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September 14, 2017

BY E-FILING

Ms. Cynthia Brown
Chief, Section of Administration
Office of Proceedings
Surface Transportation Board
395 E Street, S.W.
Washington, DC 20423-0001

Re: ***Application of the National Railroad Passenger Corporation under 49 U.S.C. § 24308(a) – Canadian National Railway Company*** **(Docket No. FD 35743)**

Dear Ms. Brown:

Enclosed for filing under seal in the above-referenced docket please find the Highly Confidential Version of the Rebuttal Submission of Illinois Central Railroad Company and Grand Trunk Western Railroad Company.

Also enclosed for filing on the public record in this proceeding is a copy of the Public Version of this submission, redacted in accordance with the protective order entered in this proceeding on December 16, 2013.

Very truly yours,

David A. Hirsh

Counsel for Illinois Central Railroad Company
and Grand Trunk Western Railroad Company

Enclosures

cc: Kevin M. Sheys, Esquire

PUBLIC VERSION – REDACTED

BEFORE THE
SURFACE TRANSPORTATION BOARD

Docket No. FD 35743

APPLICATION OF THE NATIONAL RAILROAD PASSENGER CORPORATION UNDER 49 U.S.C. § 24308(a) – CANADIAN NATIONAL RAILWAY COMPANY

REBUTTAL SUBMISSION OF ILLINOIS CENTRAL RAILROAD COMPANY AND GRAND TRUNK WESTERN RAILROAD

Volume 1

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September 14, 2017

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PUBLIC VERSION

BEFORE THE
SURFACE TRANSPORTATION BOARD

Docket No. FD 35743

APPLICATION OF THE NATIONAL RAILROAD PASSENGER CORPORATION UNDER 49 U.S.C. § 24308(a) – CANADIAN NATIONAL RAILWAY COMPANY

REBUTTAL SUBMISSION OF ILLINOIS CENTRAL RAILROAD COMPANY AND GRAND TRUNK WESTERN RAILROAD COMPANY

Illinois Central Railroad Company ("IC") and Grand Trunk Western Railroad Company ("GTW") (together, "CN")[1] hereby respond to Amtrak's Opening Submission and submit their rebuttal evidence regarding reasonable terms and compensation for Amtrak's use of CN's facilities and services. That evidence consists of the following verified statements (with, where applicable, supporting exhibits and workpapers).

VOLUME I

A. **Joint Rebuttal Verified Statement of Paul E. Ladue and Scott Kuxmann.**

Messrs. Ladue and Kuxmann submitted a Joint Verified Statement ("Ladue/Kuxmann VS") as part of CN's Opening Submission, [2] in which they described Amtrak's operations on CN's lines, the terms of the current Operating Agreement and CN's proposals for certain modifications,[3] the

[1] IC and GTW are indirect wholly owned subsidiaries of Canadian National Railway Company ("CNR"). For convenience, we use the term "Canadian National" to refer collectively to CNR and its subsidiaries, including IC and GTW.

[2] Since that submission, Mr. Ladue has retired as Region Director Contracts and Administration for Canadian National's Southern Region. He is testifying here as a consultant to CN.

[3] As CN stated in its Opening Evidence, once it is informed by the evidence submitted by both parties in the proceeding, it intends to submit further proposed language to amend the

advantages of the current Operating Agreement's methodology for assessing performance and determining incentives and penalties, and CN's performance as a host railroad. In their Rebuttal Verified Statement ("Ladue/Kuxmann RVS"), Messrs. Ladue and Kuxmann respond to claims and proposals made in Amtrak's Opening Submission and describe some of the serious flaws in the penalty scheme proposed by Amtrak. They explain why the current Operating Agreement's structure is superior to Amtrak's proposal, rebut Amtrak's complaints about the incentive provisions in the current Operating Agreement and CN's performance, and discuss why the Board should reject various unexplained amendments that Amtrak proposes to the Operating Agreement.

B. **Rebuttal Verified Statement of Derek Taylor.** Mr Taylor is General Manager of the Regional Operations Center for Canadian National's Southern Region and, as such, is responsible for overseeing, coordinating, and dispatching freight and passenger rail operations on the CN lines at issue in this case. In his Rebuttal Verified Statement ("Taylor RVS"), Mr. Taylor refutes Amtrak's claims that CN lacks appropriate incentives under the current Operating Agreement to prevent delays and accord priority to Amtrak trains. He explains how Amtrak's arguments and evidence inaccurately portrays CN's dispatching practice and performance, and he demonstrates that, contrary to Amtrak's suggestion, CN accords priority to Amtrak trains over all freight trains, including CN's intermodal trains. He also discusses the regular and significant delays that CN's own trains suffer as a result of Amtrak's presence on CN's lines. Finally, he explains that reducing HRD to the level required under Amtrak's proposed penalty system would

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Operating Agreement and implement its substantive proposals. *See* Ladue/Kuxmann VS at 50-51, n.70. CN intends to do so as part of its opening brief. If Amtrak would prefer, however, CN would be amenable to considering a joint request to modify the procedural schedule to permit such a filing by either party in advance of the opening briefs.

cause cascading operational delays throughout CN's system, undermining the performance of all trains, including Amtrak's, and imposing substantial costs on CN.

C. **Rebuttal Verified Statement of Harald Krueger.** Mr. Krueger, Senior Manager, Network Planning, for Canadian National, was a co-author of the Joint Verified Statement of Harald Krueger, Brian Doyle, and Nikola Rank ("Krueger/Doyle/Rank VS"), submitted as part of CN's Opening Submission, which described the modeling conducted by CN in order to identify the specific capital investment that would be necessary to replace CN rail line capacity consumed by Amtrak trains operating over two CN rail corridors at various levels of on-time performance. In his Rebuttal Verified Statement ("Krueger RVS"), Mr. Krueger addresses Amtrak's proposal to base performance incentives and penalties in the Operating Agreement on minutes of "Host-Responsible Delay" (or "HRD") experienced by Amtrak trains on the CN lines, and he analyzes the rail line capacity that would be required in order to reduce HRD for the City of New Orleans and Illini/Saluki services to the levels necessary for CN to avoid penalties or earn incentive payments under Amtrak's proposal. In addition, he responds to assertions in Amtrak's Opening Submission that changes to Amtrak train schedules are not needed, and he discusses CN's recent proposal to modify the schedules for the Illini/Saluki service and the likely improvement to "All-Stations On-Time Performance" (or "ASOTP") that would result from those schedule changes.

D. **Rebuttal Verified Statement of Robert D. Willig.** Professor Willig, Professor of Economics and Public Affairs at the Woodrow Wilson School and the Economics Department at Princeton University, submitted a Verified Statement ("Willig VS") as part of CN's Opening Submission, in which he described how a compensation agreement for hosting Amtrak passenger services should be structured from the standpoint of sound economic principles and evaluated

from that standpoint various features of the current Operating Agreement and CN's proposed changes to it. In his Rebuttal Verified Statement ("Willig RVS"), he reviews Amtrak's proposed changes to the Operating Agreement, explaining that they violate sound economic principles, reflect a failure by Amtrak to internalize the costs caused by its demands, and would exacerbate existing uneconomical subsidization of Amtrak by CN. He explains that Amtrak's proposed penalty scheme rests on goals that are not aligned with the public interest, is structured in an economically unsound way calculated to generate penalties payable by CN to Amtrak rather than produce optimum results, and lacks appropriate flexibility.

E. **Rebuttal Verified Statement of Jeffrey A. Dubin.** Professor Dubin, Adjunct Professor of Economics and Statistics at the University of California Los Angeles Anderson School of Management, and retired Professor of Economics at the California Institute of Technology, submitted a Verified Statement ("Dubin VS") as part of CN's Opening Submission, in which he presented the results of his statistical analysis to determine the relationship between aggregate minutes of freight train interference and passenger train interference, on the one hand, and endpoint on-time performance of specific Amtrak trains operating on CN lines, on the other. In his Rebuttal Verified Statement ("Dubin RVS"), Professor Dubin responds to the Verified Statement of Benjamin Sacks. He explains that Mr. Sacks's regression analysis attempting to describe historical correlations between Host-Responsible Delay ("HRD") and All-Stations On-Time Performance ("ASOTP") cannot justify, and does not fit with, Amtrak's proposed penalty scheme, that it depends on historical schedules and operating conditions such that it has no predictive value if schedules and operating conditions change significantly, and that it misdescribes HRD/ASOTP relationships due to several analytical flaws.

VOLUME II

F. **Rebuttal Verified Statement of David A. Hirsh.** In his Rebuttal Verified Statement ("Hirsh RVS"), Mr. Hirsh, outside counsel for CN in this proceeding, verifies the authenticity of the documents that are attached as exhibits to his statement, as well as certain documents attached as exhibits to the Taylor and Ladue/Kuxmann Rebuttal Verified Statements, and briefly describes these documents, which were either produced by the parties in discovery or obtained from public sources.[4]

Respectfully submitted,

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September 14, 2017

[4] The parties have agreed that deposition transcripts need not be lodged with the Board, but that parties may instead submit such portions of the transcripts as they wish with their evidentiary submissions or briefs. Accordingly, transcript pages referenced in CN's rebuttal verified statements are attached thereto.

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PUBLIC VERSION - REDACTED

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Docket No. FD 35743

APPLICATION OF THE NATIONAL RAILROAD PASSENGER CORPORATION UNDER 49 U.S.C. § 24308(a) – CANADIAN NATIONAL RAILWAY COMPANY

JOINT REBUTTAL VERIFIED STATEMENT OF PAUL LADUE AND SCOTT KUXMANN

We are Paul E. Ladue and Scott Kuxmann. On September 4, 2015, we filed a verified statement ("Ladue/Kuxmann VS")[1] in this case, which set forth our qualifications in more detail.[2] In the Ladue/Kuxmann VS, we discussed Amtrak's operations on CN's lines (including its existing and historical train volumes, failure to contribute to infrastructure, and scheduling issues), the terms of the current Operating Agreement (including the disputed terms governing compensation and the assessment of CN's performance), CN's history of strong performance under the Operating Agreement, and CN's proposal for the terms and conditions of a new Operating Agreement.

The Ladue/Kuxmann VS, along with the other verified statements submitted as CN's Opening Evidence, demonstrated that: (1) the overall structure of the Operating Agreement is

[1] "VS" references herein are to Verified Statements filed by either party in the opening evidentiary round on September 4, 2015 (as subsequently corrected, if applicable); "RVS" references are to the rebuttal verified statements being filed by CN on September 14, 2017.

[2] Since that statement was filed, Paul Ladue has retired from his position as Region Director Contracts and Administration, Southern Region, for CN. He is now working as a consultant to CN.

fundamentally sound, but could be made more fair through adjustments to relief items;[3] (2) CN incurs and should be compensated for significant costs arising from delays to its freight trains caused by Amtrak's presence on its lines; (3) Amtrak's use of CN's lines consumes a substantial share of CN's rail line capacity, which could be replaced through additional infrastructure necessary to make CN whole; and (4) Amtrak's schedules are outdated and require adjustment to be compatible with high "on-time performance" as defined by Amtrak/FRA's Section 207 metrics, which have since been invalidated.[4]

In this verified statement, we respond to the evidence and proposals submitted by Amtrak as its Opening Statement, which include the verified statements of Mr. Benjamin Sacks ("Sacks VS") and Mr. Paul Vilter ("Vilter VS"). In Part I, we summarize the serious flaws in Amtrak's proposed new penalty scheme. In Part II, we reprise why the structure of the existing Operating Agreement is appropriate as contrasted with Amtrak's proposal, and we explain why Amtrak's complaints about the incentive structure of the existing Operating Agreement are unfounded. In Part III, we describe the key failings of Amtrak's proposal in greater detail. In Part IV, we

[3] "Relief items" are allowances provided for in the current Operating Agreement for delays that are outside of CN's control, so that trains are not counted as late because of those delays. As we pointed out in our opening statement, at page 21, fn. 30, "Having relief items for delays beyond the control of the host railroad is a common aspect of Amtrak's Operating Agreements. *See*, *e.g.*, https://www.amtrakoig.gov/sites/default/files/reports/Audit4062005CSXOTP3302010.pdf ('Specifically, in determining whether a train arrived on time, Amtrak agreed to allow tolerances for specific delays that were not caused by or were generally beyond the control of the host railroad.'").

[4] Section 207 of PRIIA, the statute under which Amtrak and the Federal Railroad Administration ("FRA") jointly promulgated the metrics and standards, was held unconstitutional in *Ass'n of Am. R.R. v. U.S. Dep't of Transp.*, 821 F.3d 19 (D.C. Cir. 2016), thereby invalidating the metrics and standards themselves. We understand that the United States did not seek review from the Supreme Court of the 2016 decision, but it is the district court's decision on remand in the D.C. Circuit.

discuss certain of Amtrak's secondary proposals that appear only in the text of its proposed new Operating Agreement, and explain why they should be rejected.

I. AMTRAK'S PROPOSAL IS NOT STRUCTURED TO ACHIEVE 80% ASOTP, BUT TO IMPOSE MASSIVE PENALTIES ON CN.

A. Summary of Amtrak's Proposal.

Amtrak proposes to replace the current Operating Agreement's system of incentives and penalties based on contractual on-time performance (or "KOTP"), which we described in our previous statement (at pages 17-18), with an entirely new system derived as follows:

(1) Amtrak proposes to use as a baseline of acceptable performance by CN 80% All-Stations On Time Performance ("ASOTP") under current schedules, without any new infrastructure or equipment investment or commitment by Amtrak to reduce the delays it causes. In other words, Amtrak proposes to place the entire burden of achieving 80% ASOTP on CN (and perhaps, in due course, on other hosts on multi-host routes).

(2) On that basis, Amtrak had its statistical analyst, Mr. Sacks, attempt to estimate, for each Amtrak service subject to the Operating Agreement, the levels of delays Amtrak attributes to CN as host ("Host Responsible Delay" or "HRD")[5] that would "correlate" to 80% ASOTP. Amtrak proposes to use the level of HRD that correlates with 80% ASOTP as a new baseline "HRD Standard" for each CN service.

(3) Amtrak proposes that, for each service and each month, CN would be required to pay penalties to Amtrak when CN's HRD exceeds the new HRD Standard for that service. Amtrak would be required to pay CN incentives when CN's HRD is less than the HRD Standard.

[5] Amtrak generally expresses HRD in minutes per 10,000 train miles, and, unless otherwise specifically noted, we follow that convention in this statement.

(4) Amtrak proposes to eliminate the look-back protection, with the result that CN could owe Amtrak net penalties.

(5) Amtrak proposes that penalties and incentives be calculated for each service on a uniform per-minute-of-HRD basis, set at 1.2 times Amtrak's statistical analyst's estimate of what Amtrak calls CN's "perceived costs" of reducing HRD.

(6) Finally Amtrak proposes to cap each service's monthly incentives at the maximum dollar value level of incentives for that service under the current Operating Agreement (the one element of the current scheme Amtrak proposes to retain), and to cap penalties at the HRD level at which Amtrak's statistical analyst projects CN would cease to "perceive costs" of reducing HRD.

B. Amtrak's Proposal is Unachievable, and is Unreasonable.

As we elaborate further in Section III, below, Amtrak's proposal seeks to re-write the existing agreement between the parties that was commercially negotiated in favor of a structure that is unachievable under current schedules and would require CN to pay massive penalties to Amtrak. Amtrak's proposal is fatally flawed in multiple ways.

- Amtrak's proposal is unnecessary because (as we elaborate in Section II) the current Operating Agreement system generally works well, and its basic structure provides flexibility for improvements to address legitimate concerns.
- Amtrak's proposal is premised on, among other things, unfounded complaints (see Section II.A, below) about what it labels "freight train interference" ("FTI") – a subset of HRD that Amtrak attributes to failures by CN to subordinate its freight traffic sufficiently to Amtrak trains.

- Amtrak proposes 80% ASOTP, but this is a goal it never sought in the context of the current Operating Agreement or in negotiations until well into this litigation. ASOTP treats OTP at every station as equally important without regard to ridership. Whether a train is late to a station used by only a handful of passengers may be less meaningful than whether it is on time to a station used by hundreds of passengers. The current Operating Agreement uses "checkpoints" at major stations and the endpoints of multi-host routes, and has the flexibility to add more if appropriate.
- Amtrak's proposal is premised on achieving a goal of 80% ASOTP, but ASOTP is infeasible under current back-loaded schedules in which recovery time is only included after most stations are reached. Yet since Amtrak's opening submission, which expressly proposed to retain the current schedules, Amtrak has proposed to change the schedules.
- Even if Amtrak wants 80% ASOTP, there are means of achieving it that are far more efficient and effective than Amtrak's proposal. As we elaborate below, the most promising alternative means, but not the only alternative means, would be to revise Amtrak schedules that are outdated, inaccurate, and incompatible with an ASOTP metric. CN is hopeful that Amtrak is willing to consider implementing revised schedules, and the parties have exchanged proposals to revise the schedules this year. As Mr. Krueger explains in his rebuttal verified statement, CN's proposed schedules for the 4 trains in the Illini/Saluki service, which is CN's service with the lowest average ASOTP, would make 80% ASOTP

achievable, while only slightly lengthening schedules and maintaining reasonable network fluidity.

- Amtrak's proposal would unreasonably penalize CN for all HRD (of which FTI is just one of eight categories), including delays that cannot be prevented by CN, including delays due to issues like safety- and maintenance-based slow orders, signal problems, commuter train interference, permanent slow orders that were agreed to by Amtrak, and interlockings controlled by other railroads. Imposing penalties on CN for delays that it cannot avoid does not create appropriate incentives and serves no purpose other than to requiring CN to pay Amtrak.[6]
- On multi-host services, Amtrak's proposed 80% ASOTP has little to do with CN's performance and more to do with the performance of other carriers, which is not in CN's control. As we showed in Table 1 (on page 5) of our opening verified statement, CN hosts less than half of the Blue Water service, less than 13% of the Lincoln service, and much lower percentages of the Texas Eagle and Wolverine

[6] As we explained in our opening verified statement, use of an HRD metric is generally undesirable. (i) It is overbroad, using broad codes that sweep in many delays clearly outside the host's ability to control. (ii) It fails to adhere to prior Amtrak-CN negotiated and agreed tradeoffs between train starts and relief items. (iii) It wrongly treats all delay alike, so delays that do not result in a train being late are treated just the same as delays that cause a train to be late. (iv) It fails to give recognition to Amtrak-CN agreed-on determinations regarding the reasonable levels of delay in a particular schedule. (v) It is subject to having large individual train delays overshadow and distort the overall measure.

[redacted]

services. Establishing a performance standard for CN based on performance over these entire routes, and attempting to achieve an 80% ASOTP goal for the whole of each of these services by imposing that standard on CN, is asking the tail to wag the dog. For example, for those trains for which CN hosts the last segment, (*i.e.,* eastbound Wolverine and Blue Water trains, and northbound Lincoln and Texas Eagle trains), most of the station arrival times that determine ASOTP will have been determined before the train even reaches CN.

- Amtrak's scheme is premised on its statistical analyst's attempted translation of 80% ASOTP into HRD terms. But this translation fails to control for other factors that influence ASOTP. It ignores the fact that while some HRD minutes may affect ASOTP, others do not. For example, HRD "delay" minutes can be offset by available recovery in the segment of the schedule at issue. Amtrak has agreed to include recovery in schedules because it is necessary to provide for inevitable delays.
- While Amtrak refuses to acknowledge and resists compensating CN for its costs of subordinating freight traffic to Amtrak trains, it bases its penalty scheme on a notion of CN's "perceived costs" of doing so.
- By proposing to make every minute of HRD count towards penalties, Amtrak's proposal invites more frequent, costly, and time consuming disputes between the parties about delay measurement and attribution.

In choosing to not advance a serious commercial proposal, Amtrak has made no effort to compromise, address CN's concerns, show flexibility, or pursue common-sense joint solutions, such as schedule adjustment. Its proposal is premised on the notion that CN should be solely

responsible for enabling Amtrak to achieve 80% ASOTP under current schedules, a position it never advanced in negotiations. It ignores other ways to improve ASOTP, such as schedule adjustment, infrastructure investment, and Amtrak operational improvement. Such solutions would likely be more efficient and potentially more cost effective but would involve some combination of cooperation, investment, and effort on Amtrak's part. Amtrak should not be rewarded for making such an extreme and unproductive litigation-oriented proposal.

C. Amtrak's Proposed Penalty Scheme Would Result in CN Earning No Net Compensation and Instead Paying Massive Penalties to Amtrak.

Amtrak's proposal demands baseline performance levels of HRD that are generally far lower than CN or other hosts have achieved in the past, far lower than the HRD levels Amtrak has recognized (outside the context of this litigation) as representing good host performance, and far lower than are reasonably achievable under current schedules and operating conditions. Where it is even possible to achieve those HRD levels, CN's costs of doing so would be exorbitant. In some cases, it is impossible for CN to achieve those HRD levels, even if CN cleared all freight trains off CN's lines during the time when Amtrak trains are running. Amtrak, however, proposes that it pay neither for those additional costs incurred by CN under Amtrak's new proposal, nor for CN's existing freight delay costs due to hosting and prioritizing Amtrak trains. In practice, Amtrak's penalty scheme would impose huge additional uncompensated costs on CN by consuming existing network capacity and delaying freight trains. However, for key CN services, Amtrak's proposal based on existing schedules guarantees that 80% ASOTP is unachievable.

Amtrak's proposal appears designed to advance a much less legitimate objective that is troubling and raises serious issues. It is designed to generate massive penalties (*i.e.,* payments to Amtrak by CN). The combination of Amtrak's proposed penalty scheme and its proposed

elimination of the lookback provision would result in CN's earning no net compensation. Instead, Amtrak wants CN to pay large subsidies to Amtrak even as it hosts Amtrak, and even while providing Amtrak with what, by any historical standard, is excellent service. Three examples illustrate the unreasonable nature of Amtrak's proposal:

(1) Applying the proposal retroactively, as Amtrak seeks, for the period August 2013 to the present (for this purpose, June 2017) – a period when CN consistently exceeded Amtrak's expectations and earned [redacted] in incentives under the Operating Agreement then in force – would yield penalties of over $50 million. Because those penalties, paid by CN to Amtrak, would exceed the incremental cost compensation Amtrak pays to CN, the net result would be that CN would be forced to host Amtrak for free and pay Amtrak over [redacted].[7]

(2) By logical extension, Amtrak's proposal would appear to require other host railroads, including Amtrak, to pay substantial penalties. Over that same period, extending Amtrak's proposal to other hosts (including Amtrak itself) on the multi-host routes at issue would result in the imposition of massive penalties on them as well.[8] At historical levels of HRD, Union Pacific would be subject to $84 million in annual penalties related to its hosting the Texas Eagle service. On the Wolverine, under the HRD Standard Amtrak would set for hosts, Michigan Department of Transportation (whose portion of the Wolverine route we understand is

[7] *See* Workpaper "Sacks as applied to CN services."

[8] In this bilateral case about the CN-Amtrak Operating Agreement, Amtrak has not explained what it would propose to do on non-CN segments of multi-host routes to achieve its ostensible 80% ASOTP goal. But Mr. Sacks derived Amtrak's HRD Standards on a whole-route basis, based on an alleged correlation between whole-route ASOTP and whole-route (not just CN) HRD. Where Amtrak offers no basis for treating CN differently from other host railroads, extrapolating its proposed penalty scheme to other hosts is one way to test its reasonableness.

operated by Amtrak) would be subject to over $13 million in penalties, and Amtrak itself (as a host on a different portion of the line) would be subject to over $4.5 million in penalties.[9]

(3) Amtrak's proposal would even require CN to pay penalties if CN achieved 900 HRD on an annual basis. This was the standard Amtrak jointly promulgated with the FRA under Section 207 of PRIIA (which has since been invalidated). At the time, CN and other railroads objected that 900 HRD was too low and substantially below industry-wide averages. Even at 900 HRD, under Amtrak's new proposal, CN would have to pay Amtrak over $7 million in penalties, meaning that, net, CN would host Amtrak for free and pay Amtrak about [redacted] per year.[10]

Indeed, even Amtrak appears to recognize that focusing solely on achieving 80% ASOTP through large proposed reductions in HRD is flawed. Since making its penalty proposal, Amtrak has proposed significant changes to the Illini/Saluki and City of New Orleans schedules to improve ASOTP. This is a common-sense, cost-effective way to improve ASOTP that Amtrak's proposal in this case entirely ignores. As we elaborate below, however, Amtrak's changes did not solve the problems of applying an 80% ASOTP standard to current schedules. CN undertook the task of addressing the multiple interrelated issues with the Illini/Saluki train schedules and proposed more comprehensive changes to those schedules that should, based on historical patterns of performance, result in ASOTP at or above 80%. As Professor Dubin explains in his Rebuttal Verified Statement, it is obvious that if Amtrak's schedules change significantly – especially if they change in a way designed to improve ASOTP – the relationship between ASOTP and HRD will change. The HRD Standards that are based on an alleged "correlation"

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[9] *See* Workpaper "Sacks as applied to other hosts on CN services."

[10] *See* Workpaper "Sacks as applied to CN services."

between ASOTP and HRD will also change. Because Amtrak's penalty proposal offers no flexibility to adjust the HRD Standards if schedules significantly change, Amtrak's penalty proposal is inapplicable.

II. THE EXISTING OPERATING AGREEMENT PROVIDES THE RIGHT STRUCTURE TO COMPENSATE CN FOR HOSTING AMTRAK AND INCENTIVIZE CN TO HELP AMTRAK PERFORM WELL.

In contrast to the Amtrak's unrealistic, one-sided proposal, CN's proposed adjustments to the existing Operating Agreement are reasonable and feasible. They would lead to better outcomes without fundamentally altering the previously negotiated economic relationship between CN and Amtrak. The existing incentive/penalty provision in the Operating Agreement is fundamentally sound and has the flexibility to meet the needs of Amtrak and CN.

As discussed in our opening verified statement, the existing KOTP-based incentive/penalty scheme is directly based on the same schedule that passengers see and on what passengers care about – whether Amtrak's trains are on time (or, on multi-host routes, whether the train traverses CN's segment within the allotted time). Further, through the use of relief items, the existing KOTP incentive/penalty scheme focuses on CN's contribution to achieving that goal. By contrast, Amtrak's proposed HRD system is based on "pure run time," or "PRT,"[11] a component of the schedule that passengers do not see.

In this section, we discuss why that system, as modified by the adjustments proposed in our opening verified statement, is superior to Amtrak's proposal, and why Amtrak's complaints about the existing system are unfounded and misleading.

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[11] PRT is defined as the theoretically shortest time, given established track speeds, in which a given Amtrak train can traverse its assigned route if there is no other traffic on the rail line and all operating conditions are perfect.

A. Contrary To Amtrak's Claims, The Current Incentive Provisions Under the Operating Agreement Function Well.

Amtrak's Opening Evidence makes four primary complaints about the incentive/penalty arrangement in the current Operating Agreement for the four services that operate on the lines of the Illinois Central (the "IC Services").[12] First, Amtrak claims that under the existing system, CN is incentivized to dispatch Amtrak's trains so that they arrive "just in time" within the parameters for payment under the Operating Agreement. Second, Amtrak claims that CN "gives up on" trains that have become so delayed that they cannot earn incentives. Third, Amtrak claims that the lookback provision negates CN's incentives to improve performance when performance is very bad. Finally, Amtrak alleges that administering the system of relief items is time-consuming and contentious. As discussed below, those assertions are unfounded and incorrect.

1. CN does not dispatch Amtrak's trains to arrive just within Operating Agreement parameters for incentives.

Mr. Vilter complains that "[t]he Current Agreement does not reward CN for minimizing HRD minutes, only for doing 'good enough' to arrive at a checkpoint within tolerance. CN can cause a significant number of HRD minutes, but just few enough to arrive within the tolerance and be paid an incentive." Vilter VS at 6. Mr. Vilter attempts to support this claim by providing, in Attachment 4 to his Verified Statement, 45 examples of "Delayed Trains That Earned Incentives." Mr. Vilter describes these as examples of trains "where there were significant CN HRD minutes (and passengers arriving late to, and departing late from, stations),

[12] As discussed in the Ladue/Kuxmann VS, the parties agree that the incentive/penalty system used by the two services operating on the lines of Grand Trunk Western (the Blue Water and the Wolverine, referred to together as "GTW Services") should be replaced by whatever system is adopted for the IC Services. Ladue/Kuxmann VS at 13.

but the trains arrived within tolerance and thus were counted as 'makes' toward CN earning an incentive." Vilter VS at 6-8. Mr. Vilter's examples do not support his contention.

First, Amtrak's complaint is not supported by the numbers. Mr. Vilter fails to demonstrate a significant pattern of trains arriving just in time under the KOTP metric.[13] His 45 examples are from the period July 22, 2013 to June 3, 2015, during which CN hosted over 16,000 Amtrak trains. In other words, they represent less than 0.3% of Amtrak train movements over CN during that period. That Mr. Vilter can identify 0.3% of trains as arriving just in time to qualify for incentives is entirely unremarkable.

More importantly, data for the two main services at issues in this case – the City of New Orleans and the Illini/Saluki – confirm that it is rare for Amtrak trains running on CN's lines to arrive just in time under the KOTP metric. As Table 1 shows, between January 1, 2012 and July 31, 2015, just [redacted] of KOTP-on-time Illini/Saluki trains, and just [redacted] of KOTP-on-time City of New Orleans trains, achieve KOTP with less than 5 minutes to spare; and the proportions of KOTP-late trains that are less than 5 minutes late are much higher. That is precisely the opposite of the clustering of datapoints in the "just in time" range that one would expect to see if, as Mr. Vilter suggests, CN had a practice of doing the minimum necessary to achieve KOTP.

[13] That the 45 trains Mr. Vilter discusses arrived on time in accordance with the Operating Agreement demonstrates they were operating within the expected parameters of that agreement. While Mr. Vilter implies that CN could have handled these trains better, he provides no specific suggestions for improvement, and no evidence that CN failed to prioritize Amtrak trains.

Table 1 - Summary of KOTP Arrival Data (Jan. 2012 – Jul. 2015)[14]

	Illini/Saluki	City of New Orleans
Total trains	5054	5003
Total "on time" per KOTP	[redacted]	[redacted]
Percent of total trains on time within 0-5 mins	[redacted]	[redacted]
Percent of on time trains that are within 0-5 mins	[redacted]	[redacted]
Total "late" under KOTP	[redacted]	[redacted]
Percent of total trains that are late within 0-5 mins	[redacted]	[redacted]
Percent of late trains that are within 0-5 mins	[redacted]	[redacted]

Second, Amtrak's complaint is not supported by its examples. Mr. Vilter's examples are not instances of CN finely calibrating its performance to do the minimum necessary to earn incentives.[15] For example, in 25 of Mr. Vilter's 45 examples, the train reached its endpoint on time within the tolerance permitted by Amtrak, meaning the trains counted as on-time under Amtrak's Endpoint OTP metric.[16] Moreover, as Table 2 shows, in 8 of Mr. Vilter's 45 examples (including 3 out of 3 for train 364), the train operated over the CN portion of the route ***faster*** than its scheduled run time:

[14] The basis for Table 1 is as follows. [redacted]

[15] The Rebuttal Verified Statement of Derek Taylor ("Taylor RVS") explains why, from a dispatching perspective, Mr. Vilter's claim that CN dispatches trains to fine-tune delays so as to permit an Amtrak train to arrive "just in time" is unrealistic and wrong.

[16] This number is self-evident from the tables in the examples themselves, which indicate late stations through bolding and on-time stations through plain text.

Table 2 –
Examples from Vilter Attachment 4 of
Trains Operating Faster than Scheduled Run Time on CN

Example #	Page #	Train #	Date	Minutes late arriving at CN	Minutes late arriving at endpoint	Run time relative to schedule time on CN
1	1	364	7/22/2013	36	20	-16
12	13	364	9/13/2013	9	3	-6
16	17	393	10/9/2013	0	-4	-4
19	20	393	10/13/2013	8	4	-4
20	21	59	10/16/2013	0	-25	-25
26	29	393	10/26/2013	13	7	-6
28	31	391	10/29/2013	12	11	-1
31	34	364	3/15/2014	23	19	-4

If the best examples Amtrak can come up with out of 16,000 train trips include trains that arrived at their destination and/or traversed the CN segment on time, Amtrak's stated concern is unfounded.

2. CN does not "give up" on late trains

Mr. Vilter's second complaint is that under the Operating Agreement, CN has no incentive to prevent further delays to trains once they cannot achieve KOTP, and, by implication, that CN makes no such efforts. The idea that CN fails to prioritize very late Amtrak trains is inconsistent with the realities of dispatching. As Mr. Taylor explains, CN's dispatchers lack the necessary real-time information about Amtrak delays necessary to enable them to distinguish between Amtrak trains that could still achieve KOTP and those that are "lost" in terms of KOTP.[17] Moreover, "giving up" on a lost train would violate CN's instructions to its dispatchers

[17] Taylor RVS at 13.

and be contrary to CN's own interests to move Amtrak trains through the mostly single track network to ensure fluidity and efficient use of existing infrastructure.[18]

Mr. Vilter provides 15 examples of trains that sustained further delays after initial delays of approximately an hour or more attributed by Amtrak to CN HRD. Vilter VS pp. 8-9 & Attachment 5. These few cherry-picked examples, however, do not support his point. Our review of the SRS delay records of these trains shows that CN's freight trains are delayed for Amtrak – often quite substantially – after the point that Mr. Vilter claims CN has "given up" on the Amtrak train. On average, for the 15 examples of "lost trains" provided by Amtrak, CN incurred 73 minutes of freight train delays due to the operation of the Amtrak train after the point at which Mr. Vilter claims the train was "lost."[19] Further, these freight delays represent, on average, over 50% of the total freight delay caused by the operation of the Amtrak train. Amtrak is wrong to assume that once a train can no longer earn incentives, CN no longer subordinates its own traffic to Amtrak.

Amtrak's complaint also cannot be squared with its own data. Few trains are late enough at an early enough stage of their trip for the issue of "giving up" on them to even potentially arise. Although he did not state an explicit threshold, the trains that Mr. Vilter suggests are "lost" for KOTP purposes typically have accumulated 60 minutes of HRD before reaching their mid-points.[20] But such "lost" trains are rare. For example, of the 5,045 Illini/Saluki train trips

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[18] Taylor RVS at 15.

[19] See Workpaper "Freight Delays Caused by Lost Trains."

[20] We use Mr. Vilter's apparent threshold to test his argument, and we use "lost trains" as a shorthand for it. We do not, however, agree that 60 minutes of HRD makes a train "lost" for KOTP purposes. Many delays coded by Amtrak as HRD involve matters covered by relief items under the Operating Agreement, reflecting the parties' agreement that they are beyond CN's

between January 2012 and June 2015, only 71 (1.4%) experienced more than 60 minutes of HRD prior to the mid-point of the run.[21]

Further, Amtrak's "giving up" notion implies that "lost" trains would experience far more HRD in the second half of their trip than trains that are on or closer to their schedule. But the opposite is true. Only 25.4% (18 of 71) of potentially "lost" trains sustained post-midpoint HRD delay of 30 minutes or more, whereas a higher percentage of the trains not "lost" did so – 29.7% (1,475 of 4,974). The data belie any claim that CN "gives up" on "lost" trains." Instead, they corroborate Mr. Taylor's rebuttal verified statement that CN uses its best efforts, consistent with sound and safe dispatching practice, to prevent delays to all Amtrak trains, without regard to whether they are on time or already late.

3. The lookback provision does not diminish CN's incentives to help Amtrak perform well.

According to Mr. Vilter, "[p]erhaps" the "most important[]" problem with the current incentive/penalty system is the lookback provision, because it allegedly negates CN's incentives to improve performance when performance is very bad. Vilter VS at 2.

We understand from numerous publicly available sources, including publicly available operating agreements, government reports, and agency decisions, that lookback provisions are a common feature of Amtrak's operating agreements with its host freight carriers. Amtrak even

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reasonable control. In any event, CN does not treat such trains (or any delayed Amtrak trains) as "lost."

[21] *See* Workpaper "Trains Given Up On Analysis." We focus here on the Illini/Saluki service because it is the source of 13 of Mr. Vilter's 15 examples.

included a similar provision in the agreement it recently signed to host MBTA trains on Amtrak lines.[22]

Because of CN's history of good performance under the Operating Agreement, the lookback provision has hardly ever come into play.[23] And, on the rare occasions when it has come into play, it has not, as Mr. Vilter suggests, caused CN to abandon all effort to expedite Amtrak trains and earn incentives. To the contrary, when CN has incurred a penalty in a given month, it has worked hard, and generally successfully, to improve performance in the next month.[24]

A lookback provision is necessary to ensure that the incremental cost compensation to which CN is entitled as Amtrak's host is not taken away from it under the rubric of penalties. But it should rarely, if ever, come into play, because the agreement should include realistic, consistently achievable schedules and reasonable performance standards that give CN a genuine opportunity to earn incentives and avoid incurring penalties. Consequently, under a balanced, well-functioning operating agreement, it should not be Amtrak's "most important" problem.

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[22] See Amtrak-MBTA Agreement, June 26, 2017 FMCB; available at https://www.mbta.com/uploadedfiles/About_the_T/Board_Meetings/L.%20%20%20UPDATED%20Amtrak-MBTA%20Agreement%20-%20NP%20Final%203.pdf ("All penalties/incentives capped at $1million/year.") While not strictly a lookback provision, this provision has a similar effect: limiting maximum penalties to a small fraction of Amtrak's overall compensation.

[23] Ladue/Kuxmann VS at 20. As we previously discussed, the lookback has recently become an issue on the Illini/Saluki service because Amtrak refuses to treat delays caused by its equipment's failure to reliably shunt grade crossing warning device circuits as relief items. CN disagrees with Amtrak's interpretation of the Operating Agreement on this point (and we proposed in our opening statement an amendment to the Agreement to clarify the issue, Ladue/Kuxmann VS at 58-59). Based on historical performance, upon resolution of this issue, the lookback would no longer be triggered.

[24] Ladue/Kuxmann VS at 26.

However, a lookback provision takes on greater importance in a host operating agreement if the other provisions of that agreement make unreasonable demands of the host and attach substantial penalties to reasonable host performance. As we elaborate in Section III, below, that is precisely what Amtrak's proposal would do.

4. Amtrak overstates the difficulties in administering the current Agreement and understates the difficulties in administering its proposal.

Mr. Vilter complains about the costs of administering the current Operating Agreement, and claims that Amtrak's proposal "makes it much less likely that Amtrak and CN will have protracted disputes over small amounts of delay minutes." Vilter VS at 18. That claim is implausible because there is every reason to believe that Amtrak's proposal would engender more disputes, and more administrative costs and burdens. It is also misleading because the fact that a simple incentive system can be administered simply is not a benefit if that simplicity creates skewed incentives.

The current KOTP system gives rise to relatively few protracted disputes. For each train trip, it involves a binary decision: after adjustment for relief items, was the train on time or was it not? Total transit time is generally calculated automatically and seldom disputed. The application of relief items can engender disputes. But since most trains achieve KOTP with several minutes to spare (as shown in Table 1 above), the binary nature of KOTP makes many relief item determinations moot.[25] Moreover, the parties have a long history of experience in interpreting the Operating Agreement's relief term provisions, which has narrowed points of

[25] For example, if, on initial assessment, a train achieves KOTP with 10 minutes to spare, CN has nothing to gain by arguing that 5 minutes of delay fell within a relief item so it should be deemed to achieved KOTP with 15 minutes to spare, and Amtrak has nothing to gain by arguing that 5 minutes of delay should not be subject to a relief item so it should be deemed to have achieved KOTP with only 5 minutes to spare.

dispute. Further, by adopting CN's proposed changes to relief items, the potential for disputes would be even further reduced.

The administrative burdens of the current KOTP system pale in comparison with those that Amtrak's proposal would create. Under Amtrak's HRD-based penalty system, every minute of HRD on every train trip would count. Both parties would have an immediate financial incentive – far greater than existing incentives – to dispute the attribution of every minute of delay. This would vastly increase the number of disputes that arise under the current system. There is thus no reason to think that the lines Amtrak has unilaterally drawn in its definition of HRD will be subject to less dispute in their application than the lines the parties drew together in their definition of relief items.[26]

Moreover, the characteristics of HRD that Amtrak apparently believes should make its delay attribution less subject to challenge than the present Operating Agreement do not reflect inherent advantages of HRD, but instead reflect the fact that HRD does a much less complete and accurate job HRD of delay attribution. As discussed in our opening verified statement, HRD is not assigned by Amtrak based on the root cause of delay. Thus, if Amtrak has its way, there would be no disputes about the actual root cause of delays, but that is only because use of HRD as presently administered by Amtrak would render the critical question of actual causes irrelevant. Similarly, Amtrak's broad categorization of delays as host responsible under the

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[26] Mr. Vilter's data concerning the percentage of HRD coded delays challenged by CN has no bearing on the likelihood of future challenges, as it ignores this fundamental change in stakes and incentives. Moreover, Mr. Vilter's claim that Amtrak has granted 85% of CN's coding change requests involving HRD is based on a cherry-picked period of relative harmony: July 2013-June 2014. Vilter VS at 17 & Attachment 7. Since October 2014 (long before Mr. Vilter filed his statement), a large percentage of CN's coding change requests have involved the delays caused by the failure of Amtrak's Horizon and Amfleet equipment to properly shunt grade crossing signal equipment. Amtrak has denied every one of those requests, and the parties continue to dispute them.

rubric of HRD is overly inclusive and less accurately measures those delays that are reasonably within CN's control.

In sum, contrary to Amtrak's claims, its proposal to use HRD as a measure of CN responsibility for delays, and to count every HRD minute toward penalties and incentives, would result in a markedly less accurate system of delay attribution than the existing Operating Agreement and an enormous increase in disputes between the parties, resulting in significant additional administrative costs and burdens.

B. HRD and ASOTP Levels Do Not Demonstrate, as Amtrak Claims, that the Incentive/Penalty Provisions of the Existing OA Are Fundamentally Flawed.

Amtrak makes much of the facts that (i) it generally achieves less than 80% ASOTP on its CN-hosted services (while failing to acknowledge that the same is true on most of its non-CN-hosted services), and (ii) CN's HRD is generally substantially higher than Amtrak's proposed HRD Standards. Amtrak suggests that those facts prove that the current Operating Agreement is failing to incentivize CN to perform well. But the much more likely conclusion based on those facts is that 80% ASOTP cannot reasonably be achieved on Amtrak services hosted by CN under current operating circumstances and Amtrak's present schedules, which Amtrak has since proposed to change. That fact is highlighted by the unreasonable levels of many of Amtrak's HRD Standards.

1. Low ASOTP on the City of New Orleans and Illini/Saluki Services Reflects Specific Features and Defects of Their Current Schedules, Not the Current Incentives and Penalties Scheme.

As we explained in our opening verified statement,[27] for CN's two largest Amtrak services – the Illini/Saluki and City of New Orleans – high levels of ASOTP cannot be expected

[27] Ladue/Kuxmann VS at 34-44.

under current operating conditions without schedule changes designed to (i) correct insufficient PRT, and (ii) provide additional recovery time, particularly for interim stations.

Accurate PRT, which is meant to represent a realistic measurement of what a train can reliably achieve in ideal operating conditions, is an essential building block for any Amtrak schedule.[28] PRT also provides the baseline against which Amtrak measures HRD. If PRT is insufficient, delay will be recorded even when a train is not actually delayed relative to its realistic best speed, and recovery time and tolerance will be consumed not by actual train delays, but an inability to meet transit times that are too short because they are based on insufficient PRT.[29] Thus, if PRT is short, it will tend to decrease OTP.

Backloading recovery time presents a major obstacle to the achievement of high ASOTP, as it means there is little or no recovery time available to offset reasonably anticipated levels of delays that occur prior to interim stations. Recovery time in the current Illini/Saluki and City of New Orleans schedules is heavily backloaded. Backloading has the advantage, however, of minimizing Amtrak idle time, since it generally precludes trains from arriving early at interim stations and then having to idle there until their scheduled departure time. Minimizing idle time at interim stations reduces total trip time for passengers who disembark at later stations and

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[28] In addition to PRT, there are two other major components of an Amtrak schedule. (1) Dwell time, which is defined as the amount of time required to perform work while a train is stopped at a station, including loading and unloading passengers and bags, changing crews, and/or servicing the locomotive or cabin cars. (2) Recovery time, which is defined as an amount of time added to the schedule to compensate for all reasonably foreseeable contingencies and delays (regardless of source) encountered along the route so that the train's schedule can be met with regularity. *See* Ladue/Kuxmann VS at 32-33.

[29] In theory, Amtrak conductors should be coding delays due to insufficient run time as "OTH." In practice, however, they have an incentive to miscode delays actually due to short PRT as something other than OTH, including HRD, in order to avoid the suggestion that they did not handle the train efficiently. That risk is particularly great insofar as Amtrak denies that PRT is short.

enables Amtrak to achieve high levels of Endpoint OTP with a shorter total schedule than would otherwise be possible. Minimizing Amtrak idle time also reduces CN freight delays, because Amtrak idling trains on CN lines at interim stations consume capacity for a longer period and harm CN's network fluidity.

This tension between backloading of recovery time and the ASOTP performance metric is well known. Amtrak recognized this tension in promulgating with FRA in 2010 the (since-invalidated) PRIIA metrics and standards. They delayed implementation of the ASOTP standard they developed, in order to provide time for schedule revisions to address issues such as backloaded recovery time issues. More recently, in February 2017, after filing its opening evidence, Amtrak proposed revising the schedules for the Illini/Saluki and City of New Orleans services to spread (*i.e.*, end the backloading of) recovery time for the express purpose of improving ASOTP.

Contrary to its recognition elsewhere, Amtrak's opening failed to address the incompatibility of existing schedules with Amtrak's ASOTP goal. Amtrak instead suggested that the current Operating Agreement's KOTP-based incentives scheme must be defective because CN sometimes earns incentives on trains that have been late to some interim stations. Vilter VS at 6-7. Given backloading, trains that perform well and arrive at their destination on time will frequently be "late" at the unrealistic schedule times set for interim stations.[30]

[30] As Professor Willig points out at pages 17-19 of his Rebuttal Verified Statement, the fact that CN achieves consistently high KOTP across different services, while those services achieve widely varying but generally low levels of ASOTP, is evidence that the worst ASOTP problems are the product of service-specific factors, such as backloaded schedules. The same point also underlies the disparate HRD standards Amtrak proposes for the various services, ranging from 411 HRD for the Wolverine to 1073 HRD for the Lincoln. The more starkly incompatible a schedule is with high ASOTP, the more extreme and unrealistic measures would be necessary to achieve high HRD if, as Amtrak's proposal assumes, the schedule is not changed.

Mr. Vilter's inaccurate claims regarding performance under KOTP lead to an inapt prescription. Amtrak proposes to "fix" ASOTP by forcing CN to reduce delays by means of a new penalty scheme. Amtrak ignores that CN is already delivering Amtrak trains to their destination on time with a high degree of reliability; that Amtrak has previously effectively agreed, in providing recovery time in its public schedules, that the levels of delay currently experienced on CN lines are reasonable; and that current existing schedules, at least for Amtrak's two largest services on CN (the Illini/Saluki and City of New Orleans) are incompatible with an 80% ASOTP objective.

Instead, if Amtrak's real goal is achieving 80% ASOTP – and not a pretext for imposing penalties on CN, and if the Board decides it is an appropriate goal – the way to do so is to tackle the fundamental obstacle: the current backloaded schedules. As explained in the Rebuttal Verified Statement of Harald Krueger ("Krueger RVS"), Amtrak's 2017 schedule proposal is a start in that direction, but a simplistic and defective one. As Mr. Krueger further describes, CN has proposed in response a much more complete revision of the Illini/Saluki schedule, one that would correct insufficient PRT, spread recovery time efficiently, and add a modest amount of additional recovery time to account for regular delays that can be expected to occur during real-world operations.[31] He also proposes adding time to account for the speed restriction required

[31] Amtrak has in the past resisted any schedule change that lengthens the overall schedule, *see* Ladue/Kuxmann VS at 10, claiming that its experience lengthening schedules has not improved OTP. *See* Vilter Tr. 128:7-129:2 (stating "[i]t hasn't been [Amtrak's] history, longer schedules have not historically improved OTP," and citing the Sunset Limited as an example) (Attached as Exhibit 1 to this statement). Empirically, however, that is not true. After time was added to the Sunset Limited in mid 2000s, its Endpoint OTP increased from 17.1% for the period 2000 to 2007 to 69.9% for the period 2008 to 2016. *See* Workpaper "Sunset Limited OTP Analysis." In arguing against the common-sense proposition that lengthening schedules tends to improve passenger on-time performance, Amtrak, on page 13 of its reply comments in the STB Ex Parte 726 rulemaking (filed March 30, 2016),cited the experience of a long-distance

for the safe operation of the single-level Horizon/Amfleet equipment that Amtrak operates on the Illini/Saluki service.[32]

As he demonstrates, adopting CN's schedule improvements would lead, assuming no changes in delay experience, to ASOTP exceeding 80% on the Illini/Saluki, the CN-hosted service with the lowest current ASOTP. As he further discusses, if Amtrak is receptive, CN stands ready to develop a similar proposal for the City of New Orleans service.[33]

2. Low ASOTP on the Blue Water, Wolverine, Lincoln, and Texas Eagle Services Reflects Delays Occurring on Other Host Railroads More Than Delays on CN.

CN hosts less than half of the route miles of the Blue Water, and less than 13% of the route miles of the Wolverine, Lincoln, and Texas Eagle services. Not surprisingly, therefore, most delays, and most impediments to high ASOTP, on these services have nothing to do with CN.

As with the Illini/Saluki and the City of New Orleans, low ASOTP on these services may be attributable to schedule design issues that could be most efficiently addressed as such. Again,

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VIA Rail (the Canadian equivalent to Amtrak) train (which operates from Toronto to Vancouver), for which time was added to the schedule in 2008. We understand, based on our discussion with Terry O'Brien (CN's Director of Passenger Operations in Canada), that VIA Rail trains do not operate with the same priority as Amtrak, and that this particular VIA service suffers from performance issues during the summer due to work blocks and in winter due to the severe winter weather in Canada.

[32] As we discussed in our opening statement, Ladue/Kuxmann VS at 43, that speed restriction is required because Amtrak's preferred equipment fails to reliably shunt grade crossing warning devices when they operate at track speed. CN, another Class I railroad, and Amtrak are working with the Federal Railroad Administration to try to find an acceptable solution to this problem. Thus far, however, the problem has not been fixed, and Amtrak's schedules have not been adjusted to account for it.

[33] Amtrak apparently agrees that "[s]chedule adjustment [to the City of New Orleans] would probably bring ASOTP to 80%, if CN delays do not increase." See Exhibit 2 ATK0000032327 [C] (included as Exhibit 11 to our prior VS).

as Amtrak and the FRA acknowledged with respect to all Amtrak services in 2010, ASOTP should not be viewed as a meaningful metric for any Amtrak service unless and until its schedule has been designed or revised with ASOTP in mind. However, fixing the schedules for these multi-host services to be compatible with ASOTP, if that is the objective, would require the cooperation of Amtrak and all hosts. CN is ready and willing to participate constructively in such a process, although the present litigation initiated by Amtrak is ill-suited to accommodate it.

Even leaving schedule issues aside, it is plain that CN's performance under the current Operating Agreement scheme is not a significant cause of low ASOTP on the four multi-host services.[34] For the two GTW Services, Amtrak's proposed changes to the Operating Agreement are a bad solution in search of a non-existent problem. On the Blue Water, CN HRD is already relatively low (consistently below Amtrak's/FRA's Metrics and Standards level of 900 HRD), and ASOTP has consistently exceeded 80% ASOTP for the past year and half. For the Wolverine service, any such delay and ASOTP problems occur mainly on the 91.3% of the route not hosted by CN, and insufficient and backloaded recovery time in the schedules appears to be a major driver of low ASOTP. Even with those issues, the Wolverine achieves approximately 70% ASOTP. Wolverine trains average only about 9 minutes of delay on the CN segment,[35] barely half of which (4.5 minutes) Amtrak counts as HRD, and most of that is due to matters beyond CN's reasonable control – delays at interlockings controlled by other railroads, and a

[34] *See* Exhibit 2 [redacted]

[35] S*ee* Workpaper "Wolverine Delay Analysis," submitted with our opening verified statement.

permanent slow order that Amtrak and CN agreed to under the Operating Agreement.[36] CN FTI, the focus of Amtrak's complaints about CN's conduct under the current Operating Agreement, averages only about 1.5 minutes per train.

The multi-host Lincoln and Texas Eagle services both run a very small portion of their routes (12.6% for the Lincoln, 2.7% for the Texas Eagle) on CN's Joliet Subdivision. As Amtrak apparently recognizes,[37] CN's performance does not have a substantial effect on their ASOTP. Both in absolute terms and in per-mile terms, there are fewer delays on CN's segment than on the rest of these services. Moreover, as we have previously noted, the predominant cause of delay on the Joliet Subdivision is interlockings controlled by other railroads. Although Amtrak attributes these delays to CN as HRD, they are outside CN's reasonable control.[38]

C. The Current Operating Agreement Has the Flexibility to Address Inter-Related Issues of Schedule, Capacity, and Equipment.

As the foregoing shows, there are multiple issues affecting ASOTP. Although CN's HRD is not the root cause of Amtrak's ASOTP problems, Amtrak proposes to penalize CN for its HRD. This outcome would not be a fair, efficient, or effective solution. Inter-related issues of schedule design, equipment performance, and host railroad capacity constraints must all be collaboratively addressed together by Amtrak and CN as a host railroad. As we have previously explained, insofar as the issues can be resolved by CN and Amtrak working together, the

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[36] *See* Ladue/Kuxmann VS at 48. The parties agreed to the slow order because they recognized that it could only be eliminated with a substantial capital investment to increase track speed that would primarily, if not exclusively, benefit Amtrak. We understand that Amtrak has been unwilling or unable to fund this investment.

[37] *See* footnote 34 *supra.*

[38] *See* Ladue/Kuxmann VS at 46.

structure of the current Operating Agreement provides a sound and flexible basis for doing so.[39] CN's recent schedule revision proposal for the Illini/Saluki, which would work harmoniously with the incentive/penalty provisions of the current Operating Agreement, epitomizes how mutually beneficial solutions can be achieved. And, if Amtrak wishes KOTP to more closely follow ASOTP by including more checkpoints, then, as discussed in our opening statement (at 49), the structure of the Operating Agreement can accommodate that, and CN is willing to review such a proposal from Amtrak.

III. AMTRAK'S PROPOSAL IS UNFAIR, UNREASONABLE, IMPRACTICAL, AND CONTRARY TO THE PUBLIC INTEREST.

There are five fundamental problems with the proposal Amtrak advances in its Opening Evidence. First, it makes no provision to compensate CN for the incremental costs associated with delays to CN freight trains caused by Amtrak's operations. Second, Amtrak's proposed performance standards are unreasonable, and in some cases are unachievable, because it seeks to place the entire burden of achieving 80% ASOTP on CN, even under schedules that are incompatible with high ASOTP, and fails to consider more reasonable and economical means of improving performance, such as schedule adjustment. Third, Amtrak's proposed performance metric, HRD, is inferior to the current Operating Agreement's KOTP metric, because HRD fails to distinguish between delays that affect on-time performance and those that do not, is susceptible to distortion due to large delays of individual trains, and because it blames CN for delays that are beyond CN's reasonable control. *See* footnote 6, above. Fourth, Amtrak's proposed penalty and incentive rates are based on a notion of CN's "perceived costs" that is both

[39] *See* Ladue/Kuxmann VS at 49-50. Of course, insofar as a solution– for example, re-engineering of the schedule for a multi-host service − requires the participation of others, no bilateral Operating Agreement or litigation can achieve it.

inaccurate and irrelevant to the value generated by different levels of service. Finally, the end result of these features is a punitive scheme that would not achieve good results for passengers, but would impose huge, uncompensated costs on CN and compel CN to subsidize Amtrak in the form of massive penalty payments even when CN provides Amtrak with excellent service. We discuss each of these flaws in turn in this section.

A. Amtrak's Proposal Would Increase CN's Freight Delay and Consume Additional Capacity, But Provide No Means for CN to Recover Increased Incremental Costs Attributable to Amtrak.

As CN's opening submissions demonstrated, CN incurs large costs from freight delay and reduced capacity to meet the performance standard required under the current Operating Agreement. CN receives no compensation for these incremental costs. Thus, the current Operating Agreement effectively makes CN and its freight customers subsidize Amtrak.

CN proposes to reduce that subsidy by requiring Amtrak to compensate CN for its proven and quantifiable costs of freight delays that would not have been incurred but for Amtrak's presence on CN's line. Doing so would not, however, eliminate the subsidy: CN would still not be compensated for the full incremental costs of hosting Amtrak, some of which are not directly quantifiable, such as the effects of the freight delays on CN's actual and potential freight customers. CN's opening submissions therefore included modeling that estimated the full cost of Amtrak's presence on CN's line, in terms of both capacity consumed and infrastructure required to replace that capacity. That modeling also showed that, without changes in infrastructure or schedules, efforts to increase Endpoint OTP to 80-90% by reducing FTI would result in very large additional freight delays.

In contrast, Amtrak's proposal would dramatically ***increase*** the subsidy CN provides Amtrak under the current Operating Agreement. Amtrak included no compensation for CN's incremental costs from freight delay and lost capacity. In addition, Amtrak's proposal would

confront CN with a costly new ultimatum: CN would have to incur substantially greater costs resulting from freight delay and lost capacity to meet new, higher performance standards (Amtrak's HRD Standards), and/or it would have to pay Amtrak large penalties.

In Section III.E, below, we discuss CN's potential penalty liability if the Board accepted Amtrak's proposal created for this litigation. In some cases, penalties would be unavoidable because the HRD Standards that Amtrak proposes are simply unattainable. In other cases, the HRD Standards may be attainable, but attaining them, or even getting close to them, would entail enormous uncompensated expense and disruption for CN operations.

Much of what Amtrak counts as HRD – for example, slow orders, signal failures, required maintenance work, and delays at foreign interlockings – is unavoidable. So approaching Amtrak's HRD Standards would require drastic reductions in so-called "freight train interference" ("FTI"), which, in turn, would require unreasonably and inefficiently delaying freight trains and creating large bubbles around Amtrak trains in which no freight trains could run for substantial periods of the day.[40] That would entail huge costs to CN for which Amtrak proposes no compensation, and would cause serious harm to CN's freight customers and the public interest in ensuring efficient interstate freight transportation on the nation's interconnected rail network.

B. Amtrak's Proposed Performance Standards Are Unreasonable Under Current Schedules That Are Incompatible with High ASOTP.

CN fully appreciates the importance of providing good on-time performance to Amtrak's passengers, and stands ready to work with Amtrak and other parties (including other Amtrak

[40] By way of example, the Krueger RVS describes the amount of capacity that would be consumed by Amtrak at the service levels required to approach the 432 HRD minutes/10,000 miles standard Amtrak proposes as the threshold for penalties on the Illini/Saluki service.

hosts) toward that end. Improving Amtrak's service should be a cooperative endeavor, and it should begin with a recognition and balanced assessment of the multiple causes of Amtrak's service problems. Amtrak's on-time performance suffers from schedules that are outdated and backloaded such that trains that run the route as a whole without excessive delay are nonetheless "late" relative to unrealistic schedule times at intermediate stations. In addition, Amtrak's on-time performance on CN's lines suffers from Amtrak's failure to make any infrastructure investments on CN's lines. Amtrak's on-time performance suffers from aging Amtrak equipment and inefficient Amtrak operations that cause delays and consume additional capacity. And, on occasion, Amtrak's performance suffers from delays that are within the reasonable control of a host railroad – although a large percentage of what Amtrak labels as "host-responsible delay," or HRD, is not reasonably avoidable.

A practical, cooperative, problem-solving approach would look at each of these underlying causes of poor OTP, see which are predominant where, and prioritize the lowest-cost, most efficient solutions. As we outlined in Section II.B, above, CN has taken substantial steps in that direction in relation to the Illini/Saluki and City of New Orleans services. CN found that the central problem for those services is their outdated schedule design and has proposed for the Illini/Saluki a highly efficient solution that, for a relatively small adjustment in trip time, could generate a large benefit in improved ASOTP. CN has offered to undertake a similar effort for the City of New Orleans service if Amtrak is amenable. On the multi-host routes, CN has shown that the main problems, and the best places to look for solutions, are on larger segments hosted by other railroads. CN does not suggest that the need for such efforts excuses it (or Amtrak) from working diligently to prevent delays on CN's segment that are reasonably preventable. CN already does so, and the current Operating Agreement properly holds CN to account for doing

so. But a fair and reasonable approach involves considering all the causes, and multiple solutions, to Amtrak's OTP problems.

Amtrak's proposal does not take such a collaborative approach. Instead, it would place the entire burden of achieving 80% ASOTP on CN (and potentially on other hosts on multi-host services), on pain of substantial penalties. Amtrak's proposal is not a fair, efficient, commercially reasonable, or even feasible basis for an operating agreement.

Amtrak instructed its statistical analyst, Mr. Sacks, to determine what levels of HRD "correlate" to 80% ASOTP, and it now asks the Board to require CN to achieve those levels without compensation and on pain of penalties. Amtrak apparently hopes that Mr. Sacks's statistical exercise will convince the Board to adopt its extreme penalty proposal generated solely for this litigation. But apart from the fact that, as Professor Dubin explains, there are numerous problems with Mr. Sacks's methodology, the fundamental nature of the "80% Point" answers Mr. Sacks comes up with is dictated by the unreasonable questions Amtrak asked him. In effect, Amtrak asked him to determine what levels of HRD CN (and, on multi-host routes, other hosts) would have to achieve to enable Amtrak to achieve 80% ASOTP ***without addressing any of the non-HRD problems underlying low ASOTP, including schedules that are incompatible with high ASOTP***. The extraordinary low HRD Standards generated by Mr. Sacks are revealing and unsurprising: ***if the Board adopts Amtrak's self-serving approach of placing all the burden of fixing Amtrak's ASOTP problems on CN, and non-CN-related problems are not addressed***, the result will be to place an immense burden on CN. Amtrak's proposal would require CN to achieve HRD levels that few, if any, major Amtrak hosts regularly achieve and that are either unachievable or only achievable at extraordinary, disproportionate cost to other freight traffic and available capacity.

We discuss below some of the most obvious problems with Amtrak's approach.

1. Amtrak's Proposed HRD Standards Are Unreasonably Low and Irrationally Disparate.

Under Amtrak's proposal, CN would be liable to make penalty payments to Amtrak unless it achieves unprecedented low HRD Standards. The following table shows how absurdly low some of these HRD levels are when they are translated into HRD minutes per train trip.

Table 3 - Amtrak Proposed HRD Standard Expressed as Minutes Per Train Trip

Service	CN Route Miles	Amtrak HRD Standard	Threshold (minutes per train trip)
Blue Water	158.7	936	14.9
City of New Orleans	927.9	709	65.8
Illini/Saluki	305.6	432	13.2
Lincoln	35.7	1073	3.8
Texas Eagle	35.7	615	2.2
Wolverine	26.5	411	1.1
Threshold (minutes per train trip) = (Amtrak HRD Standard / 10,000) * CN Route Miles			

For example, the 432 HRD standard for the Illini/Saluki amounts to an allowable limit of 13.2 minutes of delay per train trip on the CN portion of the route, which is 99% of the total route. The tolerance under the ASOTP metric is 15 minutes. Thus, if the train incurred 14 minutes of HRD on CN, it could be on time at every station ***even in the absence of any recovery time in the schedule***, yet CN would be penalized for its performance. A similar result occurs on the Wolverine service – the 411 HRD standard over the 304 total route miles means that over all combined hosts, a train could only experience 12.5 minutes of HRD before Amtrak would assess penalties. Thus, a train could be on time at every station, again even in the absence of any recovery time in the schedule, and the host railroads could still be subject to penalties under Amtrak's proposal.

These examples reflect the fact that Amtrak apparently gave no consideration to whether its abstract statistical analyses would result in HRD Standards that were achievable. Consequently, many are not. The standards for most services are far below historical HRD levels achieved by CN, and also far below the 900 HRD standard Amtrak/FRA has long championed prior to this proceeding. Amtrak's HRD Standards are only reasonably achievable for two of its services on CN – the Blue Water and the Lincoln. The following table compares the HRD Standards to historic CN HRD during the period that Sacks performed his analysis (July 1, 2011 to June 30, 2015) ("Sacks Analysis Period").[41]

Table 4 - Comparison of Amtrak's HRD Standard to Historic CN HRD

Service	Amtrak Proposal HRD Standard	Average CN HRD during Sacks Analysis Period	Months during Sacks Analysis Period with HRD below Amtrak Proposal HRD Threshold
Blue Water	936	1017	19
City of New Orleans	709	1103	2
Illini/Saluki	432	1260	0
Lincoln	1073	1596	14
Texas Eagle	615	2083	1
Wolverine	411	1933	0

These same disparities between historical performance and Amtrak's proposed standards also exist for other host carriers. Amtrak's HRD Standards are premised on Mr. Sacks's determination of a single "80% Point" for the whole route, but in most cases, they would demand far lower HRD levels than other hosts on the route have achieved and, indeed, far lower HRD levels than have been achieved on other Amtrak services nationwide.

[41] *See* Workpaper "HRD Analysis," tab "HRD Comparison."

The huge differences in HRD standards proposed by Amtrak (which range from 1073 HRD on the Lincoln and 936 on the Blue Water to 432 on the Illini/Saluki and 411 on the Wolverine) also underscores that its standards are driven by a narrow statistical exercise undertaken without regard to differences in schedules, infrastructure, operations, or other critical factors affecting Amtrak's ability to achieve 80% ASOTP. They reflect no analysis of actual operating conditions and no attempt to set a fair and consistent standard for what constitutes "good" or "acceptable" host performance. On the Blue Water, which has a relatively realistic schedule that is broadly consistent with operational realities, that burden would not be huge. But on the Illini/Saluki, there are complex operational issues and problems (particularly from the standpoint of an ASOTP goal) with unrealistic and backloaded schedules. Instead of attempting to solve those problems, Amtrak proposes to offload them onto CN in the form of unprecedentedly low and unattainable HRD standards.

The four corridor services (Blue Water, Illini/Saluki, Lincoln, and Wolverine)[42] are all approximately the same total distance (roughly 300 miles), yet the divergent HRD Standard amounts means that the average individual train on each service could incur significantly different minutes of delay in order to count as a "win" under Amtrak's proposal. This calculation is shown on the following table.

[42] Outside of the Northeast Corridor, Amtrak divides its services between "long-distance" services (those operating on routes of 750 miles or longer) and "corridor" services (those operating on shorter routes).

Table 5 - Permissible Minutes of Delay Per Train for Corridor Services Under Amtrak's Proposal

Service	Total Route Miles	Amtrak HRD Standard	Minutes of Permissible Delay per Train
Blue Water	319	936	29.9
Illini/Saluki	309	432	13.3
Lincoln	284	1073	30.5
Wolverine	304	411	12.5
Minutes of permissible delay per Train = (Amtrak HRD Standard / 10,000) * Total Route Miles			

Amtrak has submitted no evidence demonstrating that there is a legitimate reason why two services – the Blue Water and the Lincoln – should have standards that permit 30 minutes of HRD per train, while two other equivalent corridor services have standards that permit less than half that amount. It has not shown, for example, that it is over twice as easy for a host railroad to achieve low HRD on the Wolverine or Illini/Saluki as it is on the Lincoln or Blue Water. To the contrary, Table 4, above, shows that the Wolverine has historically been the service on which CN's HRD per 10,000 train-miles has been second highest, which is due largely to factors that CN cannot prevent, including a permanent slow order that Amtrak agreed to under the Operating Agreement (and that will remain in place absent Amtrak's decision to fund increased infrastructure) and delays at interlockings controlled by other railroads.

2. Amtrak's Proposal Ignores the Fact that Non-FTI HRD (and Some FTI) Is Largely Unavoidable.

In every respect except for one, the focus of Amtrak's Opening Submissions is on FTI – the "freight train interference" delays Amtrak trains experience when they meet with, or are delayed behind, CN's freight trains. FTI is the focus of virtually all of Amtrak's examples and complaints about CN's performance. Mr. Vilter's central theme (rebutted above and in Mr. Taylor's rebuttal verified statement) is that CN's dispatchers do not sufficiently prioritize

Amtrak trains over freight trains. And Mr. Sacks derived the "penalty rates" Amtrak asks the Board to impose on CN from the "perceived costs" of freight delays CN reported from its 2013 experiment to determine what delays could be reduced by further subordinating freight trains to Amtrak trains in order to reduce FTI.[43] Thus, the basis for Amtrak's claim that CN can and should improve its performance revolves around FTI, as does the basis for Amtrak's penalty scheme.

The exception to Amtrak's focus on FTI is a critical inconsistency in its proposal: Amtrak does not propose an FTI performance standard; it proposes an HRD performance standard. FTI is one of 8 categories of HRD, along with passenger and commuter train interference ("PTI" and "CTI"), signal malfunctions ("DCS"), slow orders ("DSR"), maintenance-of-way work blocks ("DMW"), unusual routing ("RTE"), and detours caused by rail conditions ("DTR"). As the following tables show, while percentages vary among services, FTI typically accounts for only about half of total CN HRD.[44]

Table 6 - Percentage of HRD Types by Service During the Sacks Analysis Period

Service	**CTI**	**DCS**	**DMW**	**DSR**	**DTR**	**FTI**	**PTI**	**RTE**
Blue Water	0.0%	9.5%	2.4%	5.3%	0.0%	68.9%	8.9%	5.1%
City of New Orleans	0.6%	9.3%	1.7%	17.1%	0.3%	47.6%	14.2%	9.3%
Illini/Saluki	2.8%	19.6%	2.5%	9.6%	0.0%	46.1%	15.4%	4.0%
Lincoln	3.8%	19.4%	3.8%	13.5%	0.2%	44.4%	7.0%	7.8%
Texas Eagle	2.4%	16.1%	4.5%	7.6%	0.4%	54.3%	9.7%	4.9%
Wolverine	0.1%	17.1%	4.1%	26.2%	0.0%	33.4%	6.0%	13.2%

[43] *See* Sacks VS ¶¶ 35-49 & Appx. G.

[44] See Workpaper "HRD Analysis," tab "HRD by Type."

Table 7 - Relative Percentages of FTI and Non-FTI Delays on CN During the Sacks Analysis Period

Service	FTI	Total non-FTI
Blue Water	68.9%	31.1%
City of New Orleans	47.6%	52.4%
Illini/Saluki	46.1%	53.9%
Lincoln	44.4	55.6%
Texas Eagle	54.3%	45.7%
Wolverine	33.4%	66.6%

It is understandable why Amtrak presented no evidence criticizing CN for non-FTI delays: they are generally determined by circumstances that exist before the specific train trip begins, and they are outside of CN's reasonable control. For example, temporary slow orders arise from time to time as a function of mandatory track inspections. Signal failures often occur more or less at random. Maintenance-of-way work blocks are essential (for Amtrak's, as well as CN's, benefit) to keep CN's track in a state of good repair and promote safety. Delays caused by commuter traffic or other Amtrak trains are largely out of CN's control because, on a largely single-track railroad, when a passenger train meets another passenger train, one or the other will be delayed. And all of these delays can be exacerbated by other forces, such as weather, or third parties, such as vandals who destroy signal system components.

Absent major and hugely expensive investments, which Amtrak has not offered to fund, non-FTI HRD therefore represents a more-or-less constant, irreducible "background" level of HRD. Therefore, while Amtrak claims to be seeking reductions in HRD as a whole, it is really, as a practical matter, demanding reductions only in FTI. Acknowledging that reality, and understanding Amtrak's HRD Standard proposal in terms of the FTI reductions it would require, highlights that Amtrak's demands are unreasonable and infeasible.

Table 8, below, shows the "permissible" levels of CN FTI if (i) Amtrak's HRD Standards are adopted, and (ii) non-FTI CN HRD remains at its average historical levels.[45] The minutes in parentheses are negative numbers.

Table 8 - Permissible Minutes of FTI per Train

Service	Amtrak HRD Standard	Average monthly non-FTI HRD, Jul 2011 – June 2015	"Permissible" amount of FTI per 10k train miles	"Permissible" minutes of FTI per train
Blue Water	936	316	620	9.8
City of New Orleans	709	578	131	12.1
Illini/Saluki	432	678	(246)	(7.5)
Lincoln	1073	895	178	0.6
Texas Eagle	615	937	(322)	(1.2)
Wolverine	411	1283	(574)	(1.5)

As the table shows, for three services – the Illini/Saluki, the Texas Eagle, and the Wolverine -- those "permissible" FTI levels are negative. Negative FTI is impossible. Thus, for those three services, therefore, Amtrak's proposed HRD Standards would require CN to both (1) eliminate all FTI – a practical impossibility[46] – and (2) reduce non-FTI delays that are beyond CN's reasonable control. Since doing so is infeasible without investment CN does not require for itself and Amtrak has not agreed to fund, CN would have no way of avoiding a requirement to pay Amtrak substantial penalties every month.

For the other three services – the City of New Orleans, the Blue Water and the Lincoln – Amtrak's proposal would permit CN some FTI, but at unreasonably low levels. For example, on

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[45] *See* Workpaper "HRD Analysis," tab "Permissible FTI."

[46] Even eliminating all interference from CN freight trains would not eliminate FTI (as defined by Amtrak) on some segments. When an Amtrak train running on CN lines is delayed at an interlocking controlled by, say, Conrail, because a Conrail train is crossing CN's line, Amtrak counts that delay as CN FTI even if there is no CN freight train anywhere near. Indeed, that precise scenario is a significant source of CN FTI on the Wolverine. As that scenario illustrates, significant amounts of FTI also can be beyond CN's control.

every trip of a train in the City of New Orleans service, CN would incur penalties for any FTI over 10.9 minutes, which is an unrealistically low allowance for a 900-mile train trip over single-track territory. Equally unrealistic is the 0.6 minutes – less than 40 seconds – that CN would be allowed on its 35.7-mile portion of the Lincoln service route. This allowance is especially unrealistic given Amtrak's assignment of responsibility to CN for delays caused by trains crossing at interlockings that CN does not control. CN's portion of the Lincoln route includes six such interlockings. At any one interlocking an Amtrak train could be delayed for up to 15 to 20 minutes, and Amtrak would categorize that delay as FTI counted against CN. Under Amtrak's proposed standard for the Lincoln, one such delay could overwhelm the performance of over 30 other trains with zero FTI, resulting in net penalties to CN.

The serious implications of Amtrak's proposal can be seen clearly if one assumes, for all six services the following: (1) that the average non-FTI HRD levels that occurred over the Sacks Analysis Timeframe would apply, and (2) that CN somehow achieves the impossible: zero FTI. On that basis, under Amtrak's proposal, CN would earn incentive payments on the City of New Orleans, the Blue Water, and the Lincoln, but they would be small because the permissible levels of FTI against which CN would be judged are so small. At the same time, it would incur larger penalties on the Illini/Saluki (average $183,921 per month during the Sacks analysis period; $8.8 million total), the Texas Eagle ($14,240 per month; $683 thousand total), and the Wolverine ($54,283 per month; $2.2 million total). On aggregate, across the six services, CN would incur a monthly penalty of almost $50,000.[47]

[47] See Workpaper "HRD Analysis," tab "Penalties with no FTI."

3. Amtrak's Proposal Fails to Account for Schedule Design

As Professor Dubin elaborates in his Rebuttal Verified Statement, Mr. Sacks's analysis of the relationship between HRD and ASOTP, which is the basis for Amtrak's proposed HRD Standards, depends entirely on the existing schedules under which the HRD and ASOTP data Mr. Sacks studied were generated. Changing schedules means changing what it means to be on time. Under a schedule that does not properly take account of unavoidable congestion and other operating problems, or that is not designed with ASOTP in mind, ASOTP will be bad even with excellent host performance.

In other words, contrary to Amtrak's dogma that hosts are always to blame, the root cause of Amtrak's low ASOTP may be its schedules. As we discuss in Section II above, and as the Krueger RVS shows, this is precisely the case with the City of New Orleans and Illini/Saluki schedules. The current schedules, on which Amtrak's proposed HRD Standards are premised, do not work in conjunction with an ASOTP goal or standard because they backload recovery time, which means that even minor delays at early stages of a trip can cause a train to become late at intermediate stations, while still arriving on time at the endpoint. Amtrak's HRD Standards are a reflection of that fact: the schedule design is such a huge obstacle to high ASOTP that even extraordinary efforts to reduce HRD cannot overcome it. If high ASOTP is Amtrak's goal, and the main obstacle to achieving that goal is the schedule, then the most fair, cost-effective, and efficient way to achieve that objective is to change the schedule. As Mr. Krueger explains, Amtrak acknowledged that common-sense conclusion earlier this year when it proposed revised schedules, with recovery time redistributed to be less backloaded, in order to improve ASOTP on the City of New Orleans and the Illini/Saluki. Fixing such a schedule can produce good ASOTP with essentially the same host performance. As Mr. Krueger further explains, Amtrak's implementation of that point in its proposed schedules was poor, but CN has now proposed a

revised schedule for the Illini/Saluki, and stands ready to develop one for the City of New Orleans that would achieve high ASOTP without major changes in trip time or host performance.

As Professor Dubin explains, if CN's proposed schedule or even the schedules Amtrak proposed earlier this year is adopted, Mr. Sacks's analysis will be moot. The HRD Standards Mr. Sacks calculated under the old schedules will be quite different from whatever HRD levels would tend to coincide with 80% ASOTP under the new schedules.

Train schedules should be reviewed regularly and revised over time, even absent the kind of fundamental incompatibility that exists between Amtrak's backloaded schedules and its stated goal of high ASOTP. And other factors that can alter relationships between HRD and ASOTP levels – operating conditions, traffic levels, infrastructure, equipment, levels of delay caused by Amtrak, levels of delay caused by third parties, *etc.* – inevitably change over time. A fundamental failing of Amtrak's approach is that it would enshrine, in a multi-year operating agreement, unfair and unreasonable HRD performance standards and performance levels for which Amtrak is not willing to pay, because it was derived through an exercise driven by a flawed statistical analysis of past performance data generated under back-loaded schedules ill-suited to ASOTP.

C. Amtrak's Proposal to Measure CN's Performance Using HRD Is Far Inferior to the Existing OA's Measure of CN Performance Using Run Time and Relief Items.

Leaving aside the fact that the level of HRD set by Amtrak is far too low, Amtrak would implement its performance standards by using its HRD metric, but that metric is a far poorer measure of CN performance than the KOTP metric (*i.e.,* run time with agreed-upon relief items) used in the Operating Agreement. Many of HRD's flaws were noted in a table on page 31 of the Ladue/Kuxmann VS.

First, as CN demonstrated in its Opening Submission, there are many instances in which what Amtrak considers a "host-responsible" delay is outside the reasonable control of CN. Delays at interlockings that are not controlled by CN are one obvious example; delays where severe weather causes signal malfunctions or a temporary slow order are another. Professor Willig explained in his opening verified statement that the efficient functioning of any incentive system "must be based on performance within the host's reasonable control." Allowing CN to be "penalized for delays not within its responsibility or reasonable control would inefficiently skew the costs and incentives for CN's freight and Amtrak's passenger operations."[48] Amtrak's proposal to eliminate this key feature of the Operating Agreement violates this basic economic tenet and would "serve only to transfer the risk of certain costs from Amtrak to CN and serve no socially useful function."[49]

The current Operating Agreement relies on "relief items," which both (1) reflect negotiation and agreement between the parties in the context of real-world operating conditions on particular routes, and (2) do a far better job than HRD, albeit still an imperfect job, of identifying what is within CN's reasonable control. In fact, HRD includes types of delay covered by relief items that Amtrak has previously agreed are beyond CN's control and should not be held against CN.[50] As we explained in our opening statement, even the current Operating Agreement's relief items are too narrow and should be expanded to prevent CN from being unfairly penalized for delays beyond its reasonable control.

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[48] *See* Willig VS at 9.

[49] *Id*.

[50] [redacted]

Second, using broad HRD definitions disregards tradeoffs between train starts and the relief items that Amtrak has previously agreed to. In 2006, CN agreed to host an additional 4 daily Lincoln Service trains and 2 daily Illini/Saluki trains in exchange for Amtrak's agreement to include certain relief items in the operating agreement. In particular, CN only permitted the addition of these 6 daily trains in exchange for Amtrak's agreement [redacted] If the Operating Agreement were revised to eliminate the benefit of this relief item, without at the same time eliminating the additional trains, CN would lose the benefit of the bargain it negotiated with Amtrak, and Amtrak, conversely, would gain a windfall.

Third, HRD wrongly treats all delay alike, because HRD is detached from actual train runs. Amtrak touts counting every delay under its proposal as a benefit,[51] but delays that do not actually cause a train to be late, whether at an intermediate station or at an endpoint, should not be treated the same as delays that do make it late. By contrast, KOTP judges performance based on what passengers and, ostensibly, Amtrak, care about: whether the train is on time. A train that is on time at every station – 100% ASOTP – can nonetheless be recorded as having substantial HRD. Thus, under Amtrak's proposed HRD-based scheme, CN could owe Amtrak penalties for delivering an Amtrak train to every station on time.

Cumulating all delays regardless of source also sweeps in delays to trains that are annulled, shortened, or otherwise do not complete their full trip. The current Operating Agreement recognizes that some trains may fail to reach their endpoint or suffer such significant delay along the way that it would not be fair to count the train for incentive/penalty purposes. Mr. Sacks also seemingly excluded such trains in his analysis, *see* Sacks VS ¶ 29(c).

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[51] *See* Vilter VS at 14-15.

Nonetheless, Amtrak's proposal includes no provision for discounting the HRD incurred by these trains, even if such delay is abnormally large due to circumstances beyond CN's control.

Fourth, unlike KOTP, HRD is measured against PRT, rather than against the whole schedule. Even Amtrak recognizes in its schedules, albeit imperfectly, that some trains need more recovery time than others because they face more potential causes of delay. A performance metric directly tied to schedules, such as KOTP, gives recognition to the judgments already agreed upon in the schedules about what levels of delay are reasonable. A PRT-based performance metric such as HRD ignores those agreed-upon judgments.

Finally, unlike KOTP, outliers can overwhelm the HRD measure. Because HRD cumulates delays across a large number of trains (*i.e.*, all trains that operated during a month) and expresses those delays as minutes per 10,000 train miles, it is susceptible to having large individual train delays overshadow and distort the overall measure. A train that is on time 19 times out of 20 is highly reliable, but if a major problem causes it to be extremely late the one time it is late, judging it based on HRD may result in large penalties for highly reliable service. For example, CN can fail to meet Amtrak's HRD standard even if 90% of Amtrak's trains arrive on time, if a few delays to the remaining 10% are large enough. For services with a small number of train miles on a host, such as the Wolverine, Texas Eagle, and Lincoln services on CN, a small number of major delays can easily overwhelm the general measure of HRD, because it is measured per 10,000 train miles.[52] Under KOTP, by contrast, each failure to meet on-time performance standards counts once towards the KOTP performance percentage, as does each success, so no one failure can overwhelm the overall performance metric.

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[52] *See* Ladue/Kuxmann VS at 45.

D. Amtrak's Derivation of "Penalty Rates" from CN's "Perceived Costs" of Reducing Amtrak HRD Is Misleading.

As we discuss in Section III.A, above, a fundamental problem with Amtrak's proposal is that it demands unprecedented high levels of performance from CN while offering no compensation for CN's increased incremental costs from additional freight delay and reduced capacity. Mr. Sacks states: "Amtrak has informed me that it does not accept or agree with the additional costs CN attributes to the provision of relatively better Amtrak service." Sacks VS at 15 n.17. Amtrak has yet to explain the basis for that position, but for purposes of compensating CN, Amtrak appears to be in denial about CN's freight delay costs.

Remarkably, however, Amtrak relies on those same costs as the basis for its penalty scheme. It proposes to penalize CN based on "penalty rates" Sacks derives by multiplying by 1.2 what he calls CN's "perceived costs" of reducing HRD on each service. *See* Sacks VS ¶¶ 35-49. Amtrak would place CN in the untenable position of being forced either to incur uncompensated costs or to pay penalties to Amtrak based on those costs. The proposal is an unfair and unreasonable win-win for Amtrak, and lose-lose for CN.

In addition to being unfair, Amtrak's proposal is irrational. As Professor Willig explains, using CN's ***costs*** (whether "perceived" or actual) as the basis for penalizing CN makes no economic or commercial sense. *See* Willig RVS at 20-24. A sound incentive scheme should give CN, as the service provider, a price signal about the ***benefits*** of the extra service it is asked to provide so that it can compare them to their costs. *Id*.[53]

[53] Because "perceived cost" is an irrational basis for host incentives and penalties, a detailed understanding of what Mr. Sacks calls CN's "perceived costs" should not be necessary. But as current and former CN employees who have been responsible for the Amtrak relationship and were involved in the genesis of the July 2013 document on which Mr. Sacks relies as evidence of CN's "perceived costs" (Sacks VS, Appx. G), we note that Mr. Sacks's explanation

E. Amtrak's Punitive and Unreasonable Penalty Scheme Would Effectively Force CN to Provide an Enormous Subsidy to Amtrak.

Under the current Operating Agreement, CN has an opportunity to earn incentives and (given lookback) no risk of losing the base compensation it receives for incremental costs through net penalties. CN currently earns about [redacted] per year in base compensation, by way of reimbursement of its incremental costs, plus about [redacted] per year in incentive payments, depending on performance.

Amtrak's proposal includes three features that together would effectively require CN to pay Amtrak large net penalties that would be greater than the compensation it receives for incremental costs and would thereby require CN to further subsidize Amtrak's service: (1) setting unreasonable performance levels for CN's services as a minimum requirement, below which CN must pay penalties; (2) through artificial caps, skewing its performance payment system in favor of penalties; and (3) eliminating the lookback protection for base compensation.

Amtrak's proposal ensures that CN will suffer huge penalties by setting unreasonable performance standards, particularly for its two main services on CN (the Illini/Saluki and City of New Orleans), and using those standards as a neutral point for incentives and penalties. Thus, if CN does not achieve these unreasonably low HRD standards (which, as discussed above, it has not come close to achieving) it will be at risk of suffering penalties. Amtrak has not created a

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of CN's "perceived costs" is incomplete. That document compared CN's costs at normal pre-February 2013 service levels with the costs it incurred during a temporary experimental effort to attempt to meet the then applicable PRIIA standard of 900 HRD minutes/10,000 train-miles without additional capital investment. Approaching that level required extraordinary efforts by CN to reduce FTI, which resulted in substantial impacts on network fluidity, customer complaints, and, as the July 2013 document reflects, large increases in freight delay costs. Many of the HRD standards proposed by Mr. Sacks, of course, are far below 900 HRD. In any event, the best evidence of CN's perceived – and actual – costs of hosting Amtrak at various high levels of service is the extensive evidence included in CN's 2015 opening submissions.

reasonable incentive system, but rather a penalty scheme – with an incentive element that is window-dressing of no practical significance because it is unlikely that CN will ever be able to achieve the HRD standards required to earn incentive payments.

Compounding its emphasis on penalties, the proposal is also heavily asymmetrical in favor of penalties. Amtrak has set caps on incentives far closer to the neutral point than its caps on penalties, so that even if the neutral point were truly neutral as a matter of expected performance (rather than set at unreasonably low HRD levels), there would still be far more opportunity for penalties than for incentives. Mr. Sacks states that Amtrak retained the existing maximum amount of incentives, but Amtrak made it nominally available at a much higher, practically unachievable, level of performance. Amtrak fundamentally altered the existing bargain by making penalties far more likely and far more harmful to CN than they are under the current Operating Agreement.

The predictable result would be astronomical penalties for CN, not only for performance previously recognized as meeting negotiated standards, but also for performance well above that consistently achieved by any other major host railroad. If Amtrak's proposal applied to the period for which Amtrak is seeking retroactive relief – August 2013 to present (for this purpose, through June 2017), CN's total penalty would be over $50 million – or over $1 million in penalties per month. And, if CN performed at 900 HRD – the benchmark for satisfactory performance which Amtrak, together with FRA, jointly set in the PRIIA metrics and standards in 2010 and which no other Class I host railroad has achieved on average for a single month, let alone an entire year – CN would be obliged either to make substantial net payments to Amtrak to

host Amtrak or to substantially impair its own freight operations at great cost. These results are summarized on the following table.[54]

Table 9 - Penalties Under Amtrak's Proposal Given Historic Monthly CN HRD

Service	Sacks Analysis Period (07/2011 – 06/2015)	Retroactive period (08/2013 -06/2017)	Monthly Amount (At 900 HRD)	Annual Amount (At 900 HRD)
Blue Water	($385)	$216	$5	$60
City of New Orleans	($17,775)	($18,638)	($221)	($2,652)
Illini/Saluki	($25,743)	($28,278)	($357)	($4,284)
Lincoln	($922)	($818)	$14	$168
Texas Eagle	($2,401)	($2,467)	($17)	($204)
Wolverine	($3,078)	($3,260)	($30)	($360)
Total	**($50,304)**	**($53,245)**	**($607)**	**($7,284)**

Note: Dollar amounts in 000s

In a month in which CN achieves 900 HRD, Amtrak's proposal would assess approximately $607,000 in penalties against CN. CN's incremental costs in hosting Amtrak are approximately [redacted] per month (not including the currently uncompensated incremental cost of freight delay). Thus, under Amtrak's proposal, not only would CN fail to recover the incremental cost it incurs in hosting Amtrak, but it would also be making a net payment to Amtrak of over [redacted] a month to host Amtrak and provide performance levels far superior to those of any other host railroad.

The bottom line of Amtrak's proposal should also be considered in light of its implications for other hosts. While this proceeding only directly concerns Amtrak and CN, Amtrak has offered no reason why its approach of setting HRD Standards based on "correlation" to 80% ASOTP and imposing penalties whenever those thresholds are exceeded should apply uniquely to CN. Mr. Sacks's statement makes clear that he developed those standards on a

[54] See Workpaper "Sacks as Applied to CN Services."

whole-route basis, without focusing on CN's segment or distinguishing between hosts. Moreover, although Amtrak's proposed "penalty rate" is irrationally based on a misleading notion of CN's "perceived costs," there is no obvious reason to suppose that substantially different penalty rates should apply to different hosts. We can, therefore, reasonably extrapolate Amtrak's proposed penalty scheme to other hosts on the multi-host services at issue, adjusting as appropriate for differences in route-miles and historical HRD-level performance. On that basis, Amtrak's scheme would generate penalties as set out in the following table.[55]

Table 10 - Penalties to Non-CN Host Railroads Under Amtrak's Proposal (Given Historic Monthly HRD)

Service	Host Railroad	Sacks Analysis Period (07/2011 – 06/2015)	Retroactive period (08/2013 -06/2017)	Monthly Amount (At 900 HRD)	Annual Amount (At 900 HRD)
Blue Water	Amtrak	$387	$427	$3	$38
	MI DOT	($49)	$66	$1	$8
	NS	($377)	($363)	$1	$15
Lincoln	UP	($2,177)	($6,399)	$91	$1,096
Texas Eagle	BNSF	($8,590)	($5,644)	($61)	($738)
	UP	($84,155)	($84,230)	($538)	($6,462)
Wolverine	Amtrak	($4,094)	($4,505)	($117)	($1,409)
	MI DOT	($9,180)	($13,183)	($159)	($1,907)
	NS	($5,396)	($5,286)	($46)	($555)

Note: Dollar amounts in 000s

[55] *See* Workpaper "Sacks as Applied to non-CN Services."

As with the CN portion of these routes, other host carriers (including Amtrak itself) would be subject to huge penalties under Amtrak's proposal. On the Wolverine, for example, Amtrak itself would be subject to over $4.5 million in penalties during the period for which it is seeking retroactive relief. On the same service, historical HRD levels on the portion of the route hosted by Michigan DOT (which CN understands is also operated by Amtrak) would result in over $13 million in penalties. And Union Pacific's portion of the Texas Eagle service would be subject to $84 million in penalties. Even at 900 HRD, UP would be subject to over $6 million in annual penalties for its portion of the Texas Eagle service, and Amtrak and Michigan DOT would be subject to over $3 million in annual penalties for their performance on the Wolverine service.

The upshot is that Amtrak's proposed scheme would be a remarkably effective means of forcing hosts to fund Amtrak under the rubric of penalties. But it would do so by setting unattainable goals, imposing grossly disproportionate and uncompensated costs on hosts, and ignoring the root causes of, and most efficient solutions to, Amtrak's service concerns. Consequently, Amtrak's proposal is unreasonable and contrary to the public interest.

IV. AMTRAK'S PROPOSED LINE EDITS TO THE CURRENT AGREEMENT SHOULD BE REJECTED OR DEFERRED FOR LATER NEGOTIATION BETWEEN THE PARTIES.

Together with its Opening Statement, Amtrak submits "[t]he Operating Agreement Amtrak proposes that the Board order the parties to enter into in its decision in the proceeding . . . in order to minimize the chance that issues arise during implementation of the Board's decision

in this proceeding."[56] That draft agreement includes provisions that would implement Amtrak's main incentives and penalty proposal, which, for the reasons discussed above, should be rejected.

In addition, however, Amtrak has proposed extensive changes to the Operating Agreement (as may be seen in a blackline, included as Attachment 3 to the Vilter VS) that go far beyond what is necessary or even helpful to effectuate Amtrak's proposals regarding compensation and penalties. Some of these should be rejected out of hand as beyond the scope of disputed issues between the parties in pre-litigation discussions or in the scope of disputed issues. None merit adoption by the Board.

A. The Board Should Reject As Improperly Raised Proposed Changes that Amtrak Neither Encompassed in its Statement of Disputes Issues, Nor Raised in Pre-Litigation Negotiations.

CN devoted substantial resources to negotiating for months in good faith with Amtrak before Amtrak broke off negotiations and initiated this proceeding. CN has diligently followed the Board's rules and orders and adhered, in its proposal, to the issues listed in CN's Statement of Disputed Issues. The Board should require the same of Amtrak, and should not allow it to raise new issues for the first time years into this proceeding.

The following proposals in Amtrak's blackline do not even arguably relate to the issues of "compensation" payable to CN, "penalties," and "length of contract" identified by Amtrak in its Statement of Disputed Issues.[57] Accordingly, they should be rejected as not properly before the Board:

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[56] Amtrak Opening Statement at 11 n.23. Amtrak further claims that its proposed Operating Agreement "retains those aspects of the Current Agreement that are workable and will foster a smooth and efficient transition." *Id*.

[57] Amtrak explained these three issues as follows:

[redacted]

The following proposed changes relate at best only tangentially to "compensation" to CN, and Amtrak did not raise any of them in negotiations before initiating this proceeding. It therefore has no basis for claiming that "the parties cannot agree" on them. A failure to agree between the parties is the prerequisite for the Board's exercise of its authority to prescribe terms and compensation under 49 U.S.C. § 24308(a)(2)(A). Through discussion and compromise, perhaps the parties can agree, but Amtrak cannot short circuit required negotiations with CN to add issues to the case.

[redacted]

Compensation: "The amount of compensation CN receives under the Operating Agreement, including whether, and if so, under what terms, CN should receive compensation in excess of CN's incremental costs for quality of service, including the formulation of such compensation and the administration thereof."

Penalties: The terms under which "CN should be subject to penalties for untimely performance, including the formulation of such penalties and the administration thereof."

Length of Contract: "The establishment of a date and terms for expiration or termination of the Operating Agreement, and, if so, what that date and those terms should be."

Statement by the National Railroad Passenger Corporation Identifying Disputed Issues at 2 (Oct. 24, 2013) ("Amtrak Statement of Disputed Issues"). (Amtrak abandoned a fourth issue, "Geographic Scope," in a letter from Linda J. Morgan to Cynthia T. Brown on July 27, 2015.)

[redacted]

Out of an abundance of caution, we address on the merits some of Amtrak's unexplained proposed changes below. But we do so without prejudice to our position that the Board should reject them because Amtrak failed to previously raise them in negotiations or provide notice of them.[58]

[redacted]

[58] In requesting that the Board reject these proposals, which have not been discussed between the parties, CN is not ruling out the possibility that it would be willing to consider them if raised by Amtrak in negotiations over the final form of an Operating Agreement implementing the Board's mandates regarding the issues that were properly identified at the outset of this proceeding.

[redacted]

[redacted]

[redacted]

[redacted]

[62] Vilter Tr. 229:24-25. (Attached as Exhibit 4 to this statement.)

[63] Vilter Tr. 230:20-231:10. (Attached as Exhibit 5 to this statement.)

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

VERIFICATION

I, Paul E. Ladue, declare under penalty of perjury that I have read the foregoing Rebuttal Verified Statement, that I know the facts asserted therein, and that the same are true as stated. Further, I certify that I am qualified to and authorized to submit this Verified Statement on behalf of Canadian National Railway Company and its subsidiaries.

Executed on September 14, 2017

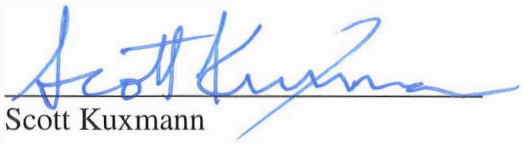


Paul E. Ladue

VERIFICATION

I, Scott Kuxmann, declare under penalty of perjury that I have read the foregoing Rebuttal Verified Statement, that I know the facts asserted therein, and that the same are true as stated. Further, I certify that I am qualified to and authorized to submit this Verified Statement on behalf of Canadian National Railway Company and its subsidiaries.

Executed on September 14, 2017



Scott Kuxmann

EXHIBIT 1

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Redacted

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EXHIBIT 2

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EXHIBIT 3

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EXHIBIT 4

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EXHIBIT 5

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PUBLIC VERSION – REDACTED

BEFORE THE
SURFACE TRANSPORTATION BOARD

Docket No. FD 35743

APPLICATION OF THE NATIONAL RAILROAD PASSENGER CORPORATION UNDER 49 U.S.C. § 24308(a) – CANADIAN NATIONAL RAILWAY COMPANY

REBUTTAL VERIFIED STATEMENT OF DEREK TAYLOR

My name is Derek Taylor. I am General Manager of the Regional Operations Center ("ROC") for CN's Southern Region, a position I have held since September 2016. Prior to my current position, I was the General Manager Midwest Division from 2012 to 2016, the General Superintendent of BC South and the Greater Vancouver Terminal from 2009 to 2012, and the Superintendent for the Memphis Zone from 2005 to 2009. In my current position, I am responsible for overseeing, coordinating, and dispatching freight and passenger rail operations on all of CN's U.S. lines (with the exception of certain lines adjacent to the Canadian border that are unrelated to this proceeding). Most of my 17 years of railroading experience with CN has been spent on the CN main line between Chicago and New Orleans. I am very familiar with both freight and passenger operations on the CN lines used by Amtrak, including the challenges faced and measures taken by CN as it strives to satisfy the increasing demands for rail capacity from freight and passenger rail, including Amtrak, on CN's largely single-track network.

In this statement, I discuss and respond to claims Amtrak has made in its Opening Statement concerning CN's dispatching of its lines and, in particular, its dispatching of Amtrak trains. As I explain below, Amtrak misunderstands and misrepresents how CN dispatches its

freight trains and Amtrak's passenger trains. I also discuss the serious effect it would have on CN's operations if CN were required to reduce Amtrak delays to the extremely low levels proposed by Amtrak.

I. AMTRAK TRAINS ARE ACCORDED THE HIGHEST PRIORITY ON CN'S MOSTLY SINGLE-TRACK NETWORK.

Amtrak's Opening Statement and the Verified Statement of Paul Vilter ("Vilter VS")[1] argue that CN should be, but is not, "minimiz[ing]" delays to Amtrak trains.[2] They appear to claim that CN does not prioritize Amtrak over freight traffic and that our dispatchers do not work hard to prevent delays to Amtrak. That is simply not the case.

A. CN's Dispatchers Accord Amtrak Trains Priority Over All Other Traffic.

Our dispatchers are instructed to give Amtrak priority over all other traffic, and managers in the operating department regularly coach dispatchers about the importance of preventing delays to Amtrak trains. This means we try to expedite Amtrak trains and we prioritize them over all other traffic on CN's network. At the same time, dispatchers must also manage traffic on our largely single-track network – including freight, Amtrak, and other passenger trains – in a manner that is safe and efficient, and that preserves network fluidity. Given the limited rail line capacity that must be shared by passenger and freight trains, all rail traffic inevitably suffers some delay. But as a result of our prioritization of Amtrak's trains, Amtrak suffers far less delay than all other classes of freight traffic.

[1] "VS" references herein are to Verified Statements filed by either party in the opening evidentiary round on September 4, 2015 (as subsequently corrected, if applicable); "RVS" references are to the rebuttal verified statements being filed by CN on September 14, 2017.

[2] *See* Amtrak Opening Statement at 3, 7; Vilter VS at 3-10.

From a dispatcher's perspective, I take exception to Amtrak's repeated suggestion that the appropriate goal for CN is to "minimize" Amtrak delay under all circumstances. While it is unclear what Amtrak means, if Amtrak means that a dispatcher's primary goal should be to minimize (or drive to zero) Amtrak delays (*i.e.*, never make a decision that may result in some possible delay to Amtrak trains), that would be a prescription for extreme inefficiency and/or a cessation of freight service.[3]

If we dispatched solely or mechanistically with the goal of literally "minimizing" delays in the short run for each Amtrak train, network fluidity would be severely impaired, and line capacity would be inefficiently consumed, to the detriment of CN's freight traffic and subsequent Amtrak trains. Focusing narrowly on minimizing delays to any one train can easily create a cascading effect that spills over to and affects all other trains, including Amtrak trains, other passenger trains, and freight trains. As discussed in Section IV below and in the Rebuttal Verified Statement of Harald Krueger ("Krueger RVS"), if we created a "bubble" excluding all freight trains around every Amtrak train in an effort to eliminate all possible Amtrak delays, we could not operate our freight railroad efficiently, and we and our freight customers would incur grossly disproportionate delays and costs, which would ultimately harm not just freight but also Amtrak traffic.

CN knows that severe operational disruption results if our dispatchers create too large of a "bubble" around Amtrak trains. This is demonstrated by an internal CN email selectively quoted by Amtrak in its Opening Submission. Amtrak cites in its Opening Statement (at page A-1) a May 10, 2012 email from Roger Frasure to Hunt Cary in which Mr. Frasure states he [redacted]

[3] If Amtrak's and Mr. Vilter's references to "minimizing" delays means something less extreme, that notion would provide CN's dispatchers with no new, different, or useful standard or guidance for how they should do their job.

[redacted] Amtrak claims this email shows [redacted] Opening Statement at 9. Amtrak, however, omits earlier emails in the thread that provide the full context for Mr. Frasure's statement, which was a response to a poor dispatching decision (in which a CN dispatcher did [redacted]) that resulted in significant delay to CN freight trains that were unnecessary to avoid delaying Amtrak and consumed capacity to the detriment of the overall network.[4]

An earlier email in the thread, from trainmaster Chip Kennedy,[5] explains what happened: [redacted]. In other words, [redacted]. Substantial delay to the CN train could have been avoided ***with no risk of increased delay to Amtrak***. The dispatcher apparently did not appreciate this fact, however, and unnecessarily delayed CN's freight train. Mr. Kennedy clarifies how this poor dispatching decision – intended for Amtrak's benefit –

[4] I attach the full email thread for this email as Exhibit 1. I understand that this full email thread was produced to Amtrak in discovery.

[5] *See* Exhibit 1, at CN0000200425-27 [C].

significantly disrupted CN's freight operations and increased CN's costs: [redacted]. As for the Amtrak train, the end result was merely to shift the location where it would idle while waiting for a meet with the northbound Amtrak train.

Thus, the email thread that Amtrak cites for the proposition that CN does not work hard to minimize delays to Amtrak instead illustrates how a focus solely on minimizing possible Amtrak delays attributable to freight meets can cause significant harm to freight traffic and network fluidity with no ultimate benefit for Amtrak's performance.

B. Contrary to Amtrak's Suggestion, CN Accords Priority to Amtrak Trains over All Freight Trains, Including CN's Intermodal Trains.

Amtrak also cites four other CN emails out of context to suggest (1) that CN prioritizes its intermodal trains over Amtrak trains, and (2) that CN does more to avoid delays to its intermodal trains than it does for Amtrak trains and that CN can and should do more to avoid delays to Amtrak trains. Amtrak Opening Statement at 10-11 & Attachment 1 at A-2 to A-5. However, as I have already stated, Amtrak trains are accorded the highest priority for purposes of CN's dispatching. Intermodal trains (which are designated with a "Q" under CN's train identification nomenclature) have a higher priority than other freight trains because they serve particularly time-sensitive freight customers, but intermodal trains have a lower priority than Amtrak. A full review of the emails cited and the relevant delay data shows that Amtrak's assertions are wrong.

1. Amtrak Cites Emails That Show that CN prioritizes its intermodal traffic over other freight traffic, not over Amtrak passenger trains.

Amtrak quotes managers in CN's Operating Department encouraging employees to focus on reducing delays to intermodal trains, stating that the goal for intermodal trains is [redacted] and that such trains [redacted] and [redacted]

[redacted] *Id.* None of these emails even references Amtrak, nor suggest that CN fails to give Amtrak priority over intermodal trains. The full email threads do not support Amtrak's suggestion that CN dispatchers are preferring intermodal trains over Amtrak trains.[6]

At page A-2 of the Attachment 1 to its Opening Statement, Amtrak includes a May 2, 2013, email from Peter Bistis (Assistant Trainmaster in Sarnia, Ontario) to several CN dispatchers in which he states that intermodal trains (that is, Q trains) [redacted] The email thread is discussing Q train priority over other ***freight*** trains. The thread begins with an email from Anne Morehouse to dispatchers and their managers,[7] and her references to priority relate solely to other freight traffic. She [redacted]. Contrary to Amtrak's suggestion, this email was not addressing intermodal train priority vis-à-vis Amtrak.

At page A-3 of the Attachment 1 to its Opening Statement, Amtrak includes a May 5, 2012 email from Peter Bistis to several CN employees in which he states in part that [redacted] that [redacted], and that [redacted]. There is no impact to Amtrak from [redacted]

[6] I attach the full threads for each email as Exhibit 2. I understand that these complete email threads were produced to Amtrak in discovery.

[7] *See* Exhibit 2, at CN0000205504-05 [C].

[redacted] and would not conflict with Amtrak's scheduled operations during these times.[8] In addition, while Amtrak's Blue Water service does access the Port Huron station through the Port Huron Yard, the station track is off of Main 3. Given the time and location of the freight train, Mr. Bistis was not referring to prioritizing a CN intermodal train over Amtrak.

The email included by Amtrak on page A-4 of Attachment 1 is from Austin McConnell (the Superintendent of the ROC) to several senior managers in the ROC on September 27, 2012. Mr. McConnell states that [redacted] Once again, the full email[9] provides context that qualifies [redacted]: Mr. McConnell's email was prompted by a [redacted]. The conflict was between an intermodal train and lower priority freight traffic, and there is no suggestion that Amtrak trains were involved.

Finally, the email cited by Amtrak on page A-5 merely includes statements from CN management that intermodal trains carry time-sensitive traffic and need to run on time. There is no mention of Amtrak in the email, nor any suggestion that potential interference with Amtrak trains was an issue to be addressed, much less any suggestion that CN prioritize intermodal trains over Amtrak trains.

[8] The westbound Blue Water train (P365) is scheduled to depart Port Huron at 6:20 am while the eastbound train (P364) is scheduled to arrive at Port Huron at 11:38 pm.

[9] *See* Exhibit 2, at CN0000187926-28 [C].

2. CN's intermodal trains suffer regular and significant delays due to Amtrak.

Amtrak's related argument that CN does a better job of reducing delays to its intermodal trains than to Amtrak trains by giving them greater priority is wrong. Contrary to Amtrak's suggestion, CN does not and cannot operate its intermodal trains [redacted] Opening Statement at 10. Delays are an inevitable part of railroading, and intermodal trains, like other trains, suffer delays due to line congestion caused by passenger or other freight trains, signal malfunctions, temporary slow orders, weather, mechanical issues, crew delays, and yard congestion.

The SRS data submitted by CN in support of its Opening Evidence show that these delays are substantial. Table 1 lists some of our more frequently delayed intermodal trains:[10]

[10] *See* Workpaper "SRS Q Train Delays.xlsx", tab "All Delays". These delays are only those that occurred on the subdivisions on which Amtrak operates. Some of these trains operate over other, non-Amtrak subdivisions, on which they may also incur delay. The calculation of delay includes extra intermodal trains (designated with an X before their number) along with their Q train counterparts ([redacted]).

Table 1 - Minutes of Delay (from any Source) to CN Intermodal Trains Incurred While On Subdivisions Used by Amtrak (Aug. 2013 - Jan. 2015)

Train	Total Minutes	Average minutes per day	Average hours per day
[redacted]	[redacted]	[redacted]	[redacted]

Just as CN cannot eliminate all delays to its time-sensitive intermodal trains by [redacted] as Amtrak suggests, CN cannot eliminate all delays to Amtrak trains.

These intermodal trains, which Amtrak wrongly infers receive preference over Amtrak's passenger trains, incur substantial delays due to meeting with and yielding to Amtrak trains. For example, as Michael Baranowski and Benton Fisher note on page 18 of their Joint Verified Statement (submitted with CN's Opening Evidence), [redacted]. Each of those

intermodal trains [redacted].

Because CN accords the highest priority to Amtrak trains, CN's intermodal trains suffer much greater delays due to Amtrak than Amtrak suffers due to them. Table 2 shows the number of minutes, hours, and average minutes per day that CN intermodal trains were delayed by Amtrak during the period August 1, 2013 to January 31, 2015:[11]

Table 2 - Minutes of Delay to CN Intermodal Trains caused by Amtrak Trains (Aug. 2013 - Jan. 2015)

Train	Total Minutes	Average minutes per day	Average hours per day
[redacted]			

As Table 3 shows, in that same period, Amtrak's conductor recorded less than 30% as many minutes of delay to Amtrak trains based on interference from CN's intermodal trains:[12]

[11] *See* Workpaper "SRS Q Train Delays.xlsx", tab "Amtrak Delays". As with Table 1, the calculation of delay in this table includes extra trains along with their Q train counterparts. [redacted]

[12] *See* Workpaper "Amtrak Delays Due to Q trains.xlsx". In gathering these data, I erred on the side of over-inclusion by attributing delays of Amtrak trains to CN intermodal trains even in cases where the description did not make the delay attribution entirely clear. Given the under-

Table 3 - Minutes of Delay to Amtrak Trains caused by CN Intermodal Trains (Aug. 2013 - Jan. 2015)

Train	Total Minutes	Average minutes per day	Average hours per day
[redacted]			

These data reflect the reality that Amtrak trains receive the highest dispatching priority of all trains on the CN network and substantial attention from CN's dispatchers and management. Amtrak's suggestion that CN prioritizes its intermodal trains over Amtrak trains is false.

inclusiveness of my estimation of the delays Amtrak caused to CN's intermodal trains in Table 2, and the over-inclusiveness of my estimation of the delays CN intermodal trains caused to Amtrak in Table 3, the actual ratio of the former to the latter may be substantially greater than the 3.5:1 ratio reflected in the tables.

The row "Other" includes trains in the Wolverine service that only ran for temporary periods.

II. CONTRARY TO AMTRAK'S SUGGESTIONS, INCENTIVES UNDER THE AMTRAK-CN OPERATING AGREEMENT WORK TO ASSURE THAT CN PROVIDES AMTRAK WITH PRIORITY AND STRONG SERVICE.

Amtrak argues that the existing Operating Agreement creates flawed incentives for CN's dispatchers that result in CN's dispatchers regularly (1) calibrating their handling of an Amtrak train so that it is delayed just short of the point at which it would no longer count as on time for the calculation of incentives under the Operating Agreement, and (2) giving up on (*i.e.*, no longer seeking to prevent delays for) trains that have experienced so much delay in their run they have no chance of count as on time for incentives under the Operating Agreement. These arguments are based on misconceptions concerning the realities of railroad dispatching – Amtrak both understates the complexity of dispatching and overstates the precision with which railroad dispatchers operate – and on a flawed understanding of CN's incentives under the Operating Agreement.

As discussed above, CN's policy and practice, as reflected in dispatchers' instructions, training, and conduct, is that Amtrak trains have the highest priority and must be expedited, consistent with making sound dispatching decisions that promote safety and preserve network fluidity.[13] Our dispatchers are evaluated based on whether they dispatch soundly, safely, efficiently, and in a manner consistent with CN's policies, including its policy of giving Amtrak the highest priority. Moreover, given their broad responsibilities and the information available to

[13] As discussed in more detail in the Rebuttal Verified Statements of Paul Ladue and Scott Kuxmann and of Harald Krueger, the schedules for some services (notably the Illini/Saluki) are poorly suited to on-time arrivals at intermediate stations due to the lack of recovery time prior to the endpoint. Nonetheless, our dispatchers work hard to keep Amtrak on its published schedule.

them, our dispatchers cannot and do not focus narrowly on whether and when Amtrak's trains will be counted as on time for purposes of Operating Agreement incentives.

A. CN's Dispatchers Do Not Calibrate Amtrak Delays to Allow Them to Arrive Just Under the Threshold Permitted by the Operating Agreement.

Amtrak's argument that dispatchers calibrate delays so that Amtrak trains arrive "just in time" for purposes of measuring on-time performance under the Operating Agreement wrongly presupposes that a CN decision maker – presumably the dispatcher – (1) knows in real time how many delay minutes each Amtrak train has accumulated and how many of those delay minutes will be treated by Amtrak as subject to relief items, such that they will not count against CN for incentive/penalty purposes, and (2) has the ability to control the precise minutes of delay incurred by an Amtrak train. Amtrak's assumptions are wrong.

First, real-time information about delays recorded by Amtrak conductors is not available to a dispatcher. Amtrak's conductors on board the train record and attribute delays, and they do not communicate their delay calculation and attribution decisions to CN's dispatchers in real time. For example, a train could be delayed due to a slow order, a signal malfunction, insufficient run time in the schedule, an engine or equipment malfunction that prevented it from moving at authorized track speed, or environmental conditions, weather, or any combination of the above. The dispatcher likely would be entirely unaware of the decisions made by the Amtrak conductor to identify the causes of those delays and also the duration attributed to the delay. In addition, the Amtrak conductor's windshield view might differ from the dispatcher's root cause perspective.

Second, Amtrak's argument wrongly assumes that dispatchers could accurately predict and finely tune the number of delay minutes an Amtrak train will ultimately suffer before it reaches a checkpoint. That argument ignores the fact that many types of delay that count against

CN for purposes of calculating on-time performance under the Operating Agreement are not within the control of dispatchers, making it impossible for them to fine tune how much total delay a particular train will incur.

Amtrak's argument fails to appreciate the nature and complexity of dispatching. Dispatchers have a lot of work to do to respond in real time to ever-changing circumstances across the network and train operations. They must do so safely, efficiently, and to preserve network fluidity. They have to determine how and where multiple trains of different lengths, different speeds, different schedules, and different priorities, operating over hundreds of miles of territory with various physical characteristics, will meet and interact; how likely it is that a meet will delay an Amtrak train or other freight trains operating on the network; whether such a delay will be substantial or minimal; and what network effects would arise from delaying a freight train for an extended period to avoid the meet. In addition to all of this, a dispatcher seeking to manage Amtrak trains to arrive with maximum delay permitted under the Operating Agreement would have to calculate to the minute how much delay has already occurred, determine whether such delay occurred due to a CN-attributable issue or otherwise, and accurately predict whether possible future meets or other delays (which themselves may or may be subject to relief items under the Operating Agreement) would occur before the train reached the checkpoint. Given the demands on dispatchers, even assuming they had the necessary delay information available in real time (which they do not) and could fully control delays (which they cannot), such an undertaking would be utterly infeasible.

Finally, and perhaps most important, even if all the necessary real-time information were available to CN dispatchers, and even if those dispatchers could use that information to make finely-tuned calculations of delays in real-time and believed that they could predict future delays

perfectly, they still could not do so because CN's policies and procedures preclude it. Ignoring delays to Amtrak trains would be contrary to our dispatchers' training and would violate management's instructions to prevent delays to Amtrak to the extent consistent with sound and safe dispatching and network fluidity.

B. Amtrak's Claim That CN "Gives Up" On Late Amtrak Trains Is Wrong.

Mr. Vilter also argues that the current Operating Agreement does not incentivize CN "to continue to avoid further CN HRD minutes after CN HRD minutes have caused a trip's travel time to no longer be within tolerance [under the terms of the Operating Agreement]." Vilter V.S. at 8. He claims, in essence, that CN "gives up" on "lost trains," and he cites fifteen examples of "lost trains" in Attachment 5 to his opening verified statement to support his assertion. Once again, Mr. Vilter fails to appreciate the realities of dispatching.

CN dispatchers do not "give up" on Amtrak trains. Doing so would be directly contrary to the instructions we give our dispatchers. We understand the importance of reliable and timely Amtrak service, and we strive to prevent delays to Amtrak trains whether the train is on time or late. Many delays (such as those caused by slow orders, signal failures, and scheduled maintenance work) are necessary to ensure safety, are outside the control of our dispatchers, and can occur whether a train is on time, slightly late, or significantly late. On our capacity-constrained lines, there are inevitably situations in which delays to an Amtrak train cannot reasonably be avoided while ensuring safety, regardless of whether and how much that train has already been delayed. Thus, the fact that Amtrak can point to fifteen trains that were delayed after they were quite late – out of the thousands operated over the period of Mr. Vilter's sample – illustrates how rare this is. Thirteen of fifteen of Mr. Vilter's example trains are in the Illini/Saluki service. Messrs. Ladue/Kuxmann show in their rebuttal verified statement (at

Section II.A.2.) that those trains in the Illini/Saluki service are rare (representing just 1.4% of trains in this service) and do not, in fact, experience more delay than other trains.

Instead, contrary to Mr. Vilter's assertion, I oversee dispatchers who work hard to avoid further delays when dealing with an Amtrak train that is already behind schedule. The dispatchers have a strong incentive to move such Amtrak trains off CN's lines quickly, since a long-delayed, out-of-schedule Amtrak train will meet other trains at unscheduled times and locations. Such trains can be highly disruptive to network fluidity and make management of the network more difficult, resulting in additional congestion and delays to freight and other trains.

III. REDUCING HRD TO THE LEVELS PROPOSED BY AMTRAK WOULD BE UNREASONABLY COSTLY AND OPERATIONALLY INFEASIBLE.

I understand that Amtrak's proposal would greatly change the incentive/penalty scheme of the current Operating Agreement. Amtrak's proposal would result in CN's incurring substantial penalties unless it meets what I view to be, for many services, unreasonably low HRD targets. As Messrs. Ladue and Kuxmann explain in more detail in their rebuttal verified statement (at Section III.B.3), there are limits to CN's ability to reduce HRD. Non-FTI HRD, for example, includes delays that CN's dispatchers cannot avoid, such as those caused by temporary slow orders, signal malfunctions, and scheduled maintenance work. It also includes delays caused by meets with other opposing Amtrak trains, which, on a largely single-track railroad, are unavoidable. These delays cannot be prevented other than at great cost (*e.g.*, infrastructure investments), but I understand Amtrak is not offering to pay for such costs. Messrs. Ladue and Kuxmann show that a significant proportion of existing HRD is such inherent delay, unrelated to so-called "freight train interference," or FTI, delay. Therefore, CN would in essence be required to reduce FTI to zero (or to negative levels – a literal impossibility) to have any chance of earning incentives in a given month under Amtrak's proposal.

The effects of such an extreme requirement on CN's freight service cannot be overstated. In his Rebuttal Verified Statement, Mr. Krueger explains that reducing FTI delays to zero would require holding freight and passenger trains far back from Amtrak trains to ensure that Amtrak's trains are not delayed due to freight trains. This would create cascading delays throughout our system, similar to the example I discussed in Section I.B.1., above, in which a delay to a single CN freight train caused extensive delays throughout a subdivision. But in this case, such delays would be recurring and would affect a much larger CN territory. At a minimum, Amtrak's proposed HRD levels substantially impair CN's ability to serve our freight customers, jeopardize our network fluidity, and undermine the performance of all trains, including Amtrak's, on our lines. CN already incurs substantial operational costs and delays to host Amtrak trains on CN's freight tracks. Further reductions in FTI would be costly and, in some cases, infeasible, unless we were to exclude all freight trains from large swathes of our freight rail network for much of the day.

VERIFICATION

I, Derek Taylor, declare under penalty of perjury under the laws of the United States that I have read the foregoing Rebuttal Verified Statement, that I know the facts asserted therein, and that the same are true as stated. Further, I certify that I am qualified to and authorized to submit this Verified Statement on behalf of Canadian National Railway Company and its subsidiaries.

Executed on September 14th, 2017

Derek Taylor

EXHIBIT 1

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REDACTED

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EXHIBIT 2

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BEFORE THE
SURFACE TRANSPORTATION BOARD

Docket No. FD 35743

APPLICATION OF THE NATIONAL RAILROAD PASSENGER CORPORATION UNDER 49 U.S.C. § 24308(a) – CANADIAN NATIONAL RAILWAY COMPANY

REBUTTAL VERIFIED STATEMENT OF HARALD KRUEGER

My name is Harald Krueger. I am the Senior Manager, Network Planning, at Canadian National Railway Company ("CNR").[1] I am the co-author of the Joint Verified Statement of Harald Krueger, Brian Doyle, and Nikola Rank ("Krueger VS"),[2] which was filed on September 4, 2015 as part of CN's Opening Evidence in this case, and, I filed a verified statement in this case, which set forth my qualifications in more detail.

In my prior statement, I modeled two corridors (Chicago to New Orleans and South Bend to Port Huron) to identify the capital investment necessary to replace the CN rail line capacity consumed by Amtrak operating over those corridors at various levels of endpoint on-time performance. In addition, for the Illini/Saluki and City of New Orleans services I compared the pure run time ("PRT") component in the existing schedule with a minimum run time ("MRT") calculated by CN's Train Performance Calculator ("TPC").

[1] In this Verified Statement, I use "CN" to refer to Illinois Central Railroad Company and Grand Trunk Western Railroad Company, both of which are indirect wholly owned subsidiaries of CNR.

[2] "VS" references herein are to Verified Statements filed by either party in the opening evidentiary round on September 4, 2015 (as subsequently corrected, if applicable); "RVS" references are to the rebuttal verified statements being filed by CN on September 14, 2017.

I have been asked in this rebuttal statement to address several issues raised by Amtrak's Opening Evidence. In Section I, I explain why, based on my prior review of MRT/PRT and given Amtrak's expressed goal of achieving high levels of All-Stations On Time Performance ("ASOTP"), I disagree with Amtrak's opening position that there is no need to modify the schedules for the City of New Orleans and Illini/Saluki services. I then discuss Amtrak's change in position since its Opening Evidence – specifically, its proposal to modify one limited aspect of the schedules for its trains in these two services so they may perform better as measured by ASOTP. I also discuss CN's response, including its proposal to Amtrak of comprehensively revised schedules for the Illini/Saluki service, which are expected to increase ASOTP dramatically -- up to or even exceeding the 80% ASOTP level sought by Amtrak.

I also address two further issues raised by Amtrak's Opening Evidence. In Section II, I analyze the loss of capacity and harm to CN's freight operations that would result if CN were required to meet the extremely low levels of Host Responsible Delay ("HRD") proposed by Amtrak for the City of New Orleans and Illini/Saluki services. And finally, in Section III, I explain that Amtrak's witness, Mr. Sacks, is wrong in assuming that the relationship between costs incurred by CN and reduction of delays to Amtrak trains is linear, because, in fact, it is exponential and irregular.

I. THE SCHEDULES FOR THE ILLINI/SALUKI AND CITY OF NEW ORLEANS SERVICES MUST BE CHANGED IN ORDER TO ACHIEVE AMTRAK'S DESIRED LEVELS OF ASOTP.

I understand that the evidence and analyses submitted with Amtrak's Opening Evidence were based on existing schedules, and that Amtrak did not propose schedule changes for any of its services operating over CN.[3] Amtrak appears to assume that it could reasonably expect to

[3] *See* Amtrak Opening Statement at 13; Verified Statement of Paul Vilter at 18.

regularly achieve its 80% ASOTP goal when operating under its current schedules. As CN pointed out in its Opening Evidence, that is not the case. For example, the two services with the most route miles on CN (the City of New Orleans and the Illini/Saluki) both have significant issues with their schedules that prevent the reliable achievement of high levels of ASOTP.[4]

Since filing its Opening Evidence, Amtrak has proposed schedule changes for the City of New Orleans and Illini/Saluki services expressly intended to address one problem that precludes high ASOTP – their "back loaded" distribution of recovery time. However, Amtrak's 2017 proposal did not fully address recovery time issues, failed entirely to address other issues previously raised by CN, and did not include any analysis or estimate of the effect on ASOTP. In an effort to remedy those deficiencies, last month, CN proposed to Amtrak a revision to the Illini/Saluki schedule, which comprehensively addresses all issues with the schedules so that Amtrak trains can reliably achieve high ASOTP. Further, CN offered to do a similarly thorough analysis and provide a proposed revision to the City of New Orleans schedule, if Amtrak is receptive. In this section, I describe the problems with the existing schedules, the deficiencies in Amtrak's limited schedule change proposal, and CN's methodology for creating schedules that comprehensively address all outstanding issues.

A. Schedule Changes Are Required if the City of New Orleans and Illini/Saluki Services Are Ever To Reliably Meet Amtrak's ASOTP Goals.

Amtrak's schedules have three basic components: (1) Pure Run Time ("PRT"), which is the theoretical minimum amount of time a train can traverse a segment under ideal operating conditions; (2) recovery and/or miscellaneous time to account for all delays encountered en route that would increase travel time above PRT; and (3) dwell time, which is the amount of time a

[4] Joint Verified Statement of Paul E. Ladue and Scott Kuxmann at 32-43 ("Ladue/Kuxmann VS").

train must stop at a station in order to accomplish all its necessary work (generally loading/unloading of passengers). Reliably achieving high ASOTP requires having the right amount of time in the right segments.

As discussed in the Joint Verified Statement of Messrs. Ladue/Kuxmann submitted with CN's Opening Evidence ("Ladue/Kuxmann VS"), the schedules for the Illini/Saluki and City of New Orleans services appear to have significant flaws that should and must be corrected if Amtrak wishes to improve the ASOTP of those services.[5] One of the issues they reference was identified and discussed in my prior verified statement – the fact that there is insufficient PRT in the schedules for both of these services.[6]

PRT is the basic building block for a train schedule and can be established easily and objectively using a Train Performance Calculator ("TPC"). As calculated by a TPC, PRT depends primarily on three variables: the maximum authorized track speed, the track geometry (grades and curves) and the train's consist characteristics (tractive effort, weight, length, rolling resistance, *etc.*), which varies by the number and type of locomotives and the number and type of cars. PRT should be sufficient for whatever consist the train might actually run with under the schedule. The analysis presented in my opening joint verified statement showed that the PRTs in the schedules for the City of New Orleans and Illini/Saluki services are insufficient and require adjustment.[7]

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[5] Ladue/Kuxmann VS at 32-43.

[6] Krueger VS at 36-37; *see also* Ladue/Kuxmann VS at 36, 38.

[7] *See* Krueger VS at 36. My conclusion was reinforced by other evidence presented in the Ladue/Kuxmann VS, including that Amtrak conductors on the Illini/Saluki service recognize the insufficient run time on that service through their frequent coding of delays as "OTH," which is an Amtrak delay code for unable to make run time, Ladue/Kuxmann VS at 38-39, and that the total schedule time relative to distance for the Illini/Saluki service is among the shortest for Amtrak corridor services, *Id*. at 39-42.

For the City of New Orleans service, I showed that PRT for Train 58 was short by 19 minutes, and for Train 59 was short by 36 minutes. As noted in my statement (at 36, n. 33), for the TPC runs underlying these calculations, I used a base consist for these trains 1 P-42 locomotive and 9 Superliner cars. This is consistent with the base consist for these trains in the Operating Agreement (Appendix V, Table 3), which permits Amtrak to run a train of this size with no adjustment to PRT in its schedule, which, in fact, it sometimes does.[8]

For the Illini/Saluki service, I showed that PRT was too short by 15.5 minutes for trains 390/392 and by 14.1 minutes for trains 391/393. For the TPC runs underlying these calculations, I used the most common consist for these trains – 1 P42 locomotive and 7 Horizon-class cars. The base consist for these trains in Appendix V, Table 3 of the current Operating Agreement is 1 locomotive and 6 cars, but due to safety issues with the Horizon/Amfleet cars used by Amtrak for this service, Amtrak is required to use an additional car.[9]

In their opening verified statement, Messrs. Ladue and Kuxmann also discussed two other important problems with Amtrak's existing schedule for these services, which should be addressed. First, both services' schedules feature significant "backloading" of recovery time (*i.e.*, all or a significant amount of recovery time is allocated to the final segment of the

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[8] Amtrak also sometimes operates trains with 1 locomotive and 7 cars. Required PRT for such trains would be somewhat less for the longer consist, but the schedule would still be short by 14.7 minutes for Train 59.

[9] I used a consist of 1 P42 locomotive and 7 Horizon class cars for of both the City of New Orleans and Illini/Saluki services for the capacity modeling I presented in my prior verified statement. That consist was appropriate for purposes of that task, which required only general TPC outputs for Amtrak's trains that would allow them to generally move through the model (measurement point to measurement point) roughly in accordance with their schedule. More generally, the model is insensitive to the choice of consist because I was using it to compare runs produced using the same consist. For purposes of accurately measuring PRT (or MRT) for the Amtrak service, however, it was appropriate to use the consists discussed above.

service),[10] which can make achieving high ASOTP virtually impossible. Second, the Illini/Saluki schedules do not account for the slower operating speeds required for safety reasons due to Amtrak's use of Amfleet/Horizon equipment (the so-called "short shunt" issue).[11] Each of these three issues – insufficient PRT, backloaded recovery time, and slower speeds due to Amtrak's Horizon/Amfleet equipment – can and should be addressed in the schedules for these services if Amtrak wishes to achieve high ASOTP.

B. Amtrak's Limited Proposal to Spread Recovery Time is Insufficient to Meet Its ASOTP Goals.

On February 13, 2017, Amtrak sent CN proposed changes to the schedules for the City of New Orleans and Illini/Saluki services. These schedules, according to Amtrak, would redistribute existing recovery time to help improve ASOTP.[12] However, Amtrak's proposal added no PRT or recovery time, and provided no adjustments for the short shunt issue. CN responded on February 24 by asking Amtrak to provide the information and analyses it had generated concerning Amtrak's determination of the location and amount of recovery time proposed and its use of existing PRT, and to explain if and how Amtrak accounted for operating restrictions and safety standards in setting the schedule.

Amtrak responded to CN's request on April 3, 2017. Its response provided no supporting analysis or data. Instead, Amtrak confirmed that its intention was to improve ASOTP by redistributing recovery time, but that it had no intention of addressing the other scheduling issues

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[10] *See* Ladue/Kuxmann VS at 28 n. 38.

[11] *See id*. at 43.

[12] Exhibit 1 to this statement contains a copy of Amtrak's proposal and the cover email transmitting the same, CN's February 24th response to Amtrak's proposal, and Amtrak's April 3 reply to CN's response.

raised by CN. Amtrak offered to consider a different reallocation of recovery time if CN wished to propose one.

I have analyzed the likely effect of Amtrak's proposal on ASOTP for the Illini/Saluki service, by comparing the revised schedules to historical performance for the period January 2016 to May 2017. As shown in Table 1, Amtrak's proposed schedule revisions would improve ASOTP at existing levels of Amtrak delay, but still falls well short of 80%.

Table 1 – Comparison of Estimated Illini/Saluki ASOTP between the Current Schedule and Amtrak's Proposed Illini/Saluki Schedule[13] (based on Jan. 2016 - May 2017 actual arrivals)

Train	Current Schedule ASOTP	Amtrak Proposed Schedule ASOTP	Change
390	39.8%	48.9%	9.1
391	30.6%	45.6%	15.0
392	33.4%	40.5%	7.1
393	28.4%	46.3%	17.9
Average	**33.0%**	**45.3%**	**12.3**

But as discussed in the next section, CN's counter-proposal, which addresses all the known problems with the Illini/Saluki schedule, can be expected, again based on historical performance, to yield ASOTP in excess of 80%.

C. CN's Proposed Schedules Comprehensively Address PRT, Recovery Time, and the Short Shunt Issues, and Would Significantly Increase ASOTP.

In contrast to Amtrak's very limited effort at schedule revision described above, CN undertook the substantial work of creating new schedules for the Illini/Saluki service. Given the considerable time and effort required to produce a new schedule, and CN's uncertainty regarding

[13] *See* workpapers "Carbondale Amtrak Service ASOTP Calculator (Amtrak 2017 proposal)" and "Carbondale Amtrak Service ASOTP Calculator (current)" for the calculations underlying this table.

Amtrak's willingness to consider schedule changes beyond mere redistribution of recovery time, CN has initially prepared only the four new schedules for the trains in the Illini/Saluki service. CN forwarded its proposed schedules to Amtrak on August 18, 2017.[14] In its cover letter, CN offered to create revised schedules for the City of New Orleans service, if Amtrak indicated it was open to addressing all interrelated issues. Amtrak has not responded to this offer.

I had a central role in creating CN's proposed new schedules for the Illini/Saluki service. Unlike Amtrak, in preparing those schedules, CN sought to address all of the key issues relating to those schedules: (i) inadequate PRT; (ii) poorly distributed and inadequate recovery time; and (iii) delays related to the short shunt issue.

1. CN's proposed schedule revision addresses the insufficient PRT in the schedule for the Illini/Saluki service.

My new analysis confirmed what I had said in my prior verified statement: there is insufficient PRT in the current schedules for the Illini/Saluki service. In the course of preparing the new Illini/Saluki schedules, I again conducted TPC runs using 1 P42 locomotive and 7 Horizon/Amfleet cars and those runs again demonstrated that PRT is too short.[15] Table 2 shows the difference in PRT between Clark Street and Carbondale for each of the four trains in the current schedule and CN's proposed schedule (with no PRT adjustment for the short shunt issue).

[14] CN's schedule proposal, along with the cover letter transmitting it to Amtrak is attached as Exhibit 2 to this statement.

[15] The results from these TPC runs are included in the workpaper "TPC results for Illini-Saluki schedule proposal."

Table 2 – Comparison of Total PRT between Clark Street and Carbondale Between Current Schedule and CN's Proposed Schedule[16]

Trains	Total PRT in Current Schedule	Total PRT in CN's Proposed Schedule	Difference (minutes)	Difference (percent)
390/392	265	281	16	6.0%
391/393	265	278	13	4.9%

Fixing these PRT deficiencies was the first step in creating correct and sustainable Illini/Saluki schedules that could be achieved.

2. There is insufficient and poorly-distributed recovery time in the schedule for the Illini/Saluki service.

The MRT calculated by a TPC is a theoretical minimum reflecting optimum performance. Any deviation from that optimum performance, whether due to suboptimal engine performance, suboptimal train handling by the engineer, weather conditions such as head winds, or wheel slip due to a wet rail, or any number of other external factors, will cause a train to fall behind its TPC-calculated MRT. Other delays that regularly occur during real-world operations, such as signal malfunctions, slow orders resulting from routine inspections or maintenance-of-way work blocks, delays at stations due to slow-loading passengers, and meets with other freight and passenger trains, can cause a train to fall further behind its schedule based on TPC-calculated MRT. Recovery and miscellaneous time is therefore added to the schedule to keep trains on time.

That time must be added in the schedule segments where it is needed. Adding too much time too early can cause that time to be unused and lost, and cause the Amtrak train to idle at

[16] The MRT generated by CN's TPC is accurate to the tenth of a minute. Amtrak uses whole minutes in its schedule skeletons. The numbers in the column "Total PRT in CN's Proposed Schedule" at Table 2 reflect minor adjustments for rounding the more precise TPC results to whole numbers in order to compare them to Amtrak's schedule.

stations for longer than necessary while awaiting its scheduled departure times. Many stations on the Illini/Saluki service are on single track, and unnecessary Amtrak idling at the station can impair network fluidity and increase both delays to CN's freight trains and operating costs. "Backloading" recovery time toward the end of a schedule minimizes the idling problem at interim stations and may also reduce necessary recovery time, since none is lost due to such idling. However, it does not help the train achieve high on-time performance at earlier stations. It is important to strike the right balance between the amount and location of recovery and miscellaneous time, which depends on the parties' objectives. If the goal is high Endpoint OTP and minimum total trip time, backloading of recovery time makes sense. But if high ASOTP is the goal, (as Amtrak now suggests), backloading must be avoided.

As is well understood by both parties, the schedules for the Illini/Saluki are heavily backloaded – 100% of the recovery time (and between 85% and 90% of the total combined recovery and miscellaneous time) is allocated to the final segment. There is no recovery time at any intermediate station, and only 5 minutes of miscellaneous time,[17] which comes near the middle of the train runs (prior to Champaign for the northbound trains (390 and 392) and prior to Mattoon for the southbound trains (391 and 393)), leaving no recovery or miscellaneous time at all for early stations. Therefore, redistribution of recovery time is essential to improvement of ASOTP.

In addition to recovery time's distribution, it is also important to ensure the amount of recovery time is sufficient to account for the delays likely to occur during the run of the train. Based on our experience operating passenger trains in the U.S. and Canada, CN has a well-

[17] I understand these 5 minutes of miscellaneous time are added to the schedule for the specific purpose of accounting for a scheduled meet between opposing Amtrak trains.

developed approach and methodology for determining the appropriate amount and location of recovery time in schedules. We followed the same approach and methodology in developing our proposed schedules.

First, we included an operating allowance equal to 5% of PRT to account for the fact that PRT is a theoretical minimum under optimal conditions that is rarely, if ever, achieved in real-world conditions on the network. This recovery time is intended to account for delays that result from human inefficiencies (locomotive engineers not accelerating or decelerating in an optimal manner), locomotive inefficiencies (mechanical flaws that prevent the locomotive from accelerating or decelerating according to their optimum specifications, or lost tractive effort due to wet rails), weather (headwinds, heavy rain, cold), and other unpredictable events. This time (typically only a minute or two per segment) is added to each segment.

Second, we included a temporary slow order ("TSO") allowance equal to 4% of PRT to account for delays caused by slow orders imposed as a result of routine track inspections and maintenance. The TSO allowance was added at approximately the midpoint and the endpoint.

Third, we included allowances for crossover movements and for meets (with both freight and passenger trains) that are likely to occur during the run of the train. We assumed that between Chicago and Champaign there would be an average of two crossover movements, one resulting in a 1 minute delay (at a 25 mph crossover) and one resulting in a 2 minute delay (at a 10 mph crossover); we therefore added 1.5 minutes to the schedule to account for these movements. For meets between passenger trains, we allocated 5 minutes per train, and included this as miscellaneous time in the segment where the meet typically occurs. I understand this is consistent with Amtrak's treatment of passenger train meets. For freight train meets, we allocated 7 minutes per scheduled meet (recognizing that such meets consume more time

because freight trains are longer and slower), and included it as recovery time in the segment where the meet typically occurs.

Finally, after adding time according to the principles described above, I redistributed some recovery minutes on some trains between segments to balance the dual goals of increasing ASOTP and avoiding excessive early train arrivals that resulting in wasteful idling.

The details of the adjustments described above can be seen in the schedule breakdowns attached as Exhibit 3.

3. The Illini/Saluki Schedule should be adjusted to account for speed restrictions required to address the unsafe short shunting of certain Amtrak equipment.

Messrs. Ladue and Kuxmann discussed in their opening verified statement the speed restriction required for the safe operation of the single-level Horizon/Amfleet equipment that Amtrak operates on the Illini/Saluki service, because that equipment fails to reliably shunt grade crossing warning devices at speeds above 60 mph.[18] Amtrak's schedules have not been adjusted to account for this speed restriction. As a result, Amtrak's public schedules do not reflect reality, making poor OTP practically inevitable for trains with this equipment type.

To develop realistic schedules, I used CN's TPC to calculate the schedule adjustment necessary to account for the speed restriction on this equipment.[19] This adjustment, which amounts to 12 minutes of additional time, could be made in the PRT of the train, since the nature of the equipment is limiting the train's maximum authorized speed. However, in light of the possibility that Amtrak may change or modify its equipment to eliminate the problem, or that another solution will be found, we proposed making the adjustment in the form of an addition to

[18] See Ladue/Kuxmann VS at 43.

[19] The details of the additional running time necessary to account for the short shunt issue can be seen in the schedule breakdowns attached as Exhibit 4.

miscellaneous time. We distributed the 12 minutes among segments in accordance with the impact of the speed reductions.

4. CN's proposed schedule changes for the Illini/Saluki service would make Amtrak's 80% ASOTP goal achievable on a reliable basis, while only slightly lengthening those schedules.

Adopting CN's proposed schedules should have a major positive effect on the Illini/Saluki's ASOTP. Using historic Amtrak arrival/departure data (*i.e.*, assuming no change in delay experience), I estimate that CN's proposed schedule changes could increase ASOTP by almost 50 percentage points (and by almost 40 percentage points more than Amtrak's far more limited proposal) to an average of 82.9% for the Illini/Saluki service, as shown in Table 3.[20]

Table 3 - Comparison of Estimated ASOTP Between Current Schedule and CN Proposed Schedule (2016-2017)

Train #	Current Schedule ASOTP	Amtrak Proposed Schedule ASOTP	CN Proposal
390	39.8%	48.9%	86.3%
391	30.6%	45.6%	80.6%
392	33.4%	40.5%	82.6%
393	28.4%	46.3%	82.0%
Average	**33.0%**	**45.3%**	**82.9%**

Moreover, in balancing the schedule changes necessary to achieve this higher ASOTP, CN took into account Amtrak's resistance to lengthening its schedules. As Table 4 shows, without the 12 minute short shunt adjustment (which all parties hope will not need to be a permanent part of the schedule), the sum of CN's proposed changes results in only a modest 8.1% average increase in schedule time.

[20] See workpapers "Carbondale Amtrak Service ASOTP Calculator (CN 2017 proposal)," "Carbondale Amtrak Service ASOTP Calculator (Amtrak 2017 proposal)" and "Carbondale Amtrak Service ASOTP Calculator (current)" for the calculations underlying this table.

Table 4 - Comparison of Total Illini/Saluki Schedule Time Between Current Schedule and CN's Proposed Schedule (Unadjusted for Horizon Equipment Speed Restriction)[21]

Train	Existing total schedule time	CN proposed total schedule time (no adjustment for Horizon equipment)	Increase over existing (minutes)	Increase over existing (percent)
390	330	350	20	6.1%
391	330	350	20	6.1%
392	330	372	42	12.7%
393	330	357	27	8.1%
Average	**330**	**357**	**27**	**8.1%**

II. ACHIEVEMENT OF AMTRAK'S PROPOSED HRD PERFORMANCE LEVELS WOULD REQUIRE AMTRAK'S TRAINS TO CONSUME A HUGE AND DISPROPORTIONATE SHARE OF CN'S TRACK CAPACITY, SIGNIFICANTLY HARMING FREIGHT SERVICE.

In this section, I explain the implications of Amtrak's proposed HRD performance levels for allowable freight train interference ("FTI") for the Illini/Saluki and City of New Orleans services, and how in order to meet those targets Amtrak train operations would have to consume a large share of CN's track capacity, greatly disproportionate to the number of Amtrak trains.

A. Amtrak's Proposal Would, In Effect, Require CN to Meet Unreasonable Levels of FTI.

I understand that Amtrak's proposed incentive/penalty arrangement would require CN to meet certain HRD targets to avoid what could be significant financial penalties. In addition, I understand that for many Amtrak services hosted by CN, the HRD targets are well below the historical HRD levels these services have been able to achieve. Table 5 shows Amtrak's target

[21] As noted, the schedule length comparison does not include the time added to address the short-shunt issue. All parties hope that such added time will not be part of a permanent schedule. Even if the 12 minutes needed to address the short-shunt issue were included in measuring the overall increase in schedule length, on average for the four trains it would result in an increase in total schedule time of just 11.8%.

HRD compared to historic average monthly HRD during the period June 2011 through July 2015.[22]

Table 5 - Comparison of Average Monthly HRD/10k (Jun. 2011 - Jul. 2015) to Amtrak's Proposed HRD Standards

	Average monthly HRD	Amtrak proposed HRD standard	HRD reduction required to avoid penalties
Blue Water	1017	936	81
City of New Orleans	1103	709	394
Illini/Saluki	1260	432	828
Lincoln	1596	1073	523
Texas Eagle	2083	615	1468
Wolverine	1933	411	1522

These HRD reductions must come primarily from reduced FTI. There are certain types of delay that Amtrak treats as HRD – temporary slow orders, signal malfunctions, maintenance-of-way work blocks – that are inherent to and unavoidable on a largely single track railroad. In addition, absent investment in infrastructure (which Amtrak has not proposed and CN does not require for its freight service) or schedule changes (which could mitigate the conflicts), delays caused by meets with opposing passenger trains are likewise largely outside CN's control.

Barring funding for increased line capacity,[23] essentially the entire burden of reducing HRD would have to be borne by reallocating existing rail line capacity to Amtrak services, to the detriment of CN's freight service in order to reduce FTI. Doing so, of course, would directly harm freight service by increasing delays, restricting when and how freight trains could operate, and limiting CN's flexibility and capacity to run its own trains.

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[22] *See* Ladue/Kuxmann RVS at 34, Table 4.

[23] My prior verified statement estimated the investment needed to achieve Amtrak service goals based on specified Endpoint OTP percentages. The investment necessary to achieve Amtrak's stated ASOTP goals likely would be significantly higher.

I understand that for some services it would be impossible to meet Amtrak's proposed HRD levels through reductions in FTI because other HRD categories already exceed Amtrak's proposed limits. For other services, meeting Amtrak's HRD goals would require reductions in FTI to extremely low levels. Table 6 shows the amount of "allowable" monthly FTI (per 10,000 train miles) for each service (minutes in parentheses are negative numbers).[24]

Table 6 – Allowable FTI (Minutes per 10,000 Train Miles) Necessary to Meet Amtrak's Proposed HRD Standards

	Average monthly FTI	Average monthly non-FTI HRD	Amtrak proposal HRD	"Allowable" monthly FTI
Blue Water	701	316	936	620
City of New Orleans	525	578	709	131
Illini/Saluki	582	678	432	(246)
Lincoln	701	895	1073	178
Texas Eagle	1146	937	615	(322)
Wolverine	650	1283	411	(574)

Table 7 shows the minutes per 10,000 train miles from the previous table converted into minutes per train. Again, minutes in parentheses are negative numbers.

Table 7 – Allowable FTI (Minutes Per Train) Necessary to Meet Amtrak's HRD Standards

	Route miles on CN	Amtrak proposal HRD (minutes per train)	"Allowable" FTI (minutes per train)
Blue Water	158.7	14.9	9.8
City of New Orleans	927.9	65.8	12.1
Illini/Saluki	306.7	13.2	(7.5)
Lincoln	35.7	3.8	0.6
Texas Eagle	35.7	2.2	(1.2)
Wolverine	26.5	1.1	(1.5)
Note: Minutes per train = (HRD / 10,000) * CN route miles			

[24] *See* Ladue/Kuxmann RVS at 39, Table 8.

Below I estimate the effect on the capacity of CN's main line between Chicago and Carbondale, which is traversed by Amtrak's City of New Orleans and Illini/Saluki services.

B. Reducing FTI to the levels necessary to meet Amtrak's HRD standards would consume a disproportionate share of CN's existing capacity, significantly disrupting CN's freight service.

There are various ways to conceptualize Amtrak's consumption of CN's rail line capacity due to the reductions in allowable train delay required by Amtrak's proposal. Protecting Amtrak trains from all FTI can be thought of as requiring an exclusive operating zone or "bubble" around those trains – an area of track in which no other train may operate – to eliminate any risk of delaying an Amtrak train. The Amtrak exclusive operating zone, or "bubble," could be used as a means to measure the amount of time during which track would be unavailable for CN freight operations because it is being consumed by Amtrak, similar to a track-outage or curfew. The following sections explain how this approach was used to measure the potential impact of Amtrak's heightened service standards on CN's rail line capacity.

1. Amtrak's proposed heightened service levels would require surrounding their trains with a large exclusive operating zone, or "bubble."

In this section, I estimate the size of the exclusive operating zone, or "bubble," that would be required around each of the 6 Amtrak trains that operate in the Chicago-to-Carbondale corridor to meet Amtrak's new proposed delay standards. Given the trivial amount of FTI allowed under Amtrak's proposal for the City of New Orleans service (12.2 minutes for a 900 mile trip), and the negative allowable FTI for the Illini/Saluki service, I assumed for purpose of my analysis that there must be no FTI over this corridor. My analysis was based on a typical CN freight train on the Chicago-to-Carbondale corridor, which I assumed was 11,000 feet long with 0.8 horsepower per ton. I used actual signal block lengths to model overtakes. I assumed approach blocks of two miles for the opposing moves, which is short for this corridor (and

therefore conservative), but reflects the typical braking distance for a loaded freight train on level ground.

Calculating the exclusive operating zone requires looking at each individual piece of single track (or "gauntlet") within the corridor. For each gauntlet, separate calculations must be made for Amtrak either overtaking a freight or Amtrak meeting a freight. Further, to avoid skewing the track time occupancy calculations (described below), I broke the Chicago to Carbondale corridor into three segments – Chicago to Champaign, Champaign to Edgewood Junction, and Edgewood Junction to Carbondale.[25]

With these parameters, I estimated the exclusive operating zone as follows. First, I determined the location at which a meet or overtake could occur and where a freight train clears the end of a single track gauntlet. I then determined the time at which the freight train must clear that location so that all signals seen by the approaching Amtrak train would have just switched to a favorable indication. I defined this point in time as the "Clearance Point." When Amtrak is overtaking a freight, the Clearance Point is the time at which the freight train just clears the single track gauntlet without delaying the Amtrak train behind it. When an Amtrak train is meeting an opposing freight train, the Clearance Point is the time at which the freight train just clears the single track gauntlet without delaying the Amtrak train approaching from the opposing direction. In order words, the Clearance Point is both a geographic location (a specific milepost where the freight train can stop clear and permit Amtrak to move unimpeded) and a point in time (when the freight train must get to that milepost in order to avoid any delay to Amtrak).

[25] These interim segment points are a major yard (Champaign) and junction point (Edgewood Junction) where a CN dispatcher could hold or stage a freight train in order to avoid delaying Amtrak.

When the freight train reaches the Clearance Point, the position and time for both the freight train and Amtrak are known. Working backwards from this point of reference, and using the freight train's TPC run, I then calculated the time of the freight train at the previous location at which the dispatcher would have had to make the decision to either stop the freight train in the clear before the single track gauntlet, or permit it to proceed through the gauntlet. I call this location and time the "Decision Point".

Like the Clearance Point, the Decision Point is both a geographic location (a specific milepost) and a point in time (the last time at which the freight train could traverse and clear the single track gauntlet without delaying Amtrak). If the freight train arrived earlier to the Decision Point, the dispatcher could permit it to proceed over the gauntlet to the next siding (because it could do so without delaying Amtrak); if it arrived any later, it would not have enough time to reach the other side of the gauntlet without delaying Amtrak (implying that it would have been held at the previous Clearance Point). Knowing the freight train's time at the Decision Point, I could calculate the time and position for the Amtrak train. The time and location of the Amtrak train in relation to the Decision Point is the beginning of the Amtrak exclusive operating zone for that specific gauntlet. This analysis was repeated for each single track gauntlet between Chicago and Carbondale, and for each of the six Amtrak trains that operate over that corridor.

To estimate the beginning of the exclusive operating zone realistically, it is necessary to add a "dispatcher Risk Factor" to account for the time a real-world dispatcher would stop the freight train in advance of the theoretical Decision Point in order to completely avoid FTI and eliminate any potential risk of delay to the Amtrak train. For the purposes of this analysis, I have assumed a modest dispatcher uncertainty factor of 15 minutes.

Tables 8 and 9 show the average exclusive operating zone (*i.e.*, the "bubble" across all pieces of single track in the segment) determined, as described above, for each segment of the corridor for a typical northbound and typical southbound freight train.

Table 8 - Estimated Exclusive Operating Zone (in miles) for Northbound Freight Trains

Segment	**Chicago - Champaign**		**Champaign - Edgewood**		**Edgewood - Carbondale**	
Amtrak	**Following**	**Opposing**	**Following**	**Opposing**	**Following**	**Opposing**
Average	23.0	58.8	25.1	63.7	20.4	72.4
Stdev	3.7	7.7	5.2	8.8	9.1	6.5
Min	17.6	47.2	17.3	52.6	8.0	62.6
Max	28.3	68.9	32.4	79.9	31.7	79.5

Table 9 - Estimated Exclusive Operating Zone (in miles) for Southbound Freight Trains

Segment	**Chicago - Champaign**		**Champaign - Edgewood**		**Edgewood - Carbondale**	
Amtrak	**Following**	**Opposing**	**Following**	**Opposing**	**Following**	**Opposing**
Average	24.0	59.6	23.1	63.7	21.6	56.5
Stdev	6.0	8.9	4.1	5.4	8.2	15.5
Min	15.8	49.5	15.6	56.3	7.5	36.4
Max	34.6	74.8	28.4	72.7	30.4	80.7

The calculation for each piece of single track is independent of the others, so none of these calculations account for multiple Amtrak trains or the network effects and cascading delays that could be expected from a full slate of CN freight trains operating dynamically over the corridor.

The results of the analysis shown in Table 8 and 9 identify that the separation between Amtrak and freight prior to a meet or overtake that would generate an FTI delay, ranges from 7.5 miles to 80.7 miles. On this corridor, CN sidings are generally 10-15 miles apart, which means that even in this simplified, conservative scenario, in order to avoid an FTI delay, CN would have to keep anywhere from two to five sidings clear between a freight train and an Amtrak

train. Requiring such lengthy exclusive operating zones for each of Amtrak's 6 trains would have a major detrimental effect on freight operations.[26]

2. Amtrak's heightened service levels would significantly reduce the hours of the day in which CN could conduct normal freight operations.

Another way to conceptualize the impact of the increased consumption of CN line capacity required to meet Amtrak's new proposed HRD standards is to consider the amount of time that Amtrak trains would effectively have exclusive occupancy of CN trackage. As the required exclusive operating zone around an Amtrak train increases in size (which it will do as the allowable FTI decreases), its track occupancy or "bubble" time and its interference with freight operations also increase.

For this analysis, I treated the exclusive operating zone as analogous to a location with a track "curfew" or "blackout" period, such as a diamond over which a commuter service operates. At such a location, the traffic crossing CN's line is of higher priority and/or can be so frequent that during specific times of the day, CN is completely precluded from operating over the diamond. This usually occurs during a commuter line's rush hour, when freight traffic on the crossing line must wait until the blackout period is over before it can move across the diamond and proceed over the corridor. The blackout period is therefore equivalent to a track outage in that a section of the corridor is totally unavailable for a period of time for freight to operate.

The total duration of the blackout is measured from the start to finish of the blackout period, regardless of the amount of measurable freight delay that results from the blackout. This is because whether or not the railroad chooses to dispatch a train such that it will wait at the diamond or wait at another location, during the blackout period no traffic can move past that

[26] *See* Taylor RVS at 16-17.

location. In effect, these blackout periods reduce the available hours of the day that CN would otherwise have available to operate across the corridor.

If the rail line is operated so that an Amtrak train cannot incur delay from any other train, it will effectively create a rolling blackout ahead of itself as it traverses the corridor, creating track outages for all of the single track portions of the railway. This is the same as the operating exclusion zone described above, in that any freight trains arriving during this time will be forced to wait until the end of the blackout period created by the Amtrak. Trying to moving a freight train through this rolling blackout or exclusion zone is similar to attempting to operate across a diamond during a commuter rush hour (except one is static and the other is dynamic). As with a conventional, static blackout, the impact to freight is measured as the time unavailable to operate, which is the total size of the exclusion zone measured in minutes.

In other words, this is the amount of time it takes Amtrak to traverse the section of track between the Decision Point and the Clearance Point. Summing the amount of blackout time created by the Amtrak train for each operating exclusion zone therefore quantifies the amount of time unavailable to CN to operate its freight trains on the territory due to that train. Summing the amounts for all six Amtrak trains operating through this corridor quantifies the amount of time in a 24 hour period that would be unavailable to CN to operate its freight trains on the territory due to those Amtrak trains.[27]

As shown on Table 10, Amtrak's operations at its proposed service levels would preclude CN's freight operations for approximately 50% of the day on each of the three segments between Chicago and Carbondale.

[27] Locations where there is overlap in blackout areas from opposing Amtrak trains are not double counted.

Table 10 - Hours of Freight Availability Given Daily Amtrak Trains and Amtrak Proposed HRD

	Chicago – Champaign	Champaign – Edgewood Jct	Edgewood Jct – Carbondale
Northbound freight availability	10.7 hours (44.58%)	10.53 hours (43.89%)	7.35 hours (30.62%)
Southbound freight availability	10.35 hours (43.13%)	11.63 hours (48.47%)	10.2 hours (42.50%)

Table 10 shows the hours in the day that would remain available to CN to run its freight trains due to the multiple operating exclusion zones that would be required for Amtrak's trains to operate through the corridor without any delay caused by freight trains. Thus, although on average the six Amtrak trains represent approximately 23% of all traffic in this corridor, it would occupy CN's rail lines for 12 to almost 17 hours per day (or between 50 and 70% of the day).

III. REDUCING HRD WOULD INCREASE CN'S COSTS EXPONENTIALLY.

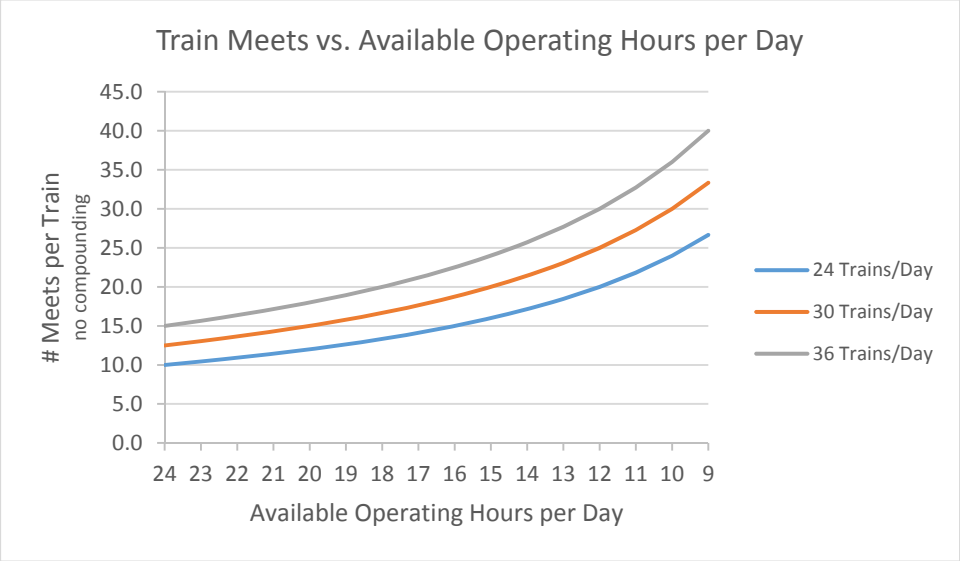
I understand that Amtrak's proposed penalty scheme is premised on the assumption that there is a linear relationship between HRD reductions and CN's "perceived costs," *i.e.*, it assumes that reducing HRD on a given service from 900 to 800 minutes per 10,000 train miles would cost CN the same as reducing it from 800 to 700 or from 100 to 0.[28] That assumption in no way realistically reflects CN's "perceived" or actual costs.

First, as I have explained above, all other things being equal, and leaving aside for now further infrastructure investment, reducing delays to Amtrak trains decreases the amount of time (by the amounts shown in Table 10) CN has to operate each day. This concentrates CN's freight traffic, effectively increasing the train frequency. For example, if there are 12 trains per day that operate over the corridor (1 every 2 hours), reducing the track availability by 50% (*i.e.*, 12 hours) doubles the train frequency during the remaining 12 hours to one train every hour. Increasing

[28] *See* Sacks VS ¶¶ 37(b), (c), 46, 47.

train frequency increases the number of meets per train, which thereby increases CN's freight traffic delays and associated costs.

In simple terms, all else being equal, the number of meets increase in a non-linear way as traffic density (trains/hour) increases, as shown by the following simple chart.



In general, because the number of meets increase non-linearly, then train delays and their associated costs would also increase non-linearly. Being able to run freight trains on a segment 23 hours a day instead of 24 entails costs, but they are manageable. Being able to run them 9 hours a day instead of 10 is a far larger proportionate reduction, and entails far more disruption and cost.

As with any rational attempt to solve a complex problem that has multiple partial solutions, CN pursues the most cost-effective solutions first – *i.e.*, given the problem of how to reduce HRD, CN will prioritize the measures that reduce the most HRD for the least cost in freight capacity loss and delays. As HRD is further reduced, those cost-effective solutions will be exhausted until, at low levels of HRD, achieving further HRD reduction will require CN to resort to less cost-efficient solutions. This entails diminishing marginal returns from efforts to

reduce HRD -- that is, a broadly exponential increase in cost per unit of HRD reduction as HRD levels are further reduced.

The HRD reduction/cost relationship would not, however, be smoothly exponential. Due to inherent uncertainties about the timing and location of train meets, the indivisibility of trains, and the fact that unexpected events can and do affect rail operations and reduce the effective capacity of a line, it is not possible to shift smoothly down to a precise HRD (or FTI) number. Measures to reduce delays cannot easily be calibrated to a precise number of delay minutes saved. Moreover, eliminating delay minutes for trains cannot easily be calibrated to HRD reductions, as eliminating just 1 minute of delay will result in much larger reduction of HRD, which is measured in delays per 10,000 miles. For example, eliminating 1 minute of delay for a Wolverine train or a Texas Eagle/Lincoln train would equate to a reduction in HRD minutes per 10,000 miles of 377 and 280, respectively. As a result, the relationship between HRD reduction and costs will be lumpy and not linear.

Second, although Amtrak has neither proposed nor offered to fund it, achieving the unreasonably low levels of HRD Amtrak seeks would potentially require significant capital investment to increase line capacity or require extreme and costly investments intended to reduce non-FTI delays attributable to normal levels of slow orders or signal malfunctions. For example, Amtrak's proposed HRD standard of 432 for the Illini/Saluki service cannot be achieved solely by reducing FTI. As soon as HRD levels demanded compel a switch to capital investment and similar methods of reducing delay, the costs of HRD reduction are likely to rise dramatically. Capital investment costs bear little relation to freight delay costs (which I understand were the only costs addressed in the source Mr. Sacks used to estimate CN's "perceived costs"[29]), and are

[29] *See* Sacks VS, Appx. G.

typically much greater. Within capital costs, moreover, the same general pattern can be expected as within capacity reallocation costs: CN will pursue more cost-effective capital investments first, and so once it reaches very low levels of HRD, the only investments left available to it to further reduce HRD will be much more expensive. Finally, capital investment costs are even more lumpy than capacity reallocation costs: if a new siding is required to reduce HRD, one cannot achieve half the HRD reduction with half a siding.

A more rational and cost effective solution, both in terms of improved Amtrak service as well as capital investments, is to develop a better Amtrak schedule that is in line with reality and current operating parameters of the freight railroad. A fact and science based schedule that recognizes and accounts for the existing infrastructure, traffic, and operations expected to be encountered on a freight railroad can achieve a significantly improved Amtrak service with a relatively small increase in schedule time.

VERIFICATION

I, Harald Krueger, declare under penalty of perjury under the laws of the United States that I have read the foregoing Rebuttal Verified Statement, that I know the facts asserted therein, and that the same are true as stated. Further, I certify that I am qualified to and authorized to submit this Verified Statement on behalf of Canadian National Railway Company and its subsidiaries.

Executed on September 14, 2017

Harald Krueger

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EXHIBIT 1

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Scott Kuxmann

From: Azen, Michael <Michael.Azen@amtrak.com>
Sent: Monday, February 13, 2017 12:48 PM
To: Scott Kuxmann
Cc: Bruce, Barbara; Davidson, Bruce; Blair, Jim
Subject: Schedule Change Request Carbondale Service effective April 24, 2017
Attachments: cdl0417 asotp V1.0.xls

Scott,

Please see attached Amtrak's proposed schedule changes for Carbondale service. These proposed schedules reflect redistribution of the recovery time to intermediate stations along the route. Please review and advise concurrence. As always, if you have any questions please feel free to contact me or Barb.

Thanks,
Michael Azen

Michael Azen
Senior Scheduling Specialist
Amtrak | 500 W. Jackson Blvd | Second Floor | Chicago, IL 60661
Email: Michael.Azen@amtrak.com | office: 312.544.5331 | cell: 312.914.5063 | fax:202.799.6093

Saluki

Train 390

Schedule Skeleton - Saluki/Train 390 (Daily) — **April 24, 2017**

Effective 1/11/16 Daily		Days of Operation		Effective 4/24/17 Daily	Remarks and Changes	RR	Mileage	Services	PRT	Recovery Minutes	Misc. Adjust.	Dwell Minutes	Arrive	Depart	Station
						CNIC	0.0	t,e,I						**7:35 AM**	Carbondale,IL **CT**
7:30 AM	**Dp**	Carbondale, IL	**CT**	7:35 AM	Depart CDL 5 minutes later.	CNIC	20.3		20			1	7:55 AM	7:56 AM	Du Quoin, IL
7:51 AM	**Dp**	Du Quoin, IL		7:56 AM	Redistribute recovery time for ASOTP.	CNIC	55.7		31			1	8:27 AM	8:28 AM	Centralia, IL
8:23 AM	**Dp**	Centralia, IL		8:28 AM		CNIC	108.9		43			1	9:11 AM	9:12 AM	Effingham, IL
9:07 AM	**Dp**	Effingham, IL		9:12 AM		CNIC	135.7		23	**3**		1	9:38 AM	9:39 AM	Mattoon, IL (Charleston)
9:31 AM	**Dp**	Mattoon, IL		9:39 AM		CNIC			27				*10:06 AM*	*10:06 AM*	XTI - *Tolono*
10:14 AM	**Dp**	Champaign-Urbana, IL		10:20 AM		CNIC	180.3		8	**3**		3	10:17 AM	10:20 AM	Champaign-Urbana, IL
10:27 AM	**Dp**	Rantoul, IL		10:41 AM		CNIC	194.3		12	**3**	**5**	1	10:40 AM	10:41 AM	Rantoul, IL
10:53 AM	**Dp**	Gilman, IL		11:10 AM		CNIC	227.0		25	**3**		1	11:09 AM	11:10 AM	Gilman, IL
11:15 AM	**Dp**	Kankakee, IL		11:35 AM		CNIC	252.2		21	**3**		1	11:34 AM	11:35 AM	Kankakee, IL
19 11:44 AM	**Dp**	Homewood, IL		19 12:09 PM		CNIC	284.6		27	**5**		2	12:07 PM	12:09 PM	Homewood, IL
1:00 PM	**Ar**	Chicago, IL	**CT**	1:05 PM	**12/29/16**	AMT	306.7		28	**6**			*12:43 PM*	*12:43 PM*	XCS - *16th Street*
						AMT	308.9	T,E	17		5		1:05 PM		Chicago, IL **CT**
									Total Pure Run	Total Recovery Minutes	Total Misc. Adj.	Total Dwell	Total Schedule Time		
									282	**26**	**10**	**12**	**330**		**12/29/16**

Purpose of Misc. Adjustments

Saluki

Train 391

Schedule Skeleton - Saluki/Train 391 (Daily) — **April 24, 2017**

Effective 1/11/16 Daily		Days of Operation		Effective 4/24/17 Daily	Remarks and Changes
8:15 AM	**Dp**	Chicago, IL	**CT**	8:15 AM	Redistribute recovery time.
19 8:56 AM	**Dp**	Homewood, IL		19 8:56 AM	
9:22 AM	**Dp**	Kankakee, IL		9:25 AM	
9:44 AM	**Dp**	Gilman, IL		9:50 AM	
10:10 AM	**Dp**	Rantoul, IL		10:19 AM	
10:25 AM	**Dp**	Champaign-Urbana, IL		10:39 AM	
11:05 AM	**Dp**	Mattoon, IL		11:17 AM	
11:29 AM	**Dp**	Effingham, IL		11:46 AM	
12:16 PM	**Dp**	Centralia, IL		12:38 PM	
12:49 PM	**Dp**	Du Quoin, IL		1:12 PM	
1:45 PM	**Ar**	Carbondale, IL	**CT**	1:45 PM	**12/29/16**

RR	Mileage	Services	PRT	Recovery Minutes	Misc. Adjust.	Dwell Minutes	Arrive	Depart	Station
AMT	0.0	t,e,FA,W,I						8:15 AM	Chicago, IL
CNIC	2.2		13				*8:28 AM*	*8:28 AM*	XCS - *16th Street*
CNIC	24.3		26			2	8:54 AM	8:56 AM	Homewood, IL
CNIC	56.7		25		**3**	1	9:24 AM	9:25 AM	Kankakee, IL
CNIC	81.9		21		**3**	1	9:49 AM	9:50 AM	Gilman, IL
CNIC	114.6		25		**3**	1	10:18 AM	10:19 AM	Rantoul, IL
CNIC	128.6		12		**5**	3	10:36 AM	10:39 AM	Champaign-Urbana, IL
CNIC			10				*10:49 AM*	*10:49 AM*	XTI - *Tolono*
CNIC	173.2		24	**3**		1	11:16 AM	11:17 AM	Mattoon, IL
CNIC	200.0		23	**5**		1	11:45 AM	11:46 AM	Effingham, IL
CNIC	253.2		46	**5**		1	12:37 PM	12:38 PM	Centralia, IL
CNIC	288.6		32	**1**		1	1:11 PM	1:12 PM	Du Quoin, IL
CNIC	308.9	T,E	21	**12**			1:45 PM		Carbondale, IL
			Total Pure Run	Total Recovery Minutes	Total Misc. Adj.	Total Dwell	Total Schedule Time		
			278	**26**	**14**	**12**	**330**		

12/29/16

Purpose of Misc. Adjustments

Illini

Train 392

Schedule Skeleton - Illini/Train 392 (Daily) — **April 24, 2017**

Effective 1/11/16 Daily		Days of Operation		Effective 4/24/17 Daily	Remarks and Changes	RR	Mileage	Services	PRT	Recovery Minutes	Misc. Adjust.	Dwell Minutes	Arrive	Depart	Station
						CNIC	0.0	T,E,I						**4:05 PM**	Carbondale,IL **CT**
4:15 PM	**Dp**	Carbondale, IL	**CT**	4:05 PM	Depart CDL 10 minutes earlier.	CNIC	20.3		20			1	4:25 PM	4:26 PM	Du Quoin, IL
4:36 PM	**Dp**	Du Quoin, IL		4:26 PM	Redistribute recovery time.	CNIC	55.7		31			1	4:57 PM	4:58 PM	Centralia, IL
5:08 PM	**Dp**	Centralia, IL		4:58 PM		CNIC	108.9		43			1	5:41 PM	5:42 PM	Effingham, IL
5:52 PM	**Dp**	Effingham, IL		5:42 PM		CNIC	135.7		23	**3**		1	6:08 PM	6:09 PM	Mattoon, IL (Charleston)
6:16 PM	**Dp**	Mattoon, IL		6:09 PM		CNIC			27		5		*6:41 PM*	*6:41 PM*	XTI - *Tolono*
6:59 PM	**Dp**	Champaign-Urbana, IL		6:55 PM		CNIC	180.3		8	**3**		3	6:52 PM	6:55 PM	Champaign-Urbana, IL
7:12 PM	**Dp**	Rantoul, IL		7:11 PM		CNIC	194.3		12	**3**		1	7:10 PM	7:11 PM	Rantoul, IL
7:38 PM	**Dp**	Gilman, IL		7:40 PM		CNIC	227.0		25	**3**		1	7:39 PM	7:40 PM	Gilman, IL
8:00 PM	**Dp**	Kankakee, IL		8:05 PM		CNIC	252.2		21	**3**		1	8:04 PM	8:05 PM	Kankakee, IL
8:27 PM	**Dp**	Homewood, IL		8:37 PM		CNIC	284.6		27	**5**		2	8:37 PM	8:39 PM	Homewood, IL
D				**D**		AMT	306.7		28	**6**			*9:13 PM*	*9:13 PM*	XCS - *16th Street*
9:45 PM	**Ar**	Chicago, IL	**CT**	9:35 PM	**12/29/16**	AMT	308.9	t,e	17		5		9:35 PM		Chicago, IL **CT**
									Total Pure Run	Total Recovery Minutes	Total Misc. Adj.	Total Dwell	Total Schedule Time		
									282	**26**	**10**	**12**	**330**		**12/29/16**

Purpose of Misc. Adjustments

Illini

Train 393

Schedule Skeleton - Illini/Train 393 (Daily) — **April 24, 2017**

Effective 1/11/16 Daily		Days of Operation		Effective 4/24/17 Daily	Remarks and Changes	RR	Mileage	Services	PRT	Recovery Minutes	Misc. Adjust.	Dwell Minutes	Arrive	Depart	Station
						AMT	0.0	T,E,FA,W,I						4:05 PM	Chicago, IL
	4:05 PM	**Dp**	Chicago, IL **CT**			CNIC	2.2		13				*4:18 PM*	*4:18 PM*	XCS - *16th Street*
					Redistribute recovery time.	CNIC	24.3		26			2	4:44 PM	4:46 PM	Homewood, IL
19	4:46 PM	**Dp**	Homewood, IL	19	4:46 PM	CNIC	56.7		25		**3**	1	5:14 PM	5:15 PM	Kankakee, IL
	5:12 PM	**Dp**	Kankakee, IL		5:15 PM	CNIC	81.9		21		**3**	1	5:39 PM	5:40 PM	Gilman, IL
	5:34 PM	**Dp**	Gilman, IL		5:40 PM	CNIC	114.6		25		**3**	1	6:08 PM	6:09 PM	Rantoul, IL
	6:00 PM	**Dp**	Rantoul, IL		6:09 PM	CNIC	128.6		12		**5**	3	6:26 PM	6:29 PM	Champaign-Urbana, IL
	6:15 PM	**Dp**	Champaign-Urbana, IL		6:29 PM	CNIC			10				*6:39 PM*	*6:39 PM*	XTI - *Tolono*
	6:55 PM	**Dp**	Mattoon, IL		7:07 PM	CNIC	173.2		24	**3**		1	7:06 PM	7:07 PM	Mattoon, IL
	7:19 PM	**Dp**	Effingham, IL		7:36 PM	CNIC	200.0		23	**5**		1	7:35 PM	7:36 PM	Effingham, IL
	8:06 PM	**Dp**	Centralia, IL		8:28 PM	CNIC	253.2		46	**5**		1	8:27 PM	8:28 PM	Centralia, IL
	8:39 PM	**Dp**	Du Quoin, IL		9:02 PM	CNIC	288.6		32	**1**		1	9:01 PM	9:02 PM	Du Quoin, IL
	9:35 PM	**Ar**	Carbondale, IL **CT**		**12/29/16**	CNIC	308.9	t,e	21	**12**			9:35 PM		Carbondale, IL
									Total Pure Run	Total Recovery Minutes	Total Misc. Adj.	Total Dwell	Total Schedule Time		
									278	**26**	**14**	**12**	**330**		**12/29/16**

Purpose of Misc. Adjustments

Chicago…Champaign-Urbana…Carbondale

Effective 4/24/17

391 Daily	393 Daily	59 Daily					58 Daily	390 Daily	392 Daily
8:15 AM	4:05 PM	8:05 PM	↓	Dp	Chicago, IL	Ar	↑ 9:00 AM	1:05 PM	9:35 PM
8:28 AM	*4:18 PM*	*8:22 PM*		*Ps*	XCS - *Clark St.*	*Ps*	*8:53 AM*	*12:43 PM*	*9:13 PM*
19 8:56 AM	19 4:46 PM	19 8:54 PM		Dp	Homewood, IL	Dp	19 7:44 AM	19 12:09 PM	D 8:37 PM
9:25 AM	5:15 PM	F 9:23 PM		Dp	Kankakee, IL	Dp	F 7:13 AM	11:35 AM	8:05 PM
9:50 AM	5:40 PM			Dp	Gilman, IL	Dp		11:10 AM	7:40 PM
10:19 AM	6:09 PM			Dp	Rantoul, IL	Dp		10:41 AM	7:11 PM
10:39 AM	6:29 PM	10:34 PM		Dp	Champaign-Urbana, IL	Dp	6:10 AM	10:20 AM	6:55 PM
10:49 AM	*6:39 PM*			*Ps*	XTI - *Tolono*	*Ps*		*10:06 AM*	*6:41 PM*
11:17 AM	7:07 PM	F 11:13 PM		Dp	Mattoon, IL	Dp	F 5:23 AM	9:39 AM	6:09 PM
11:46 AM	7:36 PM	F 11:37 PM		Dp	Effingham, IL	Dp	F 4:57 AM	9:12 AM	5:42 PM
12:38 PM	8:28 PM	F 12:25 AM		Dp	Centralia, IL	Dp	F 4:10 AM	8:28 AM	4:58 PM
1:12 PM	9:02 PM			Dp	Du Quoin, IL	Dp		7:56 AM	4:26 PM
1:45 PM	9:35 PM	1:21 AM		Ar	Carbondale, IL	Dp	3:16 AM	7:35 AM	4:05 PM

12/29/16

Scott Kuxmann

From: Azen, Michael <Michael.Azen@amtrak.com>
Sent: Monday, February 13, 2017 12:45 PM
To: Scott Kuxmann
Cc: Bruce, Barbara; Davidson, Bruce; Blair, Jim
Subject: Schedule Change Request City of New Orleans April 24, 2017
Attachments: cityofnol0417 asotp V1.0.xls

Scott,

Please see attached Amtrak's proposed schedule changes for City of New Orleans Service. These proposed schedules reflect redistribution of the recovery time to intermediate stations along the route. Please review and advise concurrence. As always, if you have any questions please feel free to contact me or Barb.

Thanks,
Michael Azen

Michael Azen
Senior Scheduling Specialist
Amtrak | 500 W. Jackson Blvd | Second Floor | Chicago, IL 60661
Email: Michael.Azen@amtrak.com | office: 312.544.5331 | cell: 312.914.5063 | fax:202.799.6093



City of New Orleans

Train 58

	Effective 1/11/16 Daily		Days of Operation		Proposed 4/24/17 Daily	Remarks and Changes
	1:45 PM	Dp	New Orleans, LA	CT	1:45 PM	Redistribute recovery time.
	2:45 PM	Dp	Hammond, LA		2:47 PM	
F	3:32 PM	Dp	McComb, MS		F 3:35 PM	
	3:56 PM	Dp	Brookhaven, MS		F 4:01 PM	
F	4:17 PM	Dp	Hazlehurst, MS		F 4:25 PM	
	5:44 PM	Dp	Jackson, MS		5:36 PM	
F	6:42 PM	Dp	Yazoo City, MS		F 6:35 PM	
	7:37 PM	Dp	Greenwood, MS		7:33 PM	
	10:00 PM	Ar	Memphis, TN		10:00 PM	
	10:40 PM	Dp			10:40 PM	
F	12:22 AM	Dp	Newbern-Dyersburg, TN		F 12:24 AM	
F	1:04 AM	Dp	Fulton, KY		F 1:09 AM	
	3:11 AM	Ar	Carbondale, IL		3:12 AM	
	3:16 AM	Dp			3:17 AM	
F	4:10 AM	Dp	Centralia, IL		F 4:13 AM	
F	4:57 AM	Dp	Effingham, IL		F 5:02 AM	
F	5:23 AM	Dp	Mattoon, IL		F 5:32 AM	
	6:10 AM	Dp	Champaign-Urbana, IL		6:24 AM	
F	7:13 AM	Dp	Kankakee, IL		F 7:30 AM	
19	7:44 AM	Dp	Homewood, IL		19 8:06 AM	
	9:00 AM	Ar	Chicago, IL	CT	9:00 AM	1/25/17

Schedule Skeleton - City of New Orleans/Train 58 April 24, 2017

RR	Mileage	Services	PRT	Recovery Minutes	Misc. Adjust.	Dwell Minutes	Arrive	Depart	Station	Check Point
AMT	0.0	T,E,FA,I,W,G						1:45 PM	New Orleans, LA **CT**	X
CNIC	3.7		10				*1:55 PM*	*1:55 PM*	XSU - *Southport Jct*	*X*
CNIC	11.5		10				*2:05 PM*	*2:05 PM*	*Orleans Jct.*	
CNIC	13.7		3				*2:08 PM*	*2:08 PM*	*Skip*	
CNIC	24.7		10				*2:18 PM*	*2:18 PM*	*Frenier*	
CNIC	37.8		10				*2:28 PM*	*2:28 PM*	*Manchac*	
CNIC	53.3		14	**2**		3	2:44 PM	2:47 PM	Hammond, LA	
CNIC	105.4		45	**1**		2	3:33 PM	3:35 PM	McComb, MS	
CNIC	129.2		22	**2**		2	3:59 PM	4:01 PM	Brookhaven, MS	
CNIC	149.8		19	**3**		2	4:23 PM	4:25 PM	Hazlehurst, MS	
CNIC	183.3	e	42	**2**	11	16	5:20 PM	5:36 PM	Jackson, MS	
CNIC	227.7		54	**3**		2	6:33 PM	6:35 PM	Yazoo City, MS	
CNIC	280.2	t	48	**5**		5	7:28 PM	7:33 PM	Greenwood, MS	
CNIC	405.4	E,e	125	**32**		30	10:10 PM	10:40 PM	Memphis, TN	X
CNIC	491.6		98	**4**		2	12:22 AM	12:24 AM	Newbern-Dyersburg, TN	
CNIC	527.4		37	**6**		2	1:07 AM	1:09 AM	Fulton, KY	
CNIC	577.3		51				*2:00 AM*	*2:00 AM*	*Mounds Jct.*	
CNIC	592.2		11	**7**			*2:18 AM*	*2:18 AM*	*Wetaugh*	
CNIC	604.3		18				*2:36 AM*	*2:36 AM*	*Anna*	
CNIC	624.9	T,E	24	**12**		5	3:12 AM	3:17 AM	Carbondale, IL	
CNIC	680.6		52	**2**		2	4:11 AM	4:13 AM	Centralia, IL	
CNIC	733.8		45	**3**		1	5:01 AM	5:02 AM	Effingham, IL	
CNIC	760.6		23	**5**		2	5:30 AM	5:32 AM	Mattoon, IL (Charleston)	
CNIC	805.2		37	**10**		5	6:19 AM	6:24 AM	Champaign-Urbana, IL	
CNIC	877.1		59	**5**		2	7:28 AM	7:30 AM	Kankakee, IL	
CNIC	909.5		27	**6**		3	8:03 AM	8:06 AM	Homewood, IL	
AMT	931.6		30	**17**			*8:53 AM*	*8:53 AM*	XCS - *Clark St.*	*X*
AMT	933.8	t,e	23	**-16**			9:00 AM		Chicago, IL **CT**	X

1 - P42, 9 cars

	Total Pure Run	Total Recovery Minutes	Total Misc. Adj.	Total Dwell	Total Schedule Time
NOL-XSU	**10**	**0**	**0**	**0**	**10**
XSU-MEM	**402**	**50**	**11**	**62**	**525**
MEM-XCS	**512**	**77**	**0**	**24**	**613**
XCS-CHI	**23**	**-16**	**0**	**0**	**7**
NOL-CHI	**947**	**111**	**11**	**86**	**1155**

1/25/17

PRT	Recovery	%	Segment
402	61	15.2%	XSU-MEM
512	77	15.0%	MEM-XCS

City of New Orleans

Train 59

Effective 1/11/16 Daily					Proposed 4/24/17 Daily		Remarks and Changes
	8:05 PM	**Dp**	Chicago, IL	**CT**		8:00 PM	Redistribute recovery time.
19	8:54 PM	**Dp**	Homewood, IL		19	8:54 PM	
F	9:23 PM	**Dp**	Kankakee, IL		**F**	9:23 PM	
	10:34 PM	**Dp**	Champaign-Urbana, IL			10:34 PM	
F	11:13 PM	**Dp**	Mattoon, IL		**F**	11:18 PM	
F	11:37 PM	**Dp**	Effingham, IL		**F**	11:44 PM	
F	12:25 AM	**Dp**	Centralia, IL		**F**	12:32 AM	
	1:21 AM	**Ar**	Carbondale, IL			1:31 AM	
	1:26 AM	**Dp**				1:36 AM	
F	3:14 AM	**Dp**	Fulton, KY		**F**	3:24 AM	
F	3:56 AM	**Dp**	Newbern-Dyersburg, TN		**F**	4:08 AM	
	6:27 AM	**Ar**	Memphis, TN			6:27 AM	
	6:50 AM	**Dp**				6:50 AM	
	9:00 AM	**Dp**	Greenwood, MS			9:03 AM	
F	9:51 AM	**Dp**	Yazoo City, MS		**F**	9:57 AM	
	11:20 AM	**Dp**	Jackson, MS			11:16 AM	
F	11:55 AM	**Dp**	Hazlehurst, MS		**F**	11:55 AM	
	12:16 PM	**Dp**	Brookhaven, MS		**F**	12:18 PM	
F	12:40 PM	**Dp**	McComb, MS		**F**	12:43 PM	
	1:28 PM	**Dp**	Hammond, LA			1:34 PM	
	3:32 PM	**Ar**	New Orleans, LA	**CT**		3:32 PM	**1/25/17**

Schedule Skeleton - City of New Orleans/Train 59 — April 24, 2017

RR	Mileage	Services	PRT	Recovery Minutes	Misc. Adjust.	Dwell Minutes	Arrive	Depart	Station	Check Point
AMT	0.0	t,e,FA,I,W,G,M						8:00 PM	Chicago, IL	**X**
CNIC	2.2		22				*8:22 PM*	*8:22 PM*	XCS - *Clark St*	***X***
CNIC	24.3		28	**1**		3	8:51 PM	8:54 PM	Homewood, IL	
CNIC	56.7		27			2	9:21 PM	9:23 PM	Kankakee, IL	
CNIC	128.6		63	**3**		5	10:29 PM	10:34 PM	Champaign-Urbana, IL	
CNIC	173.2		37	**5**		2	11:16 PM	11:18 PM	Mattoon, IL	
CNIC	200.0		23	**2**		1	11:43 PM	11:44 PM	Effingham, IL	
CNIC	253.2		44	**2**		2	12:30 AM	12:32 AM	Centralia, IL	
CNIC	308.9	T,E	51	**8**		5	1:31 AM	1:36 AM	Carbondale, IL	
CNIC	329.5		24				*2:00 AM*	*2:00 AM*	*Anna*	
CNIC	341.6		18				*2:18 AM*	*2:18 AM*	*Wetaugh*	
CNIC	356.5		10				*2:28 AM*	*2:28 AM*	*Mounds Jct.*	
CNIC	406.4	E,e,M	50	**4**		2	3:22 AM	3:24 AM	Fulton, KY	
CNIC	442.2		38	**4**		2	4:06 AM	4:08 AM	Newbern-Dyersburg, TN	
CNIC	528.4	t	95	**44**		23	6:27 AM	6:50 AM	Memphis, TN	**X**
CNIC	653.6		122	**6**		5	8:58 AM	9:03 AM	Greenwood, MS	
CNIC	706.1		47	**5**		2	9:55 AM	9:57 AM	Yazoo City, MS	
CNIC	750.5	e	53	**8**	9	9	11:07 AM	11:16 AM	Jackson, MS	
CNIC	784.0		32	**5**		2	11:53 AM	11:55 AM	Hazlehurst, MS	
CNIC	804.6		18	**3**		2	12:16 PM	12:18 PM	Brookhaven, MS	
CNIC	828.4		20	**3**		2	12:41 PM	12:43 PM	McComb, MS	
CNIC	880.5		42	**6**		3	1:31 PM	1:34 PM	Hammond, LA	
CNIC	896.0	T,E	17				*1:51 PM*	*1:51 PM*	*Manchac*	
CNIC	909.1		10				*2:01 PM*	*2:01 PM*	*Frenier*	
CNIC	920.1		10				*2:11 PM*	*2:11 PM*	*Skip*	
CNIC	922.3		3				*2:14 PM*	*2:14 PM*	*Orleans Jct.*	
CNIC	930.1		10	**42**			*3:06 PM*	*3:06 PM*	XSU - *Southport Jct*	***X***
AMT	933.8		26				3:32 PM		New Orleans, LA	**X**

1 - P42, 9 cars

	Total Pure Run	Total Recovery Minutes	Total Misc. Adj.	Total Dwell	Total Schedule Time
CHI-XCS	**22**	**0**	**0**	**0**	**22**
XCS-MEM	**508**	**73**	**0**	**47**	**628**
MEM-XSU	**384**	**78**	**9**	**25**	**496**
XSU-NOL	**26**	**0**	**0**	**0**	**26**
CHI-NOL	**940**	**151**	**9**	**72**	**1172**

1/25/17

PRT	Recovery	%	Segment
508	73	14.4%	XCS-MEM
384	87	22.7%	MEM-XSU

Southern Region

Scott Kuxmann
Manager Passenger Operations

17641 Ashland Ave
Homewood Illinois
60430-1345

Dear Michael:

This responds to your February 13, 2017 email attaching proposed schedules that reflect redistributions of recovery time in the schedules for the City of New Orleans and Illini/Saluki services. Your email requests CN's concurrence with those proposed changes, but it provides no analysis or explanation for how you arrived at your proposed redistributions or their anticipated effects.

As you know, schedule changes are governed by Section 3.2(D) of the CN/Amtrak operating agreement. Under Subsection (2) of that section, the party requesting a change to an existing schedule "shall also supply such other information necessary to permit the Reviewing Party to analyze the proposed schedule change." In order to understand and analyze Amtrak's proposed schedule changes, CN requests Amtrak supply the following additional information:

- Information or analyses generated by Amtrak:
    - for purposes of determining the location and amount of recovery time in the proposed schedules; and
    - for purposes of determining whether the amount of pure run time in each segment is sufficient or is otherwise capable of being achieved by Amtrak's trains on a regular basis.
- If not included with the above:
    - A comparison of your proposed recovery time to historical delay trends for individual segments; and
    - An analysis of the anticipated effects of the proposed schedules, including its anticipated effects on (i) Amtrak performance as measured under the terms of our Operating Agreement, (ii) Amtrak's ASOTP metric, (iii) Amtrak delay, and (iv) Amtrak time idling at stations.

- Whether, and if so, how, Amtrak gave due regard to CN's speed, weight, and similar operating restrictions and rules and safety standards in setting the schedule for the Illini/Saluki service, as required by Section 3.2(D)(1)(i) of the operating agreement.

This information is necessary for CN to understand the basis for and effect of Amtrak's proposed schedule changes. We look forward to receiving this information promptly so that we may assess your proposal.

NATIONAL RAILROAD PASSENGER CORPORATION
60 Massachusetts Avenue, NE, Washington, DC 20003

April 3, 2017

Mr. Scott Kuxmann
NRPC Operations Officer
CN North America
17641 South Ashland Ave.
Homewood, Illinois 60430-1345

Dear Scott:

This letter responds to your February 24, 2017 letter to Amtrak regarding Amtrak's proposal to reallocate recovery time on the Illini/Saluki and City of New Orleans services. In your response to Amtrak's proposed schedule modifications, you requested additional explanation of why Amtrak chose to place recovery time where we did in our proposal, and of what impact Amtrak expects the new schedules to have on All Stations On Time Performance (ASOTP).

Amtrak's proposal seeks to be responsive to the Surface Transportation Board (STB)'s recommendation contained in its Final Rule pursuant to Docket EP 726, that "a number of current passenger rail schedules insert a very large share of recovery time between the last stations on a route. To support all stations OTP on such a route could require a reevaluation and potential reallocation of recovery time across the entire route." Based on CN's March 30, 2016 reply comments to STB in EP 726, it would appear that CN agrees this should be done.

The current schedules for the City of New Orleans and Illini/Saluki services have a large share of recovery time between the last stations and, per STB's and CN's express comments, Amtrak is proposing to reallocate recovery time across these routes.

Amtrak's schedule modification proposal takes some of the recovery time currently at the endpoints (and at Memphis, in the case of Trains 58 and 59) and reallocates it to certain intermediate stations. A larger share of the reallocated recovery time was generally assigned to stations with higher ridership and/or that are later in the route and thus more likely to have had delays occur prior to the train's arrival at those stations.

Amtrak anticipates that these changes will improve ASOTP on the City of New Orleans and Illini/Saluki services. We do not have any reason to believe, however, that these changes will have a significant effect on Amtrak responsible delays or on Amtrak time idling at stations.

Your response also requested a variety of other information which is not relevant to this proposal, which is to simply reallocate existing recovery time.

We hope this information is helpful. Please confirm as soon as possible if CN approves Amtrak's proposed schedules to reallocate recovery time on the Illini/Saluki and City of New Orleans services, effective June 5, 2017. If CN would care to propose a different reallocation of recovery time on these services, Amtrak would be happy to consider it.

Please contact me if you have any questions.

Sincerely,

Jason Maga
Senior Manager, Host Railroads

Cc: J. Blair - Amtrak
M. Azen - Amtrak

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EXHIBIT 2

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Southern Region
Scott Kuxmann
Manager Passenger Operations

Office 708 332 4516
Cell 708 990 8486
17641 Ashland Ave
Homewood Illinois
60430-1345

August 18, 2017

Jason Maga
Senior Manager, Host Railroads
Amtrak
60 Massachusetts Avenue, NE
Washington, DC 20002

Dear Jason:

This is further follow up on the issue of revised schedules for the City of New Orleans and Illini/Saluki services.

On February 13, 2017, Michael Azen, Amtrak's Senior Scheduling Specialist, sent me proposed schedule changes to redistribute recovery time in the schedules for these services in order to improve the All-Stations On Time Performance ("ASOTP"). I responded on February 24, 2017, and requested that Amtrak provide, in accordance with Section 3.2(D) of the CN/Amtrak Operating Agreement, the "information necessary to permit" CN to analyze Amtrak's proposed schedule changes. In particular, CN asked Amtrak to provide information and analyses concerning Amtrak's determination of the location and amount of recovery time proposed, the adequacy of pure run time in the proposed schedule, and the likely effect of the proposed schedule on Amtrak's proposed ASOTP metric. Your response on April 3, 2017 noted that Amtrak had undertaken to spread recovery time because "the current schedules for the City of New Orleans and Illini/Saluki services have a large share of recovery time between the last stations." However, Amtrak provided no detailed explanation or back up for the schedules Amtrak proposed and no estimates of what effects they might have on Amtrak's proposed ASOTP metric. Further, Amtrak refused to provide CN's other requested information relating to insufficient pure run time and operating restrictions applicable to Amtrak's trains, as supposedly "not relevant to this proposal." Amtrak indicated that it would be willing to consider a proposal from CN with a "different reallocation of recovery time" for the Illini/Saluki and City of New Orleans services.

CN agrees with Amtrak that schedule adjustments would be necessary in order to meet Amtrak's ASOTP goals for the Illini/Saluki and City of New Orleans services. As indicated by my prior letter, however, for these two services, important issues other than the distribution of recovery time must be addressed in order to create reliable, achievable schedules in the interests of all stakeholders, including Amtrak's

passengers. These issues include (i) insufficient pure run time on some segments, (ii) insufficient recovery/miscellaneous time, and (iii) on the Illini/Saluki service, the fact that due to issues with Amtrak's Horizon/Amfleet equipment speed restrictions are necessary to ensure their safe operation.

Therefore, in response to Amtrak's proposal, CN has taken the time and expended the resources necessary to address comprehensively these interconnected issues, beginning with the four trains in the Illini/Saluki service. The resulting proposed schedules for those four trains are attached, along with a breakdown of essential components, as discussed below. With these modest changes, service would substantially improve. CN proposes to undertake a similarly comprehensive analysis and revision of the schedules for the two City of New Orleans trains, if Amtrak is open to working with CN on such a revision. CN expects that substantial improvements in service can likewise be achieved for the City of New Orleans trains using such an approach.

It is quite clear, however, that moving additional recovery time prior to interim stations will increase Amtrak idling at those stations because that recovery time will not always be needed. As a result, Amtrak will block CN's lines for longer periods, resulting in increased freight delay costs. This inherent problem with spreading recovery time underscores one of the advantages of backloaded recovery time in Amtrak schedules. As you know, CN has asserted that Amtrak should compensate CN for incremental freight delay costs due to Amtrak's passenger operations on CN's lines.

To assist Amtrak's own analysis and understanding of CN's proposed schedules, I have expanded the schedule skeleton to show its individual components and included a separate table that compares the proposed schedules to the existing schedules. Please note the following key points concerning the development of the schedules:

- The changes to pure run time are based on calculations from CN's Train Performance Calculator, using 1 P42 locomotive and 7 Horizon class cars, with minor rounding (up and down) to account for the fact that the run times between stations are not always whole minutes.

- The amount and location of the recovery time reflect the following: (i) a 5% buffer was applied to all segments to account for the fact that the TPC's theoretical minimum run time is rarely achieved in real-world operating conditions, (ii) a 4% buffer was added roughly every 150 miles to account for temporary slow orders and track outages that

occur as part of general maintenance, (iii) a crossover allowance was applied in segments in which a train is typically expected to cross over between main lines, (iv) an allowance was added on a segment-by-segment basis for train meets, and (v) minor additional adjustments were made as necessary to help trains more reliably achieve 80% ASOTP.

- The amount and location of the miscellaneous time are based on two components: (i) a five-minute allowance was provided for meets with opposing Amtrak trains, and (ii) added time was provided, on a selected segment-by-segment basis, to account for the slower operating speeds required for Amtrak's Horizon/Amfleet coaches. (These slower speeds were calculated using CN's TPC and added to the schedule as whole minutes.) Isolating the added time for the Horizon/Amfleet equipment speed restriction (see the "Horizon/Amfleet Adjustment" column) should allow for the easy adjustment of these schedules if and when the need for these speed restrictions is removed.

We hope these revised schedules are acceptable to Amtrak and that you will agree to work with us on a similar comprehensive review of and revision to the schedules for the City of New Orleans trains. Please let me know if you have any questions and how you would like to proceed.

Sincerely,



Scott Kuxmann

Train 390 - CN/Amtrak ASOTP Proposals
Schedule Skeleton Comparison

Current Schedule

Station	PRT	Recovery Minutes	Misc. Adjust.	Dwell Minutes	Arrive	Depart
Carbondale,IL **CT**						7:30 AM
Du Quoin, IL	20	0		1	7:50 AM	7:51 AM
Centralia, IL	31	0		1	8:22 AM	8:23 AM
Effingham, IL	43	0		1	9:06 AM	9:07 AM
Mattoon, IL (Charleston)	23	0		1	9:30 AM	9:31 AM
XTI - Tolono	27		5		10:03 AM	10:03 AM
Champaign-Urbana, IL	8	0		3	10:11 AM	10:14 AM
Rantoul, IL	12	0		1	10:26 AM	10:27 AM
Gilman, IL	25	0		1	10:52 AM	10:53 AM
Kankakee, IL	21	0		1	11:14 AM	11:15 AM
Homewood, IL	27	0		2	11:42 AM	11:44 AM
XCS - 16th Street	28	26			12:38 PM	12:38 PM
Chicago, IL **CT**	17	0	5		1:00 PM	
	Total Pure Run	Total Recovery Minutes	Total Misc. Adj.	Total Dwell	Total Schedule Time	
	282	**26**	**10**	**12**	**330**	

CN proposal - with crossing adjustment

PRT Components			**Recovery Components**					**Misc. Components**					
MRT from TPC	Adj	PRT	5% OPR	4% TSO	Crossover Allowance	Freight Meets	Recovery Minutes	Horizon/Amfleet Adjustment	Amtrak Meets	Misc. Adjust	Dwell Minutes	Arrive	Depart
													7:30 AM
20.6	0.4	21	1				1				1	7:52 AM	7:53 AM
33.0	0.0	33	2				2				1	8:28 AM	8:29 AM
47.4	-0.4	47	2				2	3		3	1	9:21 AM	9:22 AM
22.6	0.4	23	1				1	4		4	1	9:50 AM	9:51 AM
30.7	0.3	31	1				1	1		1		10:24 AM	10:24 AM
8.7	0.3	9									3	10:33 AM	10:36 AM
13.4	-0.4	13	1	7			8	1		1	1	10:58 AM	10:59 AM
26.7	0.3	27	1				1	1	5	6	1	11:33 AM	11:34 AM
21.7	0.3	22	1				1	1		1	1	11:58 AM	11:59 AM
27.7	0.3	28	1				1	1		1	2	12:29 PM	12:31 PM
27.0	0.0	27	1	5	2	14	22					1:20 PM	1:20 PM
11.1	-0.1	11	1				1					1:32 PM	
Total MRT from TPC	Total Adj	Total PRT	Total OPR	Total TSO	Total Crossover	Total Freight Meets	Total Recovery Minutes	Total Horizon/Amfleet Adjustment	Total Misc. Adj.	Total Misc. Adj.	Total Dwell	Total Schedule Time	
290.6	**1.4**	**292**	**13**	**12**	**2**	**14**	**41**	**12**	**5**	**17**	**12**	**362**	
Totals w/o adjustment for Amtrak equipmen	**290.6**	**1.4**	**292**	**13**	**12**	**2**	**14**	**41**	**0**	**5**	**5**	**12**	**350**

Change between current schedule and CN proposal

PRT	Recovery Minutes	Misc. Adjust.	Dwell Minutes	Arrive	Depart
					0
1	1	0	0	2	2
2	2	0	0	6	6
4	2	3	0	15	15
0	1	4	0	20	20
4	1	-4	0	21	21
1	0	0	0	22	22
1	8	1	0	32	32
2	1	6	0	41	41
1	1	1	0	44	44
1	1	1	0	47	47
-1	-4	0	0	42	42
-6	1	-5	0	32	0
Total PRT change	Total Recovery change	Total Misc. change	Total Dwell change	Total Schedule change	
10	**15**	**7**	**0**	**32**	
10	**15**	**-5**	**0.0**	**20**	

Train 391 - CN/Amtrak ASOTP Proposals
Schedule Skeleton Comparison

Current Schedule

Station	PRT	Recovery Minutes	Misc. Adjust.	Dwell Minutes	Arrive	Depart
Chicago, IL						8:15 AM
XCS - 16th Street	13				8:28 AM	8:28 AM
Homewood, IL	26	0		2	8:54 AM	8:56 AM
Kankakee, IL	25	0		1	9:21 AM	9:22 AM
Gilman, IL	21	0		1	9:43 AM	9:44 AM
Rantoul, IL	25	0		1	10:09 AM	10:10 AM
Champaign-Urbana, IL	12	0		3	10:22 AM	10:25 AM
XTI - Tolono	10		5		10:40 AM	10:40 AM
Mattoon, IL	24	0		1	11:04 AM	11:05 AM
Effingham, IL	23	0		1	11:28 AM	11:29 AM
Centralia, IL	46	0		1	12:15 PM	12:16 PM
Du Quoin, IL	32	0		1	12:48 PM	12:49 PM
Carbondale, IL	21	26	9		1:45 PM	
	Total Pure Run	Total Recovery Minutes	Total Misc. Adj.	Total Dwell	Total Schedule Time	
	278	**26**	**14**	**12**	**330**	

CN proposal - with crossing adjustment

PRT Components			Recovery Components					Misc. Components					
MRT from TPC	Adj	PRT	5% OPR	4% TSO	Crossover Allowance	Freight Meets	Recovery Minutes	Horizon/Amfleet Adjustment	Amtrak Meets	Misc. Adjust	Dwell Minutes	Arrive	Depart
													8:15 AM
10.9	2.1	13										8:28 AM	8:28 AM
27.4	-0.4	27	2				2				2	8:57 AM	8:59 AM
27.4	-0.4	27	2				2	1		1	1	9:29 AM	9:30 AM
21.8	0.2	22	1			7	8				1	10:00 AM	10:01 AM
26.8	0.2	27	1				1	1		1	1	10:30 AM	10:31 AM
13.5	-0.5	13	1		2		3	1	5	6	3	10:53 AM	10:56 AM
8.6	0.4	9		5			5	1		1		11:11 AM	11:11 AM
29.0	0.0	29	1				1	2		2	1	11:43 AM	11:44 AM
22.6	0.4	23	1			7	8	3		3	1	12:18 PM	12:19 PM
47.2	-0.2	47	3				3	3		3	1	1:12 PM	1:13 PM
33.6	0.4	34	1				1				1	1:48 PM	1:49 PM
20.4	-0.4	20	2	6			8					2:17 PM	
Total MRT from TPC	Total Adj	Total PRT	Total OPR	Total TSO	Total Crossover	Total Freight Meets	Total Recovery Minutes	Total Horizon/Amfleet Adjustment	Total Misc. Adj.	Total Misc. Adj.	Total Dwell	Total Schedule Time	
289.2	**1.8**	**291**	**15**	**11**	**2**	**14**	**42**	**12**	**5**	**17**	**12**	**362**	
289.2	**1.8**	**291**	**15**	**11**	**2**	**14**	**42**	**0**	**5**	**5**	**12**	**350**	

Totals w/o adjustment for Amtrak equipmen

Change between current schedule and CN proposal

PRT	Recovery Minutes	Misc. Adjust.	Dwell Minutes	Arrive	Depart
					0
0	0	0	0	0	0
1	2	0	0	3	3
2	2	1	0	8	8
1	8	0	0	17	17
2	1	1	0	21	21
1	3	6	0	31	31
-1	5	-4	0	31	31
5	1	2	0	39	39
0	8	3	0	50	50
1	3	3	0	57	57
2	1	0	0	60	60
-1	-18	-9	0	32	0
Total PRT change	Total Recovery change	Total Misc. change	Total Dwell change	Total Schedule change	
13	**16**	**3**	**0**	**32**	
13	**16**	**-9**	**0.0**	**20**	

Train 392 - CN/Amtrak ASOTP Proposals
Schedule Skeleton Comparison

Current Schedule

Station	PRT	Recovery Minutes	Misc. Adjust.	Dwell Minutes	Arrive	Depart
Carbondale,IL **CT**						4:15 PM
Du Quoin, IL	20	0		1	4:35 PM	4:36 PM
Centralia, IL	31	0		1	5:07 PM	5:08 PM
Effingham, IL	43	0		1	5:51 PM	5:52 PM
Mattoon, IL (Charleston)	23	0		1	6:15 PM	6:16 PM
XTI - Tolono	27		5		6:48 PM	6:48 PM
Champaign-Urbana, IL	8	0		3	6:56 PM	6:59 PM
Rantoul, IL	12	0		1	7:11 PM	7:12 PM
Gilman, IL	25	0		1	7:37 PM	7:38 PM
Kankakee, IL	21	0		1	7:59 PM	8:00 PM
Homewood, IL	27	0		2	8:27 PM	8:29 PM
XCS - 16th Street	28	26			9:23 PM	9:23 PM
Chicago, IL **CT**	17	0	5		9:45 PM	
	Total Pure Run	Total Recovery Minutes	Total Misc. Adj.	Total Dwell	Total Schedule Time	
	282	**26**	**10**	**12**	**330**	

CN proposal - with crossing adjustment

PRT Components			**Recovery Components**					**Misc. Components**					
MRT from TPC	Adj	PRT	5% OPR	4% TSO	OTP Adjustment	Freight Meets	Recovery Minutes	Horizon/Amfleet Adjustment	Amtrak Meets	Misc. Adjust	Dwell Minutes	Arrive	Depart
													4:15 PM
20.6	0.4	21	1				1				1	4:37 PM	4:38 PM
33.0	0.0	33	2				2				1	5:13 PM	5:14 PM
47.4	-0.4	47	2				2	3		3	1	6:06 PM	6:07 PM
22.6	0.4	23	2				2	3		3	1	6:35 PM	6:36 PM
30.7	0.3	31	1			7	8	1		1		7:16 PM	7:16 PM
8.7	0.3	9			-5		-5	1	5	6	3	7:26 PM	7:29 PM
13.4	-0.4	13	1	7	-2		6	1		1	1	7:49 PM	7:50 PM
26.7	0.3	27	1		7		8	1		1	1	8:26 PM	8:27 PM
21.7	0.3	22	1		-3	7	5	1		1	1	8:55 PM	8:56 PM
27.7	0.3	28	1		2	7	10	1		1	2	9:35 PM	9:37 PM
27.0	0.0	27	1	5	2		8					10:12 PM	10:12 PM
11.1	-0.1	11	1		15		16					10:39 PM	
Total MRT from TPC	Total Adj	Total PRT	Total OPR	Total TSO	Total OTP Adjustment	Total Freight Meets	Total Recovery Minutes	Total Horizon/Amfleet Adjustment	Total Misc. Adj.	Total Misc. Adj.	Total Dwell	Total Schedule Time	
290.6	**1.4**	**292**	**14**	**12**	**16**	**21**	**63**	**12**	**5**	**17**	**12**	**384**	
Totals w/o adjustment for Amtrak equipmen	**290.6**	**1.4**	**292**	**14**	**12**	**16**	**21**	**63**	**0**	**5**	**5**	**12**	**372**

Change between current schedule and CN proposal

PRT	Recovery Minutes	Misc. Adjust.	Dwell Minutes	Arrive	Depart
					0
1	1	0	0	2	2
2	2	0	0	6	6
4	2	3	0	15	15
0	2	3	0	20	20
4	8	-4	0	28	28
1	-5	6	0	30	30
1	6	1	0	38	38
2	8	1	0	49	49
1	5	1	0	56	56
1	10	1	0	68	68
-1	-18	0	0	49	49
-6	16	-5	0	54	0
Total PRT change	Total Recovery change	Total Misc. change	Total Dwell change	Total Schedule change	
10	**37**	**7**	**0**	**54**	
10	**37**	**-5**	**0.0**	**42**	

Train 393 - CN/Amtrak ASOTP Proposals
Schedule Skeleton Comparison

Current Schedule

Station	PRT	Recovery Minutes	Misc. Adjust.	Dwell Minutes	Arrive	Depart
Chicago, IL						4:05 PM
XCS - 16th Street	13				4:18 PM	4:18 PM
Homewood, IL	26	0		2	4:44 PM	4:46 PM
Kankakee, IL	25	0		1	5:11 PM	5:12 PM
Gilman, IL	21	0		1	5:33 PM	5:34 PM
Rantoul, IL	25	0		1	5:59 PM	6:00 PM
Champaign-Urbana, IL	12	0		3	6:12 PM	6:15 PM
XTI - Tolono	10		5		6:30 PM	6:30 PM
Mattoon, IL	24	0		1	6:54 PM	6:55 PM
Effingham, IL	23	0		1	7:18 PM	7:19 PM
Centralia, IL	46	0		1	8:05 PM	8:06 PM
Du Quoin, IL	32	0		1	8:38 PM	8:39 PM
Carbondale, IL	21	26	9		9:35 PM	
	Total Pure Run	Total Recovery Minutes	Total Misc. Adj.	Total Dwell	Total Schedule Time	
	278	**26**	**14**	**12**	**330**	

CN proposal - with crossing adjustment

PRT Components			Recovery Components					Misc. Components					
MRT from TPC	Adj	PRT	5% OPR	4% TSO	OTP Adjustment	Freight Meets	Recovery Minutes	Horizon/Amfleet Adjustment	Amtrak Meets	Misc. Adjust	Dwell Minutes	Arrive	Depart
													4:05 PM
10.9	2.1	13										4:18 PM	4:18 PM
27.4	-0.4	27	2				2				2	4:47 PM	4:49 PM
27.4	-0.4	27	2				2	1		1	1	5:19 PM	5:20 PM
21.8	0.2	22	1			7	8				1	5:50 PM	5:51 PM
26.8	0.2	27	1				1	1		1	1	6:20 PM	6:21 PM
13.5	-0.5	13	1		-2	7	6	1		1	3	6:41 PM	6:44 PM
8.6	0.4	9		5		-1	4	1	5	6		7:03 PM	7:03 PM
29.0	0.0	29	1		-1			2		2	1	7:34 PM	7:35 PM
22.6	0.4	23	1		5		6	3		3	1	8:07 PM	8:08 PM
47.2	-0.2	47	3		-5	7	5	3		3	1	9:03 PM	9:04 PM
33.6	0.4	34	1		3		4				1	9:42 PM	9:43 PM
20.4	-0.4	20	2	6	3		11					10:14 PM	
Total MRT from TPC	Total Adj	Total PRT	Total OPR	Total TSO	Total OTP Adjustment	Total Freight Meets	Total Recovery Minutes	Total Horizon/Amfleet Adjustment	Total Misc. Adj.	Total Misc. Adj.	Total Dwell	Total Schedule Time	
289.2	**1.8**	**291**	**15**	**11**	**3**	**20**	**49**	**12**	**5**	**17**	**12**	**369**	
Totals w/o adjustment for Amtrak equipmen	**289.2**	**1.8**	**291**	**15**	**11**	**3**	**20**	**49**	**0**	**5**	**5**	**12**	**357**

Change between current schedule and CN proposal

PRT	Recovery Minutes	Misc. Adjust.	Dwell Minutes	Arrive	Depart
					0
0	0	0	0	0	0
1	2	0	0	3	3
2	2	1	0	8	8
1	8	0	0	17	17
2	1	1	0	21	21
1	6	1	0	29	29
-1	4	1	0	33	33
5	0	2	0	40	40
0	6	3	0	49	49
1	5	3	0	58	58
2	4	0	0	64	64
-1	-15	-9	0	39	0
Total PRT change	Total Recovery change	Total Misc. change	Total Dwell change	Total Schedule change	
13	**23**	**3**	**0**	**39**	
13	**23**	**-9**	**0.0**	**27**	

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EXHIBIT 3

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PROPOSED SCHEDULE (AUGUST 2017): TPC Based, Frt & Amtrak Meets, etc (NO Crossing Shunt Speed Restrictions)

390 - CN Standards (337 minutes - Carbondale to Clark St)

DIRECTION: **Northbound**
FROM : **Carbondale, IL**
TO : **Chicago Union Station**

FREQUENCY : **DAILY**

MATERIEL / EQUIPMENT: **P42 - 7 Amfleet / Horizon**

1	P42 @		4250	H.P.
	Less HEP @	275 KW =	3881	H.P. (net)
	Weight	133 TONS =	133	TONS
7	**Amfleet / Horizon**	60 TONS =	420	TONS
		TOTAL WEIGHT OF TRAIN :	553	TONS
			7.02	**HP PER TON**

390 - CN Standards (337 minutes - Carbondale to Clark St)
Saluki

NOTES:
Based on typical consist: P42 - 7 Amfleet / Horizon
Excludes crossing shunt speed restrictions
Speeds updated for April 1, 2017 Timetables
No interlocking delay time but v-time included Kensington, Tolono, Kinmundy, Odin, Ashley

Subdivision	SUB Mileage	STATION			PUBLISHED SCHEDULE (correct) hrs:mins	CORRECT SCHEDULE Times hrs:mins	Stn-Stn MRT mins	ALLOWANCES 5% OPR mins	4% TSO mins	Other Adjust. mins	Adjusted Times mins	MEETS EN ROUTE Frt	Psg	STOPS EN ROUTE STATIONS	Mins	TOTALS Sub-T mins	Adjust. mins	TOTAL mins	NOTES
Centralia	**308.30**	**Carbondale Amtrak**	*Dep*		**7:30**	**7:30**	20.6	1.0								21.6	0.4	22.0	
Centralia	**288.40**	**Duquoin Amtrak**	*Arr*		7:52	7:52								**Duquoin Amtrak**	**1.0**				
			Dep	**S**	7:53	7:53	19.1	1.0								20.1	-0.1	20.0	
Centralia	**266.30**	**Ashley**	*Arr*		8:13	8:13													EVWRR Interlocking
		EVWRR Interlocking	*Dep*		8:13	8:13	13.9	0.7								14.6	0.4	15.0	0 min interlocking delay
Centralia	**252.40**	**Centralia Amtrak**	*Arr*		8:28	8:28								**Centralia Amtrak**	**1.0**				
			Dep	**S**	8:29	8:29	6.4	0.3								6.7	-0.7	6.0	
Champaign / Centralia	**247.20**	**Sandoval Jct**	*Arr*		8:35	8:35													
			Dep		8:35	8:35	2.8	0.1								2.9	0.1	3.0	
Champaign	**244.20**	**Odin**	*Arr*		8:38	8:38													CSX Interlocking
		CSX Interlocking	*Dep*		8:38	8:38	13.1	0.7								13.8	0.2	14.0	0 min interlocking delay
Champaign	**229.40**	**Kinmundy**	*Arr*		8:52	8:52													UP Interlocking
		UP Interlocking	*Dep*		8:52	8:52	12.2	0.6								12.8	0.2	13.0	0 min interlocking delay
Champaign	**214.80**	**Edgewood Jct**	*Arr*		9:05	9:05													
			Dep		9:05	9:05	12.9	0.6								13.5	-0.5	13.0	
Champaign	**199.23**	**Effingham Amtrak**	*Arr*		9:18	9:18								**Effingham Amtrak**	**1.0**				
			Dep	**S**	9:19	9:19	22.6	1.1								23.7	0.3	24.0	
Champaign	**172.43**	**Mattoon Amtrak**	*Arr*		9:43	9:43								**Mattoon Amtrak**	**1.0**				
			Dep	**S**	9:44	9:44	30.7	1.5								32.2	-0.2	32.0	
Champaign	**137.10**	**Tolono**	*Arr*		10:16	10:16													NS Interlocking
		NS Interlocking	*Dep*		10:16	10:16	8.7	0.4			**0.0**					9.1	-0.1	9.0	0 min interlocking delay
Champaign	**127.92**	**Champaign Amtrak**	*Arr*		**10:25**	10:25								**Champaign Amtrak**	**3.0**				
			Dep	**S**	**10:28**	10:28	4.3	0.2	6.7							11.2	-0.2	11.0	
Chicago / Champaign	**124.10**	**Leverett Jct**	*Arr*		10:39	10:39													
			Dep		10:39	10:39	9.1	0.5								9.6	0.4	10.0	
Chicago	**113.80**	**Rantoul Amtrak**	*Arr*		10:49	10:49								**Rantoul Amtrak**	**1.0**				
			Dep	**S**	10:50	10:50	26.7	1.3					**5.0 #391**			33.0	0.0	33.0	
Chicago	**82.15**	**Gilman Amtrak**	*Arr*		11:23	11:23								**Gilman Amtrak**	**1.0**				
			Dep	**S**	11:24	11:24	21.7	1.1								22.8	0.2	23.0	
Chicago	**55.86**	**Kankakee Amtrak**	*Arr*		11:47	11:47								**Kankakee Amtrak**	**1.0**				
			Dep	**S**	11:48	11:48	20.0	1.0								21.0	0.0	21.0	
Chicago	**31.60**	**Stuenkel**	*Arr*		12:09	12:09													
			Dep		12:09	12:09	7.7	0.4								8.1	-0.1	8.0	
Chicago	**23.52**	**Homewood Amtrak**	*Arr*		12:17	12:17								**Homewood Amtrak**	**2.0**				
			Dep	**S**	12:19	12:19	9.4	0.5				**14.0**	**2 Frt @ 7mins**			23.9	0.1	24.0	
Chicago	**14.50**	**Kensington**	*Arr*		12:43	12:43													Metra Interlocking
		Metra Interlocking	*Dep*		12:43	12:43	17.6	0.9	4.5	1.5	**0.0**					24.5	-0.5	24.0	0 min interlocking delay
Freeport	**2.12**	**Chicago - Clark Street**	*Arr*		**13:07**	13:07													Xover allowance (avg of 2):
			Dep		**13:07**	13:07	11.1	0.6	0.4							12.1	-0.1	12.0	2" @ 10 mph, 1"@ 25 mph
Chicago Terminal	**0.00**	**Chicago - Union Station**	*Arr*	**S**	13:19	13:19													
		TOTAL RUNNING Times:			**5:49**	**5:49**	290.6	14.5	11.6	1.5	**0.0**	14.0	5.0	0.0	12.0	337.3	-0.3	337.0	
		Carbondale to Clark Street (total minutes)			**337**		TRUE	5.0%	4.0%	27.7			19.0						

Carbondale to Clark Street (MRT) **279.5**

PROPOSED SCHEDULE (AUGUST 2017): TPC Based, Frt & Amtrak Meets, etc (NO Crossing Shunt Speed Restrictions)

391 - CN Standards (337 minutes - Clark St to Carbondale)

DIRECTION: **Southbound**
FROM : **Chicago Union Station**
TO : **Carbondale, IL**

FREQUENCY : **DAILY**

MATERIEL / EQUIPMENT: **P42 - 7 Amfleet / Horizon**

1	P42 @		4250	H.P.
	Less HEP @	275 KW =	3881	H.P. (net)
	Weight	133 TONS =	133	TONS
7	**Amfleet / Horizon**	60 TONS =	420	TONS
		TOTAL WEIGHT OF TRAIN :	553	TONS
			7.02	**HP PER TON**

391 - CN Standards (337 minutes - Clark St to Carbondale)
Saluki

NOTES:
Based on typical consist: P42 - 7 Amfleet / Horizon
Excludes crossing shunt speed restrictions
Speeds updated for April 1, 2017 Timetables
No interlocking delay time but v-time included Kensington, Tolono, Kinmundy, Odin, Ashley

Subdivision	SUB Mileage	STATION		PUBLISHED SCHEDULE (adjusted) hrs:mins		CORRECT SCHEDULE Times hrs:mins	Stn-Stn MRT mins	ALLOWANCES 5% OPR mins	4% TSO mins	Other Adjust. mins	Adjusted Times mins	MEETS EN ROUTE Frt	Psg	STOPS EN ROUTE STATIONS	Mins	TOTALS Sub-T mins	Adjust. mins	TOTAL mins	NOTES
Chicago Terminal	**0.00**	**Chicago - Union Station**	*Dep*		**8:15**	**8:15**	10.9	0.5			**2.0**					13.4	-0.4	13.0	Adjust to match Amtrak Clark St departure
Freeport	**2.12**	**Chicago - Clark Street**	*Arr*		**8:28**	8:28													
			Dep		**8:28**	8:28	17.9	0.9								18.8	0.2	19.0	
Chicago	**14.50**	**Kensington**	*Arr*		8:47	8:47													
		Metra Interlocking	*Dep*		8:47	8:47	9.5	0.5								10.0	0.0	10.0	Metra Interlocking 0 min interlocking delay
Chicago	**23.52**	**Homewood Amtrak**	*Arr*		8:57	8:57													
			Dep	**S**	8:59	8:59	7.6	0.4						**Homewood Amtrak**	**2.0**	8.0	0.0	8.0	
Chicago	**31.60**	**Stuenkel**	*Arr*		9:07	9:07													
			Dep		9:07	9:07	19.8	1.0								20.8	0.2	21.0	
Chicago	**55.86**	**Kankakee Amtrak**	*Arr*		9:28	9:28													
			Dep	**S**	9:29	9:29	21.8	1.1				**7.0**	**1 Frt @ 7mins**	**Kankakee Amtrak**	**1.0**	29.9	0.1	30.0	
Chicago	**82.45**	**Gilman Amtrak**	*Arr*		9:59	9:59													
			Dep	**S**	10:00	10:00	26.8	1.3						**Gilman Amtrak**	**1.0**	28.1	-0.1	28.0	
Chicago	**113.80**	**Rantoul Amtrak**	*Arr*		10:28	10:28													
			Dep	**S**	10:29	10:29	9.6	0.5					**5.0** **#390**	**Rantoul Amtrak**	**1.0**	15.1	-0.1	15.0	
Chicago / Champaign	**124.10**	**Leverett Jct**	*Arr*		10:44	10:44													
			Dep		10:44	10:44	3.9	0.2		1.5	**0.0**					5.6	0.4	6.0	Xover allowance (avg of 2): 2" @ 10 mph, 1"@ 25 mph
Champaign	**127.92**	**Champaign Amtrak**	*Arr*		**10:50**	10:50								**Champaign Amtrak**	**3.0**				
			Dep	**S**	**10:53**	10:53	8.6	0.4	5.5							14.5	-0.5	14.0	
Champaign	**137.10**	**Tolono**	*Arr*		11:07	11:07													
		NS Interlocking	*Dep*		11:07	11:07	29.0	1.5								30.5	-0.4	30.0	NS Interlocking 0 min interlocking delay
Champaign	**172.43**	**Mattoon Amtrak**	*Arr*		11:37	11:37								**Mattoon Amtrak**	**1.0**				
			Dep	**S**	11:38	11:38	22.6	1.1				**7.0**	**1 Frt @ 7mins**			30.7	0.3	31.0	
Champaign	**199.23**	**Effingham Amtrak**	*Arr*		12:09	12:09								**Effingham Amtrak**	**1.0**				
			Dep	**S**	12:10	12:10	13.3	0.7								14.0	0.0	14.0	
Champaign	**214.80**	**Edgewood Jct**	*Arr*		12:24	12:24													
			Dep		12:24	12:24	11.6	0.6								12.2	-0.2	12.0	
Champaign	**229.40**	**Kinmundy**	*Arr*		12:36	12:36													
		UP Interlocking	*Dep*		12:36	12:36	13.0	0.7								13.7	0.4	14.0	UP Interlocking 0 min interlocking delay
Champaign	**244.20**	**Odin**	*Arr*		12:50	12:50													
		CSX Interlocking	*Dep*		12:50	12:50	3.4	0.2								3.6	0.4	4.0	CSX Interlocking 0 min interlocking delay
Champaign / Centralia	**247.20**	**Sandoval Jct**	*Arr*		12:54	12:54													
			Dep		12:54	12:54	5.9	0.3								6.2	-0.2	6.0	
Centralia	**252.40**	**Centralia Amtrak**	*Arr*		13:00	13:00								**Centralia Amtrak**	**1.0**				
			Dep	**S**	13:01	13:01	14.4	0.7								15.1	-0.1	15.0	
Centralia	**266.30**	**Ashley**	*Arr*		13:16	13:16													
		EVWRR Interlocking	*Dep*		13:16	13:16	19.2	1.0								20.2	-0.2	20.0	EVWRR Interlocking 0 min interlocking delay
Centralia	**288.40**	**Duquoin Amtrak**	*Arr*		13:36	13:36								**Duquoin Amtrak**	**1.0**				
			Dep	**S**	13:37	13:37	20.4	1.0	6.1		**0.0**					27.5	0.5	28.0	
Centralia	**308.30**	**Carbondale Amtrak**	*Arr*	**S**	**14:05**	14:05													
	TOTAL RUNNING Times:				**5:50**	**5:50**	289.2	14.5	11.6	1.5	**2.0**	14.0	5.0	0.0	12.0	337.7	0.3	338.0	
	Clark Street to Carbondale (total minutes)				**337**		TRUE	5.0%	4.0%	27.5			19.0						

Clark Street to Carbondale (MRT) **278.3**

PROPOSED SCHEDULE (AUGUST 2017): TPC Based, Frt & Amtrak Meets, etc (NO Crossing Shunt Speed Restrictions)

392 - CN Standards (344 minutes - Carbondale to Clark St)

DIRECTION: **Northbound**
FROM : **Carbondale, IL**
TO : **Chicago Union Station**

FREQUENCY : **DAILY**

MATERIEL / EQUIPMENT: **P42 - 7 Amfleet / Horizon**

1	P42 @			4250 H.P.
	Less HEP @	275	KW =	3881 H.P. (net)
	Weight	133	TONS =	133 TONS
7	**Amfleet / Horizon**	60	TONS =	420 TONS
			TOTAL WEIGHT OF TRAIN :	553 TONS
				7.02 HP PER TON

392 - CN Standards (344 minutes - Carbondale to Clark St)
Illini

NOTES:
Based on typical consist: P42 - 7 Amfleet / Horizon
Excludes crossing shunt speed restrictions
Speeds updated for April 1, 2017 Timetables
No interlocking delay time but v-time included Kensington, Tolono, Kinmundy, Odin, Ashley

Subdivision	SUB Mileage	STATION		PUBLISHED SCHEDULE (adjusted) hrs:mins	CORRECT SCHEDULE Times hrs:mins	Stn-Stn MRT mins	ALLOWANCES 5% OPR mins	4% TSO mins	Other Adjust. mins	Adjusted Times mins	MEETS EN ROUTE Frt	Psg	STOPS EN ROUTE STATIONS	Mins	TOTALS Sub-T mins	Adjust. mins	TOTAL mins	NOTES
Centralia	**308.30**	**Carbondale Amtrak**	*Dep*	**16:15**	**16:15**	20.6	1.0								21.6	0.4	22.0	
Centralia	**288.40**	**Duquoin Amtrak**	*Arr*	16:37	16:37								**Duquoin Amtrak**	**1.0**				
			Dep	S 16:38	16:38	19.1	1.0								20.1	-0.1	20.0	
Centralia	**266.30**	**Ashley**	*Arr*	16:58	16:58													EVWRR Interlocking
		EVWRR Interlocking	*Dep*	16:58	16:58	13.9	0.7								14.6	0.4	15.0	0 min interlocking delay
Centralia	**252.40**	**Centralia Amtrak**	*Arr*	17:13	17:13								**Centralia Amtrak**	**1.0**				
			Dep	S 17:14	17:14	6.4	0.3								6.7	-0.7	6.0	
Champaign / Centralia	**247.20**	**Sandoval Jct**	*Arr*	17:20	17:20													
			Dep	17:20	17:20	2.8	0.1								2.9	0.1	3.0	
Champaign	**244.20**	**Odin**	*Arr*	17:23	17:23													CSX Interlocking
		CSX Interlocking	*Dep*	17:23	17:23	13.1	0.7								13.8	0.2	14.0	0 min interlocking delay
Champaign	**229.40**	**Kinmundy**	*Arr*	17:37	17:37													UP Interlocking
		UP Interlocking	*Dep*	17:37	17:37	12.2	0.6								12.8	0.2	13.0	0 min interlocking delay
Champaign	**214.80**	**Edgewood Jct**	*Arr*	17:50	17:50													
			Dep	17:50	17:50	12.9	0.6								13.5	-0.5	13.0	
Champaign	**199.23**	**Effingham Amtrak**	*Arr*	18:03	18:03								**Effingham Amtrak**	**1.0**				
			Dep	S 18:04	18:04	22.6	1.1								23.7	0.3	24.0	
Champaign	**172.43**	**Mattoon Amtrak**	*Arr*	18:28	18:28								**Mattoon Amtrak**	**1.0**				
			Dep	S 18:29	18:29	30.7	1.5				**7.0**	**1 Frt @ 7mins**			39.2	-0.2	39.0	
Champaign	**137.10**	**Tolono**	*Arr*	19:08	19:08													NS Interlocking
		NS Interlocking	*Dep*	19:08	19:08	8.7	0.4		-5.0	**0.0**		**5.0 #392**			9.1	-0.1	9.0	0 min interlocking delay
Champaign	**127.92**	**Champaign Amtrak**	*Arr*	**19:17**	19:17								**Champaign Amtrak**	**3.0**				OTP adjust Champaign
			Dep	S **19:20**	19:20	4.3	0.2	6.7	5.0						16.2	-0.2	16.0	OTP adjust
Chicago / Champaign	**124.10**	**Leverett Jct**	*Arr*	19:36	19:36													
			Dep	19:36	19:36	9.1	0.5		-6.0						3.6	0.4	4.0	OTP adjust Rantoul
Chicago	**113.80**	**Rantoul Amtrak**	*Arr*	19:40	19:40								**Rantoul Amtrak**	**1.0**				
			Dep	S 19:41	19:41	26.7	1.3		7.0						35.0	0.0	35.0	OTP adjust Gilman
Chicago	**82.15**	**Gilman Amtrak**	*Arr*	20:16	20:16								**Gilman Amtrak**	**1.0**				
			Dep	S 20:17	20:17	21.7	1.1		-3.0		**7.0**	**1 Frt @ 7mins**			26.8	0.2	27.0	OTP adjust Kankakee
Chicago	**55.86**	**Kankakee Amtrak**	*Arr*	20:44	20:44								**Kankakee Amtrak**	**1.0**				
			Dep	S 20:45	20:45	20.0	1.0		2.0						23.0	0.0	23.0	OTP adjust
Chicago	**31.60**	**Stuenkel**	*Arr*	21:08	21:08													
			Dep	21:08	21:08	7.7	0.4				**7.0**	**1 Frt @ 7mins**			15.1	-0.1	15.0	
Chicago	**23.52**	**Homewood Amtrak**	*Arr*	21:23	21:23								**Homewood Amtrak**	**2.0**				
			Dep	S 21:25	21:25	9.4	0.5								9.9	0.1	10.0	
Chicago	**14.50**	**Kensington**	*Arr*	21:35	21:35													Metra Interlocking
		Metra Interlocking	*Dep*	21:35	21:35	17.6	0.9	4.5	1.5						24.5	-0.5	24.0	0 min interlocking delay
Freeport	**2.12**	**Chicago - Clark Street**	*Arr*	**21:59**	21:59													Xover allowance (avg of 2):
			Dep	**21:59**	21:44	11.1	0.6	0.4		**15.0**					27.1	-0.1	27.0	2" @ 10 mph, 1"@ 25 mph
Chicago Terminal	**0.00**	**Chicago - Union Station**	*Arr*	S 22:26	22:11													Add 15" OTP Chicago
		TOTAL RUNNING Times:		**6:11**	**5:56**	290.6	14.5	11.6	1.5	**15.0**	21.0	5.0	0.0	12.0	359.3	-0.3	359.0	
		Carbondale to Clark Street (total minutes)		**344**		TRUE	5.0%	4.0%	27.7			26.0						

Carbondale to Clark Street (MRT) **279.5**

PROPOSED SCHEDULE (AUGUST 2017): TPC Based, Frt & Amtrak Meets, etc (NO Crossing Shunt Speed Restrictions)

393 - CN Standards (344 minutes - Clark St to Carbondale)

DIRECTION: **Southbound**
FROM : **Chicago Union Station**
TO : **Carbondale, IL**

FREQUENCY : **DAILY**

MATERIEL / EQUIPMENT: **P42 - 7 Amfleet / Horizon**

1	P42 @		4250	H.P.
	Less HEP @	275 KW =	3881	H.P. (net)
	Weight	133 TONS =	133	TONS
7	**Amfleet / Horizon**	60 TONS =	420	TONS
		TOTAL WEIGHT OF TRAIN :	553	TONS
			7.02	**HP PER TON**

393 - CN Standards (344 minutes - Clark St to Carbondale)
Illini

NOTES:
Based on typical consist: P42 - 7 Amfleet / Horizon
Excludes crossing shunt speed restrictions
Speeds updated for April 1, 2017 Timetables
No interlocking delay time but v-time included Kensington, Tolono, Kinmundy, Odin, Ashley

Subdivision	SUB Mileage	STATION			PUBLISHED SCHEDULE (adjusted) hrs:mins	CORRECT SCHEDULE Times hrs:mins	Stn-Stn MRT mins	ALLOWANCES 5% OPR mins	4% TSO mins	Other Adjust. mins	Adjusted Times mins	MEETS EN ROUTE Frt	Psg	STOPS EN ROUTE STATIONS	Mins	TOTALS Sub-T mins	Adjust. mins	TOTAL mins	NOTES
Chicago Terminal	**0.00**	**Chicago - Union Station**	*Dep*		**16:05**	**16:05**	10.9	0.5			**2.0**					13.4	-0.4	13.0	Adjust to match Amtrak Clark St departure
Freeport	**2.12**	**Chicago - Clark Street**	*Arr*		**16:18**	16:18													
			Dep		**16:18**	16:18	17.9	0.9								18.8	0.2	19.0	
Chicago	**14.50**	**Kensington**	*Arr*		16:37	16:37													Metra Interlocking
		Metra Interlocking	*Dep*		16:37	16:37	9.5	0.5								10.0	0.0	10.0	0 min interlocking delay
Chicago	**23.52**	**Homewood Amtrak**	*Arr*		16:47	16:47								**Homewood Amtrak**	**2.0**				
			Dep	**S**	16:49	16:49	7.6	0.4								8.0	0.0	8.0	
Chicago	**31.60**	**Stuenkel**	*Arr*		16:57	16:57													
			Dep		16:57	16:57	19.8	1.0								20.8	0.2	21.0	
Chicago	**55.86**	**Kankakee Amtrak**	*Arr*		17:18	17:18								**Kankakee Amtrak**	**1.0**				
			Dep	**S**	17:19	17:19	21.8	1.1				**7.0**	**1 Frt @ 7mins**			29.9	0.1	30.0	
Chicago	**82.45**	**Gilman Amtrak**	*Arr*		17:49	17:49								**Gilman Amtrak**	**1.0**				
			Dep	**S**	17:50	17:50	26.8	1.3								28.1	-0.1	28.0	
Chicago	**113.80**	**Rantoul Amtrak**	*Arr*		18:18	18:18								**Rantoul Amtrak**	**1.0**				
			Dep	**S**	18:19	18:19	9.6	0.5				**7.0**	**1 Frt @ 7mins**			17.1	-0.1	17.0	
Chicago / Champaign	**124.10**	**Leverett Jct**	*Arr*		18:36	18:36													Xover allowance (avg of 2):
			Dep		18:36	18:36	3.9	0.2		-2.5	**0.0**					1.6	0.4	2.0	2" @ 10 mph, 1"@ 25 mph - 4" OTP adjust Champaign
Champaign	**127.92**	**Champaign Amtrak**	*Arr*		**18:38**	18:38								**Champaign Amtrak**	**3.0**				
			Dep	**S**	**18:41**	18:41	8.6	0.4	5.5	4.0						18.5	-0.5	18.0	OTP adjust
Champaign	**137.10**	**Tolono**	*Arr*		18:59	18:59													NS Interlocking
		NS Interlocking	*Dep*		18:59	18:59	29.0	1.5		-6.0			**5.0 #392**			29.5	-0.4	29.0	0 min interlocking delay OTP adjust Mattoon
Champaign	**172.43**	**Mattoon Amtrak**	*Arr*		19:28	19:28								**Mattoon Amtrak**	**1.0**				
			Dep	**S**	19:29	19:29	22.6	1.1		5.0						28.7	0.3	29.0	OTP adjust Effingham
Champaign	**199.23**	**Effingham Amtrak**	*Arr*		19:58	19:58								**Effingham Amtrak**	**1.0**				
			Dep	**S**	19:59	19:59	13.3	0.7		1.0		**7.0**	**1 Frt @ 7mins**			22.0	0.0	22.0	OTP adjust
Champaign	**214.80**	**Edgewood Jct**	*Arr*		20:21	20:21													
			Dep		20:21	20:21	11.6	0.6								12.2	-0.2	12.0	
Champaign	**229.40**	**Kinmundy**	*Arr*		20:33	20:33													UP Interlocking
		UP Interlocking	*Dep*		20:33	20:33	13.0	0.7								13.7	0.4	14.0	0 min interlocking delay
Champaign	**244.20**	**Odin**	*Arr*		20:47	20:47													CSX Interlocking
		CSX Interlocking	*Dep*		20:47	20:47	3.4	0.2								3.6	0.4	4.0	0 min interlocking delay
Champaign / Centralia	**247.20**	**Sandoval Jct**	*Arr*		20:51	20:51													
			Dep		20:51	20:51	5.9	0.3		-6.0						0.2	-0.2	0.0	OTP adjust Centralia
Centralia	**252.40**	**Centralia Amtrak**	*Arr*		20:51	20:51								**Centralia Amtrak**	**1.0**				
			Dep	**S**	20:52	20:52	14.4	0.7		6.0						21.1	-0.1	21.0	OTP adjust
Centralia	**266.30**	**Ashley**	*Arr*		21:13	21:13													EVWRR Interlocking
		EVWRR Interlocking	*Dep*		21:13	21:13	19.2	1.0		-3.0						17.2	-0.2	17.0	0 min interlocking delay OTP adjust Duquoin
Centralia	**288.40**	**Duquoin Amtrak**	*Arr*		21:30	21:30								**Duquoin Amtrak**	**1.0**				
			Dep	**S**	21:31	21:31	20.4	1.0	6.1	3.0	**0.0**					30.5	0.5	31.0	OTP adjust
Centralia	**308.30**	**Carbondale Amtrak**	*Arr*	**S**	**22:02**	22:02													
		TOTAL RUNNING Times:			**5:57**	**5:57**	289.2	14.5	11.6	1.5	**2.0**	21.0	5.0	0.0	12.0	344.7	0.3	345.0	
		Clark Street to Carbondale (total minutes)			**344**		TRUE	5.0%	4.0%	27.5		26.0							

Clark Street to Carbondale (MRT) **278.3**

EXHIBIT 4

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PROPOSED SCHEDULE (AUGUST 2017): TPC Based, Frt & Amtrak Meets, etc (WITH Crossing Shunt Speed Restrictions)

390 - CN Standards (350 minutes - Carbondale to Clark St)

DIRECTION: **Northbound**
FROM : **Carbondale, IL**
TO : **Chicago Union Station**

FREQUENCY: **DAILY**

EQUIPMENT: **P42 - 7 Amfleet / Horizon**

1	P42 @			4250 H.P.
	Less HEP @	275 KW =		3881 H.P. (net)
	Weight	133 TONS =		133 TONS
7	**Amfleet / Horizon**	60 TONS =		420 TONS
		TOTAL WEIGHT OF TRAIN :		553 TONS
				7.02 HP PER TON

390 - CN Standards (350 minutes - Carbondale to Clark St)
Saluki

NOTES:
- **Based on typical consist: P42 - 7 Amfleet / Horizon**
- **Includes crossing shunt speed restrictions (non-Superliner equipment)**
- Speeds updated for April 1, 2017 Timetables
- No interlocking delay time but v-time included Kensington, Tolono, Kinmundy, Odin, Ashley

Subdivision	SUB Mileage	STATION			PUBLISHED SCHEDULE (correct) hrs:mins	CORRECT SCHEDULE Times hrs:mins	Stn-Stn MRT mins	ALLOWANCES 5% OPR mins	4% TSO mins	Other Adjust. mins	Adjusted Times mins	MEETS EN ROUTE Frt	Psg	STOPS EN ROUTE STATIONS	Mins	TOTALS Sub-T mins	Adjust. mins	TOTAL mins	NOTES
Centralia	**308.30**	**Carbondale Amtrak**	*Dep*		**7:30**	**7:30**	20.6	1.0								21.6	0.4	22.0	
Centralia	**288.40**	**Duquoin Amtrak**	*Arr*		7:52	7:52													
			Dep	S	7:53	7:53	19.1	1.0						**Duquoin Amtrak**	**1.0**	20.1	-0.1	20.0	
Centralia	**266.30**	**Ashley**	*Arr*		8:13	8:13													EVWRR Interlocking
		EVWRR Interlocking	*Dep*		8:13	8:13	13.9	0.7								14.6	0.4	15.0	0 min interlocking delay
Centralia	**252.40**	**Centralia Amtrak**	*Arr*		8:28	8:28													
			Dep	S	8:29	8:29	6.4	0.3						**Centralia Amtrak**	**1.0**	6.7	-0.7	6.0	
Champaign / Centralia	**247.20**	**Sandoval Jct**	*Arr*		8:35	8:35													
			Dep		8:35	8:35	3.0	0.2								3.2	-0.2	3.0	
Champaign	**244.20**	**Odin**	*Arr*		8:38	8:38													CSX Interlocking
		CSX Interlocking	*Dep*		8:38	8:38	13.6	0.7								14.3	-0.3	14.0	0 min interlocking delay
Champaign	**229.40**	**Kinmundy**	*Arr*		8:52	8:52													UP Interlocking
		UP Interlocking	*Dep*		8:52	8:52	13.3	0.7								14.0	0.0	14.0	0 min interlocking delay
Champaign	**214.80**	**Edgewood Jct**	*Arr*		9:06	9:06													
			Dep		9:06	9:06	14.4	0.7								15.1	-0.1	15.0	
Champaign	**199.23**	**Effingham Amtrak**	*Arr*		9:21	9:21													
			Dep	S	9:22	9:22	26.0	1.3						**Effingham Amtrak**	**1.0**	27.3	0.7	28.0	
Champaign	**172.43**	**Mattoon Amtrak**	*Arr*		9:50	9:50													
			Dep	S	9:51	9:51	31.9	1.6						**Mattoon Amtrak**	**1.0**	33.5	-0.5	33.0	
Champaign	**137.10**	**Tolono**	*Arr*		10:24	10:24													NS Interlocking
		NS Interlocking	*Dep*		10:24	10:24	9.0	0.5			**0.0**					9.5	-0.4	9.0	0 min interlocking delay
Champaign	**127.92**	**Champaign Amtrak**	*Arr*		**10:33**	10:33								**Champaign Amtrak**	**3.0**				
			Dep	S	**10:36**	10:36	4.3	0.2	7.0							11.5	0.5	12.0	
Chicago / Champaign	**124.10**	**Leverett Jct**	*Arr*		10:48	10:48													
			Dep		10:48	10:48	9.4	0.5								9.9	0.1	10.0	
Chicago	**113.80**	**Rantoul Amtrak**	*Arr*		10:58	10:58								**Rantoul Amtrak**	**1.0**				
			Dep	S	10:59	10:59	27.7	1.4					**5.0 #391**			34.1	-0.1	34.0	
Chicago	**82.15**	**Gilman Amtrak**	*Arr*		11:33	11:33								**Gilman Amtrak**	**1.0**				
			Dep	S	11:34	11:34	22.4	1.1								23.5	0.5	24.0	
Chicago	**55.86**	**Kankakee Amtrak**	*Arr*		11:58	11:58								**Kankakee Amtrak**	**1.0**				
			Dep	S	11:59	11:59	20.8	1.0								21.8	0.2	22.0	
Chicago	**31.60**	**Stuenkel**	*Arr*		12:21	12:21													
			Dep		12:21	12:21	7.8	0.4								8.2	-0.2	8.0	
Chicago	**23.52**	**Homewood Amtrak**	*Arr*		12:29	12:29								**Homewood Amtrak**	**2.0**				
			Dep	S	12:31	12:31	9.4	0.5				**14.0 2 Frt @ 7mins**				23.9	0.1	24.0	
Chicago	**14.50**	**Kensington**	*Arr*		12:55	12:55													Metra Interlocking
		Metra Interlocking	*Dep*		12:55	12:55	17.6	0.9	4.6	1.5	**0.0**					24.6	0.4	25.0	0 min interlocking delay
Freeport	**2.12**	**Chicago - Clark Street**	*Arr*		**13:20**	13:20													Xover allowance (avg of 2):
			Dep		**13:20**	13:20	11.1	0.6	0.4							12.1	-0.1	12.0	2" @ 10 mph, 1"@ 25 mph
Chicago Terminal	**0.00**	**Chicago - Union Station**	*Arr*	S	13:32	13:32													
		TOTAL RUNNING Times:			**6:02**	**6:02**	301.7	15.1	12.1	1.5	**0.0**	14.0	5.0	0.0	12.0	349.4	0.6	350.0	
		Carbondale to Clark Street (total minutes)			**350**		TRUE	5.0%	4.0%	28.7			19.0						

Carbondale to Clark Street (MRT) **290.6**

PROPOSED SCHEDULE (AUGUST 2017): TPC Based, Frt & Amtrak Meets, etc (WITH Crossing Shunt Speed Restrictions)

391 - CN Standards (349 minutes - Clark St to Carbondale)

DIRECTION: **Southbound**
FROM : **Chicago Union Station**
TO : **Carbondale, IL**

FREQUENCY: **DAILY**

EQUIPMENT: **P42 - 7 Amfleet / Horizon**

1	P42 @		4250	H.P.
	Less HEP @	275 KW =	3881	H.P. (net)
	Weight	133 TONS =	133	TONS
7	**Amfleet / Horizon**	60 TONS =	420	TONS
		TOTAL WEIGHT OF TRAIN :	553	TONS
			7.02	**HP PER TON**

391 - CN Standards (349 minutes - Clark St to Carbondale)
Saluki

NOTES:
- **Based on typical consist: P42 - 7 Amfleet / Horizon**
- **Includes crossing shunt speed restrictions (non-Superliner equipment)**
- Speeds updated for April 1, 2017 Timetables
- No interlocking delay time but v-time included Kensington, Tolono, Kinmundy, Odin, Ashley

Subdivision	SUB Mileage	STATION		PUBLISHED SCHEDULE (adjusted) hrs:mins	CORRECT SCHEDULE Times hrs:mins	Stn-Stn MRT mins	ALLOWANCES 5% OPR mins	4% TSO mins	Other Adjust. mins	Adjusted Times mins	MEETS EN ROUTE Frt	Psg	STOPS EN ROUTE STATIONS	Mins	TOTALS Sub-T mins	Adjust. mins	TOTAL mins	NOTES
Chicago Terminal	**0.00**	**Chicago - Union Station**																Adjust to match Amtrak
			Dep	**8:15**	**8:15**	10.9	0.5			**2.0**					13.4	-0.4	13.0	Clark St departure
Freeport	**2.12**	**Chicago - Clark Street**	*Arr*	**8:28**	8:28													
			Dep	**8:28**	8:28	17.9	0.9								18.8	0.2	19.0	
Chicago	**14.50**	**Kensington**	*Arr*	8:47	8:47													
		Metra Interlocking	*Dep*	8:47	8:47	9.5	0.5								10.0	0.0	10.0	Metra Interlocking 0 min interlocking delay
Chicago	**23.52**	**Homewood Amtrak**	*Arr*	8:57	8:57								**Homewood Amtrak**	**2.0**				
			Dep	**S** 8:59	8:59	7.6	0.4								8.0	0.0	8.0	
Chicago	**31.60**	**Stuenkel**	*Arr*	9:07	9:07													
			Dep	9:07	9:07	20.7	1.0								21.7	0.3	22.0	
Chicago	**55.86**	**Kankakee Amtrak**	*Arr*	9:29	9:29								**Kankakee Amtrak**	**1.0**				
			Dep	**S** 9:30	9:30	22.3	1.1				**7.0**	**1 Frt @ 7mins**			30.4	-0.4	30.0	
Chicago	**82.15**	**Gilman Amtrak**	*Arr*	10:00	10:00								**Gilman Amtrak**	**1.0**				
			Dep	**S** 10:01	10:01	27.9	1.4								29.3	-0.3	29.0	
Chicago	**113.80**	**Rantoul Amtrak**	*Arr*	10:30	10:30								**Rantoul Amtrak**	**1.0**				
			Dep	**S** 10:31	10:31	9.9	0.5					**5.0 #390**			15.4	0.6	16.0	
Chicago / Champaign	**124.10**	**Leverett Jct**	*Arr*	10:47	10:47													Xover allowance (avg of 2):
			Dep	10:47	10:47	3.9	0.2		1.5	**0.0**					5.6	0.4	6.0	2" @ 10 mph, 1"@ 25 mph
Champaign	**127.92**	**Champaign Amtrak**	*Arr*	**10:53**	10:53								**Champaign Amtrak**	**3.0**				
			Dep	**S 10:56**	10:56	8.9	0.4	5.6							14.9	0.1	15.0	
Champaign	**137.10**	**Tolono**	*Arr*	11:11	11:11													NS Interlocking
		NS Interlocking	*Dep*	11:11	11:11	30.4	1.5								31.9	0.1	32.0	0 min interlocking delay
Champaign	**172.43**	**Mattoon Amtrak**	*Arr*	11:43	11:43								**Mattoon Amtrak**	**1.0**				
			Dep	**S** 11:44	11:44	25.7	1.3				**7.0**	**1 Frt @ 7mins**			34.0	0.0	34.0	
Champaign	**199.23**	**Effingham Amtrak**	*Arr*	12:18	12:18								**Effingham Amtrak**	**1.0**				
			Dep	**S** 12:19	12:19	14.7	0.7								15.4	-0.4	15.0	
Champaign	**214.80**	**Edgewood Jct**	*Arr*	12:34	12:34													
			Dep	12:34	12:34	13.1	0.7								13.8	0.2	14.0	
Champaign	**229.40**	**Kinmundy**	*Arr*	12:48	12:48													UP Interlocking
		UP Interlocking	*Dep*	12:48	12:48	13.4	0.7								14.1	-0.1	14.0	0 min interlocking delay
Champaign	**244.20**	**Odin**	*Arr*	13:02	13:02													CSX Interlocking
		CSX Interlocking	*Dep*	13:02	13:02	3.5	0.2								3.7	0.3	4.0	0 min interlocking delay
Champaign / Centralia	**247.20**	**Sandoval Jct**	*Arr*	13:06	13:06													
			Dep	13:06	13:06	5.9	0.3								6.2	-0.2	6.0	
Centralia	**252.40**	**Centralia Amtrak**	*Arr*	13:12	13:12								**Centralia Amtrak**	**1.0**				
			Dep	**S** 13:13	13:13	14.4	0.7								15.1	-0.1	15.0	
Centralia	**266.30**	**Ashley**	*Arr*	13:28	13:28													EVWRR Interlocking
		EVWRR Interlocking	*Dep*	13:28	13:28	19.2	1.0								20.2	-0.2	20.0	0 min interlocking delay
Centralia	**288.40**	**Duquoin Amtrak**	*Arr*	13:48	13:48								**Duquoin Amtrak**	**1.0**				
			Dep	**S** 13:49	13:49	20.4	1.0	6.4		**0.0**					27.8	0.2	28.0	
Centralia	**308.30**	**Carbondale Amtrak**	*Arr*	**S 14:17**	14:17													
		TOTAL RUNNING Times:		**6:02**	**6:02**	300.2	15.0	12.0	1.5	**2.0**	14.0	5.0	0.0	12.0	349.7	0.3	350.0	
		Clark Street to Carbondale (total minutes)		**349**		TRUE	5.0%	4.0%	28.5			19.0						

Clark Street to Carbondale (MRT) **289.3**

PROPOSED SCHEDULE (AUGUST 2017): TPC Based, Frt & Amtrak Meets, etc (WITH Crossing Shunt Speed Restrictions)

392 - CN Standards (357 minutes - Carbondale to Clark St)

DIRECTION: **Northbound**
FROM : **Carbondale, IL**
TO : **Chicago Union Station**

FREQUENCY: **DAILY**

EQUIPMENT: **P42 - 7 Amfleet / Horizon**

1	P42 @			4250 H.P.
	Less HEP @	275	KW =	3881 H.P. (net)
	Weight	133	TONS =	133 TONS
7	**Amfleet / Horizon**	60	TONS =	420 TONS
			TOTAL WEIGHT OF TRAIN :	553 TONS
				7.02 HP PER TON

392 - CN Standards (357 minutes - Carbondale to Clark St)
Illini

NOTES:
Based on typical consist: P42 - 7 Amfleet / Horizon
Includes crossing shunt speed restrictions (non-Superliner equipment)
Speeds updated for April 1, 2017 Timetables
No interlocking delay time but v-time included Kensington, Tolono, Kinmundy, Odin, Ashley

Subdivision	SUB Mileage	STATION			PUBLISHED SCHEDULE (adjusted) hrs:mins	CORRECT SCHEDULE Times hrs:mins	Stn-Stn MRT mins	ALLOWANCES 5% OPR mins	4% TSO mins	Other Adjust. mins	Adjusted Times mins	MEETS EN ROUTE Frt	Psg	STOPS EN ROUTE STATIONS	Mins	TOTALS Sub-T mins	Adjust. mins	TOTAL mins	NOTES
Centralia	**308.30**	**Carbondale Amtrak**	*Dep*		**16:15**	**16:15**	20.6	1.0								21.6	0.4	22.0	
Centralia	**288.40**	**Duquoin Amtrak**	*Arr*		16:37	16:37								**Duquoin Amtrak**	**1.0**				
			Dep	**S**	16:38	16:38	19.1	1.0								20.1	-0.1	20.0	
Centralia	**266.30**	**Ashley**	*Arr*		16:58	16:58													EVWRR Interlocking
		EVWRR Interlocking	*Dep*		16:58	16:58	13.9	0.7								14.6	0.4	15.0	0 min interlocking delay
Centralia	**252.40**	**Centralia Amtrak**	*Arr*		17:13	17:13								**Centralia Amtrak**	**1.0**				
			Dep	**S**	17:14	17:14	6.4	0.3								6.7	-0.7	6.0	
Champaign / Centralia	**247.20**	**Sandoval Jct**	*Arr*		17:20	17:20													
			Dep		17:20	17:20	3.0	0.2								3.2	-0.2	3.0	
Champaign	**244.20**	**Odin**	*Arr*		17:23	17:23													CSX Interlocking
		CSX Interlocking	*Dep*		17:23	17:23	13.6	0.7								14.3	-0.3	14.0	0 min interlocking delay
Champaign	**229.40**	**Kinmundy**	*Arr*		17:37	17:37													UP Interlocking
		UP Interlocking	*Dep*		17:37	17:37	13.3	0.7								14.0	0.0	14.0	0 min interlocking delay
Champaign	**214.80**	**Edgewood Jct**	*Arr*		17:51	17:51													
			Dep		17:51	17:51	14.4	0.7								15.1	-0.1	15.0	
Champaign	**199.23**	**Effingham Amtrak**	*Arr*		18:06	18:06								**Effingham Amtrak**	**1.0**				
			Dep	**S**	18:07	18:07	26.0	1.3								27.3	0.7	28.0	
Champaign	**172.43**	**Mattoon Amtrak**	*Arr*		18:35	18:35								**Mattoon Amtrak**	**1.0**				
			Dep	**S**	18:36	18:36	31.9	1.6				**7.0**	**1 Frt @ 7mins**			40.5	-0.5	40.0	
Champaign	**137.10**	**Tolono**	*Arr*		19:16	19:16													NS Interlocking
		NS Interlocking	*Dep*		19:16	19:16	9.0	0.5		-5.0	**0.0**		**5.0 #392**			9.5	0.6	10.0	0 min interlocking delay OTP adjust Champaign
Champaign	**127.92**	**Champaign Amtrak**	*Arr*		**19:26**	19:26								**Champaign Amtrak**	**3.0**				
			Dep	**S**	**19:29**	19:29	4.3	0.2	7.0	5.0						16.5	0.5	17.0	OTP adjust
Chicago / Champaign	**124.10**	**Leverett Jct**	*Arr*		19:46	19:46													
			Dep		19:46	19:46	9.4	0.5		-6.0						3.9	-0.9	3.0	OTP adjust Rantoul
Chicago	**113.80**	**Rantoul Amtrak**	*Arr*		19:49	19:49								**Rantoul Amtrak**	**1.0**				
			Dep	**S**	19:50	19:50	27.7	1.4		7.0						36.1	-0.1	36.0	OTP adjust Gilman
Chicago	**82.15**	**Gilman Amtrak**	*Arr*		20:26	20:26								**Gilman Amtrak**	**1.0**				
			Dep	**S**	20:27	20:27	22.4	1.1		-3.0		**7.0**	**1 Frt @ 7mins**			27.5	0.5	28.0	OTP adjust Kankakee
Chicago	**55.86**	**Kankakee Amtrak**	*Arr*		20:55	20:55								**Kankakee Amtrak**	**1.0**				
			Dep	**S**	20:56	20:56	20.8	1.0		2.0						23.8	0.2	24.0	OTP adjust
Chicago	**31.60**	**Stuenkel**	*Arr*		21:20	21:20													
			Dep		21:20	21:20	7.8	0.4				**7.0**	**1 Frt @ 7mins**			15.2	-0.2	15.0	
Chicago	**23.52**	**Homewood Amtrak**	*Arr*		21:35	21:35								**Homewood Amtrak**	**2.0**				
			Dep	**S**	21:37	21:37	9.4	0.5								9.9	0.1	10.0	
Chicago	**14.50**	**Kensington**	*Arr*		21:47	21:47													Metra Interlocking
		Metra Interlocking	*Dep*		21:47	21:47	17.6	0.9	4.6	1.5						24.6	0.4	25.0	0 min interlocking delay
Freeport	**2.12**	**Chicago - Clark Street**	*Arr*		**22:12**	22:12													Xover allowance (avg of 2):
			Dep		**22:12**	21:57	11.1	0.6	0.4		**15.0**					27.1	-0.1	27.0	2" @ 10 mph, 1"@ 25 mph
Chicago Terminal	**0.00**	**Chicago - Union Station**	*Arr*	**S**	22:39	22:24													Add 15" OTP Chicago
		TOTAL RUNNING Times:			**6:24**	**6:09**	301.7	15.1	12.1	1.5	**15.0**	21.0	5.0	0.0	12.0	371.4	0.6	372.0	
		Carbondale to Clark Street (total minutes)			**357**		TRUE	5.0%	4.0%	28.7			26.0						

Carbondale to Clark Street (MRT) **290.6**

PROPOSED SCHEDULE (AUGUST 2017): TPC Based, Frt & Amtrak Meets, etc (WITH Crossing Shunt Speed Restrictions)

393 - CN Standards (356 minutes - Clark St to Carbondale)

DIRECTION: **Southbound**
FROM : **Chicago Union Station**
TO : **Carbondale, IL**

FREQUENCY: **DAILY**

EQUIPMENT: **P42 - 7 Amfleet / Horizon**

1	P42 @			4250 H.P.
	Less HEP @	275 KW =		3881 H.P. (net)
	Weight	133 TONS =		133 TONS
7	**Amfleet / Horizon**	60 TONS =		420 TONS
		TOTAL WEIGHT OF TRAIN :		553 TONS
				7.02 HP PER TON

393 - CN Standards (356 minutes - Clark St to Carbondale)

Illini

NOTES:

- **Based on typical consist: P42 - 7 Amfleet / Horizon**
- **Includes crossing shunt speed restrictions (non-Superliner equipment)**
- Speeds updated for April 1, 2017 Timetables
- No interlocking delay time but v-time included Kensington, Tolono, Kinmundy, Odin, Ashley

Subdivision	SUB Mileage	STATION			PUBLISHED SCHEDULE (adjusted) hrs:mins	CORRECT SCHEDULE Times hrs:mins	Stn-Stn MRT mins	ALLOWANCES 5% OPR mins	4% TSO mins	Other Adjust. mins	Adjusted Times mins	MEETS EN ROUTE Frt	Psg	STOPS EN ROUTE STATIONS	Mins	TOTALS Sub-T mins	Adjust. mins	TOTAL mins	NOTES
Chicago Terminal	**0.00**	**Chicago - Union Station**	*Dep*		**16:05**	**16:05**	10.9	0.5			**2.0**					13.4	-0.4	13.0	Adjust to match Amtrak Clark St departure
Freeport	**2.12**	**Chicago - Clark Street**	*Arr*		**16:18**	16:18													
			Dep		**16:18**	16:18	17.9	0.9								18.8	0.2	19.0	
Chicago	**14.50**	**Kensington**	*Arr*		16:37	16:37													Metra Interlocking
		Metra Interlocking	*Dep*		16:37	16:37	9.5	0.5								10.0	0.0	10.0	0 min interlocking delay
Chicago	**23.52**	**Homewood Amtrak**	*Arr*		16:47	16:47								**Homewood Amtrak**	**2.0**				
			Dep	**S**	16:49	16:49	7.6	0.4								8.0	0.0	8.0	
Chicago	**31.60**	**Stuenkel**	*Arr*		16:57	16:57													
			Dep		16:57	16:57	20.7	1.0								21.7	0.3	22.0	
Chicago	**55.86**	**Kankakee Amtrak**	*Arr*		17:19	17:19								**Kankakee Amtrak**	**1.0**				
			Dep	**S**	17:20	17:20	22.3	1.1				**7.0**	**1 Frt @ 7mins**			30.4	-0.4	30.0	
Chicago	**82.15**	**Gilman Amtrak**	*Arr*		17:50	17:50								**Gilman Amtrak**	**1.0**				
			Dep	**S**	17:51	17:51	27.9	1.4								29.3	-0.3	29.0	
Chicago	**113.80**	**Rantoul Amtrak**	*Arr*		18:20	18:20								**Rantoul Amtrak**	**1.0**				
			Dep	**S**	18:21	18:21	9.9	0.5				**7.0**	**1 Frt @ 7mins**			17.4	0.6	18.0	
Chicago / Champaign	**124.10**	**Leverett Jct**	*Arr*		18:39	18:39													Xover allowance (avg of 2):
			Dep		18:39	18:39	3.9	0.2		-2.5	**0.0**					1.6	0.4	2.0	2" @ 10 mph, 1"@ 25 mph - 4" OTP adjust Champaign
Champaign	**127.92**	**Champaign Amtrak**	*Arr*		**18:41**	18:41								**Champaign Amtrak**	**3.0**				
			Dep	**S**	**18:44**	18:44	8.9	0.4	5.6	4.0						18.9	0.1	19.0	OTP adjust
Champaign	**137.10**	**Tolono**	*Arr*		19:03	19:03													NS Interlocking
		NS Interlocking	*Dep*		19:03	19:03	30.4	1.5		-6.0			**5.0 #392**			30.9	0.1	31.0	0 min interlocking delay OTP adjust Mattoon
Champaign	**172.43**	**Mattoon Amtrak**	*Arr*		19:34	19:34								**Mattoon Amtrak**	**1.0**				
			Dep	**S**	19:35	19:35	25.7	1.3		5.0						32.0	0.0	32.0	OTP adjust Effingham
Champaign	**199.23**	**Effingham Amtrak**	*Arr*		20:07	20:07								**Effingham Amtrak**	**1.0**				
			Dep	**S**	20:08	20:08	14.7	0.7		1.0		**7.0**	**1 Frt @ 7mins**			23.4	-0.4	23.0	OTP adjust
Champaign	**214.80**	**Edgewood Jct**	*Arr*		20:31	20:31													
			Dep		20:31	20:31	13.1	0.7								13.8	0.2	14.0	
Champaign	**229.40**	**Kinmundy**	*Arr*		20:45	20:45													UP Interlocking
		UP Interlocking	*Dep*		20:45	20:45	13.4	0.7								14.1	-0.1	14.0	0 min interlocking delay
Champaign	**244.20**	**Odin**	*Arr*		20:59	20:59													CSX Interlocking
		CSX Interlocking	*Dep*		20:59	20:59	3.5	0.2								3.7	0.3	4.0	0 min interlocking delay
Champaign / Centralia	**247.20**	**Sandoval Jct**	*Arr*		21:03	21:03													
			Dep		21:03	21:03	5.9	0.3		-6.0						0.2	-0.2	0.0	OTP adjust Centralia
Centralia	**252.40**	**Centralia Amtrak**	*Arr*		21:03	21:03								**Centralia Amtrak**	**1.0**				
			Dep	**S**	21:04	21:04	14.4	0.7		6.0						21.1	-0.1	21.0	OTP adjust
Centralia	**266.30**	**Ashley**	*Arr*		21:25	21:25													EVWRR Interlocking
		EVWRR Interlocking	*Dep*		21:25	21:25	19.2	1.0		-3.0						17.2	-0.2	17.0	0 min interlocking delay OTP adjust Duquoin
Centralia	**288.40**	**Duquoin Amtrak**	*Arr*		21:42	21:42								**Duquoin Amtrak**	**1.0**				
			Dep	**S**	21:43	21:43	20.4	1.0	6.4	3.0	**0.0**					30.8	0.2	31.0	OTP adjust
Centralia	**308.30**	**Carbondale Amtrak**	*Arr*	**S**	**22:14**	22:14													
		TOTAL RUNNING Times:			**6:09**	**6:09**	300.2	15.0	12.0	1.5	**2.0**	21.0	5.0	0.0	12.0	356.7	0.3	357.0	
		Clark Street to Carbondale (total minutes)			**356**		TRUE	5.0%	4.0%	28.5			26.0						

Clark Street to Carbondale (MRT) **289.3**

PUBLIC VERSION – REDACTED

BEFORE THE
SURFACE TRANSPORTATION BOARD

Docket No. FD 35743

APPLICATION OF THE NATIONAL RAILROAD PASSENGER CORPORATION UNDER 49 U.S.C. § 24308(a) – CANADIAN NATIONAL RAILWAY COMPANY

REBUTTAL VERIFIED STATEMENT OF ROBERT D. WILLIG

INTRODUCTION

My name is Robert D. Willig. I provided a verified statement that was filed by Illinois Central Railroad Company and Grand Trunk Western Railroad ("CN") as part of its opening evidence in this case on September 4, 2015 ("Willig VS").[1] My credentials are set out in that statement. In this rebuttal statement I analyze and comment on Amtrak's proposed changes to the Amtrak-CN Operating Agreement ("Operating Agreement"), with a focus on the economic principles that are important for economic efficiency and socially desirable outcomes, as I discussed in my prior verified statement. As explained below, while CN's proposal is consistent with those economic principles and the public interest, Amtrak's proposal fundamentally violates them and would not serve the public interest.

A. Key Economic Principles and the Public Interest

My prior statement discussed how an Amtrak/freight railroad host operating agreement ("OA") should be constructed in order to be consistent with sound economic principles and the

[1] "VS" references herein are to Verified Statements filed by either party in the opening evidentiary round on September 4, 2015 (as subsequently corrected, if applicable); "RVS" references are to the rebuttal verified statements being filed by CN on September 14, 2017.

public interest. I explained that in order to facilitate a sustainable and flexible relationship whereby Amtrak and CN's freight service can co-exist efficiently on CN's lines and each party can be incentivized to make decisions consistent with the public interest, the OA should follow the following principles:

1. *Cost-internalization/non-subsidization*. Insofar as practicable (recognizing that some costs may be unprovable or unquantifiable), Amtrak should fully compensate CN for CN's incremental costs of hosting Amtrak, including any costs that may vary with level of service. Providing for such compensation has two important effects. First, adherence to this principle leads Amtrak to internalize the costs it causes, so that Amtrak will be incentivized to weigh them against the benefits it can generate for itself and the public interests it serves, and thereby reach socially optimal, cost-benefit-justified, decisions about the amounts and baseline levels of service it demands from CN. Second, adherence to this principle avoids compelling CN to subsidize Amtrak, which would be economically inefficient and contrary to both the immediate public interest in efficient freight service and the long-term public interest in a sustainable co-existence between freight and passenger service.

2. *Efficient incentives and penalties*. Subject to the above principle (*i.e.*, without denying CN the net compensation necessary to cover its incremental costs of hosting and serving Amtrak), in order to incentivize CN to make socially optimal decisions about what level of service to provide Amtrak, the OA should provide for CN incentives and penalties for performance variations above and below the established baseline level of service. Further, to the extent possible, those incentives and penalties should be triggered only by matters within CN's reasonable control. Insofar as available data permit, those incentives and penalties should reflect the impacts of CN's conduct on the aggregate public plus private value generated by Amtrak, so that CN will be incentivized to undertake the efforts and costs of improving performance and avoiding

performance shortfalls when, but only when, they are warranted by the resulting effects on total value.

3. Trade-offs and flexibility. The OA should be negotiated as an integrated whole, and there should be opportunities for renegotiation periodically, or when problems arise, so that the parties can optimize the trade-offs among the inter-related elements of (i) cost compensation, (ii) base performance level (as determined by the application of an agreed performance standard to an agreed Amtrak schedule), (iii) infrastructure and other investments, and (iv) incentives and penalties.

I found that CN's proposal follows these principles. By adding Amtrak-caused freight delay costs to the cost compensation Amtrak must pay CN, it reduces CN's subsidy of Amtrak and increases Amtrak's cost internalization.[2] By revising the criteria for incentives and penalties to hew more closely to performance variations relative to the baseline level of service that are within CN's reasonable control, it better aligns CN's incentives with the public interest.[3] Absent further evidence of the costs and benefits of different levels of performance, CN's proposal to retain the general structure of the incentives and penalties provisions agreed to by the parties in the past is presumptively sound.[4] CN's proposal and approach also offer principled flexibility and processes to revise schedules if the parties find reason to do so, and to reopen the agreement if the Operating Agreement incentive scheme is not working.[5]

[2] *See* Willig VS at 3-6, 11; Ladue/Kuxmann VS at 14-16, [redacted].

[3] *See* Willig VS at 9-10, 12-13; Ladue/Kuxmann VS at 56-65.

[4] *See* Willig VS at 7.

[5] *See* Willig VS at 13; Ladue/Kuxmann VS at 65-68.

B. Amtrak's Proposal

In this statement, I discuss Amtrak's proposal, as expressed in its Opening Submissions filed on September 4, 2015, in light of the same principles articulated in my prior statement. In contrast with CN's proposal, Amtrak's proposal violates these principles in important ways:

1. No freight delay or capacity cost compensation. Like the current Operating Agreement, but unlike CN's proposal, Amtrak's proposal would deny CN compensation for the freight delay and other costs of Amtrak's consumption of CN's rail line capacity. As a result, under its proposal, Amtrak would not fully compensate CN for its incremental costs of hosting Amtrak, and the cost compensation CN would receive would not rise as CN freight delay costs rise due to efforts to provide Amtrak with better service.

2. New delay minimization/80% ASOTP goals. Amtrak expresses what I am informed are new goals for the Operating Agreement – to "minimize" Host-Responsible Delay minutes ("HRD"),[6] and to achieve at least 80% All-Stations On-Time Performance ("ASOTP").[7] These goals are fundamentally flawed because they were chosen by Amtrak without considering what service levels are optimal in light of their costs, and without considering whether it is necessary, or more efficient, to use means other than (or in addition to) CN reducing HRD to improve Amtrak's performance. While these goals would not be directly incorporated as terms of the Operating Agreement under Amtrak's proposal, they are the stated basis for, and significantly affect, Amtrak's proposed terms regarding penalties and incentives.

3. New penalties and incentives scheme, calibrated to HRD, based on a notion of "CN's perceived costs," calculated to yield large penalties, and without "look-back" protection

[6] *See, e.g.*, Amtrak Opening Statement at 3; Vilter VS at 3; *see also* Sacks VS ¶ 7.

[7] *See, e.g.*, Amtrak Opening Statement at 5, 17-18; Vilter VS at 3, 19; *see also* Sacks VS ¶ 7.

against the erosion of CN's base incremental cost compensation. As detailed below, Amtrak proposes an entirely new penalties and incentives scheme, under which CN's performance would be judged in terms of minutes of HRD, instead of the "contractual on-time performance" ("KOTP") standard the parties have used in the current and prior OAs.[8] Coupled with that proposed change in metric is a change in the baseline level of performance at which neither incentives nor penalties would be earned, as well as changes in penalty and incentives caps. Incentives and penalties would also be calculated on a new basis derived by Amtrak's statistical analyst's estimate of what he calls "CN's perceived costs."[9] And the "look-back" provision, which protects CN from net penalties under both the current Operating Agreement and CN's proposal, would be eliminated.[10] The net effect of these changes would be to make penalties much larger and much more likely, and incentives much smaller and much less likely, than they would be under the current Operating Agreement and CN's proposal, and to expose CN to a risk of large net penalties even if it performs substantially better than it and other members of the railroad industry have performed in the past. Amtrak's penalty proposal would impair cost internalization since the substantial penalties collected by Amtrak would offset or eliminate its responsibility to reimburse CN's incremental costs. Amtrak's penalty proposal would further undermine incentives for optimal performance by giving CN price signals that are unrelated to the values that could be generated by its efforts.

4. Less flexibility/no schedule changes. Amtrak's proposal does not include any flexibility-enhancing amendments comparable to those included in CN's proposal. It would

[8] [redacted]

[9] *See* Sacks VS ¶¶ 35-49.

[10] *See* Amtrak Opening Statement at 5, 15-16; Vilter VS at 2, 10, 14. For further discussion of the look-back provision, *see* [redacted]; Willig VS at 6-7.

set permanent performance standards based on an estimate of host performance required to achieve 80% ASOTP under current schedules with current infrastructure, equipment and operating conditions, and with no independent operating improvements by Amtrak. Under Amtrak's proposal, those performance standards would continue to apply even if schedule and other conditions on which they were premised changed, and there would be no mechanism for the parties (and likely little incentive for Amtrak) to negotiate efficient adjustments over time.

I elaborate below on each of these points, and on their economic and public policy implications.

I. AMTRAK'S PROPOSAL FAILS TO COMPENSATE CN FOR ITS INCREMENTAL COSTS AND HIGHLIGHTS THE PROBLEMS THAT ARISE WHEN COSTS ARE NOT INTERNALIZED.

A. Amtrak's Proposal Violates The Cost Internalization/Non-Subsidization Principle

Neither the current Operating Agreement nor Amtrak's proposed revision to it makes any provision for CN to be compensated for incremental freight delay or other capacity costs it incurs due to hosting and prioritizing Amtrak trains.[11] The cost compensation Amtrak pays CN is [redacted];[12] it does not increase as freight delay costs rise, or as levels of service that give rise to freight delay costs increase.

Thus, under the current Operating Agreement and Amtrak's proposal, CN is not, and would

[11] Amtrak witness Paul Vilter testified that there is no "compensation for the costs of freight delays" in Amtrak's proposal, Vilter dep. tr. at 163:13-16, [redacted] (Relevant extracts of Mr. Vilter's deposition transcript are attached as Exhibit 1 to this statement.)

[12] *See* [redacted]; *see also* [redacted]

not be, compensated for either the incremental costs of the current level of delays to its freight trains that arise unavoidably from Amtrak's operations over CN's lines, or the incremental costs of additional delays to its freight trains that would arise from the higher levels of service demanded by Amtrak.[13] Mr. Vilter, who testified that he was responsible for the content of Amtrak's proposal,[14] testified that this omission is intentional on Amtrak's part: Amtrak opposes adding a provision for compensation of CN's freight delay costs,[15] because "Amtrak does not … believe that costs related to service levels are incremental costs."[16]

As I explained in my opening statement, the failure to provide for freight delay cost compensation for CN violates basic economic principles in two ways.[17] First, it means that Amtrak does not internalize the costs it causes. Indeed, this appears to be Amtrak's intent: Mr. Vilter testified that bearing the costs its decisions generate is "outside the scope of what [Amtrak is] trying to accomplish here."[18] As a result, Amtrak's incentives are misaligned with the public interest, as I elaborate in Section I.B, below.

[13] CN is also not compensated for costs that are not readily quantifiable, such as loss of freight revenue due to impairment of its freight service, but given that CN has also not proposed a specific means to provide such compensation, and given the difficulties in quantifying those costs, I will focus on CN's freight delay costs.

[14] Vilter dep. tr. at 185:18.

[15] Vilter dep. tr. at 152:19-22; *see also id.* at 160:9-12 (Amtrak's opposition to freight delay cost compensation applies without regard to the service level CN provides Amtrak); 163:10-16 (acknowledging that incentive payments for high service levels do not constitute compensation for additional freight delay costs).

[16] Vilter dep. tr. at 153:5-8.

[17] *See* Willig VS at 4-5.

[18] Vilter dep. tr. at 225:19-20.

Second, it means that CN – and, indirectly, its freight customers – are burdened with subsidizing Amtrak – even beyond the impact of limiting host railroad compensation to only incremental costs. Such compelled subsidization is contrary to both the immediate public interest in efficient freight service and the long-term public interest in a sustainable co-existence between freight and passenger service. A relationship between two business partners whereby one is compelled to sustain losses continuously to benefit the other is not an efficient, sustainable economic relationship. It will inevitably lead to conflict, rather than efficient cooperation. Over the long term, if CN is forced to subsidize Amtrak, efficient investments that benefit both Amtrak and freight customers, and both passenger and freight service, will be discouraged, and the public interests entailed will be harmed.

Amtrak's proposal would not merely retain these defects of the current Operating Agreement; it would exacerbate them. As discussed in Section III below, Amtrak's proposed penalty scheme would set a substantially higher base level of performance than the current Operating Agreement. All other things being equal, the higher the level of performance Amtrak demands, the more CN is required to subordinate its freight traffic for the benefit of Amtrak trains. The more CN subordinates its freight traffic for Amtrak trains, the more freight delay (and other capacity) costs it is likely to incur,[19] and the larger the shortfall will be in efficient compensation created by the failure to compensate for freight delay costs.

B. Amtrak's Opening Reflects The Problems That Arise When A Party Does Not Internalize The Costs It Would Impose.

When a self-interested rational economic actor does not internalize the costs generated by its demands its incentives become misaligned with the public interest, and it is incentivized to

[19] Such an increase in effort and costs, however, will not necessarily translate into improved Amtrak service. For example, a period of bad weather that hampers all railroad operations may lead to freight delay costs increasing at the same time as Amtrak performance results decline.

demand more than is socially optimal. Commuters, for example, use more scarce rush-hour road capacity than is socially optimal, creating gridlock, if a toll road charges the same toll all day instead of charging a higher rate at rush hour to reflect the delay costs of other commuters caused by the marginal commuter's addition to congestion. Tolls that charge based on those incremental delay costs, and thus internalize those costs to the commuters making their decisions about their schedule and travel mode, provide commuters with socially optimal signals and incentives that foster socially optimal utilization of the transportation resources. By the same logic, if Amtrak operates as a self-interested rational economic actor, an OA that fails to cause Amtrak to internalize the costs of the service levels it demands will result in Amtrak making a socially harmful trade-off between passenger and freight service by demanding service levels that are too high.

Under Amtrak's proposal, the cost compensation "price" it pays CN under the Operating Agreement will remain essentially fixed on a per-train-mile basis, giving Amtrak every incentive to demand extremely high levels of service even if the costs to CN and its freight customers of subordinating freight traffic in order to meet those demands are disproportionate to any benefits to Amtrak and its passengers. Indeed, insofar as base service levels would be expressed as a trigger for penalties and incentives, the absence of cost internalization leads to the perverse conclusion that, net of penalties and incentives, Amtrak would pay less if it demands a higher base service level. Moreover, if Amtrak does not internalize CN's freight delay costs, Amtrak will have no incentive to help reduce those costs by reducing its service level demands, or by adjusting its schedules and/or contributing investments in infrastructure or equipment that will make it more feasible and less costly to achieve those demands, even if one or more of such actions represent the most efficient way to further the combined public interest in both passenger and freight rail.

Amtrak is an unusual hybrid entity with complex goals, and I express no overarching view on whether it operates as a rational self-interested economic actor. However, its statements and proposal in this case appear highly consistent with the conduct of a self-interested actor whose incentives are misaligned with the public interest due to a failure to internalize costs.

As I noted above, in his deposition Mr. Vilter rejected the notion that Amtrak should bear the costs its decisions generates. He also testified that while Amtrak takes its own costs into account when making decisions about, for example, schedules,[20] impacts on CN's freight customers did not significantly affect Amtrak's decisions about what to propose in this case.[21] In advocating for its proposal, Amtrak also took no firm position on the genuineness and true amount of the freight delay costs alleged by CN,[22] and no position whatsoever on whether the base level of service performance standards it proposes are even "reasonably achievable."[23] In sum, Amtrak's statements indicate that it did not attempt to determine, or to weigh, the costs to CN and its customers of Amtrak's proposal.

Amtrak's proposal is consequently one-sided and seemingly self-serving. The stated goals of Amtrak's proposal – minimizing HRD and achieving 80% ASOTP – ignore costs, feasibility, and the interests served by freight traffic, as I discuss further in Section II below. From a public interest standpoint, the goal of an OA should be to ***optimize*** performance considering the costs and

[20] Vilter dep. tr. at 28:3-5.

[21] Vilter dep. tr. at 56:24 – 57:1.

[22] *See* Vilter dep. tr. at 160:16-20 ("I don't feel I know enough" to evaluate CN's claims of freight delay costs); Amtrak Opening Statement at 14 ("Amtrak does not agree with CN's attribution of its costs" – but offers no different attribution); Sacks VS at 15, n.17 ("Amtrak has informed me that it does not accept or agree with the additional costs CN attributes to the provision of relatively better Amtrak service" – cost estimates Sacks nonetheless used in constructing Amtrak's proposed penalty scheme, as discussed in Section III, below).

[23] *See* Vilter dep. tr. at 142:20-23.

benefits of improved performance. The interests of Amtrak and its passengers in on-time performance should be given appropriate weight in implementing that goal. But the overall end should not be to ***minimize*** delays with no regard to countervailing considerations.

As I discuss in Section III below, Amtrak's penalty proposal seems designed to place on CN all the burden of achieving Amtrak's goal of improved performance. If 80% ASOTP is the goal, there are various ways it could be achieved:

(1) changing schedules;

(2) investing in improved infrastructure;

(3) investing in improved equipment; and/or

(4) reducing delays attributed to:

(a) Amtrak;

(b) CN;

(c) other host railroads (for the four out of six Amtrak services at issues that run on multi-host routes); or

(d) third parties.

As with most complex public policy problems that have multiple causes, objective analysis would likely reveal that the optimal solution to the problem of improving ASOTP involves a combination of several such measures, with built-in ongoing flexibility to adjust the combination as relative costs and effectiveness change and new information is developed. Instead, Amtrak offers nothing with respect to schedules,[24] infrastructure, equipment, its own delays, its other

[24] *See* Vilter VS at 18 (Amtrak "proposes to carry forward the current schedules on CN to the proposed Agreement."). As I discuss in Section IV below, separate from its proposal in this case, Amtrak more recently proposed schedule adjustments to two services – the City of New Orleans and the Illini/Saluki – designed to improve ASOTP, and CN has responded with counter-proposals for schedule changes. Amtrak's proposed Operating Agreement is, however, premised on current

hosts' delays, or third party delays, and no flexibility, and it places the entire burden of achieving 80% ASOTP on option (4)(b) − CN's efforts to reduce its HRD − on pain of substantial penalties.[25]

Sound public policy requires the explicit or implicit selection of (1) a goal that takes account of, and optimizes, all significant public interests at issue, and (2) efficient, feasible and flexible means to meet that goal without host subsidies. Such decisions inevitably involve trade-offs – as do sound commercial agreements. If Amtrak internalized the costs it generates – as it would be compelled to do through the process of rate negotiation in an ordinary commercial context – it would think carefully about whether and up to what point the benefits of improved performance are worth the costs, and what are the most efficient way(s) to achieve improved performance.

However, with its badly misaligned incentives, Amtrak is proposing an extreme and one-sided goal; seeking to place all the burden of achieving it on CN without regard to cost or feasibility; demanding greater performance by CN for reduced compensation (given Amtrak's proposed changes to the penalties and incentives provisions); and offering no flexibility. That is what happens when costs are not sufficiently internalized.

II. THE STATED GOALS OF AMTRAK'S PROPOSAL ARE ECONOMICALLY UNSOUND AND MISALIGNED WITH THE PUBLIC INTEREST

Amtrak proposes a new penalty scheme based on two stated goals:

(1) to "minimize" CN's HRD; and

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schedules, and the base level of performance it would set for CN is designed to enable Amtrak to achieve levels of HRD it equates to 80% ASOTP under current schedules.

[25] Amtrak may intend to impose similar terms – presumably including the same HRD standard, since it determined its HRD standards on a whole-route, not CN-segment-specific, basis, *see* Sacks VS ¶¶ 10, 12, 16, 24 – on other hosts on multi-host routes. As Professor Dubin elaborates in his RVS, such a scheme is neither efficient nor likely to be effective in achieving 80% ASOTP. In any event, the central point remains: Amtrak is placing the entire burden of improving ASOTP on hosts, ignoring schedule adjustment and other possible solutions.

(2) to achieve 80% All-Stations OTP ("ASOTP") based solely on reductions in Amtrak train delays, for which it would make CN solely responsible, regardless of schedules or operational realities.

These goals are not economically sound nor aligned with the public interest. They each: (i) fail to address CN's costs and the public interest in efficient and sustainable freight rail transportation, and (ii) fail to address and seek an optimal mix of the various possible ways to improve passenger satisfaction, including schedule adjustment, infrastructure and equipment investment, and reduction of Amtrak-responsible, other-host-responsible, and third-party-responsible delays.

A. Minimizing HRD Is An Unsound Objective

Amtrak repeatedly claims that the proper objective of the Operating Agreement should be to "minimize" HRD.[26] As I explained in my opening statement, that is not a sound objective from a public interest standpoint. To serve the public interest, which encompasses the interests of both passengers and freight shippers, Amtrak and freight trains must co-exist efficiently on CN's network. That entails reducing delays to Amtrak trains to an ***optimal*** (not minimal) level – a level at which the net social costs of further reducing delays exceed the net social benefits of doing so.[27] HRD could potentially be "minimized" by a massive infrastructure investment that added double-track to every mile of single track on which CN hosts Amtrak – essentially, having CN build Amtrak its own railroad; or by excluding all freight traffic from a 100-mile bubble around every Amtrak train to "minimize" the risk of meets that could delay the Amtrak train; or by conducting maintenance work at night to the maximum extent possible, with whatever overtime and safety

[26] *See, e.g.,* Amtrak Opening Statement at 3; Vilter VS at 3; *see also* Sacks VS ¶ 7.

[27] *See* Willig VS at 8.

implications that would entail, to avoid Amtrak trains being subject to slow orders or other impediments. But the costs of such extreme measures might far outweigh the benefits.

B. Total Quantity of HRD Is A Poor Proxy For Passenger Interests

In addition, even optimizing the total quantity of HRD appears to be a questionable goal. I understand that, in addition to "pure run time," Amtrak schedules include "recovery time" and "miscellaneous time," that are designed to accommodate typical or expected delays, including some HRD.[28] As a result, while in some instances reducing HRD will help a train be on time, in other instances reducing HRD will cause a train to reach its next station early. Doing so may generate some benefit to passengers who disembark at that station, but may generate no benefit to other passengers, since the train will wait at the station until its appointed departure time. Further, it may inefficiently consume rail line capacity and impose unnecessary costs insofar as Amtrak trains are parked at stations on CN lines, impeding the movement of other rail traffic. Thus, not all HRD reductions are likely to be of equal – or even of significant – value. Accordingly, total quantity of HRD is, at best, an imperfect proxy for passenger interests.

C. 80% ASOTP Could Only Be A Sound Goal In Conjunction With Appropriate Schedules

Amtrak's opening statements also set a goal of 80% ASOTP for all services on CN's lines, without regard to schedules or differences in lines and operations.[29] Amtrak instructed its statistical analyst, Mr. Sacks, to determine for each service an HRD level that "correlates" to 80% ASOTP under current schedules, which it then proposed to set as the base performance level.[30]

[28] *See* Ladue/Kuxmann VS at 32 & n.39.

[29] *See, e.g.,* Amtrak Opening Statement at 5, 17-18; Vilter VS at 3, 19; *see also* Sacks VS ¶ 7.

[30] *See* Sacks VS ¶¶ 6, 7.

Even if that "correlation" were accurately or meaningfully estimated, the resulting HRD performance levels will not have been shown to be in the public interest.

Whether it is socially optimal, or even reasonable, to seek to cause a train to reach all stations "on-time" 80% of the time depends on the schedule against which on-time performance is judged. Any "on-time" percentage, including 80% ASOTP, is meaningful only in relation to a particular schedule setting arrival and departure times. If the schedule is such that high ASOTP is easily achieved and problems likely to cause delays are rare, any standard below 95% ASOTP may be unreasonably lenient. If it offers insufficient flexibility to accommodate delays in circumstances where substantial delays are frequently unavoidable, anything over 25% ASOTP may be unreasonably demanding, or even impossible.

Amtrak's opening statements provide no evidence that 80% ASOTP is a reasonable or even feasible goal in conjunction with the current schedules – much less that it represents a socially optimal level of performance. Amtrak's opening statements do not discuss how the current schedules were derived; they do not suggest that they were derived in consideration of an 80% ASOTP goal; and they do not analyze whether 80% ASOTP is reasonably achievable under the current schedules. Indeed, as I noted above, in his deposition Mr. Vilter declined to express a view on whether the standards Amtrak proposes to require CN to meet in order to enable Amtrak to achieve 80% ASOTP are "reasonably achievable."[31]

Nor does Amtrak cite any agreement between the parties to combine the current schedules with an 80% ASOTP goal or standard. Insofar as the current schedules were derived by agreement between the parties, they are part of an integrated agreement in which the parties agreed, in the penalties and incentives provisions, to judge CN's performance based on KOTP, rather than based

[31] Vilter dep. tr. at 142:20-21.

on ASOTP or HRD. Thus, there is no reason to believe that the current schedules were ever intended to work in conjunction with an 80% ASOTP standard.

I will not attempt to judge what levels of ASOTP are reasonable, or socially optimal, under the current schedules. But several factors suggest that at least some of the current schedules do not fit well with high levels of ASOTP under current operating conditions.

First, operating under the current schedules and the current KOTP scheme for incentives and penalties, CN has, with few exceptions, consistently achieved high KOTP and consistently earned substantial incentive payments on all services under the OA.[32] In other words, CN has amply met Amtrak's contractual expectations. Yet, ASOTP percentages for most services have consistently been well below 80%.[33]

Second, Amtrak's own analysis suggests that services that experience particularly low ASOTP do so for reasons independent of host performance. Compare, for example, the Wolverine and Illini/Saluki services, which (according to Amtrak's public reports) averaged 46% ASOTP (Illini/Saluki) and 57% ASOTP (Wolverine) in the 5-year period January 2012 through December 2016, with the Blue Water and Lincoln services, which averaged 74% ASOTP (Blue Water) and 71% ASOTP in that period.[34] Amtrak's statistical analyst, Mr. Sacks, estimates the HRD levels that "correlate" to 80% ASOTP for different services under their current schedules. These HRD levels range from 411 HRD minutes/10,000 miles (Wolverine) and 432 (Illini/Saluki) to 936 (Blue Water) and 1073 (Lincoln).[35] In other words, achieving 80% ASOTP "correlates" with only about

[32] *See* Ladue/Kuxmann VS at 24-27.

[33] *See, e.g.*, Vilter VS at 4.

[34] *See* Federal Railroad Administration, *Quarterly Reports on the Performance and Service Quality of Intercity Passenger Train Operations* for First Quarter of Fiscal Year 2012 through Fourth Quarter of Fiscal Year 2016, Table 6, Test #3.

[35] Sacks VS ¶ 33.

40% as much HRD on the Wolverine and the Illini/Saluki as on the Lincoln. There must be problems with schedules and/or problems with Amtrak-responsible and third-party-responsible delays and other operating conditions on the Wolverine and the Illini/Saluki that prevent higher ASOTP from being achieved even with relatively good host performance. A rational public policy approach would entail addressing those underlying problems. Absent further justification, which Amtrak has not provided,[36] imposing disparate HRD standards because they "correlate" under disparate schedules and operating conditions to a common ASOTP percentage is inconsistent with the development of a rational public policy.

Third, schedules not designed to work in conjunction with an ASOTP goal may play a major role in giving rise to the disparity in the HRD standards that Amtrak's statistical analyst derives. In particular, I understand that some Amtrak schedules, including those for the Illini/Saluki and the City of New Orleans services, have "back-loaded" recovery time, that is, recovery time is disproportionately allocated to the segment between the last two stations on the trip (and the last segment before the Operating Agreement checkpoint at Memphis on the City of New Orleans).[37] That feature is unlikely to cause a problem in terms of Endpoint OTP or KOTP metrics, or for the high volume of passengers who disembark at the endpoints and checkpoints, since the back-loaded recovery time is available before the relevant OTP measurements are made,

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[36] If goals or standards are to be expressed in HRD terms, they should probably not be uniform for all Amtrak services (although Amtrak and the Federal Railroad Administration promulgated a uniform standard of 900 HRD minutes/10,000 miles in their since-invalidated 2010 PRIIA Metrics and Standards (*available at* https://www.fra.dot.gov/eLib/Details/L02875)). From a cost perspective, it may make sense for routes with more congestion to be subject to higher HRD limits (since more congestion entails more costs and difficulty to prevent delays). And from a benefit perspective, it may be more important for some Amtrak services than for others to reduce travel time. But nothing in Amtrak's opening evidence suggests that such factors explain or justify the dramatic disparities in its HRD targets.

[37] *See* Ladue/Kuxmann VS at 28 n.38.

and is available to help Amtrak reach these key passenger destinations at their scheduled times. But it does create a problem in conjunction with the ASOTP metric, which gives equal weight to each station, including intermediate stations, and which may therefore have no available recovery time to offset reasonably anticipated delays. As discussed in Section IV below, I understand that since submitting its opening statements, Amtrak has proposed revised, less back-loaded, schedules to improve ASOTP for its two largest services hosted by CN, the Illini/Saluki and the City of New Orleans. This underscores a critical flaw of Amtrak's proposal – it would impose new and different service standard measures in relation to schedules neither developed for those standards nor agreed upon by the parties based on such standards. Schedule changes are critical if Amtrak wishes to reorient the Operating Agreement toward an ASOTP goal.

In sum, 80% ASOTP may or may not be a reasonable public policy goal. But it can be efficiently achieved only in conjunction with schedules designed to be compatible with that goal. And the parties appear to agree that, for CN's key services, Amtrak's current schedules are not compatible with the efficient achievement of that goal.

D. ASOTP May Be A Poor Proxy For Passenger Interests

While I have not studied the public benefits associated with on-time performance, ASOTP also appears to be a highly imperfect proxy for those benefits. It treats on-time arrival at every station as equally important, ignoring the actual distribution of passengers at different stations. From the standpoint of overall passenger benefit, the current Operating Agreement – which generally focuses on achieving high OTP at the largest stations (*e.g.*, Chicago, Memphis and New Orleans for the City of New Orleans) – may better reflect the public interest, whether measured on a per-passenger or per-passenger-mile basis.

III. AMTRAK'S PENALTIES AND INCENTIVES PROPOSAL IS NOT REASONABLY DESIGNED TO ACHIEVE ECONOMIC EFFICIENCY AND SERVE THE PUBLIC INTEREST

As I explained in my opening statement, in order to serve the public interest, a rational incentives and penalties scheme should enable CN to internalize the net public and private benefits of improving its own performance so that it will be incentivized to provide Amtrak and its passengers with superior service and/or baseline service when it is socially beneficial to do so, and the scheme should do so without compelling CN to subsidize Amtrak.[38] In three key respects, Amtrak's proposed scheme is poorly designed to meet those objectives. It relies on a performance metric that is not focused on what CN can reasonably control. It sets penalty and incentive levels without regard to the value of the conduct incentivized. And it is calculated to expose CN to large penalties even when CN performs well by the standards of past agreements, history, and industry practice.

A. HRD Is A Poor Penalties/Incentives Criterion Insofar As It Encompasses Delays Beyond CN's Reasonable Control[39]

Amtrak proposes to replace KOTP with HRD as the metric for determining penalties and incentives. That proposal is inconsistent with an efficient penalties and incentives scheme insofar as HRD encompasses delays beyond CN's reasonable control: there is no point in "incentivizing" someone to fix a problem that is beyond their reasonable control to fix.[40]

Like use of relief items in the current Operating Agreement, which define which delays are attributed to CN for purposes of incentives and penalties, HRD represents an effort to distinguish

[38] *See* Willig VS at 6-11.

[39] As noted in Section II.B, above, HRD is also a poor proxy for passenger interests.

[40] *See* Willig VS at 9-10.

delays for which CN is responsible from those for which it is not. However, the relief items under the Operating Agreement have been defined and revised over time by agreement of the parties in the context of their experience with particular services. The list of relief items may be honed to better reflect CN responsibility, as CN has proposed, but the general evolutionary development of the list is conducive to efficiency.[41] In contrast, HRD is a metric defined unilaterally by Amtrak; Amtrak staff determine – in a process CN criticizes – which delays count as HRD; and HRD is a one-size-fits-all nationwide metric that is not tailored to the particular service at issue.[42] HRD assigns responsibility to CN for a broader range of delays than the current Operating Agreement does via use of relief items, and I understand it encompasses delays that CN cannot reasonably control, such as delays due to interlocking signals controlled by other freight railroads,[43] and [redacted].[44] Insofar as CN's proposal better identifies which delays are within CN's reasonable control, it is superior to Amtrak's.

B. Amtrak's Proposal Irrationally Bases Penalties And Incentives On CN's "Perceived Costs"

Amtrak's proposal irrationally bases incentive and penalty levels on what Mr. Sacks calls CN's "perceived costs,"[45] rather than on the net public and private value of improved performance. As I explained in my opening statement, an economically rational incentive scheme should calibrate incentives (and penalties) based on the value generated by the performance incentivized.

[41] *See* Ladue/Kuxmann VS at [redacted], 56-65.

[42] *See* Ladue/Kuxmann VS at 29-31.

[43] *See* Ladue/Kuxmann VS at 29.

[44] *See* [redacted].

[45] *See* Sacks VS ¶¶ 35-49.

Incentives (and penalties) send a price signal to the incentivized party (here, CN) about how much improved performance is worth. Under an efficient compensation scheme, when improved performance is worth more than the cost of providing it, compensation should be sufficient so that a rational party will provide it; if the benefits of improved performance, as signaled by the compensation on offer, are worth less than the costs, a rational party will not provide it. Either way, the performing party will make the socially optimal decision about the level of performance to provide.[46]

Absent information sufficient to reliably quantify the public and private benefits of improved performance, CN's proposal to maintain the status quo represents a sound default position.[47] Amtrak's agreement in prior commercially negotiated operating agreements to make particular incentive payments for particular performance improvements can reasonably be taken to reveal a preference for those performance improvements over those payments – *i.e.*, as evidence of Amtrak's valuation of the benefits of improved performance. That valuation could, of course, change over time. However, while Amtrak's current proposal reveals a self-serving preference that the value of different levels of performance be reflected more in the form of penalties than in the form of incentives, it does not appear to suggest a lower financial value for each increment of performance than do the prior agreements.

In proposing a new system of incentives and penalties, Amtrak does not attempt to estimate, or otherwise address, the public benefits (or even the benefits to Amtrak) of improved performance. Instead, Amtrak proposes to set penalties and incentives at 1.2 times CN's

[46] *See* Willig VS at 8-9.

[47] *See* Willig VS at 7.

"perceived costs" of improving performance.[48] It does so for the stated objective of "negat[ing] CN's perception that providing Amtrak" with inferior service will reduce CN's costs.[49] In contrast to an incentives and penalties scheme that causes the performing party to internalize the benefits as well as the costs of improved performance, Amtrak's proposal aims to cause CN to internalize 1.2 times its own costs as a counter-balance to CN weighing such costs in deciding what level of service to provide.

There are public policy contexts in which there is merit to a scheme, like Mr. Sacks's, that disincentivizes an actor from engaging in certain conduct by imposing as a penalty on that conduct a multiple of the financial benefit the actor would expect to derive from it. For example, under the Racketeering Influenced and Corrupt Organizations Act ("RICO") (18 U.S.C. § 1964(c)) and the Clayton Act (15 U.S.C. § 15(a)), treble damages are available for violation of federal racketeering and antitrust laws.[50] But those contexts generally involve criminal, or at least unlawful, activity. Racketeering violations are crimes; antitrust violations are unlawful, and in some cases criminal.[51] It makes sense to ensure that the cost in penalties of that conduct, correctly assessed, exceeds the benefit. But such a scheme makes no sense as applied to lawful conduct, such as operating a freight railroad in a manner that causes some HRD, when the socially optimal level of that conduct may be above zero.

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[48] *See* Sacks VS ¶¶ 35-49.

[49] *See* Sacks VS ¶ 7.

[50] Strictly speaking, the multipliers in RICO and antitrust cases apply to the victim's damages, not the violator's profits. The RICO and Clayton Act 3x multiplier makes sense in part because of the risk that RICO and antitrust violations may not be detected and punished, whereas HRD is more readily detectable.

[51] *See* 18 U.S.C. §§ 1962-63.

By proposing a system of penalties that exceeds by 20% what Amtrak claims it believes CN perceives to be its costs, and by failing to compare costs to benefits, Amtrak's proposal provides no basis for reaching the socially optimal level of performance. First, consider what would happen if we grant three assumptions necessary to make Amtrak's proposal "work:"

(i) *Costs:* Mr. Sacks has accurately determined CN's "perceived costs;"

(ii) *Rate of return:* 20% is a sufficient mark-up for CN; and

(iii) *Possibility:* reducing HRD to the levels implied by Amtrak's scheme is actually possible.

Under those assumptions, a rational actor in CN's position would always perform to the level at which the Amtrak proposal caps incentives. Yet, nothing in Amtrak's evidence suggests that performance at those levels is socially optimal, or even desirable. Mr. Sacks states that the cap levels were selected so that the maximum incentive payments to CN would be the same (albeit for higher levels of performance) as under the current OA.[52] The resulting HRD levels – the performance that would be incentivized if Amtrak's scheme worked – are merely whatever levels happen to coincide with those payment levels. Amtrak does not even mention those levels of performance in its opening statements – much less attempt to demonstrate they are socially optimal. They do, however, appear in Mr. Sacks' workpapers,[53] and in Table 1 below. They reflect an arbitrary jumble of performance levels, all at low HRD levels, and they embody striking disparities:

[52] Sacks VS ¶ 56.

[53] Sacks Workpaper, "Penalty System Figures and Tables.xlsx," "Max Quality Payment Point" tab.

Table 1

Service	HRD Level At Which Amtrak Proposes To Cap Incentives
Blue Water	750
City of New Orleans	426
Illini/Saluki	147
Lincoln	441
Texas Eagle	408
Wolverine	40

Second, consider what would happen if the first two of my assumptions above (cost and mark-up) hold, but the third does not, because reducing HRD to the above levels is impossible. On that basis, a rational actor in CN's position would reduce HRD to the minimum levels possible. Again, there is no basis to infer that the minimum possible level of HRD is socially optimal. And, as I discussed in Section II.A, above, the proper public policy goal is to optimize HRD levels in light of the costs and benefits of reducing HRD, not to minimize HRD.

Third, consider what would happen if the costs and/or mark-up assumptions do not hold. In that case, CN will rationally cease its efforts to reduce HRD at the point at which its marginal costs (plus mark-up) of reducing HRD exceed its marginal benefits of doing so, the latter being dictated by Amtrak penalty and incentive rates that (i) bear no relation to the social benefits of HRD reduction, and (ii) do not accurately represent CN's costs plus mark-up. In other words, CN will rationally cease its efforts to reduce HRD at the point at which its marginal costs of reducing HRD exceed an essentially arbitrary number. There is no reason to expect that scenario to yield a socially optimal level of HRD reduction.[54]

[54] Amtrak's penalties and incentives scheme is not appropriately constructed to serve the public interest under any of these scenarios, so it does not ultimately matter which is most likely. However, the last scenario seems the most probable because Mr. Sacks likely understates CN's "perceived costs" in at least two respects.

C. Without Justification, Amtrak's Proposal Seems Calculated To Expose CN To Large Net Penalties, Compelling CN To Fund Amtrak

Penalties and incentives can have equal and opposite effects on conduct; either a carrot or a stick can work. As a rational economic actor, CN will be motivated by its expectations of the extent to which it will be richer or poorer if it undertakes efforts to achieve a given performance level, unaffected by whether those changes are labeled penalties or incentives. As I explained in my opening statement, however, broader economic principles – the need to ensure that CN recoups its incremental costs of serving Amtrak – require in this context that incentives predominate and that penalties be limited, as the current OA's look-back provision does, to reducing net positive incentives.[55]

First, Mr. Sacks's source for CN's "perceived costs" is under-inclusive. The readily quantifiable freight delay costs CN estimated in Mr. Sacks's Appendix G do not include less quantifiable costs and broader capacity costs associated with loss of freight service quality and operational flexibility.

Second, Mr. Sacks infers, without support, a linear relationship between all of CN's costs and HRD levels from just two data points, despite the fact that cost/performance relationships are rarely linear. In most economic contexts, the principle of diminishing marginal returns holds: the marginal cost of a unit of performance improvement rises the closer one gets to perfect performance. This is intuitive in the common sense notion of "low-hanging fruit:" picking 50 apples from a tree with 100 apples generally takes less than half the time it takes to pick 100 if one can pick the first 50 without taking the extra time needed to fetch a ladder and reach for the most distant apples. Similarly, a rational actor in CN's position will first deploy its most cost-effective options to reduce delays to Amtrak (*e.g.,* modestly delaying non-time-sensitive freight trains). If it attempts to reach higher and higher levels of performance, it will be forced to deploy less cost-effective means (*e.g.*, multi-million dollar expenditures on sidings or double-track), and its marginal costs of reducing Amtrak delay can be expected to rise. This issue has particular application to Mr. Sacks' analysis because his Appendix G reports on costs CN incurred to reduce a particular subset of HRD – freight train interference – at a performance level lower than most of the performance range in which Amtrak proposes to apply (to all forms of HRD) penalties and incentives. If the principle of diminishing marginal returns holds, CN's costs per unit of performance improvement will be higher at very high performance levels – such as those for which Mr. Sacks attempts to determine appropriate incentive payments by reference to CN's "perceived costs" – than at the performance levels used as the basis for his estimate of CN's "perceived costs."

[55] *See* Willig VS at 6-8.

Amtrak's proposal violates those principles. It would eliminate the look-back provision,[56] potentially exposing CN to net penalties that would reduce CN's overall compensation below its incremental costs. Moreover, Amtrak's proposed scheme is heavily weighted towards net penalties in two major respects.

First, Amtrak proposes to set, and to enforce with potentially large penalties, base performance standards (*i.e.*, the HRD levels above which penalties would apply and below which incentives would apply) at levels that have been neither demanded nor achieved nor expected in the past.[57] I have no basis on which to opine on what the socially optimal level of HRD might be for each route, and I do not endorse any particular indicator noted below. However, multiple indicators suggest that the HRD levels Amtrak proposes as base performance standards may be unreasonably low.

One indicator is the fact that many of the HRD levels Amtrak would now demand are far below those that have been historically achieved for any sustained period by CN, notwithstanding that CN has consistently met or exceeded the 80% KOTP contractual standard for earning incentive payments.[58] A second indicator is that other railroads hosting the multi-host Amtrak

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[56] *See* Amtrak Opening Statement at 5, 15-16; Vilter VS at 14.

[57] *See* Sacks VS ¶ 33 & Fig. 4 (table stating proposed base performance levels, or "80% Points"); Sacks VS ¶ 54 & Fig. 10 (graph showing proposed penalty levels). Here and below, in referring to HRD levels and standards, I follow Mr. Sacks and, I understand, Amtrak's standard practice in denominating HRD as a number of minutes of what Amtrak deems host-responsible delay to an Amtrak train per 10,000 trip miles travelled by that train.

[58] *See* Current Operating Agreement, Appx. V; Ladue/Kuxmann VS at [redacted], 24-27. In the 60-month period January 2012 through December 2016, CN met or exceeded 80% KOTP for 52 months on the City of New Orleans, 45 months on the Illini/Saluki, all 60 months on the Lincoln, 58 months on the Texas Eagle, all 60 months on the Blue Water, and 58 months on the Wolverine service. If the months in which CN failed to achieve 80% KOTP were excluded, CN's historical average HRD levels shown in Table 2 below would only change modestly – from 1,087 to 1,026 for the City of New Orleans; from 1,405 to 1,356 for the Illini/Saluki; from 1,846 to 1,834 for the Texas Eagle; and from 1,961 to 1,923 for the Wolverine. *See* Workpaper, "CN ASOTP KOTP &

services at issue in this proceeding – including, on the Wolverine, Amtrak itself – have likewise generally far exceeded those levels (which, as I noted above, Amtrak determined on a whole-route, non-CN-specific basis). And a third indicator is that many of the HRD levels Amtrak would demand are far below the HRD standard Amtrak set jointly with the Federal Railroad Administration (which I understand the freight railroads generally objected were too low) in the 2010 PRIIA Metrics and Standards: 900 HRD minutes/10,000 miles.[59]

Table 2 compares the HRD levels that correspond to these three indicators (using average HRD levels achieved over the 5-year period January 2012 through December 2016 as representative of historical performance) to those proposed by Amtrak as baseline performance standards for each service.[60] The table also shows for each HRD level the annual penalties for which CN or, as applicable, the other host, would be liable under Amtrak's proposal:[61]

HRD History.xlsx." (While the two services that run on the Grand Trunk Western line, the Blue Water and the Wolverine, have historically had a different compensation scheme, I understand that it, too, involves an assessment of whether a given train trip traverses the CN segment within scheduled time plus tolerance plus time allowed for relief items, so CN's performance on those services can be expressed in KOTP terms.)

[59] *Available at* https://www.fra.dot.gov/eLib/Details/L02875. I understand that Amtrak's and FRA's Metrics and Standards now have no legal effect, because the statutory provision authorizing them to jointly set those Metrics and Standards was held unconstitutional in light of the potential for bias it created by appointing Amtrak as a joint regulator of its own commercial relationships with host railroads such as CN. *See Ass'n of Am. R.R. v. U.S. DOT*, 821 F.3d 19 (D.C. Cir. 2016). The court's ruling does not change the fact that in 2010, Amtrak (jointly) with FRA chose 900 HRD as a standard that, under PRIIA as it then stood, (i) triggered performance investigations, and (ii) was to be incorporated, insofar as practicable, into Operating Agreements. I also understand that Amtrak continues to use 900 HRD as a standard in its performance reporting. While neither Amtrak nor CN is bound by the 900 HRD standard, Amtrak's history of choosing and using that standard, in a context in which courts found an unacceptable danger that Amtrak would choose standards that favored itself, appears to be a persuasive indicator that while 900 may be an unreasonably low HRD level (as the host railroads argued), it is not an unreasonably high one.

[60] *See generally* Workpaper, "Willig Table 2.xlsx."

[61] In this proceeding, Amtrak has not proposed to impose a penalties scheme on anyone other than CN. But, as I noted above (*see* n. 25, *supra*), the logical extension of Amtrak's proposal would appear to be to impose similar terms on other hosts. The "other host" "penalties" in Table 2

Table 2

Service	Monthly HRD Base Performance Standard For CN Proposed by Amtrak	CN Average Monthly HRD Level, 2012-2016 (Annual Penalties or Incentives per Amtrak's Proposal)	Other Hosts' Average Monthly HRD Levels on Same Service, 2012-16 (Annual Penalties or Incentives if Amtrak's Proposal Were Extended to Them)	Amtrak/FRA 900 Monthly HRD Standard (Annual Penalties or Incentives for CN if it Met that Standard)
Blue Water	936	895 (Incentive: $26,350)	Amtrak: 563 (Incentive: $134,151) MIDOT: 850 (Incentive: $3,200) NS: 3,818 (Penalty: $94,221)	900 (Incentive: $60,684)
City of New Orleans	709	1,087 (Penalty: $4,177,007)	N/A	900 (Penalty: $2,653,137)
Illini/Saluki	432	1,405 (Penalty: $6,724,240)	N/A	900 (Penalty: $4,288,145)
Lincoln	1,073	1,371 (Penalty: $198,738)	UP: 1,275 (Penalty: $1,039,329)	900 (Incentive: $162,392)
Texas Eagle	615	1,846 (Penalty: $596,927)	BNSF: 1,695 (Penalty: $1,815,059) UP: 1,820 (Penalty: $21,152,308)	900 (Penalty: $204,413)
Wolverine	411	1,961 (Penalty: $774,185)	Amtrak: 703 (Penalty: $839,882) MIDOT: 1,167 (Penalty: $2,967,600) NS: 3,419 (Penalty: $1,350,838)	900 (Penalty: $360,148)

represent, for each multi-host route, the penalties that would be imposed on other hosts if (i) the same standards applied (in terms of HRD minutes per 10,000 Amtrak train miles travelled on the host), and (ii) the same level of penalties per increment of HRD and per train-mile, and the same maximum penalty minutes caps, applied to them as Amtrak proposes to apply to CN. (Both for CN and for other hosts, historical penalties are calculated month-by-month, applying Mr. Sacks's monthly maximum penalty minutes caps as appropriate, then aggregated, then annualized.)

The implications of Table 2 are dramatic. Under Amtrak's proposal, if, for example, CN reduced HRD to 900 – a level below what Amtrak has demanded and CN has achieved in the past, and a level below what the other Class I railroad hosts have, on average, achieved – CN would be liable to pay Amtrak a net annual penalty for the IC Services of approximately $7 million. I am informed that Amtrak's current (2017) average monthly payments to CN to cover CN's incremental costs for those same services – under Operating Agreement provisions that Amtrak does not propose to materially change – are approximately [redacted] per year. Thus, under Amtrak's proposal, if CN achieved 900 HRD on all four IC services, CN would not merely go uncompensated for all the costs it incurs in serving Amtrak (including the costs for which Amtrak pays under the current Operating Agreement, the additional freight delay costs CN seeks in this proceeding, and additional capacity costs); it would be obliged to make a net payment to Amtrak of approximately [redacted] per year.

Second, even apart from the critical issue of whether the base level of performance is unreasonably high, Amtrak's proposal is asymmetrical, providing more room for penalties than for incentives. Under Amtrak's proposal, incentives are capped at [redacted][62] – a level that is arbitrary in the context of Amtrak's proposed scheme, [redacted]. Penalties are capped at a notional point at which Sacks suggests CN would no longer perceive cost savings,[63] based on his linear model of CN's "perceived costs" that I critique in footnote 54, above. For all services, these arbitrary caps provide far more room between the base performance level and the penalties cap than between the base performance level and the

[62] *See* [redacted]

[63] *See* Sacks VS ¶ 51 & Appx. E.

incentives cap – *i.e.*, they allow far more scope for penalties than for incentives.[64] For example, for the Illini/Saluki, the maximum level of annual penalties is $7,401,264;[65] the maximum level of annual incentives is $2,607,228.[66]

In combination, these features – elimination of look-back, a high base level of performance, and asymmetrical caps on penalties and incentives – appear calculated to expose CN to large net penalties. Rather than incentivizing socially optimal conduct, Amtrak's proposed penalty scheme appears designed to achieve the self-serving function of compelling CN to fund Amtrak.

IV. AMTRAK'S REASONABLE CONCERNS CAN BE MET WITHIN THE FRAMEWORK OF CN'S PROPOSAL

As I have explained, an economically rational OA should be inflexible on one point: it should ensure that Amtrak pays CN sufficient net compensation to at least cover CN's incremental costs of hosting and serving Amtrak. Beyond that, flexibility and periodic renegotiation to optimize trade-offs among schedules, performance standards, incentives and penalties would be highly desirable. Amtrak should be able to get what it wants if it pays the full costs it causes, subject to the ultimate constraint that CN must be permitted to continue to discharge its common carrier obligations efficiently. Further, if the parties work together on a flexible, ongoing basis, they should be able to avoid unnecessary costs. These goals can be achieved within the flexible framework of CN's proposal.

A. 80% ASOTP Can Be Achieved, If Desired, With Schedule And Perhaps Other Changes

Amtrak has now expressed a desire to achieve 80% ASOTP. That may or may not remain

[64] *See* Sacks VS ¶ 57 & Fig. 12.

[65] *See* Sacks Workpaper, "Penalty System Figures and Tables.xlsx," "Penalty Table" tab.

[66] Sacks VS ¶ 56 & Fig. 11.

Amtrak's goal if it begins to more fully internalize potential associated costs. But if it does remain the goal, it can be efficiently achieved within the Operating Agreement framework proposed by CN. Within that framework, the parties can work together to choose whatever combination is efficient of schedule adjustments, infrastructure additions (paid for by Amtrak insofar as they are for Amtrak's benefit), and changes by both parties in performance or operations, so long as Amtrak pays CN, at a minimum, the incremental costs CN incurs due to Amtrak.

Given the high costs of infrastructure and the high costs of reducing delays on shared, capacity-constrained rail lines, schedule adjustments may be the most efficient means of improving ASOTP. I understand that early this year, long after filing its opening evidence, Amtrak proposed schedule changes to CN for the express purpose of making ASOTP easier to achieve.[67] I further understand that CN has counter-offered a schedule that CN projects, based on past actual run-times, would lead to the achievement of over 80% ASOTP on the Illini/Saluki, the worst-performing service (under the ASOTP metric) at issue, and that CN has also offered to generate a proposal for schedule adjustments that would enable Amtrak to achieve 80% ASOTP on the City of New Orleans service.[68]

These joint efforts to modify schedules represent the kind of process that has the potential to yield an efficient outcome. Whether articulated in KOTP, Endpoint OTP, HRD, or ASOTP terms, performance goals should be considered in conjunction with schedules, costs, operating

[67] *See* Email from Michael Azen (Amtrak) to Scott Kuxmann (CN), dated February 13, 2017, attaching proposed schedule changes (included in Ex. 1 to Krueger RVS).

[68] *See* Letter from Scott Kuxmann (CN) to Jason Maga (Amtrak), dated August 18, 2017, attaching proposed schedule changes (attached as Ex. 2 to Krueger RVS). I express no view on the specifics of these proposed schedule changes, but note that experience in the airline industry suggests that customers may prefer a longer schedule with better on-time performance to a shorter schedule with poor on-time performance. *See, e.g.*, G. Skaltsas, *Analysis of Airline Schedule Padding on U.S. Domestic Routes* 123 (M.I.T. 2011).

conditions and compensation terms to reach a rational agreement. Schedules that are realistic and reasonable given current operating conditions should be an essential element of any OA, which is why I commented favorably in my opening statement on CN's proposal for periodic review and updating of schedules.[69]

It is also significant that CN has projected ASOTP improvements due to schedule changes based on actual historical run-times.[70] That historical performance was achieved under the existing, KOTP-based, Operating Agreement penalties and incentives scheme, so CN's projections, if correct, illustrate a way to achieve high ASOTP with a KOTP-based scheme.

B. Other Objectives Can Be Achieved With CN's Flexible Approach

After properly considering the internalization of the costs it causes, Amtrak may decide to revise its objectives. Whether or not Amtrak does so, as CN suggested in its opening statements, Amtrak may be able to reduce the costs of achieving its objectives by agreeing to revised schedules, reducing its performance demands, and/or investing in improved infrastructure and equipment. And if Amtrak wants an even higher level of performance, it may have that option if it pays appropriately for it.

In addition, the structure of the existing Operating Agreement allows for efficient adjustments on an ongoing basis. For example, CN offered in its opening evidence to consider adding further performance measurement checkpoints, meeting a concern expressed by Amtrak in its opening evidence.[71] Further, CN proposed in its opening evidence a reopening provision,

[69] Willig VS at 12.

[70] *See* Letter from Scott Kuxmann (CN) to Jason Maga (Amtrak), dated August 18, 2017, attaching proposed schedule changes (attached as Ex. 2 to Krueger RVS).

[71] *See* Ladue/Kuxmann VS at 49.

which would enable the parties to ensure that the imposition of penalties is always meaningful, thereby meeting another concern expressed by Amtrak.[72]

Given the flexibility of the current Operating Agreement and CN's proposal, Amtrak's proposal to radically alter the incentives and penalties scheme is unnecessary. Moreover, Amtrak's approach is inflexible: its centerpiece is comprised of service-specific HRD standards that take existing operating conditions and old schedules, some of which are ill-suited to its stated ASOTP goal, as a given. And, whereas under CN's approach both parties internalize some costs and benefits so they share an incentive to achieve efficient trade-offs and adjustments, under Amtrak's one-sided approach, since it bears none of the costs, it would have no incentive to improve the efficiency of the Operating Agreement. Amtrak's proposed changes would greatly increase the subsidy CN currently provides Amtrak, but they would not further efficiency and the public interest.

[72] *See* Ladue/Kuxmann VS at 65-66; Willig VS at 10-11.

VERIFICATION

I, Robert D. Willig, declare under penalty of perjury that I have read the foregoing Rebuttal Verified Statement, that I know the facts asserted therein, and that the same are true as stated. Further, I certify that I am qualified to and authorized to submit this Verified Statement.

Executed on September 14, 2017

Robert D. Willig

EXHIBIT 1

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BEFORE THE

SURFACE TRANSPORTATION BOARD

Docket No. FD 35743

APPLICATION OF THE NATIONAL RAILROAD PASSENGER CORPORATION UNDER 49 U.S.C. Section 24308(a) - CANADIAN NATIONAL RAILWAY COMPANY

DEPOSITION OF PAUL E. VILTER

Tuesday, June 13, 2017

9:36 a.m.

Reported by Bess A. Avery, RMR, CLR

Job No. LA-129820

Pages 1 through 249

A Trying to make travel time that it believes is competitive, yes.

Q Do you take into account Amtrak's costs?

A Amtrak's costs are taken into account, yes.

Q Do you take into account host railroad costs? And by that I mean the costs incurred by the railroads, not the costs that you pay the railroads.

A Thank you. No, we don't take that into account.

Q So other than concerning yourself with potential delays that could result from interference with the freight traffic, you don't take into account that kind of interference with freight traffic?

MR. NEUMAN: Object to the form.

THE WITNESS: No, I need you to repeat that question. I don't understand.

BY MR. HIRSH:

Q What don't you understand?

A I'd like you to repeat the question.

Q Okay. Other than concerning yourself with potential delays that could result from interference with freight traffic, you don't take into account that kind of interference. Let me try to rephrase.

Q Did you have some understanding of what he was tasked with?
A Yes.
Q Did Amtrak, for example, set a goal of achieving 80 percent ASOTP?
A That is Amtrak's goal in this incentive system, yes.
Q To your knowledge, was Mr. Sacks permitted to assume that schedules would change?
MR. NEUMAN: Objection, vague.
THE WITNESS: I don't know.
BY MR. HIRSH:
Q Did Amtrak authorize Mr. Sacks to consider ways to improve ASOTP by changing Amtrak's own operations?
A I don't know.
Q How, if at all, did cost to CN factor into Amtrak's proposal?
A Cost to CN meaning?
Q Meaning the cost that CN would incur, again, not what you paid CN?
A It did not factor into Amtrak's proposal significantly.
Q How, if at all, did impacts on CN's freight customers factor into the proposal?

A Not significantly.



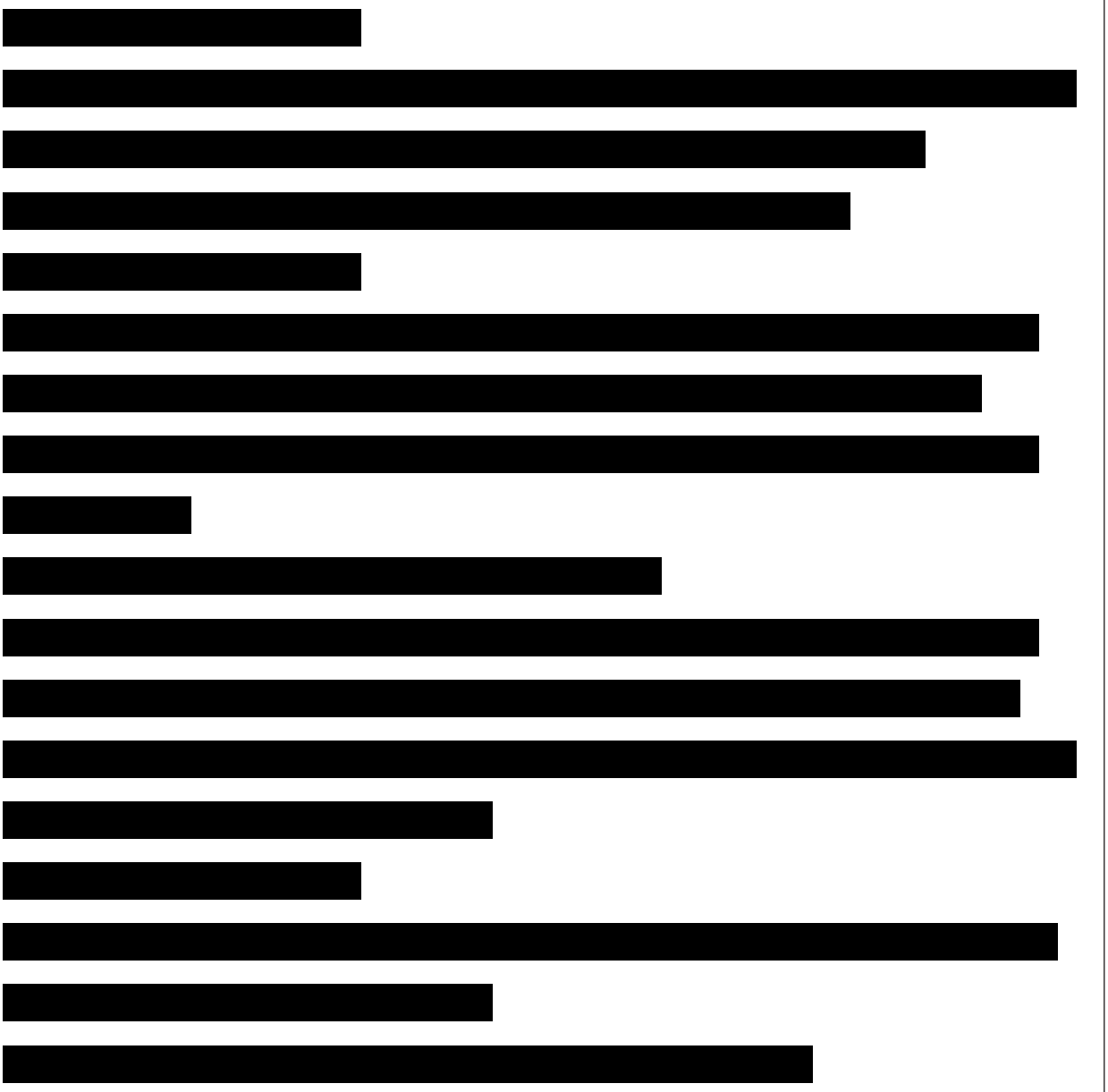
Q Did Amtrak, in proposing these standards, perform any analysis to determine whether it thought these standards could be reasonably achieved by CN?

A No.

Q So Amtrak is not in a position to say with any authority that the standards it's proposed are reasonably achievable by CN. Correct?

A We are not opining on that.

Q And based on your prior answers that you had no information about CN's costs, it's correct to



Q Yeah, does Amtrak oppose adding a provision to the operating agreement for the payment of these kinds of delay costs that CN discusses?

A Yes.

MR. NEUMAN: Are you asking Mr. Vilter in his current responsibilities, no longer HRG?

MR. HIRSH: And as the sponsor of the

primary verified statements in the proposal, that's right.

BY MR. HIRSH:

Q Why does Amtrak oppose that?

A Because Amtrak, and I'm not a lawyer, but Amtrak does not, or at least I in that role, do not believe that costs related to service levels are incremental costs.

Q What do you mean by costs related to service levels?

A If you look at the statute, it describes quality service is considered as the cost in excess of incremental costs. Our contract agreement with CN discusses what the two parties with me as the Amtrak negotiator and CN agree is compensation for incremental costs, and it does not include this. And I'm opposed to adding it.

Q Right. And my question is: Why are you opposed to adding? I understand that you are saying that it's not in there now.

A And it's not incremental.

Q What leads you to say that it's not incremental?

A Well, again, not as a lawyer, I don't -- am not familiar with the definition of

about the quality of service concept so I thought -- I'm trying to now understand if, in fact, you are not saying it's based on quality of service.

A It is based on quality of service. And there's two different points, two different levels of service in this CN proposal. In each of those CN associated a different dollar amount, but they're both levels of service.

Q Is there any level of service at which you believe Amtrak should be paying for freight delay costs?

A No.

Q That's what I was asking, is you're saying it really isn't depending on the level of service, your, whatever your point is. Okay.

I presume you are not denying that CN incurs costs when its freight trains are delayed, are you?

A I don't feel I know enough about that to answer. If a train is delayed, but it gets to the yard at a point where per diem costs are not increased or the crew didn't incur any additional cost, that's possible.

Q What about fuel? Isn't it correct that you have examined costs related to Amtrak -- delays

don't know how CN would use that, if it would feel that that was an extra cash inducement that it could keep the money, or if it would feel that if there were costs associated, that that would help offset them. But we are offering an incentive payment for delays that are below the threshold now.

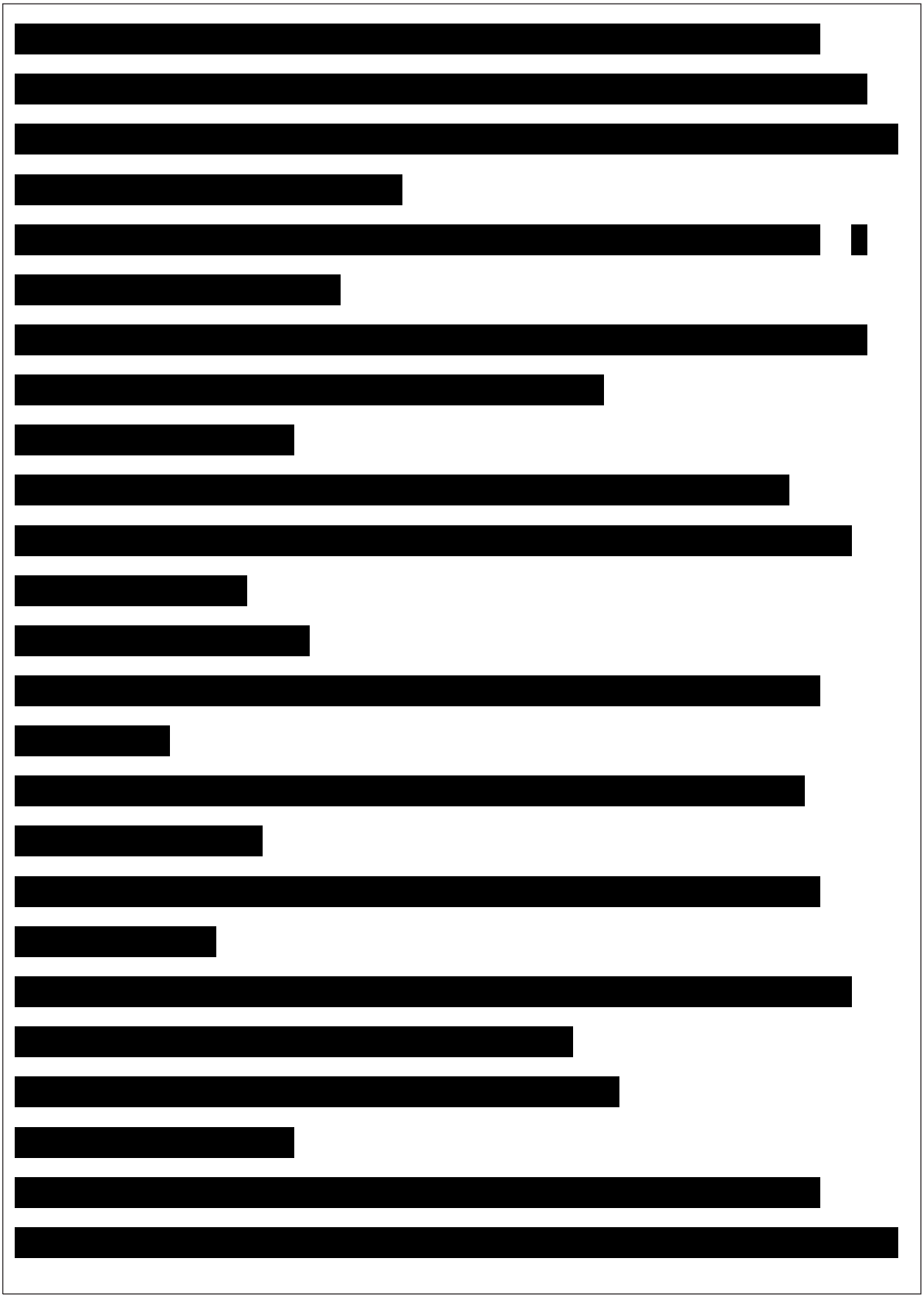
And we don't know what CN would do with it or how it would deal with it, but that's what we are offering.

Q But that's not compensation for costs. That's supposed to be an incentive. Is that what you are saying?

So I'll ask you again: Is there any compensation for the costs of freight delays in your proposal?

A No.

[redacted]



MR. NEUMAN: Tab 3.

BY MR. HIRSH:

Q Walking through this is a little difficult because originally on the version we received the paging is completely wacky. It starts and gives some pages, so if we can find a way to give us a section to review.

Now, this attachment, I gather, is a comparison of Amtrak's proposed operating agreement and the current operating agreement. Correct?

[redacted]

Q Okay. What was your role in putting this together?

A I helped direct the changes to be made.

Q Now, your statement itself contains explanations of Amtrak's proposed changes relating to compensation and incentives and penalties. Is that correct?

A Yes.

Q And it talks about how these were appropriately justified. Is that right?

Q And why aren't you proposing it?
A The objective here is to make, as I said before, there to be an impact on the host railroad for making a decision to not run an Amtrak train or -- excuse me -- for making a decision that leaves Amtrak without the choice and we're forced to annul, cancel or reschedule a train. It's to try to add a cost impact to the host for that particular scenario. That's all we are trying to accomplish here.
Q So your concept is that the host should bear the cost related to their decisions. Is that what you're saying?
A Bear a cost.
Q Cost related to their decision?
A Yes.
Q Should that same principle apply to Amtrak?
A That's outside the scope of what we are trying to accomplish here.
Q I understand. But does that principle make sense in application to Amtrak just as well?
A I think our statutory rights to use the facilities of host railroads are what govern here.

[redacted]

BEFORE THE
SURFACE TRANSPORTATION BOARD

Docket No. FD 35743

APPLICATION OF THE NATIONAL RAILROAD PASSENGER CORPORATION UNDER 49 U.S.C. § 24308(a) – CANADIAN NATIONAL RAILWAY COMPANY

REBUTTAL VERIFIED STATEMENT OF JEFFREY A. DUBIN

My name is Jeffrey A. Dubin. I am Adjunct Professor of Economics, Statistics and the Practice Area at the University of Southern California, and a Senior Advisor with Cornerstone Research. On September 4, 2015, I filed a verified statement in this case, accompanied by my curriculum vitae (Dubin VS, Ex. 1).

In that statement, I used multivariate regression techniques to estimate, under existing train schedules and network conditions, the aggregate number of freight train interference ("FTI") minutes plus passenger train interference ("PTI") minutes (collectively, "FTI_PTI") (as defined and recorded by Amtrak) that each City of New Orleans or Illini/Saluki Amtrak train hosted by CN could incur in a month and still achieve various levels of Endpoint On-Time Performance, as defined by Amtrak ("EOTP"). I conducted a similar exercise for the Blue Water Amtrak trains, but since CN hosts only a portion of the Blue Water service, I focused there on FTI_PTI and OTP on the CN segment. CN used my analysis as an input in a further independent analysis by railroad capacity modelers of what infrastructure additions would be necessary to reduce FTI_PTI to various EOTP levels without causing a net increase in delays to CN's freight traffic. *See* Dubin VS at 2-3. My opinion was confined to determining the relationship between

FTI_PTI and EOTP for those specific Amtrak trains under existing train schedules and network conditions.

At CN's request, I have reviewed the verified statement of Benjamin Sacks filed on behalf of Amtrak on the same date as my prior statement ("Sacks VS"), plus Mr. Sacks's workpapers. For context, I have also reviewed related elements of Amtrak's opening submissions, including the verified statement of Paul Vilter. The purpose of this statement is to comment on Mr. Sacks's verified statement, and particularly on Mr. Sacks's implementation and use of regression analysis.

Mr. Sacks states that Amtrak asked him to perform two main tasks:

(1) to determine, using 2011-2015 data provided by Amtrak, "the number of HRD [Host-Responsible Delay] minutes that correlate with 80% All-Stations OTP ["ASOTP"] (the '80% Point(s)')" for each of six Amtrak services that are hosted, in whole or in part, by CN. Sacks VS ¶ 6; *see* Sacks VS ¶¶ 5, 12-34; and

(2) "to develop an implementable Penalty System based on these 80% Points with the following goal: To negate CN's perception that providing Amtrak service with HRD above the 80% Point (and hence expected All Stations OTP below 80%) creates a net cost savings for CN," and to "demonstrate how [Amtrak's] proposed Quality Payment system would integrate with the proposed Penalty System." Sacks VS ¶¶ 7-8, 35-57.

I will focus my comments primarily on the first of these tasks, which, like my opening verified statement, involves the application of regression techniques to historical Amtrak data to estimate a relationship between certain delays and a measure of on-time performance (although, as I explain below, there are important differences between the tasks assigned to each of us and our methodologies).

Before doing so, however, I will briefly address the Amtrak penalty (and incentive) system that Mr. Sacks describes and for which the "80% Points" derived from his regression analysis serve as an input, because the fitness of a particular regression technique depends on context and the purpose for which it is used.

I. MR. SACKS'S REGRESSION ANALYSIS NEITHER DRIVES NOR JUSTIFIES AMTRAK'S PENALTY SCHEME

A. Amtrak's Penalty Scheme Relies On Policy Decisions Unrelated To Mr. Sacks's Regression Analysis

Regression analysis is a tool for identifying and estimating relationships between variables based on historical data. A properly conducted structural analysis which controls for relevant observable variables can estimate a causal relationship, whereas simple regression techniques – such as Mr. Sacks's two-variable linear regression analysis – may only achieve the task Mr. Sacks says Amtrak set for him – to estimate a "correlat[ion]." Sacks VS ¶ 6.[1] But even if a causal relationship is accurately estimated, regression analysis does not resolve the broader policy issues of (i) which dependent variable to pursue as a goal, (ii) what the most efficient way to pursue it is, and (iii) at what point the benefits of pursuing it are overridden by the costs.

In the present case, Mr. Sacks states that he was instructed by Amtrak (i) to focus on increasing ASOTP, (ii) to do so by constructing a penalty scheme that would motivate CN to

[1] A correlation between variable A and variable B alone does not tell us whether a change in A causes a change in B, or vice versa, or whether changes in both are instead caused by changes in variables C and D, or whether the correlation is due to a mix of such causal processes. As MIT Professor Franklin Fisher, a former president of the Econometric Society, has explained, "historical correlations among variables . . . are the hard facts with which we have to work," but "'observed relationships' may not be the real ones." F.M. Fisher, THE IDENTIFICATION PROBLEM IN ECONOMETRICS p.2 (1976).

reduce its HRD, and (iii) to base the penalties scheme on a target of 80% ASOTP. Sacks VS ¶¶ 6-7. This entails several policy choices:

- the choice of ASOTP over, for example, EOTP;
- the choice to seek to improve ASOTP by reducing HRD, rather than by changing the Amtrak schedules against which on-time performance is measured or by reducing other categories of delay, or by investing in infrastructure that could make preventing delays more feasible or less costly;
- the choice to seek to reduce HRD primarily by using penalties, rather than incentives;
- the choice to set penalties based on what Mr. Sacks calls CN's "perceived costs;" and
- the choice to set a target of 80% ASOTP, without any supporting cost-benefit analysis to demonstrate that this target is justified.

I have not been asked to opine on the merits of those policy choices, but it is important to note that they must be justified independent of Mr. Sacks's regression analysis. If they are the wrong policy choices, the technical merits of Mr. Sacks's efforts to implement them are moot.

Moreover, the policy choices that framed the instructions Amtrak gave to Mr. Sacks inevitably framed his conclusions. In general, the HRD levels that Mr. Sacks finds "correlate" to 80% ASOTP are, I understand, very low relative to the historical performance of CN and other hosts. That is, in large part, a reflection of Amtrak's policy choice to seek to determine what HRD reductions would be necessary to achieve 80% ASOTP if no other measures are taken toward that goal. As I discuss below, if other measures to improve ASOTP were undertaken –

involving, for example, schedule adjustments – 80% ASOTP could likely be achieved at substantially higher HRD levels.

B. Mr. Sacks's Regression Analysis Does Not Fit With Amtrak's Penalty Scheme

While a regression analysis alone cannot justify a penalty scheme such as Amtrak proposes, it can provide useful inputs if there is a good fit between the analysis and the proposal. However, Mr. Sacks's regression analysis is a poor fit with Amtrak's penalty scheme in two respects.

1. Mr. Sacks's HRD standards are applied only to CN's portion of multi-host routes, but were developed based on performance measured over the full multi-host route.

Mr. Sacks's regression analysis is offered in support of an Amtrak penalty scheme that would apply to six Amtrak services. On four of those services – the Blue Water, the Lincoln, the Texas Eagle and the Wolverine – CN is not the sole, or even the primary, host railroad.

Mr. Sacks's regression analysis is not host-specific. The performance metric chosen by Amtrak – ASOTP – counts identically and equally every scheduled station arrival on the entire route (plus the departures at the initial station) and determines the percentage of those arrivals that were on time. There is, therefore, no host-specific ASOTP;[2] as Mr. Sacks notes, the dependent variable in his regression analysis is ASOTP "on the entire Amtrak route." Sacks VS ¶ 16. Likewise, Mr. Sacks used as his independent variable HRD minutes per 10,000 miles for the entire route for each service – what he calls "HRD/10K." Sacks VS ¶¶ 10, 32. (He

[2] It might be possible to develop such a metric (although Mr. Sacks does not attempt to do so). However, it is not clear what it should measure: on-time performance at stations within a host's segment might be determined more by events on another host before the train reached the host's segment than by the host's own conduct, and conversely, the host's conduct might affect on-time performance at later stations to some extent. These problems are inherent in any effort to apply an ASOTP-based metric to a multi-host route.

distinguishes that variable from the equivalent CN-specific measure of HRD – "CN HRD/10K." Sacks VS ¶ 10.) Thus, the correlation Mr. Sacks seeks to determine in his regression analysis is between ASOTP for the entire route (including any sections hosted by other freight railroads) and HRD for the entire route (the mileage-weighted mean of HRD for all freight railroad hosts on the route).

The Amtrak penalty scheme he discusses does not, however, work on a whole-route basis. It would apply to CN only, and part of the analysis supporting it – Mr. Sacks's discussion of CN's "perceived costs" – is CN-specific. This mismatch raises important issues.

Let us assume for the sake of argument that (i) Amtrak's penalty scheme would be effective in motivating CN to reduce its HRD to the "80% Points" calculated by Mr. Sacks; (ii) Mr. Sacks has accurately determined that those points "correlate" with 80% ASOTP; and (iii) the relationship is not merely a "correlat[ion]," which is all that Mr. Sacks claims (Sacks VS ¶ 6), but is causal, such that reducing (whole-route) HRD to that level would lead to the achievement of (whole-route) 80% ASOTP. Even with those assumptions, Amtrak's penalty scheme would not be expected to efficiently or effectively achieve Amtrak's stated goal of 80% ASOTP on the four services for which CN is a minority host.

First, applying this same non-host-specific HRD standard to all hosts would be inefficient because there is no reason to expect that achieving equally low HRD on various host segments entails equal effort or equal costs. The efficient way to achieve low mean HRD would be to reduce HRD below the mean where it is less costly to do so and leave HRD above the mean where it is costlier to do so.

Second, applying the same HRD standard to every host along Amtrak's route would likely be ineffective. Mr. Sacks's approach involves an unsupported decision to treat all HRD

equally – to treat every minute of HRD as having the same relationship to ASOTP. The relationship is much more complex, as I elaborate below, but the flaw in Mr. Sacks's approach is intuitively obvious.[3] A minute of delay that occurs early in a train trip is likely to have more effect on ASOTP than a minute of delay that occurs between the last two stations in the trip, for the simple reason that the earlier minute of delay can affect on-time arrival and departure at a larger number of stations. Accordingly, if a train had two equal-length hosts and averaged, say, 800 HRD/10K on its first half and 1200 HRD/10K on its second half, reducing mean HRD by setting it to 900 HRD/10K for both halves might not improve, and might even worsen, ASOTP. Moreover, as discussed in Section III.A., the issue of failing to recognize that different HRD can have different relationships to ASOTP goes beyond multi-host routes – it can be an issue for any multi-station portion of a route.

2. Mr. Sacks Studies HRD, But Amtrak's Penalties Scheme Relies on the "Perceived Costs" of Preventing FTI

I understand that Amtrak's definition of HRD, the metric Mr. Sacks uses as his independent variable and Amtrak uses as its proposed performance standard, encompasses a wide variety of delays due to a wide variety of causes – not just the FTI and PTI delays I addressed in my opening statement, but also delays attributed to slow orders, signals, and other causes. I understand that the various types of HRD delay vary widely in the extent to which and the means by which they are preventable, and the costs of preventing them. Further, different categories of delay may have different impacts on ASOTP (whether because they occur at different points on the line, or for other reasons). Mr. Sacks fails to account for this because he

[3] The complexity of the relationship between ASOTP and delay presents analytical difficulties that can be avoided by using a measure of on-time performance that focuses on timeliness at a single location, as I did in my opening statement.

treats all HRD the same.

Amtrak's proposed penalty scheme exacerbates the problem because it applies the same "penalty rate" to all HRD. That penalty rate is premised on Mr. Sacks's estimate of "CN's perceived cost savings per CN train mile for each additional minute of CN HRD/10K." Sacks VS p.16. But Mr. Sacks determines those "perceived cost savings" by reference to a CN document that reports only on "the incremental cost of delays to CN's trains" of reducing Amtrak delays, Sacks VS, Appx. G, at 2. Those costs relate to one subset of HRD: FTI. (They arise when CN's trains are delayed to keep them from "interfering" with Amtrak's trains.) They may be quite different from the costs of other potential means of reducing delays that Amtrak categorizes as HRD, such as further investments in infrastructure. Estimating the "perceived cost" of HRD reduction using only data relating to the cost of FTI reduction makes no more sense than estimating the price of "food" by looking solely at the price of fruit. Amtrak's and Mr. Sacks's approach of treating all HRD the same therefore creates a mismatch between its FTI-reduction-cost-based penalty rates and its scheme applying those penalty rates indiscriminately to total HRD, regardless of its form.

This mismatch underscores a fundamental problem with Amtrak's proposed penalty scheme as developed by Mr. Sacks. Amtrak's complaints focus on FTI and its proposed financial penalties are premised on the costs of preventing FTI. But FTI is only part of HRD, which is one of many factors (including, critically, schedules) that affect ASOTP. Reducing FTI alone simply will not achieve Amtrak's stated objective of 80% ASOTP. In my workpapers, I show the results of replicating the analysis by which Mr. Sacks derived his "80% Points," but using FTI instead of HRD as the independent variable. For three services, the Illini/Saluki, the Texas Eagle, and the Wolverine, the result is negative: FTI would have to be less than zero,

under Mr. Sacks's logic, to achieve 80% ASOTP.[4] That finding serves to highlight the fundamental irrationality of attempting to achieve 80% ASOTP solely by imposing penalties on hosts, while making no other adjustments to schedules or other relevant factors. Using HRD instead of FTI as the independent variable in Mr. Sacks's analysis masks, but does not eliminate, that irrationality.

II. MR. SACKS'S REGRESSION ANALYSIS DEPENDS ON HISTORICAL SCHEDULES AND OPERATING CONDITIONS AND HAS NO PREDICTIVE VALUE FOR THE RELATIONSHIP BETWEEN HRD AND ASOTP UNDER DIFFERENT SCHEDULES OR OPERATING CONDITIONS.

Regression analysis is used to derive or estimate unknown parameters of models of relationships between variables using historical data. The resulting description of the historical relationship between the variables studied can be used to project future events ***if*** the relationship does not change. But if a policy intervention or other development significantly alters the relationship studied, the past performance reflected in the regression analysis cannot be relied upon to predict future results.

In Mr. Sacks's case, the historical data studied were monthly HRD and ASOTP data for each of the four Amtrak services that run on the Illinois Central line (the City of New Orleans, the Illini/Saluki, the Lincoln, and the Texas Eagles; collectively, the "IC Services") over a 48-month period (July 1, 2011, through June 30, 2015), and for each of the two Amtrak services that run on the Grand Trunk Western line (collectively, the "GTW Services") over a 34-month period (September 2012 through June 30, 2015). *See* Sacks VS ¶¶ 5(a), 12, 16, 29(a) & Appx. F. He used the shorter period for the GTW Services because he concluded that September 2012 schedule changes on those services "altered the relationship between HRD/10K and All Stations

[4] *See* Workpaper, "Sacks Replication Substituting FTI for HRD.xlsx."

OTP." Sacks VS ¶ 29(a). Mr. Sacks excluded all train trips under temporarily altered schedules due to track work and all incomplete train trips, and he excluded whole service-month datapoints if they contained 10 or more days with such trips. Sacks VS ¶¶ 29(b), (c), 30. He also excluded 5 datapoints "with exceptionally high HRD/10K" that he calls "outliers." Sacks VS ¶ 29(d); Appx. F.[5]

In all, out of 288 potential datapoints (6 services times a 48-month "Analysis Timeframe"), Mr. Sacks excluded 75 − over 25%.[6] In and of itself, that high rate of exclusion raises concerns about the robustness and potential skewing of the remaining data.[7] It also raises a red flag about the applicability of Mr. Sacks's conclusions to future events, even if those conclusions were otherwise sound. If a quarter of the events Mr. Sacks reviewed merited exclusion because they might not fit the pattern he described, why should the pattern he described be expected to fit, or to provide an appropriate basis for a penalty scheme intended to apply to, all future events?[8]

[5] Sacks VS ¶ 29(d) mentions 7 "outliers," but two of those were independently excluded as prior to September 2012 on the GTW Services.

[6] *See* Sacks VS, Appx. C, Fig. 21 (stating number of datapoints used for each service).

[7] These concerns are particularly significant with respect to the GTW Services. Mr. Sacks's exclusions left him with only 24 datapoints for the Blue Water and 21 datapoints for the Wolverine service. In the context of a complex relationship like that between HRD and ASOTP, which could be affected by multiple variables (as I elaborate below), such small sample sizes are not sufficient to yield robust conclusions. Moreover, Mr. Sacks disproportionately excluded summer months from his GTW Service data, so if there are seasonal differences in the HRD/ASOTP relationship, his estimates can be expected to be inaccurate.

[8] Mr. Sacks's dataset also raises staleness concerns. At this point, his last data are more than two years old, and I understand they may be three years old by the time the Board issues a final decision in this proceeding. The HRD/ASOTP relationship may well evolve during that period, rendering Mr. Sacks's findings, such as they are, obsolete.

A. Mr. Sacks's Regression Analysis Does Not and Cannot Address How HRD and ASOTP Would Relate to One Another Under Significantly Different Schedules.

Mr. Sacks excluded from his analysis most, but not all, data generated under schedules that differed from the normal schedules in effect at the end of his "Analysis Timeframe." He does not offer a consistent and persuasive justification for his decisions about which data to include and which to exclude. He attempted to test ***permanent*** schedule changes to determine whether they significantly affected the HRD/ASOTP relationship, and only excluded data prior to those which he concluded significantly affected that relationship.[9] In contrast, he excluded all data generated under ***temporary*** schedule changes on all services without such a test.[10]

While Mr. Sacks's implementation appears inconsistent, the principle underlying his exclusions is sound. Mr. Sacks was right to recognize that schedule changes can significantly alter the HRD/ASOTP relationship. ASOTP is a measure of "on-time performance" against a specific schedule. That schedule dictates what "on-time" is and, thus, what ASOTP means. If a schedule changes significantly, what ASOTP means will change significantly. In that case, as Mr. Sacks recognized, aggregating data about what are really two different variables – pre-schedule change ASOTP and post-schedule change ASOTP – as if they were the same, would be

[9] *See* Sacks VS, Appx. B. Mr. Sacks performed small sample Chow F-tests for structural stability to attempt to discern whether the regression relationship differs in certain time periods resulting from schedule changes. However, the validity of his test depends on the variance of the unexplained component of ASOTP (the residual not explained by HRD) remaining constant over time, which Mr. Sacks has not shown or tested. For further discussion, *see* Weerahandi, Samaradasa, *Testing Regression Equality with Unequal Variances*, ECONOMETRICA, Vol. 55, No. 5, Sept. 1987, pp. 1211–1215; Jayatissa, W. A., *Tests of Equality between Sets of Coefficients in Two Linear Regressions when Disturbance Variances are Unequal*, ECONOMETRICA, Vol. 45, No. 5, July 1977, pp. 1291–1292.

[10] *See* Sacks VS ¶¶ 29(c), 30.

meaningless and misleading.[11]

Changes in schedule may also affect HRD. Amtrak's schedules are constructed by adding multiple components – pure run-time ("PRT"), dwell time, recovery time, and miscellaneous time. Since each of those components affects the schedule, a change in any one of them will affect ASOTP. However, HRD is measured against only one component – PRT. Increasing PRT would tend to "improve" both HRD (by reducing it) and ASOTP (by increasing it), but it would nonetheless alter their relationship. Adding and/or redistributing recovery time in a way that improves ASOTP (by changing the benchmark against which it is measured) will even more clearly alter the HRD/ASOTP relationship, since doing so will not directly improve HRD (again, because HRD is not measured against recovery time).

The commonsense point that a significant schedule change brings about a new and different HRD/ASOTP relationship does not just affect, as Mr. Sacks recognized, what data may be properly included in an analysis of that relationship; it equally affects how such an analysis can be used. Just as past data generated under significantly different schedules cannot be trusted to reflect the HRD/ASOTP relationship that held in the past under the "normal" schedules (which is why Mr. Sacks excluded such data), that relationship cannot be trusted to describe data that will be generated in the future after a significant schedule change. In other words, if there is (or has been, since the end of Mr. Sacks's Analysis Timeframe) a significant schedule change,

[11] As compared to other on-time measures, ASOTP is particularly sensitive to schedule changes because it measures on-time performance at all stations. An endpoint OTP metric, such as the one I discussed in my opening statement, may not be significantly affected by a schedule change that reallocates time between stations along the route but does not alter the total schedule time available for reaching the endpoint. Such reallocation may, however, have a significant effect on ASOTP since it alters the schedule time available to reach intermediate stations.

Mr. Sacks's analysis (however well performed) will have no predictive value in the post-schedule change world.[12]

B. The Parties Are Discussing Schedule Changes Designed to Improve ASOTP for Amtrak's Two Largest Services on CN, Which Would Alter the HRD/ASOTP Relationship

I understand that Amtrak and CN are in discussions regarding potential changes to the schedules of Amtrak's City of New Orleans and Illini/Saluki services. I further understand that the potential changes under discussion include (i) redistributing existing recovery time from the segment between the last two stations to earlier segments of the schedule, and (ii) adding recovery time – changes that would tend (and, I understand, are intended) to improve ASOTP, but that would not have a clear, direct effect on HRD.

If any such changes are adopted, ASOTP will be defined by reference to new schedule benchmarks, so it will mean something different than what it meant in 2011-15, the period Mr. Sacks studied, and the HRD/ASOTP relationship will be different from the one he described. If the schedule changes improve ASOTP but do not (or do not to an equivalent extent) improve HRD, there will be an increase in the HRD levels that "correlate" to various ASOTP levels, as compared to those estimated by Mr. Sacks, including an increase in the HRD levels for Mr.

[12] Given sufficient data, it might theoretically be possible to perform a regression analysis, using schedule changes as an additional independent variable, that could estimate the relationship between HRD and ASOTP under a different schedule. For example, if one had many datapoints reflecting the different HRD/ASOTP relationships for a train operating under a 100-minute, a 102-minute, a 104-minute, a 108-minute, a 110-minute, and a 112-minute schedule, with no change other than to the length of the schedule, one might be able to estimate the relationship between HRD and ASOTP under a 106-minute schedule. However, Mr. Sacks did not perform any such analysis. Moreover, I understand that there has not been sufficient experience with schedule changes to make such data available.

Sacks's "80% Points."[13] Under Mr. Sacks's logic, that would mean that more HRD could be tolerated consistent with Amtrak's stated objective of 80% ASOTP. In other words, if schedules are adjusted to improve ASOTP, higher ASOTP can be achieved with less or even no HRD reduction.

C. The HRD/ASOTP Relationship Would Also Be Altered By Changes in Infrastructure Or Equipment

Like changes in schedules, changes in infrastructure and equipment are likely to affect the relationship between HRD and ASOTP observed in the historic data. Infrastructure and equipment are variables that could affect ASOTP and/or HRD and alter the relationship between ASOTP and HRD. For example, better Amtrak equipment or infrastructure investment on CN's lines might reduce HRD and non-HRD delays and improve ASOTP, which could alter the HRD/ASOTP relationship in unpredictable ways.

Mr. Sacks did not study infrastructure or equipment changes as a variable, and, as with schedule, there were, within his dataset, little if any data concerning those variables for him to study. Yet, changes in infrastructure and equipment are possible or even likely. Specifically, I understand that CN has suggested as ways to improve Amtrak train performance that (i) Amtrak or its sponsors provide funding for improvements in CN's infrastructure, and (ii) Amtrak modify the train equipment it uses for the Illini/Saluki service in order to resolve a "short shunt" problem that has forced CN for safety reasons to impose slow orders, resulting in significant delays that Amtrak (over CN's objection) treats as HRD.

[13] In graphical terms, this would mean that datapoints generated under the new schedule would be expected to fall above and to the right of the regression line in Mr. Sacks's Figure 3 (Sacks VS, p.9).

As with schedules, therefore, there may be future changes in infrastructure and/or equipment that could significantly change the relationship between HRD and ASOTP estimated by Mr. Sacks, and Mr. Sacks's data and analysis provide no basis for predicting what that relationship would be after those changes.

III. MR. SACKS'S ANALYSIS OF HOW HRD RELATES TO ASOTP IS MARRED BY MULTIPLE ANALYTICAL FLAWS

Above, I have described some inherent limitations of Mr. Sacks's analytical endeavor that would apply even if he had conducted a properly specified, structural regression analysis. In this section, I describe additional flaws in his analysis. Collectively, they indicate that Mr. Sacks's two-variable linear regression analysis describing the "correlat[ion]" (Sacks VS ¶ 6) between HRD and ASOTP falls far short of the requirements of a structural analysis.[14] It does not describe the causal relationships that give rise to that correlation, it inaccurately assumes and

[14] In order to isolate and estimate real causal relationships, and to avoid biases, structural modelling is necessary. This typically involves the use of simultaneous equations describing the relationships of multiple variables, informed by an *a priori* understanding of the relationships among those variables. *See generally* Fisher, THE IDENTIFICATION PROBLEM IN ECONOMETRICS p.2.

As an illustration, consider the relationship between the lengths of the sides of a right triangle and the hypotenuse. The length of the vertical side will certainly be correlated to the length of the hypotenuse in some datasets. But this correlation, which could be estimated using a two-variable linear regression analysis akin to that used by Mr. Sacks, does not allow us to infer the length of the vertical side from the length of the hypotenuse. To do so, we must conduct a more sophisticated analysis informed by an *a priori* understanding of the relevant geometric relationships – in this case, a multivariate analysis that addresses (as well) the length of the horizontal side as an independent variable, informed by our *a priori* understanding that that length will affect the length of the hypotenuse. With that structural analysis, we should be able to deduce (if we did not already know) the Pythagorean Theorem (that the square of the hypotenuse equals the sum of the squares of the other two sides). Similarly, we cannot infer the level of HRD that is required to achieve a given level of ASOTP without identifying, and conducting a structural analysis that addresses other relevant factors (such as the levels of Amtrak-responsible and other delays).

extrapolates a linear relationship, it ignores relevant properties of the variables studied and omits other relevant variables, and it cannot generate robust conclusions about the HRD/ASOTP relationship that would arise if Amtrak's proposed penalty scheme were implemented.[15]

A. Mr. Sacks's Model Fails To Account For The Complex, Station-By-Station Nature Of ASOTP And For Different Locations And Kinds Of HRD

The most fundamental flaw in Mr. Sacks's analysis may be attributable to Amtrak's instructions rather than his own judgments. He reports that Amtrak asked him to determine "***the number of HRD minutes*** that correlate with 80% All Stations OTP (the "80% Point(s)") for each Amtrak Route." Sacks VS ¶ 6. Such a number can be identified, as he has done; when two variables correlate within a given dataset, a line or curve can always be drawn to reflect that correlation. But in this case, it provides no meaningful estimate of causation, because there is no simple causal relationship between "the number of HRD minutes" for an entire service and that service's ASOTP.

To be sure, there is in a general sense a causal relationship between HRD and ASOTP. Delays, including those aggregated under the label HRD, can be expected, by definition, to contribute to trains failing to be on time. But ASOTP is a complex, compound metric which aggregates measurements at multiple stations and so cannot be causally explained by a simple variable such as the "number of HRD minutes." As a result, Mr. Sacks's attempt to shoe-horn

[15] It is important to note that the statistical tests (statistical significance, R^2, and t-stats) Mr. Sacks discusses do not address the concerns set out in this Section. Those tests indicate, as Mr. Sacks says, that "the relationship observed was unlikely to be due to random chance." Sacks VS ¶ 25. But the question of interest is not whether there is a general relationship such that ASOTP will typically be higher when HRD is lower; that is obviously true. The questions of interest are, instead, whether Mr. Sacks has accurately estimated how changes in HRD affect ASOTP, and whether his model reflects the reality that the position along the route of the HRD matters. Because his model is misspecified in the various ways I discuss, the answers to those questions are no.

such complexity into a single two-variable linear model will inevitably lead to a misrepresentation of the causal processes in play – a flaw well-known in the econometrics literature as "aggregation bias."[16]

Consider the difference between ASOTP and the dependent variable I addressed in my opening statement, Endpoint OTP. Endpoint OTP involves just one measurement: it reflects whether a train is on-time at a single endpoint. Given a fixed schedule and fixed definition of Endpoint OTP, that will be determined by a single number − the total number of delay minutes on that trip. In contrast, ASOTP depends on departure from the initial station and arrivals at all intermediate stations and the final station. ASOTP is not a single dependent (endogenous) variable; it is an aggregate of multiple endogenous variables inasmuch as OTP at each station is endogenous.

Moreover, those endogenous variables depend in part on each other. A late departure from station 1 makes a late arrival at station 2 more likely; a late arrival at station 2 makes a late departure at station 2 more likely, which makes a late arrival at station 3 more likely, *etc*. And, each of the endogenous variables that are aggregated into ASOTP can be expected to have a different relationship with HRD. If Amtrak controls the departure from station 1 (as I understand it typically does), station 1 OTP will not be determined in any way by HRD; station 2 OTP may be determined largely by station 1 OTP but HRD between station 1 and station 2 may have some effect on it; station 3 OTP may be determined largely by station 2 OTP (on which HRD may or may not have an effect), but also partly by, say, third-party-responsible delay, which may be the predominant form of delay on the segment between station 2 and station 3; *etc.*

[16] *See, e.g.*, H. Theil, PRINCIPLES OF ECONOMETRICS p.560 (1971).

This complexity means that the "number of HRD minutes" cannot be the primary "cause" of ASOTP, even if HRD has (multiple, varying) effects on ASOTP. Among other things, it is important where along the route HRD (and other delays) occur. Consider an extreme example: Suppose that a train trip has 10 stations and that on one day it experiences 1 hour of HRD between station 1 and station 2 that causes it to be late at all subsequent stations. On that trip, with 60 minutes of HRD it achieves 10% ASOTP. Now suppose that on the next day's trip it proceeds on time until it experiences 2 hours of HRD between the last two stations. On that trip, with 120 minutes of HRD it achieves 90% ASOTP.

In Appendix A, I sketch out a simple mathematical model that captures the relationships between HRD and ASOTP given these complications. Mr. Sacks did not use such a model and, while he describes stability tests he used to test for temporal stability, he does not purport to have used any stability test or other means to explore the plausible hypothesis that HRD/ASOTP relationships are affected by where along the train trip the HRD occurs.

In Appendix B, I set out the results of an empirical analysis that tests that hypothesis, which I performed using Mr. Sacks's data. While it does not perfectly achieve the theoretical structural specification of the model set forth in Appendix A, it captures the most important implication of that model which is a disaggregation of HRD at different stages of the train trip. Specifically, the Appendix B analysis follows Mr. Sacks's methodology for the Illini/Saluki service with one important exception: I replace the single independent factor for the average HRD over the whole route (used by Mr. Sacks) with three variables: the average HRD over the first third, the second third, and the final third of the route.

For both the first and second thirds of the route, the empirical result is a substantial increase in the magnitude of the coefficient that measures the marginal effect of HRD.[17] This implies that when HRD is reduced on those segments, ASOTP increases by more than Mr. Sacks projects. That, in turn, would yield an "80% Point" at a higher level of HRD than Mr. Sacks projects.

Appendix B reflects a predictable conclusion, which Mr. Sacks ignores but which nevertheless has significant policy implications. The HRD level that is likely to cause ASOTP to reach 80% depends heavily on where the HRD occurs. If one's goal is to improve ASOTP by reducing HRD, a more rational strategy would involve targeting HRD that occurs relatively early in the train trip, as opposed to trying to reduce HRD indiscriminately (as Amtrak proposes).

Mr. Sacks generates additional aggregation biases by treating all HRD the same. Mr. Sacks not only aggregates HRD without regard to location; he also aggregates it without regard for the type of HRD. In my opening verified statement, I focused on the two subsets of HRD that involve train meets – FTI and PTI. Mr. Sacks's independent variable is much broader – encompassing not just train meets, but also signal failures, safety- and maintenance-based slow orders, interlockings not controlled by CN, and other cases of delay Amtrak labels as HRD. Mr. Sacks treats all HRD delays the same, but he provides no evidence that they all have the same relationship to ASOTP. Certain categories of delay may be less predictable, or occur less often but be larger when they occur, which may or may not mean that they have more effect than others on causing additional delay and thus have more effect on ASOTP. So taking measures to reduce a particular kind of delay – say, FTI – may have a different effect on ASOTP than would

[17] Conversely, the magnitude of the coefficient for the final third of the route is much smaller than Mr. Sacks's coefficient, implying that changes in HRD on that segment have much less effect on ASOTP than his analysis suggests.

a more general reduction of HRD. Mr. Sacks's analysis does not, on its face, answer the question of what would happen to ASOTP if FTI (as opposed to HRD in general) were reduced by a certain amount. That unanswered question seems significant, given that Amtrak's penalty scheme focuses on the "perceived costs" of reducing FTI and insofar as reducing FTI may be more feasible than reducing other categories of HRD, as noted in Section I.B.2, above.

Mr. Sacks also fails to disaggregate his analysis in another respect: he treats each Amtrak service as one, ignoring distinctions between the individual trains that comprise that service. Trains that run in opposite directions, at different times, and under different schedules, are likely to exhibit different HRD/ASOTP relationships. For example, other things being equal, a service that experiences most of its HRD towards its northern end may have worse ASOTP on its southbound trains than on its northbound trains, because its southbound trains have more stations to hit after the HRD occurs. I am informed that Amtrak's schedules recognize that trains moving in the same service in opposite directions may have different routes and face different challenges. For example, some of Amtrak's northbound and southbound trains in the same service have different total schedule lengths. It is also the case that different trains in the same service often achieve significantly different levels of ASOTP. Given such variations, it would clearly be more informative to conduct an analysis on a train-by-train basis, as I did in my opening verified statement, rather than on the whole-service basis, as Mr. Sacks did. Collectively, the aggregation biases arising from Mr. Sacks's over-simplified model of HRD/ASOTP relationships are likely to yield a highly inaccurate result.

B. Mr. Sacks Made a Series of Errors and Unfounded Assumptions By Modeling the Relationship of HRD And ASOTP As Linear And By Extrapolating Far Beyond The Range Of His Data.

1. Mr. Sacks's modelling of percentage ASOTP in a linear regression was inaccurate because he failed to transform it first into absolute terms.

Mr. Sacks makes a textbook error by attempting to calculate a linear relationship in which the dependent variable – ASOTP – is a proportion (percentage). A linear regression analysis cannot be used to accurately model the determinants of a proportion. Professors Robert Pindyck and Daniel Rubinfeld devote an entire section of their undergraduate textbook to problems that occur when probabilities (proportions) are estimated using linear regression methods.[18] These problems include: (i) lack of logical consistency, (ii) heteroskedasticity, (iii) bias in the estimated slope relationships, (iv) implausible restrictions on the model disturbances, and (v) predictions larger than 100% or less than 0%.[19] The solutions to these issues are well known and involve transformation of the probabilities or proportions using logistic or normal transformations. Professor Rubinfeld states: "Given the difficulties associated with the linear probability model, it is natural to transform the original model in such a way that predictions will lie in the (0,1) interval for all X."[20]

The empirical difficulties of using the linear probability model (*i.e.*, linear regression analysis) without first transforming the dependent variable are well known. For example, Professor G.S. Maddala has shown that fractional data tend to bunch for large X values.[21] Such bunching causes a bias in the regression line that leads, in this case, to a bias in the estimate of HRD for a given level of the dependent variable ASOTP.

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[18] R.S. Pindyck & D. L. Rubinfeld, ECONOMETRIC MODELS AND ECONOMIC FORECASTS, pp. 298-304 (4th ed. 1998).

[19] *Id.*

[20] *Id.* at 304.

[21] G.S. Maddala, INTRODUCTION TO ECONOMETRICS, pp. 324-25 (2d ed. 1992).

Methods other than linear regression have been used in econometrics to analyze fractional dependent variables (proportions) since the 1960s, and given the potential for bias, it is best practice to avoid linear regression in this setting. My previous verified statement explained the transformation that I employed to obtain a model that was mathematically consistent with the endpoint OTP measure. Given the known bias from using a linear specification, it is fundamentally flawed to proceed using linear regression analysis without transformation.

2. Mr. Sacks relies on the baseless assumption that the relationship between HRD and ASOTP is linear and remains linear beyond the range of the data.

The above technical flaw could be "fixed" by transforming the OTP percentages into absolute values, as I did. But there is an additional problem with Mr. Sacks's treatment of the relationship between HRD and ASOTP as linear. Extrapolating a linear regression analysis beyond the range of the data is generally problematic and can lead to inaccuracies, which generally increase as the extrapolation extends further beyond the range of the data. The measures of fit Mr. Sacks cites apply within the range of the underlying data Mr. Sacks studied and do not tell us anything about how accurate his model is when it is applied to forecast outside the range of those data. A standard result, which appears in almost all econometrics textbooks, is that the confidence in a regression-based estimate is highest at the center of the underlying data (the point of averages) and decreases the further one gets from the center.[22]

A good example of extrapolation leading to inaccuracies is NASA's experience with the Challenger space shuttle. In that case, engineers had fit a regression relationship between the performance of the O-rings that connect the booster rockets and ambient temperature. This relationship had been estimated from shuttle launches on relatively warm days. When the

[22] *See, e.g.,* L. Klein, A TEXTBOOK OF ECONOMETRICS, p. 256, Fig. 5 (1953).

Challenger was launched on a very cold day, the O-ring contracted and hot gases were allowed to pass between booster rockets, leading to the explosion. The linear relationship estimated by the engineers was accurate for average days (relatively warm days) but became increasingly inaccurate when used for colder days. The confidence in the estimated O-ring contraction forecasted by this model would not rule out a contraction that was unacceptable, but this confidence was tragically not assessed before the launch.

Mr. Sacks makes this same conceptual error. He extrapolates his regression relationship far outside the band of historical experience, and in doing so enters a band of large uncertainty he does not attempt to calculate. Mr. Sacks attempts to infer an HRD level for a high level of ASOTP that falls far away from the average of the data. For example, in his Figure 18 (Sacks VS, Appx. B, p. B-6), he graphs 21 datapoints for the Wolverine service that fall (not particularly close to his regression line, as his R^2 of 0.57 reflects) within a range of approximately 1,000-2,000 HRD and 30-70% ASOTP.[23] From that small cluster, he extrapolates a line to 411 HRD and 80% ASOTP – far outside the range of the data.

Mr. Sacks provides no statistical evidence to support the assumption that the relationship between HRD and ASOTP can be accurately characterized as linear so far beyond the range of his data. Indeed, he does not even appear to believe that assumption. In explaining why he

[23] The small number of datapoints used in Mr. Sacks's analysis (which reflects in part the limitations of the data) raises a further concern with his analysis. While there is no magic number, 21 or 24 datapoints (for the GTW Services) are certainly too few to achieve accurate estimation of a complex relationship, such as that between HRD and ASOTP, that has multiple explanatory factors. Similarly, the numbers of datapoints used for other services are less than ideal to yield robust conclusions. Econometricians recognize that the more explanatory factors are in play, the more observations are required for accuracy; the number of observation less the number of explanatory factors is referred to as "degrees of freedom." Generally speaking, a more complex model will require more degrees of freedom. The relationship of ASOTP to HRD is very complex.

excluded from his analysis certain "outlier" datapoints, he states: "the linear relationship between All Stations OTP and HRD/10K which holds over the range of HRD/10K that I analyze and that is relevant for the Penalty System does not hold at very high values of HRD/10K." Sacks VS, p.11, n.13. Having acknowledged that his projected linear relationship between HRD and ASOTP does not hold at levels of HRD ***higher*** than the range of the reported data, Mr. Sacks provides no evidence to support his assumption that it holds at levels of HRD ***lower*** than that range. Mr. Sacks cannot predict with confidence from the data what the shape (and strength) of the relationship between HRD and ASOTP will be at the much lower HRD levels to which he extrapolates to find his "80% Points," but his finding that a linear relationship does not hold at higher levels of HRD is, on its face, more consistent with an S-shaped curve – which is normally used when modelling proportions – than with the straight lines he assumes as an essential part of his analysis, and which provide an essential input to Amtrak's proposed penalties scheme.

C. Mr. Sacks Misestimates The HRD/ASOTP Relationship Because His Analysis Omits Relevant Factors, Including Initial Station OTP And Different Kinds Of Non-HRD Delay

Assuming a fixed schedule and infrastructure as Mr. Sacks does, ASOTP will be determined in some manner by delays. However, HRD is not the only category of delays that contributes to trains arriving late – there are also (1) delays in departure from the initial station; (2) Amtrak-responsible delays, and (3) third-party responsible delays.

As discussed above, Mr. Sacks's two-variable linear regression analysis addresses only one independent variable – the number of HRD minutes. His analysis is a simple curve-fitting exercise; unlike a structural model, in which one would control for multiple independent variables – including other kinds of delay – he assumes that deviations from the least squares line are random. This is a fundamental flaw well known to econometricians as "omitted variables

bias." In Appendix C, I provide a standard mathematical demonstration that omitting a dependent variable that affects the dependent variable studied (here, ASOTP) and is correlated with the independent variable studied (here, HRD) will generate inaccurate results.

1. Initial Station OTP

In the present case, Mr. Sacks does not purport to have controlled for OTP (or delays before departure) at the initial station. That is a potentially significant factor in determining ASOTP: OTP at the initial station itself counts as part of ASOTP, and a late start will pre-dispose a train to arrive late at subsequent – *i.e.*, all – stations. It is also plausible that there will be a significant correlation between OTP at the initial station and Mr. Sacks's independent variable (HRD) since host dispatchers can probably more easily manage and prevent HRD to Amtrak trains that start along the line in their scheduled time slot. Thus, what appears (when Mr. Sacks ignores initial station OTP) to be HRD causing bad ASOTP may to some extent be bad initial station OTP simultaneously causing both HRD and bad ASOTP. If this is true, Mr. Sacks's estimate of the size of the coefficient that measures the marginal effect of HRD on ASOTP will be too high (subject to other distortions), leading to erroneous predictions of the ASOTP level achieved at various HRD levels.[24]

[24] Mr. Sacks's model may accurately estimate the historical ***correlation*** between HRD and ASOTP. But by omitting initial station OTP as a variable in his analysis, he fails to control for it, and thus fails to isolate the ***causal effect*** on ASOTP of changes in HRD. As I explain in more detail in Appendix C, Mr. Sacks thereby effectively assumes that when HRD changes, initial station OTP will change with it. That assumption is highly unlikely to be borne out. In particular, if CN reduces its HRD in response to Amtrak's proposed penalty scheme, there is no reason to expect that to cause a corresponding improvement in initial station OTP. (The same logic applies to Mr. Sacks's omission of the variable Amtrak-responsible delay and third-party-responsible delay, which I discuss below.)

Mr. Sacks's omission of the initial station OTP variable also precludes his model from helping to determine what levels of ASOTP would arise at a given level of HRD if initial station OTP changes. I am informed that Amtrak has, since the period studied by Mr. Sacks, undertaken initiatives at Chicago Union Station – the initial station for southbound City of New Orleans and Illini/Saluki trains – to improve initial station OTP. If successful, those measures would be expected to improve ASOTP independent of any change in HRD. Such a change would tend to increase the HRD levels which "correlate," in Mr. Sacks's terms, to various ASOTP levels, including his "80% Points."

2. Amtrak-Responsible and Third-Party Responsible Delays

Unlike initial station OTP, Mr. Sacks does purport to have considered other, non-HRD, delays *en route*. He did not include them as variables in the analysis from which he derived his "80% Points," but claims to have "verified that including all other delays (*i.e.*, non-HRD delays) as an additional independent variable in the regression does not substantially change the regression results for the impact of HRD/10K on All Stations OTP." Sacks VS ¶ 67. More specifically, he claims that "the 80% Points calculated based on a regression including all other delays are either substantially the same as, or in one case substantially lower than, the 80% Points from the regressions without that additional variable." Sacks VS ¶ 67.

Mr. Sacks's "verification" is flawed, because his "non-hrd" delay variable is, itself, overly simplistic. "Non-HRD" delays include both Amtrak-responsible delays and third-party-responsible delays. If those two categories of delay relate in different ways to HRD and ASOTP, which Mr. Sacks did not, apparently, test, aggregating them together into a single compound variable will generate misleading results. Further, and more importantly, as I have discussed above, the omission of appropriate variables to control for other delay categories is just one

among many flaws and inherent limitations that afflict Mr. Sacks's analysis, so fixing this one problem would not yield a meaningful conclusion.

Nonetheless, Mr. Sacks's "verification" is illuminating, although in ways other than he suggests. First, notwithstanding his claim that adding "non-hrd" "does not substantially change the regression results," his findings illustrate how sensitive his analysis is to omitted factors and methodological adjustments. According to his workpapers, adding "non-hrd" as a factor would change the "80% Point" for the City of New Orleans from 709 to 750 HRD, and that for the Illini/Saluki from 432 to 245 HRD.[25] Those would not be insignificant changes in the context of Amtrak's proposed penalty scheme. For example, under that scheme, substituting 750 HRD for 709 HRD as the penalty threshold for the City of New Orleans would reduce CN's penalties or increase its incentives by about $570,773 per year.[26]

Second, any analysis that can yield 245 minutes of HRD per 10,000 miles as a potential threshold for penalties should be suspect, given that, I am informed, it has never been achieved and would not be achievable. If controlling for "non-hrd" delays drives the "80% Point" for the Illini/Saluki to unrealistic levels, as Mr. Sacks suggests, this demonstrates that current levels of "non-hrd" are a significant cause of ASOTP failures. This reflects one of the fundamental flaws of Mr. Sacks's analysis: the more significant non-HRD-based impediments (schedule, Amtrak-

[25] According to Mr. Sacks's calculations, when "non-hrd" is added as a variable, the "80% Points" for other services also change (albeit less dramatically than those for the City of New Orleans and the Illini/Saluki).

[26] As explained by Mr. Sacks (Sacks VS ¶¶ 35-49), Amtrak's proposed penalty scheme applies for each service a uniform specified penalty and incentive rate to each minute of HRD per 10,000 miles that separates CN's performance from the "80% Point" (subject to certain caps). It is therefore simple to calculate the effect of a 41-point shift in the "80% Point" for the City of New Orleans: 41 x penalty rate ($0.0206) x monthly train miles (56,424) x months per year (12).

responsible delay, third-party-responsible delay, initial station OTP, *etc*.) are to high ASOTP, the less HRD can be tolerated if, as Amtrak's scheme implies, 80% ASOTP is to be achieved without addressing those other problems.[27]

CONCLUSION

As I have explained, the proposed penalty scheme Mr. Sacks discusses relies for a key input on his linear regression analysis extrapolating a "correlat[ion]" between HRD and ASOTP. But it also encompasses additional premises and policies that are independent of that analysis and appear to fit poorly with it. For example, Mr. Sacks analyzes delays and on-time performance for multi-host routes as a whole, but the penalty scheme he discusses focuses solely on CN. He analyzes HRD as a whole, but the penalty scheme he discusses relies on the alleged "perceived costs" of reducing FTI. Even if Mr. Sacks had succeeded in producing a robust structural analysis, which he did not, that analysis would neither drive nor justify the penalty scheme proposed by Amtrak.

In addition, Mr. Sacks's regression analysis is inherently of limited utility. It is a study of data generated under specific historic circumstances – namely, the schedules and operating conditions in place during the 2011-2015 study period. If Amtrak's schedules change significantly, as I understand is currently under discussion, or if significant infrastructure is added to the line affecting fluidity, such events will change the relationship between HRD and the dependent variable (ASOTP) studied by Mr. Sacks, undermining his conclusions regarding that relationship and their utility for future application.

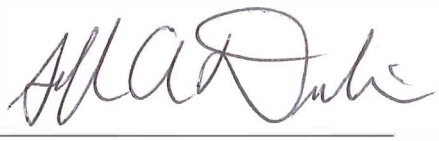
[27] Perversely, if other drivers of low ASOTP are not addressed, high levels of Amtrak-responsible delay may mean setting the HRD level required to achieve 80% ASOTP at unachievably low levels, resulting, under Amtrak's scheme, in substantial penalty payments from CN to Amtrak.

Further, Mr. Sacks's two-variable correlation analysis is inadequate to measure the complex causal relationships between HRD and ASOTP. In order to generate a single, whole-route HRD number, it replaces a series of complicated ordered relationships that occur in temporal sequence as the train moves along its route with an inexact aggregation that does not represent reality. In addition, it incorrectly assumes linearity, contrary to basic econometric principles regarding the modelling of proportions, and extrapolates far beyond the range of the data. And finally, it fails to control effectively for other relevant variables, including (but not limited to) initial station OTP and the different forms of non-HRD delay.

VERIFICATION

I, Jeffrey A. Dubin, declare under penalty of perjury that I have read the foregoing Rebuttal Verified Statement, that I know the facts asserted therein, and that the same are true as stated. Further, I certify that I am qualified to and authorized to submit this Rebuttal Verified Statement.

Executed on September 14, 2017



Jeffrey A. Dubin

APPENDIX A

A Model Of ASOTP That Reflects The Dependency Of OTP At Later Stations On OTP At Earlier Stations

The measure ASOTP is an average of binary events indicating whether or not a train is on-time at stations along a service. If the train were on-time at all stations along a service it would be one hundred percent on-time. The average formed of the binary events is thus a proportion − the proportion of stations in the service for which the trains were on-time. Importantly, there is a temporal sequence to these events as the train proceeds from the beginning to the end of the service.

Proportions are commonly used to estimate the probability of an underlying event such as the likelihood that a coin has a 50% chance of coming up heads in a given trial. For instance, many trials (coin flips) could be used to estimate the *common* probability of a "head" on a single flip using the proportion. The expected value (or expectation) of the proportion is equal to the true but unknown common probability. Econometric modeling specifies the relationship of the probability to a set of potential influences. In the case of coin-tossing, the model is simple because the probability is assumed to be common and constant.

In the present situation, the likelihood of a station having an on-time arrival depends on the arrival history of stations that were temporally precedent. In mathematical terms, if δ_{it} denotes the event that service *i* was on-time at station *t* with $\delta_{it} = 1$ if train is on-time and $\delta_{it} = 0$ if train is not on-time, then ASOTP measures the proportion

$$ASOTP_i = \sum_{t=1}^{T_i} \frac{\delta_{it}}{T_i} = (\delta_{i1} + \delta_{i2} + \cdots + \delta_{iT_i})/T_i$$

where T_i is the number of stations along service *i*.

The expectation of $ASOTP_i$ is

$$E(ASOTP_i) = \frac{1}{T_i}\sum_{t=1}^{T_i} P_{it} = (P_{i1} + P_{i2} + \cdots P_{iT_i})/T_i$$

where P_{it} denotes the probability that service *i* was on-time at station *t.* In this case, the expectation depends on potentially unequal (non-constant and non-common) probabilities.

Next, consider the specification of joint probability of the events $\delta_{it}, t = 1,2, \ldots T_i$. We should expect that the probabilities are state dependent[28] (they depend on what has occurred in prior time periods) since the events δ_{it} are not temporally independent (*i.e.*, whether or not a train was on-time at the previous station, *t-1*, has an impact on the likelihood that it is on-time at station *t*).

The consequences of state dependence require that the regression model for the expectation of ASOTP reflect the state dependence. Consider the simplest case of two stations, T_i = 2. In this case:

$$ASOTP_i = \frac{1}{2}\sum_{t=1}^{2} \delta_{it} = \frac{\delta_{i1} + \delta_{i2}}{2}.$$

The expectation is:

$$E(ASOTP_i) = \frac{P_{i1} + P_{i2}}{2}.$$

It seems reasonable to specify that P_{i1} depends on a set of factors X_{i1} that occur during the trip from the origin to station 1: $P_{i1} = F(X_{i1}'\beta_1)$ where X_{i1} is a vector of the observed factors occurring on the first trip segment and β_1 unknown coefficients with *F* a suitable probability distribution function. X_{i1} might reasonably include delay minutes by Amtrak, third parties, and hosts. Emphasizing the host responsibility delay component for notional simplicity, we write

[28] *See* T. Amemiya, ADVANCED ECONOMETRICS, pp. 348-52 (1985).

$P_{i1} = G_1(HRD_{i1})$. Clearly, P_{i1} does not depend on HRD at later intervals (specifically, HRD_{i2}) as the train has not moved beyond the first station.

Next, consider P_{i2} the probability that the train is on-time at station 2. This must reflect state dependence:

$$P_{i2} = Prob[\delta_{i2} = 1]$$

$$= Prob[\delta_{i2} = 1 \mid \delta_{i1} = 1]Prob[\delta_{i1} = 1] + Prob[\delta_{i2} = 1 \mid \delta_{i1} = 0]\, Prob[\delta_{i1} = 0]$$

which follows from basic properties of conditional probability and reflecting that the probability $\delta_{i2} = 1$ is state dependent, *i.e.,* not independent of the prior state.[29] We let:

$$P[\delta_{i2} = 1 \mid \delta_{i1}] = F[X'_{i2}\beta_2, \delta_{i1}]$$

where X_{i2} are factors including HRD that occur after the train leaves station 1 and before it reaches station 2. Again, emphasizing the HRD component for notational simplicity we let:

$$P[\delta_{i2} = 1 \mid \delta_{i1}] = G_2[HRD_{i2}, \delta_{i1}].$$

Then

$$P_{i2} = G_2(HRD_{i2}, 1) \cdot G_1(HRD_{i1}) + \ G_2(HRD_{i2}, 0) \cdot (1 - G_1(HRD_{i1}))$$

and

$$E(ASOTP_i) = \left[G_1(HRD_{i1}) + \ G_2(HRD_{i2}, 1) \cdot G_1(HRD_{i1}) + \ G_2(HRD_{i2}, 0) \cdot \left(1 - G_1(HRD_{i1})\right)\right]/2.$$

[29] This is a simplification. The probability would likely depend on additional factors from prior states, *e.g.*, how late or early the train was at the prior station. In addition, the model I set out here describes solely OTP on ***arrival*** at stations, so it does not address the issue of initial station OTP (i.e., timeliness of ***departure*** from the train's starting point) that I discuss in Section III.C of the text and in Appendix C, below. Initial station OTP both counts towards Amtrak's ASOTP metric and affects OTP at later stations, and I understand it is largely determined by Amtrak's conduct, not HRD, so a model that does not address it will tend to overstate the influence of HRD on ASOTP. The model here could be easily modified to accommodate the initial departure by introducing a time period *t*=0. The probability of timeliness at *t*=0 (whether Amtrak's train leaves its origin station on time) might depend itself on observable factors.

This expression is highly non-linear and depends on the HRD levels at each segment (HRD_{i1} and HRD_{i2}) in a complex manner. For any reasonable choice of the probability function G_i this expression cannot be a single function of average $\overline{HRD_i} = (HRD_{i1} + HRD_{i2})/2.$[30]

Consequently, a model for ASOTP cannot reasonably be estimated using a linear regression with HRD for the route as the only explanatory variable.

[30] In the case in which probabilities are not state dependent and linear in the factor HRD, the expression for $E(ASOTP_i)$ would be a linear function of average $\overline{HRD_i}$ for the entire service. However, neither linearity of the probabilities nor absence of state dependence makes this condition seem remotely plausible.

APPENDIX B

Determination Of "80% Points" For Illini/Saluki Service Using Mr. Sacks's Methodology But Using HRD For Each Third Of The Route As The Independent Variable

As I explain in Section III.A of my statement, one over-simplification Mr. Sacks made in his analysis was treating every minute of HRD the same, regardless of whether it occurred early or late in a train trip, or on one host or another on a multi-host trip. All things being equal, earlier delays will likely have more effect on ASOTP than later delays, since the more stations there are after a delay, the more OTP measurements there will be that that delay could affect.

To test that expectation empirically, I replicated Mr. Sacks's analysis for the Illini/Saluki service, but instead of using whole-route HRD as the independent variable, I divided the route into thirds and used the HRD minutes/10,000 miles for each of the first third, the middle third, and the final third of the route (in each direction) as the independent variable.[31] Consistent with the expectation that earlier delays have more effect on ASOTP, the magnitude of the of the coefficient that measures the marginal effect of HRD on ASOTP is greatest for the first third of

[31] There are 11 stops on the Illini/Saluki service. For purposes of this analysis, I divided it into thirds as follows. For trains 390 and 392 (northbound trains), the first third, encompassing 108.9 track miles, runs from stop 1 (Carbondale) to stop 4 (Effingham); the second third, encompassing 118.1 track miles, runs from stop 4 (Effingham) to stop 8 (Gilman); and the last third, encompassing 79.7 track miles, runs from stop 8 (Gilman) to stop 11 (Chicago). For trains 391 and 393 (southbound trains), the first third runs from Chicago to Gilman, the second third runs from Gilman to Effingham, and the last third runs from Effingham to Carbondale. I calculated HRD per 10K for the first third as the average HRD across the first thirds of Illini/Saluki trains in each direction (*i.e.*, Carbondale to Effingham on 390/392, and Chicago to Gilman on 391 and 393), divided by the length of the Illini/Saluki route, multiplied by 10,000. I calculated HRD per 10K for the other thirds analogously.

On pages 19-20 of my statement, I explain why analyzing delay/OTP relationships on a train-by-train basis (as I did in my opening statement) rather than on a whole-service basis that ignores the effects of different schedules and different directions (as Mr. Sacks does) is apt to yield more informative results. Nonetheless, here and in Appendix C, I follow Mr. Sacks's whole-service approach to facilitate comparison with his results.

the route, also large (and larger than Mr. Sacks's coefficient) for the second third of the route, and much smaller for the last third of the route:

Table B.1
Illini-Saluki Service

SPECIFICATION: VARIABLES	Sacks Specification	Alternative Specification
Host Responsible Delay Per 10K	-0.000329 (-15.00)	
Host Responsible Delay Per 10K - First Third		-0.000560 (-3.899)
Host Responsible Delay Per 10K - Second Third		-0.000336 (-4.819)
Host Responsible Delay Per 10K - Last Third		-5.28e-05 (-0.293)
Constant	0.942 (32.54)	0.922 (28.71)
Observations	45	45
R-squared	0.840	0.850

Source: Amtrak Station Table; Sacks Workpapers

APPENDIX C

Analysis of Mr. Sacks's Omitted Variables Bias

In this Appendix, I provide a standard technical, mathematical description of the form of omitted variables bias present in Mr. Sacks's analysis, as discussed in Section III.C of my statement, and explain how it applies in the context of Mr. Sacks's analysis. As noted in Section III.C, Mr. Sacks omits from his analysis multiple potentially significant variables, including Amtrak-responsible delay, third-party-responsible delay, and OTP at the initial station. For purposes of exposition, the description below is of a two-variable analysis (like Mr. Sacks's analysis of HRD and ASOTP) that omits a single variable; the mathematics applicable where (as in Mr. Sacks's analysis) multiple variables are omitted follow the same basic form but are more complex.

Suppose there exists a true linear relationship between y and a factor X_1 with $y = \beta_1 X_1 + u$. In this case, only one factor determines y. For simplicity, I assume that the averages of y and X_1 have been subtracted from y and X_1 so that these factors have mean zero and the true model does not contain an intercept. This is a standard simplification in econometrics that results in simpler formulae.[32] Next the analyst (correctly) assumes a regression model $y = b_1 X_1 + e$ and minimizes the sum of squared errors e to estimate b_1. One can show that the minimum sum of squared errors is obtained when $b_1 = \sum X_1 y / \sum X_1^2$. Since $y = \beta_1 X_1 + u$ we obtain after substituting for y:

[32] *See, e.g.*, R.S. Pindyck & D. L. Rubinfeld, ECONOMETRIC MODELS AND ECONOMIC FORECASTS, pp. 298-304 (4th ed. 1998). Subtracting off the means of variables is done to simplify matters of notation and increase our understanding of the basic formulas for ordinary least squares. There is no loss in generality in proceeding this way.

$$b_1 = \frac{\sum X_1 y}{\sum X_1^2} = \frac{\sum X_1 (\beta X_1 + u)}{X_1^2} = \beta_1 + \frac{\sum X_1 u}{\sum X_1^2}$$

Taking mathematical expectation (averaging) of each side we find that b_1 is an unbiased estimate of β_1 (that is, $E(b_1) = \beta_1$). As E($u \mid X_1$) = 0 by usual assumptions, the last term in the equation above has expectation zero. Here the assumed regression model matches the true empirical relationship.

However, this regression fails to be unbiased when a more complex model in fact generates the data. Suppose that the dependent variable is, in fact, co-determined by two factors. For simplicity, I continue to assume that all variables are measured relative to their means (*i.e.*, the mean level of the variable has been subtracted from the variable). Consequently I have again omitted any intercept from the model: $y = \beta_1 X_1 + \beta_2 X_2 + \varepsilon$.

Suppose, however, that the analyst incorrectly assumes a misspecified regression relationship: $y = \beta_1 X_1 + u$.[33]

The estimate of the key parameter β_1 from the ordinary least squares relationship between y and X_1 is then biased, as I now show.

The formula for b_1 in the assumed regression model is $\sum X_1 y / \sum X_1^2$ as I mentioned above. Substituting the true relationship (the process that in fact generates the data) $y = \beta_1 X_1 + \beta_2 X_2 + u$ into the formula for the parameter estimate b_1, one obtains:

$$b_1 = \frac{\sum X_1 y}{\sum X_1^2} = \frac{\sum X_1 (\beta_1 X_1 + \beta_2 X_2 + u)}{\sum X_1^2} = \beta_1 + \beta_2 (\frac{\sum X_1 X_2}{\sum X_1^2}) + \frac{\sum X_1 u}{\sum X_1^2}$$

Taking expectations, I find:

[33] For instance, Mr. Sacks incorrectly assumes that ASOTP only depends on HRD.

$E(b_1) = \beta_1 + \beta_{21}\beta_2$ where $\beta_{21} = \sum X_1 X_2 / \sum X_1^2$

This is the standard formula for omitted variable bias described in econometrics textbooks.[34] The β_{21} term is the regression coefficient in an ordinary least squares regression of X_2 on X_1.

This formula shows how incorrectly omitting a variable in the regression specification will bias the estimates of the coefficient of the included variable. The bias in the estimate is the difference $E(b_1) - \beta_1 = b_{21}\,\beta_2$. The regression coefficient of the excluded variable X_2 on the included variable X_1 has the same sign and is related to the correlation between X_1 and X_2. Only in the case where X_1 and X_2 are uncorrelated will there be no bias from omitting an important factor.

The equation above demonstrates that the expected value of b_1 consists of two components. The first is the true marginal impact of independent variable X_1 on dependent variable *y* holding other factors constant. This may be thought of as the partial derivative of X_1 with respect to *y* using basic terminology from the calculus. The second component is the impact of X_1 on the omitted factor X_2 multiplied by the marginal effect of X_2 on *y*. The combination of these two effects is essentially the total derivative concept from the calculus.

In the context of Mr. Sacks's analysis, the dependent variable *y* in the above equations is ASOTP; independent variable X_1 is HRD, and omitted variable X_2 could be initial station OTP, Amtrak-responsible delay, or third-party delay (or, potentially, another omitted variable). A more realistic specification would extend the above analysis to control simultaneously for

[34] *See, e.g.*, Pindyck and Rubinfeld, p. 185, equation (7.10).

multiple variables (*e.g.*, initial station OTP could be X_2, and the analysis could be extended to include Amtrak-responsible delay as X_3 and third-party-responsible delay as X_4).

For ease of exposition, however, consider just one omitted variable – initial station OTP. The formula above shows that the total derivative – Mr. Sacks's coefficient – presumes that a change in HRD (X_1) will lead to a change in ASOTP (y) because that change in HRD simultaneously changes the level of initial station OTP (X_2). While there are historical correlations between HRD and initial station OTP, those historical correlations cannot be expected to hold for purposes of establishing an HRD standard intended to lead to the achievement of 80% ASOTP. (Those historical correlations may perhaps reflect that bad initial station OTP has tended to cause elevated HRD, because bad initial station OTP may give rise to unpredictable arrival times for the Amtrak train down the line, which make it hard to plan ahead to prevent HRD. But future efforts to reduce HRD cannot be expected to lead to improved initial station OTP.) Consequently, Mr. Sacks's correlation analysis fails to accurately predict, *inter alia*, the impact of reducing HRD by means of the penalty scheme he discusses.

PUBLIC VERSION – REDACTED

BEFORE THE
SURFACE TRANSPORTATION BOARD

Docket No. FD 35743

APPLICATION OF THE NATIONAL RAILROAD PASSENGER CORPORATION UNDER 49 U.S.C. § 24308(a) – CANADIAN NATIONAL RAILWAY COMPANY

REBUTTAL SUBMISSION OF ILLINOIS CENTRAL RAILROAD COMPANY AND GRAND TRUNK WESTERN RAILROAD

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September 14, 2017

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PUBLIC VERSION

BEFORE THE
SURFACE TRANSPORTATION BOARD

Docket No. FD 35743

APPLICATION OF THE NATIONAL RAILROAD PASSENGER CORPORATION
UNDER 49 U.S.C. § 24308(a) — CANADIAN NATIONAL RAILWAY COMPANY

REBUTTAL VERIFIED STATEMENT OF DAVID A. HIRSH

My name is David A. Hirsh. I am a partner with the law firm Harkins Cunningham LLP and serve as outside counsel for Illinois Central Railroad Company and Grand Trunk Western Railroad Company (together "CN") in this proceeding. I submit this Rebuttal Verified Statement in support of CN's Rebuttal Submission.

The Bates-numbered documents attached as exhibits to this Rebuttal Verified Statement and certain documents attached as exhibits to the Joint Rebuttal Verified Statement of Paul E. Ladue and Scott Kuxmann ("Ladue/Kuxmann RVS") and the Rebuttal Verified Statement of Derek Taylor ("Taylor RVS") were gathered and produced by the National Railroad Passenger Corporation ("Amtrak") and by CN pursuant to a "Joint Discovery Protocol" dated January 30, 2014, and executed by counsel for each party. CN gathered and produced to Amtrak the documents identified by "CN" Bates numbers in compliance with the Joint Discovery Protocol; Amtrak produced to CN the documents identified by "ATK" Bates numbers.

The Bates-numbered documents listed in and attached to these Verified Statements were stored in, and retrieved directly from, a secure database, and they have not been altered in any way from the form in which they were produced by CN pursuant to the Joint Discovery Protocol or, in the case of Amtrak-produced documents (apart from converting files produced in native

form to PDF files to enable the Bates number and confidentiality designation to be added), received from Amtrak pursuant to the Joint Discovery Protocol.

Accordingly, I attest that the Bates-numbered documents identified in and attached to these Rebuttal Verified Statements are true and correct copies of documents produced by the parties in discovery. I further attest that documents designated "Confidential" or "Highly Confidential" are identified by the corresponding notation "[C]" or "[HC]" after their Bates numbers and that these documents are being filed under seal in accordance with the Protective Order in this proceeding.

I further attest that the documents attached hereto that do not contain a Bates number were obtained from the public domain, and are true and correct copies that have not been altered in any way.

The documents attached to this Rebuttal Verified Statement are being produced for purposes of evidence and argument in this proceeding.[1] Documents are grouped by broad subject matter to facilitate the Board's consideration of these materials.[2] Below, I provide brief descriptions of the documents and some of their salient points to further assist the Board in its review of the materials.

I. Schedules and PRT Issues

Exhibit 46 (ATK0000144003-06 [C]) is an April 2008 email thread [redacted]

[1] The Verified Statement that I submitted in support of CN's Opening Submission contained exhibits numbered from 1 through 45. The exhibits attached hereto are numbered from 46 through 140.

[2] However, to avoid redundancy, documents that pertain to multiple subjects are listed under only one heading.

[redacted]

Exhibit 47 (ATK0000143765-817 [C]) is a March 9, 2009 document [redacted]

Exhibit 48 (ATK0000190755-57 [HC]) is a file named [redacted]

Exhibit 49 (ATK0000105576-77 [C]) is a January 2013 email thread, [redacted]

[redacted]

Exhibit 50 (ATK0000014203-25 [C]) is a PDF file from November 2009 [redacted]

Exhibit 51 is the Final Rule issued May 12, 2010, publishing performance metrics pursuant to PRIIA Section 207. In the Rule, FRA and Amtrak expressly recognized and discussed how the ASOTP metric would impact schedules and require adjustments to recovery time:

> **Scheduling implications.** *Comment:* Both State agencies and freight host railroads acknowledged that the All-Stations OTP metric will require Amtrak and host railroads to agree to schedule adjustments to reallocate recovery time among intermediate stations.
>
> *Response:* The FRA and Amtrak fully realize that introduction of the All-Stations OTP standard will involve a challenging process of readjustment, in which Amtrak, its railroad hosts, and (where applicable) State sponsors of service will collaboratively analyze and, as needed, modify train schedules. The FRA encourages these parties to develop a strategy and plan to address this challenge as soon as possible. To allow for an orderly transition to All-Stations OTP, the FRA and Amtrak have adjusted the implementation schedule: the All-Stations standard will not go into effect until FY 2012, two years after the other standards, to provide additional time for needed operational and scheduling adjustments. (All-Stations OTP data will, however, be published for information only, beginning with the first quarterly Metrics and Standards report.)

(Page 18)

Annex 2 stated that "good-faith collaboration between Amtrak and host railroads" would be needed to ensure successful implementation of the Section 207 standards, including "Review

of passenger and freight schedules, in particular to ensure that Amtrak schedule Recovery Time is appropriately allocated to support the All-Stations OTP standard." (Page 33)

Exhibit 52 (ATK0000039496-97 [HC]) is a January 2010 internal email, [redacted]

Exhibit 53 (ATK0000239516-18 [HC]) is a July 2011 email thread, [redacted]

Exhibit 54 (ATK0000359196 [HC] & ATK0000359197-219 [HC]) is an April 1, 2010 email [redacted]

[3] [redacted]

Exhibit 55 (ATK0000046815 [C] & ATK0000046816-19 [C]) is a February 2011 email [redacted]

Exhibit 56 (ATK0000338009-11 [C]) is a June 2011 email thread [redacted]

Exhibit 57 (ATK0000360351-53 [C] & ATK0000358947-949 [HC]) is a July 2011 email thread, [redacted]

Exhibit 58 (ATK0000338386-390 [C]) is a July 28, 2011 PowerPoint presentation [redacted]

[redacted]

Exhibit 59 (ATK0000140870-73 [C]) is an internal email thread [redacted]

Exhibit 60 (ATK0000032675-78 [HC]) is file created in May 2012 [redacted]

Exhibit 61 (ATK0000059269 (C)] is a document named [redacted]

Exhibit 62 is a paper by Carl D. Martland, "Improving On-Time Performance for Long-Distance Passenger Trains Operating on Freight Routes," *Journal of the Transportation*

Research Forum, Vol. 47, No. 4 (Fall 2008).[4] Martland analyzed data relating to the performance of passenger trains and various classes of freight trains on the CSX I95 Corridor and found that Amtrak trains operate much faster and more reliably than any category of CSX freight trains.[5] The paper also reported that the AutoTrain's performance had improved from less than 10% in early 2006 to 82% in the first half of 2008 after a one hour schedule increase and concluded: "Analysis of the travel time distributions of the other long-distance Amtrak trains operating on CSXT's I95 Corridor from 2004 to 2008 indicates that a similar schedule increase would also have brought these other trains close to Amtrak's goal of 80% OTP."[6]

Exhibit 63 (ATK0000023025-69 [HC] & ATK0000023070-133 [HC]) consists of files produced by Amtrak titled [redacted]

[4] Available at http://journals.oregondigital.org/index.php/trforum/article/view/1126/1021 (accessed Sept. 12, 2017).

[5] *See* Page 63 (Abstract); pages 67-68 and 70-71 (details and related data).

[6] *See* Page 63 (Abstract); pages 73-74 (details and related data).

[redacted]

Exhibit 64 (ATK0000032311-14 [C]) is a document titled [redacted]

[redacted]

Exhibit 65 (ATK0000041312-320 [C]) is a 2012 email thread [redacted].[8]

Exhibit 66 (ATK0000350340 [HC] & ATK0000350341-438 [HC]) is a January 2013 email [redacted]

[redacted]

[7] [redacted]

[8] [redacted]

[9] Based on information and belief, this publication, cited in CN's Opening Submission (*see* Joint Verified Statement of Paul E. Ladue and Scott Kuxmann at 16 n. 24), was at one time available in the public domain and accordingly, under Paragraph 18 of the Protective Order, does not

[redacted]

Exhibit 67 is the public version of the Amtrak publication titled "The Art of Scheduling Trains, The Impact of Delays, and The Art of Schedule Analysis" (2d ed. 1996) that bears Amtrak's copyright.

Exhibit 68 is the January 9, 2014 Audit Report OIG-A-2014-003, "Passenger Rail Investment and Improvement Act of 2008: Accomplishments and Requirements that Deserve Consideration for Future Authorizing Legislation," issued by Amtrak's Inspector General.[10] With respect to PRIIA Section 402's directive encouraging Amtrak to engage in discussions with freight railroads and other stakeholders on routing and timing of trains to improve performance, Amtrak management represented that "[t]he corporation meets with freight railroads and commuter rail entities on an ongoing basis to develop feasible train schedules to satisfy all users' requirements." (Page 26)[11]

warrant treatment as Highly Confidential material. The public version, which bears an Amtrak copyright, is attached as Exhibit 67.

[10] Available at https://www.amtrakoig.gov/sites/default/files/reports/oig-a-2014-003.pdf (accessed Sept. 9, 2017).

[11] Pages 8-9 of the report discuss Amtrak's management's belief that capital investments designed to achieve a state of good repair and accommodate reasonable growth forecasts are the most cost effective long term means of addressing capacity constraints and ensuring performance reliability on the NEC.

II. ASOTP Issues and Challenges

Exhibit 69 (ATK0000360368 [HC] & ATK0000046461 [HC]) consists of April 2012 email threads, [redacted]

Exhibit 70 (ATK0000140970-71 [HC]) is an April-May 2012 internal email [redacted]

Exhibit 71 (ATK0000358944-45 [HC]) is an email thread from September-October 2012, [redacted]

[redacted]

Exhibit 72 (ATK0000062954-55 [C]) is a November 2012 email thread [redacted]

Exhibit 73 (ATK0000358946 [HC]) is a November 19, 2012 email thread, [redacted]

[redacted]"[12]

Exhibit 74 (ATK0000058180-83 [HC]) is a September 2013 email thread, [redacted]

[12] [redacted]

III. Capacity Constraints, Equipment, and Shared Use

Exhibit 75 (ATK0000057020-29) is April 11, 2007 testimony before the STB in which Amtrak President and CEO Alex Kummant addressed the "critical issue of rail capacity and infrastructure requirements," providing "Amtrak's view of the nature and magnitude of the rail capacity problem." (Page 2, ATK0000057021) Mr. Kummant advised the Board that "all of them [the routes over which Amtrak operates], to a greater or lesser degree, encounter delays related to insufficient rail capacity and the need for additional infrastructure investment" (Page 4, ATK0000057023) and acknowledged that the "overall negative network effect of dramatically increased freight volume is inescapable" in the "tightly constrained national rail network" (Page 6, ATK0000057025). He also discussed the public interest issues raised by these capacity constraints (Pages 8-10, ATK0000057027-29), stating: "The freight railroads appearing before you today will thoroughly describe the public benefits of increasing their ability to move more freight by rail. Amtrak agrees with these public benefits, but there is no need to stop there." (Page 8, ATK0000057027)

Exhibit 76 (ATK0000079216-48 [HC]) is a draft presentation titled [redacted]

Exhibit 77 is an excerpt from a Report of the House Committee on Transportation and Infrastructure to accompany the House version of the Passenger Rail Investment and

Improvement Act of 2008, H.R. Rep. No. 110-690 (2008). The Committee Report provides, in pertinent part:

> Section 217. Congestion grants
> …
> Amtrak provided the Committee with information regarding 18 congested points along the national network where Federal funding could immediately improve on-time performance and ridership growth. These corridors are (1) Washington, DC, to Richmond, VA; (2) Richmond, VA, to Selma, NC; (3) Seattle, WA, to Portland, OR; (4) Portland, OR, to Eugene, OR; (5) Chicago, IL, to Porter, IN; (6) Chicago, IL, to Detroit, MI; (7) Chicago, IL, to Carbondale, IL; (8) Chicago, IL, to Joliet, IL; (9) Salinas, CA, to Paso Robles, CA; San Jose, CA, to Oakland, CA, to Sacramento, CA; (10) Oakland, CA, to Bakersfield, CA; (11) San Diego, CA, to Los Angeles, CA, to Santa Barbara, CA; (12) Selma, NC, to Jacksonville, FL; (13) Sebring, FL, to Dyer, FL; (14) Mineola, TX, to Ft. Worth, TX; (15) Syracuse, NY, to Rochester, NY; (16) Albany, NY, to Utica, NY; (17) Poughkeepsie, NY, to Albany, NY; and (18) Elkhart, IN, to Sandusky, OH.

Id. at 43.

Exhibit 78 (ATK0000103569-606 [HC]) is an October 2008 file [redacted]

[redacted]

[redacted][13]

Exhibit 79 (ATK0000034401-07 [HC]), a PDF file created March 10, 2010 [redacted]

Exhibit 80 (ATK0000227793-810 [C]) is [redacted]

Exhibit 81 (ATK0000081519 [HC] & ATK0000081331-33 [HC]) consists of two 2010 PowerPoint files [redacted]

[13] [redacted]

- [redacted]
- [redacted]

[redacted]

Exhibit 82, Amtrak's Fiscal Year 2012 Budget and Comprehensive Business Plan dated February 2011, revised January 2012,[14] identifies an Amtrak capital funding project in the amount of $6.5M for Carlsbad double tracking to "eliminate most of the congestion delays for this segment of railroad, improve schedule reliability and on-time performance, and increase capacity and operational flexibility on Amtrak's second-busiest route." (Pages 53-54)

Exhibit 83 (ATK0000094266 [HC]) is a document titled [redacted]

[redacted]

[14] Available at https://www.amtrak.com/ccurl/963/948/AmtrakFY12ComprehensiveBusinessPlan-FINAL-wAppx.pdf (accessed Sept. 11, 2017).

[redacted]. [15]

Exhibit 84 (ATK0000095902-04 [C]), a filed named [redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[15] [redacted]

[redacted]

Exhibit 85 (ATK0000218103 [HC]) is an April 2012 email, [redacted]

Exhibit 86 is NCHRP Report 657, "Guidebook for Implementing Passenger Rail Service on Shared Passenger and Freight Corridors," dated 2010, issued by the Transportation Research Board of the National Academies,[16] and a related excerpt from Mr. Vilter's deposition testimony. Section D.7.4 of the Guidebook provides:

> Stakeholders on both sides of the shared use issue are consistent in emphasizing the need to first recognize and address the operational capabilities of a given physical alignment as an essential foundation for high-integrity service. With such a foundation in place, a fee structure to reward performance does appear to support high levels of service reliability. Another way to view this is to recognize that once a good physical plant is in place the dispatch and operations discipline needed, at the margin, to earn the additional fees is well worth the compensation received.
>
> The flip side is that if valuable freight is delayed due to an inadequate plant, the performance incentives for passenger operations are not a sufficient offset for jeopardizing priority freight traffic. It is essential to deal with capacity constraints before high quality passenger service can be initiated BUT the capacity investment must be accompanied by a firm commitment from the railroad to provide an agreed level of service—number of round trips, journey time and limits on aggregate delays.

[16] Available at http://www.trb.org/Publications/Blurbs/163514.aspx.

(Page D-30) (emphasis in original) Amtrak's Mr. Vilter was a member of the working group that oversaw the preparation of this report. (Page iv; Vilter dep. tr. at 14-15)

Exhibit 87 (ATK0000212201-03 [C]) is a file titled [redacted]

Exhibit 88 (ATK0000202830 [C] & ATK0000202831-70 [C]) is a January 24, 2008 email [redacted]

[redacted]

Exhibit 89 (ATK0000224507-34) [HC]), titled [redacted]

Exhibit 90 (ATK0000103490-526 [C]) is [redacted]

[redacted]

- [redacted]

- [redacted]

Exhibit 91 (ATK0000196021 [C], ATK0000331366 & ATK0000331367-68) consists of a February 2012 email and attachments [redacted]

- [redacted]

- [redacted]

[redacted]

Exhibit 92 (ATK0000207052-53 [C]) is an email thread from summer 2011 [redacted]

Exhibit 93 (ATK0000109328-30 [C]), an October 2013 document titled [redacted]

Exhibit 94 (ATK0000093184-194) is the Testimony of Amtrak's Chief Operating Officer, William L. Crosbie, at the STB hearing convened on February 11, 2009, to receive stakeholder comments on PRIIA and STB's role in implementing the legislation. Mr. Crosbie explained the importance of reliable on-time performance to Amtrak and "pledge[d] ... that we will continue to work with our host partners to meet or exceed the standards in the bill" (Pages 5-7, ATK0000093188-90), assuring the Board that Amtrak would work with "care and consideration for all stakeholders involved" and would "do our very best to solve the challenges we face in a cooperative and collaborative way." (Page 10, ATK0000093193).

Exhibit 95 is Amtrak's FY 2016 Budget and Business Plan, FY 2017 Budget Request Justification, and FY 2016-2020 Five Year Financial Plan dated February 2016 (the "FY 2016 Plan").[17] Concerning issues pertinent to this proceeding:

- The FY 2016 Plan discusses the need for "predictable dedicated funding" to "build new tracks, tunnels, bridges and other rail infrastructure, particularly on the Northeast Corridor and in Chicago," stating that "the alternative is increased infrastructure-and equipment-related service disruptions and delays." (Page 13)

- With respect to On Time Performance, the Plan states that Amtrak "is working to improve the elements of OTP we can directly control" and professes to be "working with the host railroads and others to tackle the underlying causes of rail congestion," including through Amtrak's Chicago Gateway Blue Ribbon Panel, which was created

[17] Available at https://www.amtrak.com/ccurl/844/40/FY16-Business-Plan-FY17-Budget-Justification-FY-16-20-Five-Year-Financial-Plan.pdf (accessed Sept. 12, 2017).

in October 2014 "to identify infrastructure and operational improvements to address rail network congestion in the Chicago area that is adversely impacting Amtrak, commuter and freight train operations." (Page 29)[18]

IV. Shortcomings of the Proposed HRD-Based Performance Standard

Exhibit 96 (ATK0000059188-89 [C]) is a January 2008 email [redacted]

Exhibit 97 (ATK0000045597-604 [C]) is an email thread [redacted]

[18] [redacted]

[redacted][19]

Exhibit 98 (ATK0000029676 [C]) is a file titled [redacted]

Exhibit 99 (ATK0000058135-36 [C] & ATK0000036224-25 [C]) is a series of May 2013 email exchanges [redacted]

Exhibit 100 (ATK0000032392 [C]) is [redacted]

[19] [redacted]

[redacted]

[redacted]

Exhibit 101 (ATK0000032327 [C]) is a table [redacted]

[redacted]

[redacted]

[redacted]

Exhibit 102 (ATK0000019326-29) [C]) consists of [redacted]

[redacted]

[redacted]

[redacted]

Exhibit 103 (ATK0000039707-09 [HC]) is an August 2011 email thread [redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

Exhibit 104 (ATK0000029456-58) [C]) is a 2011 email exchange [redacted]

[redacted]

[redacted]

Exhibit 105 (ATK0000110530-51 [HC]) is a presentation titled [redacted]

Exhibit 106 (ATK0000338423 [HC] & ATK0000338424 [HC]) is an August 2011 email thread [redacted]

Exhibit 107 (ATK0000341065 [HC]) is a September 2013 email, [redacted]

Exhibit 108 (ATK0000059861 [C], ATK0000061207-08 [C] & its attachment ATK0000061209 [C]), and ATK0000063656 [HC]) consists of documents [redacted]

[redacted]

Exhibit 109 (ATK0000029851-89 (DOT Inspector General Report No. CR-2012-148, issued July 10, 2012 (DOT Report)), ATK0000055093-122 [C] ([redacted]) & ATK0000055071-92 (DOT Briefing) presents the results of a 2012 study conducted by the U.S. Department of Transportation to identify statistically significant causes of Amtrak train delays under the control of host railroads and other parties. The study found that CN host effects were statistically indistinguishable from the baseline[20] for both corridor and long distance services, while Amtrak operations on the lines of various other Class 1 hosts experienced significantly longer delays than the baseline. (DOT Report, at 8-9, ATK0000029859-860 & Figure 2: Host Effects' Contributions to Station-Pair Delay on Long-Distance Services System-wide (explaining that "No bar appears for the CN host effect because it was statistically indistinguishable from the baseline host effect"); *id.* at 11, ATK0000029862 & Figure 4: Host Effects' Contributions to Station-Pair Delay on Short-Distance Services System-wide ("CN, CSXT, and NS host effects were statistically indistinguishable"); DOT Briefing, at ATK0000055080, ATK0000055082, ATK0000055084) Concluding observations in the DOT Briefing included that "Our findings also suggest an important role for capital investment in reducing Amtrak delays." (ATK0000055092)

20 [redacted]

Exhibit 110 is the published version of the DOT study, Krier, *et al*., "Individual freight effects, capacity utilization, and Amtrak service quality," produced by Amtrak as ATK0000055093-5122 [C].[21]

V. Amtrak's Endorsement and Use of 900 HRD

Exhibit 111 (ATK0000234217-50) [HC]) is a document titled [redacted]

Exhibit 112 (ATK0000360223-24 [HC]) is an August 2009 email thread [redacted]

[21] The published version of the DOT study is available for purchase at http://www.sciencedirect.com/science/article/pii/S0965856414000743.

[redacted]

Exhibit 113 (ATK0000360277-280 [HC]) is a November 2009 internal email thread [redacted]

Exhibit 114 (ATK0000051563 [HC]) is a January 26, 2011 email, [redacted]

Exhibit 115 (ATK0000062733-34 [HC]) is an April 2012 email exchange, [redacted]

Exhibit 116 (ATK0000346148-49 [C] & ATK0000346150-51 [C]) is a July 2012 internal email and attachment, [redacted]

Exhibit 117 (ATK0000347735-37 [HC]) is a series of April 2013 email exchanges [redacted]

[redacted]

Exhibit 118 (ATK0000326432-43) is a PowerPoint titled [redacted]

Exhibit 119 (ATK0000066772-73 [C], ATK0000066774 [C] & ATK0000066775 [C]) is an August 2013 email exchange [redacted]

Exhibit 120 (ATK0000066313-16 [HC] & ATK0000066318 [HC]) is a September 2013 email thread [redacted]

22 [redacted]

[redacted]

[redacted]

VI. Economic Issues

Exhibit 121 (ATK0000125308-311 [HC]) is a 2011 email thread, [redacted]

[redacted]

[redacted]

Exhibit 122 (ATK0000136110-12 [HC]) is a May 2012 email thread [redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

Exhibit 123 (ATK0000115745-764 [HC]) is [redacted]

[redacted]

[redacted]

- [redacted]
- [redacted]

[redacted]

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23 [redacted]

- [redacted]
- [redacted]

Exhibit 124 (ATK0000042481-82 [HC], ATK0000105777-78 [HC] & ATK0000119072-73 [HC]) is a series of internal email threads from early 2009, [redacted]

Exhibit 125 (ATK0000058533-34 [C]) is a May 2011 email [redacted]

Exhibit 126 (ATK0000059631-33 [HC]) is a November 2012 email thread [redacted]

Exhibit 127 (ATK0000099117-120 [C] & ATK0000099121 [HC]) is an internal email thread [redacted]

Exhibit 128 (ATK0000360206-207 [C] & ATK0000360208-217 [C]) is a June 2009 internal email thread [redacted]

[redacted]

Exhibit 129 (ATK0000032155-59 [C]) is a file named [redacted]

[redacted]

Exhibit 130 (ATK0000032315-16 [HC]) is a [redacted]

[redacted]

Exhibit 131 (ATK0000329854-55) is a document titled "J.O.E.B. Host Railroad On Time Performance And Incentives Executive Summary" from Mr. Vilter's files bearing a metadata date of June 6, 2011. Listed points on page one include that (i) PRIIA "[p]ermits payments above incremental cost for quality of service"; (ii) the "'Checkpoint' incentive/penalty system ... [a]pproximates host-responsible delays by looking at total trip time of each train and manually subtracting delays judged not to be the host's responsibility ('relief')"; and (iii) "Amtrak OTP and delay corporate goals are directly aligned with the PRIIA Section 207 Metrics and Standards." Page two reports that "We are at a convergence of many host issues, particularly compensation and performance. Renegotiating/terminating incentives/penalties triggers renegotiation of ALL host compensation issues" and that the next round of OA negotiations would "trigger the larger compensation debate" in which "Hosts are seeking to be paid more for traditional incremental costs and for new categories of incremental costs."

Exhibit 132 (ATK0000032417-421 [HC]) is a 5-page PDF file dated March 8, 2013

[redacted]

Exhibit 133 (ATK0000180582-83 [HC] & ATK0000180584 [HC]) is a February 2013 email thread [redacted]

Exhibit 134 (ATK0000136247-48 [C] & ATK0000136249 [C]) is an internal email from February 2013, [redacted]

Exhibit 135 ATK0000064351 [HC] is a May 21, 2012 email [redacted]

Exhibit 136 (ATK0000357597 [C] & ATK0000357598-99 [C]) is a September 2012 email [redacted]

Exhibit 137 (ATK0000064771 [HC] & ATK0000064772 [HC]) is a January 4, 2013 email [redacted]

[redacted]

Exhibit 138 (ATK0000021841-79) [HC] is a file produced [redacted]

Exhibit 139 is an 11-page document titled "Amtrak-MBTA Agreement, June 26, 2017 FMCB" available on MBTA's website.[24] The document describes the terms under which MBTA and Amtrak settled MBTA's constitutional challenge to PRIIA Section 212 and will share costs and joint use of the Attleboro Line for the period ending September 2021, including provisions pertaining to the treatment of incentives and penalties.

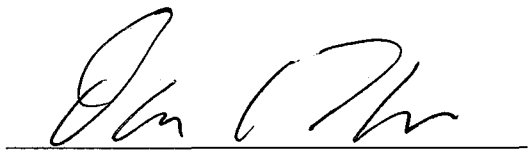
[24] Available at http://www.mbta.com/uploadedfiles/About_the_T/Board_Meetings/L.%20%20%20UPDATED%20Amtrak-MBTA%20Agreement%20-%20NP%20Final%203.pdf (accessed Sept. 11, 2017).

Exhibit 140 is the Government's Reply Brief in support of its petition for certiorari in *DOT v. AAR*, No. 13-1080 (S. Ct. 2015). In arguing that PRIAA Section 207 did not constitute an unlawful delegation of regulatory power to Amtrak, the Government's Brief emphasized that "host railroads are free to reject [Amtrak demands to incorporate metrics and standards into an operating agreement], or, in return for agreeing to incorporate some or all of the metrics and standards, to demand changes to compensation and other terms and conditions that Amtrak might decide are impracticable," and that, under Section 402, the STB "is not required to give any deference to the metrics and standards when it 'prescribe[s] reasonable terms and compensation.'" (Page 8)

VERIFICATION

I, David A. Hirsh, declare under penalty of perjury that the foregoing is true and correct. Further, I certify that I am qualified and authorized to file this verified statement.

Executed on September 14, 2017.



David A. Hirsh

Exhibits 46-50 redacted

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EXHIBIT 51

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• *Fax:* 202–493–2251.

• *Mail:* Docket Operations Facility, U.S. Department of Transportation, 1200 New Jersey Avenue, SE., W12–140, Washington, DC 20590.

• *Hand Delivery:* 1200 New Jersey Avenue, SE., Room W12–140, Washington, DC 20590, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

Communications received within 45 days of the date of this notice will be considered by FRA before final action is taken. Comments received after that date will be considered as far as practicable. All written communications concerning these proceedings are available for examination during regular business hours (9 a.m.–5 p.m.) at the above facility. All documents in the public docket are also available for inspection and copying on the Internet at the docket facility's Web site at *http://www.regulations.gov.*

Anyone is able to search the electronic form of any written communications and comments received into any of our dockets by the name of the individual submitting the document (or signing the document, if submitted on behalf of an association, business, labor union, etc.). You may review DOT's complete Privacy Act Statement in the **Federal Register** published on April 11, 2000 (65 FR 19477) or at *http://www.dot.gov/privacy.html.*

Issued in Washington, DC, on May 6, 2010.

Grady C. Cothen, Jr.,

Deputy Associate Administrator for Safety Standards and Program Development.

[FR Doc. 2010–11209 Filed 5–11–10; 8:45 am]

BILLING CODE 4910–06–P

DEPARTMENT OF TRANSPORTATION

Federal Railroad Administration

[Docket No. FRA–2009–0016]

Metrics and Standards for Intercity Passenger Rail Service under Section 207 of the Passenger Rail Investment and Improvement Act of 2008

AGENCY: Federal Railroad Administration (FRA), Department of Transportation (DOT).

ACTION: Response to Comments; Issuance of Metrics and Standards.

SUMMARY: Section 207 of the Passenger Rail Investment and Improvement Act of 2008 (Division B of Pub. L. 110–432) (PRIIA) charged the Federal Railroad Administration (FRA) and Amtrak jointly and in consultation with other parties, with developing new or improving existing metrics and minimum standards for measuring the performance and service quality of intercity passenger train operations. In compliance with the statute, the FRA and Amtrak jointly drafted performance metrics and standards for intercity passenger rail service and, on March 13, 2009, posted a draft document, entitled "Proposed Metrics and Standards for Intercity Passenger Rail Service," on the FRA's Web site. Simultaneously, the FRA published a notice in the **Federal Register** (74 FR 10983) requesting comments on the Proposed Metrics and Standards from the Surface Transportation Board, rail carriers over whose rail lines Amtrak trains operate, States, Amtrak employees, nonprofit employee organizations representing Amtrak employees, and groups representing Amtrak passengers. Seventeen comments were submitted to the corresponding docket (number FRA–2009–0016) at regulations.gov by the end of the comment period on March 27, 2009 and as a result, the FRA and Amtrak have jointly made, and are jointly issuing, revisions to the Metrics and Standards. The final version of the Metrics and Standards is posted on the FRA's Web site at *http://www.fra.dot.gov/us/content/2165.*

DATES: These Metrics and Standards are in effect as of May 11, 2010.

FOR FURTHER INFORMATION CONTACT: Neil E. Moyer, Chief, Financial and Economic Analysis Division, Office of Passenger and Freight Programs, Office of Railroad Policy and Development, Federal Railroad Administration, U.S. Department of Transportation (e-mail *Neil.Moyer@dot.gov;* telephone 202–493–6365); or Edgar E. Courtemanch, Sr. Principal, Operations Service Planning, Amtrak (e-mail *CourteE@amtrak.com;* telephone 202–906–3249).

Issued in Washington, DC, on May 6, 2010.

Neil E. Moyer,

Chief, Financial and Economic Analysis Division.

[FR Doc. 2010–11261 Filed 5–11–10; 8:45 am]

BILLING CODE 4910–06–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

[Summary Notice No. PE–2010–21]

Petition for Exemption; Summary of Petition Received

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of petition for exemption received.

SUMMARY: This notice contains a summary of a petition seeking relief from specified requirements of 14 CFR. The purpose of this notice is to improve the public's awareness of, and participation in, this aspect of FAA's regulatory activities. Neither publication of this notice nor the inclusion or omission of information in the summary is intended to affect the legal status of the petition or its final disposition.

DATES: Comments on this petition must identify the petition docket number involved and must be received on or before June 1, 2010.

ADDRESSES: You may send comments identified by Docket Number FAA–2010–0395 using any of the following methods:

• *Government-wide rulemaking Web site:* Go to *http://www.regulations.gov* and follow the instructions for sending your comments electronically.

• *Mail:* Send comments to the Docket Management Facility; U.S. Department of Transportation, 1200 New Jersey Avenue, SE., West Building Ground Floor, Room W12–140, Washington, DC 20590.

• *Fax:* Fax comments to the Docket Management Facility at 202–493–2251.

• *Hand Delivery:* Bring comments to the Docket Management Facility in Room W12–140 of the West Building Ground Floor at 1200 New Jersey Avenue, SE., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

Privacy: We will post all comments we receive, without change, to *http://www.regulations.gov,* including any personal information you provide. Using the search function of our docket Web site, anyone can find and read the comments received into any of our dockets, including the name of the individual sending the comment (or signing the comment for an association, business, labor union, etc.). You may review DOT's complete Privacy Act Statement in the **Federal Register** published on April 11, 2000 (65 FR 19477–78).

Docket: To read background documents or comments received, go to *http://www.regulations.gov* at any time or to the Docket Management Facility in Room W12–140 of the West Building Ground Floor at 1200 New Jersey Avenue, S.E., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

FOR FURTHER INFORMATION CONTACT: Laverne Brunache (202) 267–3133 or Tyneka Thomas (202) 267–7626, Office of Rulemaking, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, DC 20591.

DEPARTMENT OF TRANSPORTATION

Federal Railroad Administration

[Docket No. FRA-2009-0016]

Metrics and Standards for Intercity Passenger Rail Service

AGENCY: Federal Railroad Administration (FRA), Department of Transportation (DOT).

ACTION: Response to Comments; Issuance of Metrics and Standards

SUMMARY: Section 207 of the Passenger Rail Investment and Improvement Act of 2008 (Division B of Pub. L. 110-432) (PRIIA) charged the Federal Railroad Administration (FRA) and Amtrak jointly and in consultation with other parties, with developing new or improving existing metrics and minimum standards for measuring the performance and service quality of intercity passenger train operations. In compliance with the statute, the FRA and Amtrak jointly drafted performance metrics and standards for intercity passenger rail service and, on March 13, 2009, posted a draft document, entitled ``Proposed Metrics and Standards for Intercity Passenger Rail Service," on the FRA's Web site at http://www.fra.dot.gov/us/content/2165. Simultaneously, the FRA published a notice in the Federal Register (74 FR 10983**)** requesting comments on the Proposed Metrics and Standards from the Surface Transportation Board, rail carriers over whose rail lines Amtrak trains operate, States, Amtrak employees, nonprofit employee organizations representing Amtrak employees, and groups representing Amtrak passengers. Seventeen comments were submitted to the corresponding docket (number FRA-2009-0016) at regulations.gov by the end of the comment period on March 27, 2009 and as a result, revisions have been made to the Metrics and Standards. The Final Metrics and Standards are included at the end of this document.

DATES: These metrics and standards are in effect as of May 12, 2010.

FOR FURTHER INFORMATION CONTACT: Neil E. Moyer, Chief, Financial and Economic Analysis Division, Office of Passenger and Freight Programs, Federal Railroad Administration (e-mail Neil.Moyer@dot.gov; telephone 202-493-6365); or Edgar E. Courtemanch, Sr. Principal, Operations Service Planning, Amtrak (e-mail CourteE@amtrak.com; telephone 202-906-3249).

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E. Public Benefits, Including Service Availability and Connectivity

I. Background

Section 207 of the Passenger Rail Investment and Improvement Act of 2008 (Division B of Pub. L. 110-432) (PRIIA) charged the Federal Railroad Administration (FRA) and Amtrak with jointly developing, in consultation with the Surface Transportation Board, rail carriers over whose rail lines Amtrak trains operate, States, Amtrak employees, nonprofit employee organizations representing Amtrak employees, and groups representing Amtrak passengers, as appropriate, new or improving existing metrics and minimum standards for measuring the performance and service quality of intercity passenger train operations, including cost recovery, on-time performance and minutes of delay, ridership, on-board services, stations, facilities, equipment, and other services. The statute further provided that such metrics shall, at a minimum, include the percentage of avoidable and fully allocated operating costs covered by passenger revenues on each route, ridership per train-mile operated, measures of on-time performance and delays incurred by intercity passenger trains on the rail lines of each rail carrier and, for long-distance routes, measures of connectivity with other routes in all regions currently receiving Amtrak service and the transportation needs of communities and populations that are not well-served by other forms of intercity transportation.

In compliance with the statute, the FRA and Amtrak jointly drafted performance metrics and standards for intercity passenger rail service and, on March 13, 2009, posted a draft document, entitled "Proposed Metrics and Standards for Intercity Passenger Rail Service," on the FRA's Web site at http://www.fra.dot.gov/us/content/2165. Simultaneously, the FRA published a notice in the Federal Register (74 FR 10983**)** requesting comments on the Proposed Metrics and Standards from the stakeholders named in the PRIIA. In total, seventeen comments were submitted to the corresponding docket (number FRA-2009-0016) at regulations.gov by the end of the comment period on March 27, 2009.

The FRA and Amtrak have considered the comments of the respondents to Docket No. FRA-2009-0016, and through this notice are issuing final Metrics and Standards for Intercity Passenger Rail Service. This document also contains the FRA's responses, developed with Amtrak's concurrence, to the docket comments. The changes incorporated in the Metrics and Standards published with this notice in some cases reflect clarifications of, and in others, revisions to, the March 13 proposal. A more detailed explanation of these changes is provided below.

II. Discussion of Comments and Revisions to the Proposed Metrics and Standards

A wide variety of interested parties submitted written comments to FRA in response to the Proposed Metrics and Standards. Comments were submitted to the docket from five State Departments of Transportation, three State and regional passenger railroad agencies, three freight railroads, three railroad-related associations, and one labor organization. FRA also received one comment from an individual of unknown affiliation, likely an interested private citizen, and one brief procedural comment from the Surface Transportation Board. A full list of the parties that submitted comments can be found in Annex 4.

The comments are categorized according to the four main topics identified in the Proposed Metrics and Standards document. An additional category was created to address comments and recommendations of a more general nature. Within each category, this Supplementary Information includes a comparison of the proposed with the final Metrics and Standards; a brief summary of the comments received; and a response to those comments. In many cases, a response is provided to individual comments; in other cases, where a common

theme existed across two or more comments, the comment was consolidated and a single response provided. In both types of cases, we have noted where FRA and Amtrak have made changes to the Proposed Metrics and Standards based upon the comments and recommendations received.

The FRA and Amtrak sincerely appreciate the time and effort put forward by all participants in this effort.

A. General Comments on the Proposed Metrics and Standards

1. Procedural Comments

Implementation timing of Metrics and Standards. ***Comment:*** A procedural comment addressed the timing of the implementation of the metrics and standards and expressed concern that new performance measures will be applied retroactively to quarters prior to their finalization and implementation. ***Response:*** The FRA agrees that, in all fairness, stakeholders should only be held responsible for operations conducted following implementation of these Metrics and Standards. Accordingly, FRA will not publish the first quarterly report until the required data are available for the first full quarter following the publication of these Metrics and Standards. Thus, for example, if the present document is published by between April 1, 2010, and June 30, 2010, the first full quarter of effectiveness of the Metrics and Standards would extend from July 1, 2010 through September 30, 2010; data for that quarter would be obtained and analyzed, and the report would be prepared, in the subsequent weeks; and the first quarterly report would be published as soon as possible thereafter, and no later than January 1, 2011.

In keeping with the FY 2008 and successive appropriations acts, the FRA will continue to prepare and publish its quarterly On-Time Performance report until the quarterly reporting on these Metrics and Standards begins.

Reporting periods. ***Comment:*** The same party also noted that PRIIA only requires one quarter of data to be published in each quarterly report. ***Response:*** In actuality, the statute states that "[t]he Administrator of the Federal Railroad Administration shall collect the necessary data and publish a quarterly report on the performance and service quality of intercity passenger train operations…." That is, it says that the FRA will publish a quarterly report, not that it will publish a report containing a quarter's worth of data. Moreover, it is the FRA's position that for the metrics to be meaningful, it is necessary to collect and/or publish data for a variety of periods. For example, depending on the metric and the availability of comparable data, a typical quarterly report might show data for one or more of the following: (a) the quarter being reported upon, (b) the prior quarter (in the case of on-time performance data), (c) the four quarters ending with the quarter being reported upon, (d) the eight quarters ending with the quarter being reported upon (for rolling eight-quarter averages), and (e) the same periods detailed above ending one year previously.

Sufficiency of comment period. ***Comment:*** The Docket received two comments expressing concern with the stakeholder consultation that took place in developing the Proposed Metrics and Standards. In particular, the Transport Workers Union of America (TWU) stated that the 14-day period provided for submitting comments to the docket was inadequate and that any revisions to the Proposed Metrics and Standards document should incorporate a longer comment period (at least 30 days) with increased stakeholder involvement. ***Response:*** The FRA understands that some stakeholders would have liked more time to comment on the Proposed Metrics and Standards. However, the FRA and Amtrak have seriously considered all the

comments submitted and believe that the Final Metrics and Standards document reflects a marked improvement over the original proposal. In addition, subsequent to the enactment of the PRIIA, the American Recovery and Reinvestment Act of 2009 ("Recovery Act") allocated $8 billion in economic stimulus funding to a High-Speed Intercity Passenger Rail (HSIPR) investment program. As described in the strategic plan and guidance documents published by the FRA pursuant to the Recovery Act (and available at http://www.fra.dot.gov/us/content/31 and http://www.fra.dot.gov/us/content/2243, respectively), various partnerships and implementing agreements among the stakeholders will be prerequisite to achievement of the HSIPR program goals in most corridors. Essential to such implementing agreements will be a mutual knowledge of the operational performance expectations of the various parties. As benchmarks for many of these expectations will be established in these Metrics and Standards, their timely publication is essential to the early completion of State/rail owner/passenger operator negotiations and thus, to the speedy implementation of the HSIPR program.

Accordingly, the Metrics and Standards presented at the end of this notice represent the performance measures that the FRA and Amtrak will implement, and on which the FRA will base its quarterly report to Congress. The Metrics and Standards themselves identify specific topics within the Other Service Quality and Public Benefits categories that will require further analysis, proposals, and public comment.

2. Comments Regarding Penalties

Enforcement and penalties. ***Comment:*** Several parties submitted concerns regarding the enforcement of standards and the penalties for not meeting the standards. The TWU and multiple State agencies requested further explanation on how the metrics will be applied to routes as well as the outcomes for meeting and for not meeting the standards. In particular, the TWU requested clarification regarding the enforcement mechanism for each standard as well as the name of the agency responsible for enforcement. It also requested details on the development of guidance for enforcement procedures. ***Response:*** As explained in the PRIIA, the Surface Transportation Board (STB) is the primary enforcement body of the standards, making them an appropriate entity to develop and communicate enforcement protocols.[1] As such, the FRA believes that the enforcement procedures are properly separate from these metrics and standards. The FRA's only enforcement responsibility pertains to performance progress analysis of the worst-performing long-distance routes as provided for in Section 210 of PRIIA (49 U.S.C. 24710). None of these routes is currently State-supported.

Susceptibility of routes to enforcement. ***Comment:*** **The California Department of Transportation (**Caltrans) questioned whether Amtrak routes themselves can be penalized for not meeting performance standards. ***Response:*** Under Section 213 of PRIIA,[2] penalties for infraction of the standards are not intended for direct application to Amtrak routes, but rather to host rail carriers under specified circumstances. PRIIA Section 210 does give the FRA authority

[1] As explained in Section 213 of PRIIA, if service quality fails to meet the established standards for 2 consecutive calendar quarters, the STB may (and in some circumstances must) initiate an investigation to determine whether and to what extent this failure is due to causes that could reasonably be addressed by the host rail carrier or by Amtrak or other intercity passenger rail operators. If it determines that the failure to meet the standards is attributable to a rail carrier's failure to provide preference to Amtrak over freight transportation, it may award damages against the host rail carrier, which the carrier shall remit either to Amtrak or to an entity for which Amtrak operates intercity passenger rail service as the STB deems appropriate.

[2] Section 213 describes Surface Transportation Board responsibilities for enforcement of the Metrics and Standards, particularly as they regard host rail carriers.

to withhold non-safety-related funds from a long-distance route that is among the worst performers under these Metrics and Standards, but only if that route fails to adhere to an Amtrak-devised performance improvement plan, and only after mandated notifications and an opportunity for Amtrak to request a hearing.

Effects of the standards on State-supported services. ***Comment:*** Washington State Department of Transportation (WSDOT) expressed concern that States funding Amtrak services could be penalized for underperforming routes and that such penalties could discourage future State support. WSDOT also inquired whether "credits" can be earned for routes that exceed performance standards. ***Response:*** PRIIA includes no provision imposing consequences or penalties on States, in their capacity as sponsors or subsidizers of intercity passenger services, if those routes fail to meet the standards specified in the Metrics and Standards. Similarly, PRIIA makes no provision for the awarding of credits for routes exceeding the standards. However, other benefits naturally accrue to States, Amtrak, and host railroads for outstanding performance, including lower-cost and/or higher-revenue operations, as well as heavier rail traffic volumes and consequent public benefits. Furthermore, the States, Amtrak, and host freight railroads are free to build direct incentives into their agreements, and in some cases have already done so.

Uses of the performance measures. ***Comment:*** The Caltrans requested clarification on how the performance measures will affect Amtrak's and the FRA's decision-making authority on State-supported routes. Caltrans also asked whether the Proposed Metrics and Standards were designed to compare routes against their own past performance or against those of other routes. ***Response:*** The Metrics and Standards are designed to allow for both historical and cross-sectional analysis and comparisons. In addition to their general use and utility, PRIIA mandates that Amtrak use them in evaluating its long-distance routes (Section 210) and in developing a plan to improve on-board service (Section 222), and that FRA use them in evaluating bids under the Alternate Passenger Rail Service Pilot Program (Section 214).

3. Concerns with Metrics and Standards Data

Independence and data integrity. ***Comment:*** One commenter was concerned about the lack of independence with respect to the gathering of data for and the calculation of the Proposed Metrics and Standards. In particular, the commenter suggested that insufficient separation exists between Amtrak personnel and the data used for these performance measures. Another party stated that sole use of Amtrak-provided operational and performance data is not justified in PRIIA. ***Response:*** PRIIA, the statutory basis for these performance measures, directly incorporates Amtrak into their creation by stating that FRA and Amtrak "shall jointly" develop the Metrics and Standards. It establishes no completely independent agency or funding mechanism for gathering and analyzing the relevant data. Thus, the statute affords no scope or basis for action regarding this comment.

Fairness. ***Comment:*** Two railroads expressed misgivings about the fundamental fairness of the performance measures. One railroad indicated that the proposed performance measures were biased towards Amtrak and provided insufficient improvements on existing measures. The other cited what it said were fairness issues with tying performance penalties to Amtrak's schedules, which it argued are sometimes unrealistic. ***Response:*** The FRA and Amtrak aimed to encourage cooperation between Amtrak and the host railroads. For example, Annex 1 contemplates that Amtrak and its individual host railroads may agree that during a specific quarter, a specific train may incur more delay than usual, or may have an adjustment made to its public schedule, due to a major maintenance and construction project. Scheduling remains

primarily a topic for collaboration between Amtrak, its host railroads, and any sponsoring States, subject to the indirect constraints of the Effective Speed standard for OTP.

4. Effects of the Metrics and Standards

Administrative burdens. ***Comment:*** Several freight railroads stated that the proposed performance measures present an administrative burden and will require significant operational changes to make current Amtrak schedules realistic. They went on to assert that the Proposed Metrics and Standards will increase the cost of hosting Amtrak trains and noted that those costs may need to be passed on to Amtrak. ***Response:*** Amtrak and its host railroads each have their own train performance databases that often utilize different metrics or different definitions for the same metrics. As train performance data thus lacks uniformity among railroads, additional resources may be necessary to achieve comparable data. Similarly, the new All-Stations OTP will increase the number of OTP data points that may be subject to dispute between Amtrak and its hosts. Conversely, the heightened attention under PRIIA to performance measures on the part of both Amtrak and host railroads may lead to operational improvements that can result in lower costs and/or higher revenues to Amtrak and increased incentive payments to host railroads, mitigating administrative costs that stem from the Metrics and Standards. The FRA encourages Amtrak and host railroads to align metrics within their respective databases where possible and encourages Amtrak to continue with efforts to enhance train delay data through automation.

Effects on Amtrak/host relationships. ***Comment:*** Norfolk Southern Corp. (NS) stated that the proposed performance measures will hinder its working relationship with Amtrak, while the Association of American Railroads (AAR) and CSX Transportation, Inc. (CSX) said the Proposed Metrics and Standards may dissuade freight host railroads from agreeing to new Amtrak services. ***Response:*** The Metrics and Standards are not intended to deter future Amtrak service; rather they are to lead to improvements in whatever Amtrak service is offered. Based on the collaborative approach described in Annex 2, and on the freight railroads' long record of passenger operations, the FRA and Amtrak expect that all stakeholders will work closely together to implement this Congressional mandate efficiently and effectively, and in so doing minimize the burdens and maximize the benefits felt by each other.

5. Relationship to State Agency/Amtrak Contracts and Standards

Development of Metrics and Standards for State-supported services. ***Comment.*** Washington State Department of Transportation (WSDOT) made the case that States with State-supported services and Amtrak should be responsible for developing the Proposed Metrics and Standards in a process supported by a Federal appeals forum. ***Response:*** States have a role in the process of defining the Metrics and Standards as well as a vital interest in the end product of this process. However, Section 207 of PRIIA mandates that Amtrak and the FRA act as the lead parties in developing these performance measures.

Effect of Metrics and Standards on contracts between the States and Amtrak. ***Comment:*** A number of State agencies expressed concern regarding the effect the Proposed Metrics and Standards might have on their intercity passenger rail agreements. In particular, several agencies stated that the Proposed Metrics and Standards should not replace State operating and performance contracts with Amtrak and other railroads. State agencies argued for the continued right to negotiate their own standards for State-supported services with rail carriers and to perform and use their own performance analyses. ***Comment:*** These Final Metrics and Standards are not intended to (a) alter or replace operating and performance agreements between States and Amtrak; (b) hinder States or Amtrak from negotiating standards

with each other, or from incorporating an appeals process into their agreements; or (c) limit the analytical tools employed by States or other stakeholders.

6. Relationship to agreements between Amtrak and host railroads.

Comment: Metro-North sought confirmation that the Metrics and Standards will not supersede any Amtrak-host railroad OTP agreements. ***Response:*** Section 207 of PRIIA states that, "to the extent practicable, Amtrak and its host rail carriers shall incorporate the metrics and standards . . . into their access and service agreements."

7. Metrics and Standards, PRIIA, and ARRA

Comment: State agencies were also concerned with the possible interrelationships between the Proposed Metrics and Standards and both the American Recovery and Reinvestment Act of 2009 (ARRA) and other PRIIA-defined initiatives. Caltrans, in particular, requested clarification as to whether grant proposals under the FRA's High-Speed Intercity Passenger Rail (HSIPR) program will be evaluated based on a project's ability to improve performance measures or on a route's previous ability to meet performance standards. Also, assurance was sought that projects requesting Federal funding will only be evaluated against applicable performance measures. The Capital Corridor Joint Powers Authority (CCJPA) indicated that high performing routes will be at a disadvantage when being considered for HSIPR funding. CCJPA also noted that non-Federal capital funding sources and traffic volume are not discussed as evaluation criteria.

Response: In response to these comments about the relationship of the Metrics and Standards to other PRIIA provisions and the HSIPR program, it is worth noting that:

1) The HSIPR program involves a merit-based evaluation process as described in Section 5 of the Interim Program Guidance, available at http://www.fra.dot.gov/us/content/2243.

2) In the absence of agreed Metrics and Standards at the time the Interim Program Guidance was published, the review criteria in Section 5 of the Guidance adopted generalized topics reflecting the underlying purposes of PRIIA Section 207—for example, "increased on-time performance."

3) The application and review process for the first round of HSIPR funding (pursuant to the Interim Program Guidance published in the Federal Register on June 23, 2009) reached its conclusion on January 28, 2010, with the announcement of the first recipients selected to receive grant funding. As these Final Metrics and Standards had not been published at that time, they could not be applied to the first HSIPR funding competition.

4) The applicability of these Final Metrics and Standards to the application, review, and/or selection processes in future solicitations under the HSIPR program would be clarified in the HSIPR notices announcing such solicitations.

5) The above points do not preclude the FRA from incorporating, at its discretion, these Final Metrics and Standards in grant award negotiations with any entities selected to receive HSIPR grants.

B. Comments on Financial and Operating Measures

1. Summary of the Proposal and of the Final Metrics and Standards.

The Proposed Metrics and Standards included five different metrics under the Financial/Operating category: (1) Percent of Short-Term Avoidable Operating Cost Covered by Passenger-Related Revenue (excluding capital charges); (2) Percent of Fully Allocated Operating Cost Covered by Passenger-Related Revenue (excluding capital charges); (3) Long-term Avoidable Operating Loss per Passenger Mile (excluding capital charges); (4) Passenger-Miles per Train-Mile; and (5) Adjusted (Loss)[3] per passenger-mile. The first four of these were to be reported at the route level and the last, at the system level. For all five, the proposed standard was to be continuous year-over-year improvement.

In these Final Metrics and Standards, the same measures are retained; all financial measures will be calculated both with and without State subsidies included in revenue. Continuous year-over-year improvement will be reported and assessed on a moving two-year (eight-quarter) average basis.

2. Comments and Responses

a. Additional Measures Needed

Comment: The Midwest High-Speed Rail Association (MHSRA) recommended incorporating measures on load factor and passenger and ticket revenue by origin-destination. It also proposed adding a metric and standard for passengers declined rail service due to lack of available space. ***Response:*** The metrics proposed by MHSRA are potentially useful for a number of purposes. However, they are very detailed, involve origin-destination data that is typically proprietary to common carriers, and (in the case of passengers denied rail service) involve steep challenges of measurement, including the elimination of duplicate inquiries by a single passenger for the same space. For all these reasons, these measures would exceed the scope and purpose of Section 207 of PRIIA and add significant complexities to the quarterly report. Therefore, these new measures are not included in the final Metrics and Standards.

b. Calculations of Financial Measures

The Docket received a number of comments regarding the process for calculating the various financial measures.

Treatment of State operating subsidies. ***Comment:*** A number of State agencies called for calculating the route-by-route financial measures both with and without State contributions included in revenue, in order to better illustrate Amtrak's operating losses before receiving State funds. ***Response:*** Numerous Amtrak routes are supported by State contributions, which—while indispensable to support continuing operations—tend to obscure an analysis of the inherent efficiency of the routes in question. It would be useful, feasible, and not unduly burdensome to report cost recovery and operating loss per passenger-mile calculations both with and without State contributions, and the Metrics and Standards now incorporate this change.

Treatment of fully-allocated costs. ***Comment:*** CCJPA questioned the fairness of the proposed fully allocated cost calculation, in particular, the fact that while overhead is allocated to State-supported services, revenues from Amtrak's ancillary businesses are not allocated in a similar manner. ***Response:*** A certain amount of Amtrak's overhead is related to each of Amtrak's routes and ancillary business. Amtrak's new fully allocated cost methodology allocates system-wide costs, such as General and Administrative and other overhead costs, to all

[3] The definition of Adjusted (Loss) is: Net Operating Loss (before net interest expense), less Depreciation, Other Post-Employment Benefits (OPEB's) and project costs covered by capital funding.

of Amtrak's routes and businesses in a logical and equitable manner. CCJPA is correct that the fully allocated cost methodology does not simply spread revenues earned from Amtrak's operations among all routes, but assigns them to the routes and ancillary businesses with which they are associated. Attributing both costs and revenues to the routes and ancillary businesses to which they are related allows Amtrak to assess the performance of each individual route or business. Additional detail on Amtrak's fully allocated cost methodology is provided in the FRA's and Volpe Center's report entitled *Methodology for Determining the Avoidable and Fully Allocated Costs of Amtrak Routes*, available at http://www.fra.dot.gov/Pages/1996.shtml under "Intercity Passenger Rail Cost Analysis."

Accuracy of Amtrak's route accounting. ***Comment:*** The Wisconsin Department of Transportation (WisDOT) expressed concerns with the accuracy of Amtrak's new cost accounting system after experiencing perceived accuracy issues under the previous system. ***Response:*** Amtrak is in the process of implementing a new cost accounting system, called Amtrak Performance Tracking (APT), which will be used to calculate Short-Term Avoidable Operating Costs, Long-Term Avoidable Operating Costs, and Fully Allocated Costs for each route on a monthly basis. APT was designed to enhance transparency and also to assign costs more fairly, accurately, and consistently. All topics related to APT are addressed in great detail in the *Methodology* report referred to above.

Effects of service changes on fully-allocated costs. ***Comment:*** CCJPA also stated that fully allocated costs will need to be recalculated if a State discontinues a service. ***Response:*** That statement is accurate, but presents no challenges since Amtrak's new system will calculate the fully allocated costs of each Amtrak route monthly.

Equipment ownership. ***Comment:*** CCJPA requested that the Short-Term Avoidable Operating Cost calculation be defined in such a way that it can determine the effects of owning rail equipment. ***Response:*** Again, the FRA's and Volpe Center's forthcoming report provides a detailed explanation on how Fully-Allocated and Avoidable Operating Costs are estimated in Amtrak's new accounting system.

c. Continuous Improvement Measure

Comment: Both NS and Caltrans disagreed with the continuous year-over-year improvement standard proposed for certain metrics. Caltrans observed that such a standard serves to penalize high performing routes, and that—with regard to the financial measures—certain expenses, like fuel, cannot be controlled. ***Response:*** The FRA and Amtrak considered these comments in revising the Metrics and Standards. Continuous improvement standards will be based on an eight-quarter rolling average instead of a single quarter in order to smooth out the effects of transitory events. The Final Metrics and Standards also will apply an inflation adjustment to the dollar-denominated data from prior years used in multi-year rolling averages, to make them comparable with current-year data. With regard to high performing routes, as mentioned above, such routes will derive direct benefits from their high performance, independent of these performance measures.

d. Financial Measures Unsuitable for State Needs

Comment: One stakeholder, CCJPA, argued that the financial performance measures did not meet the needs of the States. CCJPA stated that the proposed metrics are not flexible enough to pertain to their contracts with California, Amtrak, and other railroads (e.g., CCJPA's fixed price annual contract with Amtrak). For that reason, it maintained that the proposed financial

standards should not supersede existing agreed-upon methods for calculating and reporting train performance at the State level. ***Response:*** As stated above under "Effect on State Agency Contracts and Standards," the Metrics and Standards are not intended to circumscribe the flexibility of the States and Amtrak to arrive at mutually satisfactory agreements.

e. Mail Revenue

Comment: The National Association of Railroad Passengers (NARP) noted that although mail revenue is a component of a route's total revenue calculation, Amtrak discontinued its mail transporting services in 2004. NARP recommended that Amtrak reexamine carrying mail on its trains to improve its financial performance. ***Response:*** NARP's comment relates to business decisions of and between Amtrak and the U.S. Postal Service and does not affect the definition or implementation of the Metrics and Standards.

C. Measures of On-Time Performance (OTP) and Train Delays

1. Summary of the Proposal and of the Final Metrics and Standards

The Proposed Metrics and Standards dealt separately with OTP and train delays. A route's OTP was to be discerned on the basis of three tests (only two tests until FY 2010): 1) Change in Effective Speed,[4] 2) percent on time at the endpoint (Endpoint OTP), and 3) percent on time at all stations served (All-Stations OTP). For all routes, effective speed was to be no worse than in the baseline year, FY 2007. The Proposed Metrics and Standards implied that the effective speed for each quarter was to match or better that for all of FY 2007.

OTP under the final standard is to be discerned on the basis of three tests (only two tests until FY 2012): 1) Change in Effective Speed, 2) percent on time at the endpoint (Endpoint OTP), and 3) percent on time at all stations served (All-Stations OTP) (Effective as of FY 2012). The final standard makes clear that the effective speed is to be calculated on a rolling four-quarter basis and compared with a fixed FY 2008 baseline.

The standard for percent on time was to vary by route type and by year, as follows:

Route Type	Percent on time in first year	Percent on time in fifth year
Acela	90%	95%
Other Northeast Corridor (NEC) routes	85%	90%
All other corridors	80%	90%
Long-distance routes	80%	85%

The same OTP standards are to be applied to both Endpoint and All-Stations OTP, although the tolerances for determining whether a train was late would differ between the two metrics. The OTP percentages above have been retained intact in the Final Metrics and Standards.

The following table compares the original proposal for Train Delays with that contained in the final document:

[4] Effective speed is defined as a train's mileage, divided by the sum of (a) the scheduled end-to-end running time plus (b) the average endpoint terminal lateness.

Metric (Minutes per 10,000 Train-Miles)	Original Proposal	Final Metrics and Standards
Off Northeast Corridor		
Amtrak-responsible delays	250	325
Host-responsible delays	700	900
Cause of delay shown for information?	Yes	Yes

Metric (Minutes per 10,000 Train-Miles)	Original Proposal		Final Metrics and Standards	
On Northeast Corridor				
	Acela	**All other services**	**Acela**	**All other services**
Total train delays	-	-	265	475
Infrastructure delays	104	123	-	-
Passenger and Commuter Train Interference	67	116	-	-
Third-party delays	37	44	-	-
All other delays	76	187	-	-
Cause of delay shown for information?	No		Yes	

As indicated in the table, the delay allowances have been raised and (in the case of the NEC) simplified from those originally proposed. For both off- and on-NEC performance, further information on causes of delay will be provided in the quarterly reports (although not part of the standards). Annex 3 provides the rationale for the chosen allowances.

In an important change from the original proposal, Annex 1 provides a mechanism for collaboration between Amtrak and its host railroads in adjusting published timetables and delay allowances under certain circumstances involving major planned construction and maintenance efforts.

2. Comments and Responses

The largest number of comments on the Proposed Metrics and Standards concerned the measures for on-time performance and train delays.

a. General Comments on OTP

Which routes are covered? ***Comment:*** CCJPA inquired which Amtrak routes would be subject to the Proposed Metrics and Standards and asserted that corridor services are more sensitive to OTP than long-distance trains. ***Response:*** PRIIA draws no distinction among the types of routes to be evaluated; thus all intercity passenger rail routes are covered by the Metrics and Standards, irrespective of the source(s) and methods by which they are funded, their relative sensitivity to the metrics, or the order in which they were established as part of the Amtrak system.

State-supported routes. ***Comment:*** WSDOT recommended adding "State-Supported Routes" to the list of Amtrak service types in the report to explicitly highlight the fact that they are covered by the Metrics and Standards. ***Response:*** Isolating State-supported routes as a

service type for these Metrics and Standards would produce insufficient benefits to justify the added complexity. For example, some corridor routes have both State-supported and non-State-supported trains; and annual changes in Amtrak-State contracts could produce an ever-shifting set of State-supported routes, thus detracting from year-to-year comparability. Finally, the number of non-State supported corridors is very low, and has shown signs of diminishing over the long term, thus limiting the utility of isolating these few corridors as a separate service type.

"Host railroad." ***Comment:*** Metro-North asked for clarification of the definition of a host railroad. ***Response:*** Host railroads are all entities that own and/or operate the track over which Amtrak operates. Host railroads include not only freight railroads, but also all commuter railroads and State or regional agencies that own track used in intercity passenger service. Amtrak itself serves as a host railroad when operating over its own infrastructure. Train delays will be identified by route by host railroad for each host railroad that Amtrak utilizes for an appreciable distance (15 miles or more).

Effects of the OTP standards. ***Comment:*** A few parties submitting comments expressed concern about the potential effect (or lack of effect) of the OTP standards. BNSF argued that the Proposed Metrics and Standards will not substantially improve Amtrak OTP. The Maryland Transit Administration and the Southern California Regional Rail Authority (SCRRA) both were concerned that Amtrak OTP improvements might negatively impact commuter railroads and commented that such OTP improvements should not come at the expense of commuter rail operations. ***Response:*** PRIIA Section 207 is a promising sign of increasing national attention to the reliability of Amtrak's service, and the OTP provisions of the Metrics and Standards constitute complementary performance indicators addressing the multiple facets of reliable service. Consequently, there is every reason to expect further improvements in Amtrak's OTP—especially when viewed against the backdrop of the progress in OTP that occurred in FY 2009 over FY 2008, as well as the ongoing Federal commitment to intercity passenger rail investments evidenced in the HSIPR program. The Metrics and Standards are not intended to disturb existing mechanisms that safeguard the integrity of commuter rail operations, such as agreements among commuter authorities, commuter rail operators, and railroads hosting commuter service.

Suitability of Amtrak schedules. ***Comment:*** Several freight host railroads indicated that Amtrak's current schedules are not suitable for and, in fact, cannot support reliable OTP. To meet the performance standards, these respondents asserted, the schedules will need to be revised using computer modeling techniques that account for current traffic and seasonal patterns. For instance, BNSF stated that Amtrak's current schedules are based on pure run time, not on Amtrak's ability to meet on-time arrival standards; and that longer-distance trains need to build additional recovery time into their schedules since they encounter a greater number of random delays. ***Response:*** The setting of schedules is primarily a matter between Amtrak, its host railroads, and any sponsoring States; scheduled train timings fall within the scope of the Metrics and Standards only to the extent that they contribute, in combination with endpoint terminal delays, to an increase in effective speed over the baseline. While modern scientific techniques (e.g., train performance calculators, simulations of route performance given fixed passenger schedules and random arrivals of freight trains) are desirable and encouraged, —as they can assist the two parties and other stakeholders in developing reasonable and workable schedules,—there is no substitute for teamwork and goodwill among the parties. Indeed, Annex 2 addresses that very topic, by encouraging the stakeholders to work through these issues in a collaborative manner. That the freight railroad industry devoted significant attention to its

docket responses on the Metrics and Standards indicates that the industry understands their importance and desires to collaborate in their successful implementation.

OTP and infrastructure improvements. ***Comment:*** Freight railroad and State agency respondents wondered whether and how the Proposed Metrics and Standards will deal with the need for ongoing and future rail infrastructure improvements. Freight railroads argued that significant infrastructure improvements will be needed (with Federal funding) to achieve reliable OTP results given current Amtrak schedules. One freight railroad, CSX, specifically tied the Effective Speed measure back to the issue of necessary rail capital investments. ***Response:*** These Metrics and Standard will yield increasingly robust OTP and delay reports that will provide a valuable data resource to Amtrak, States, and host railroads in pinpointing the routes that are most in need of improvement, and in isolating the causes of the most serious delays on each route. In that way, the Metrics and Standards will assist all parties in identifying the most effective and efficient ways to improve intercity passenger rail service. In turn, that knowledge will help to provide a basis for investments by, and partnerships among, the various stakeholders, and will assist them in prioritizing capital funds from available sources.

Adjustments for major construction and maintenance. ***Comment:*** Several State agencies recommended incorporating a mechanism into the OTP standards to adjust for periods when track work is being performed. For example, WSDOT recommended dismissing performance penalties that stem from delays occasioned by track work. ***Response:*** Annex 1 to the Metrics and Standards provides guidelines under which stakeholders can work together to temporarily adjust delay allowances and public Amtrak schedules during planned periods of major maintenance and construction.

Automation. ***Comment:*** Several stakeholders were concerned about the data collection process for OTP data and stated that more automated and technically advanced data collection mechanisms are needed in order to reliably track OTP. They also noted that such mechanisms would take time to implement. ***Response:*** The FRA agrees that more automated data collection mechanisms could be beneficial to the OTP reporting process and acknowledges that such improvements will take time for development, testing, and deployment. Amtrak has stated that it will investigate the possibility of integrating OTP data gathering capabilities with new technologies that it may be implementing (e.g. GPS tracking systems); in that regard, Annex 2 mentions "potential automation of station arrival and departure time recording."

Data availability. ***Comment:*** One commenter stated that data collection methods need to be developed for the Effective Speed and All-Stations OTP measures. ***Response:*** Amtrak has assured the FRA that it is currently capable of providing data for both Effective Speed and All-Stations OTP. Furthermore, the FRA has been successfully making use of Amtrak data to calculate effective speed in seven quarterly OTP reports to Congress (available at http://www.fra.dot.gov/us/content/1996),

b. Comments on Effective Speed Measure

Several concerns emerged regarding the proposed Effective Speed measure.

Rationale for an "effective speed" test. ***Comment:*** Several freight host railroads argued that the Effective Speed measure has limited applicability to OTP. BNSF argued that the baseline set for the standard was never agreed upon and the AAR stated that the associated schedules are unrealistic. For this reason, it expressed its opposition to using the measure to guard against lengthened schedules. AAR claimed that train speed is not a consideration for

passengers choosing to travel by train, while CSX maintained that the Effective Speed metric was superfluous since passengers are most concerned with on-time arrivals. Caltrans stated that the metric cannot be used to assess the possible speed of a route.

Response: The FRA and Amtrak strongly believe that the preservation of the "effective speed" test fulfills a number of purposes simultaneously:

- It serves as a bulwark against the "schedule creep" that has seen actual travel times experienced by passengers on many—but not all—American passenger rail routes worsen significantly over the past half-century.[5]
- Similarly, by underlining the importance of shortening (or at least preventing deterioration in) door-to-door travel times, it emphasizes the key role of the rail mode in serving the public convenience and necessity and accords in principle with the high-speed emphasis of the Administration as described in its Strategic Plan for high-speed rail.[6] To solve OTP challenges simply by lengthening schedules does not comport with prevailing Federal policy toward intercity passenger rail.
- Finally, as is the case with all-stations OTP, it emphasizes that the expeditious and reliable transportation of **all** intercity rail passengers on **all** routes—regardless of the region, the population density, and the type of rail service—is an important goal of both the FRA and Amtrak. In particular, in view of the thousands of city-pair markets and diverse travel purposes served by long-distance trains, the FRA and Amtrak cannot agree with some respondents that OTP is more important on some types of routes than on others; nor can it accept that door-to-door travel times are irrelevant to rail passengers.

Baseline. ***Comment:*** Multiple stakeholders stated that the proposed baseline for the Effective Speed measure is not adequate and/or reasonable. The Virginia Department of Transportation (VDOT) stated that the baseline should be derived from comprehensive route and consist analyses. ***Response:*** The FY 2007 baseline was historically and logically based, as FY 2007 was the fiscal year immediately preceding the enactment of the Consolidated Appropriations Act, 2008 (Public Law 110-161, December 2007); it was this Act that first expressed the Congressional mandate for the Secretary of Transportation to establish OTP standards for Amtrak routes, and to publish a quarterly report on each route's OTP. The FRA and Amtrak believe, however, that the PRIIA (enacted October 16, 2008) represents a more enduring manifestation of Congressional intent, as it is a multi-year authorization rather than an appropriation. Accordingly, the baseline year for Effective Speed has been changed to FY 2008, the last full Fiscal Year prior to the enactment of PRIIA Section 207. While subject to certain refinements in calculation methods,[7] the FY 2008 baseline must be regarded as representing most closely the prevailing Congressional intent as expressed in the PRIIA.

[5] Some of these variations reflect changes in routes and in stopping patterns, often caused by the reduction in service from many trains to one train daily in each direction on most long-distance routes.
[6] The Strategic Plan is available at http://www.fra.dot.gov/us/content/31.
[7] For the reports to Congress, the FRA calculated the baseline indirectly, adding (for each route) the scheduled trip time to the average minutes late over the course of FY 2007. Amtrak has more direct methods of calculating effective speed from its operating data, which will be implemented for purposes of the quarterly Metrics and Standards reports.

Seasonality. ***Comment:*** AAR and several freight host railroads stated that the baseline does not account for seasonal differences in rail operations or for the expected increase in freight-rail demand. BNSF, in particular, commented that late Amtrak trains during periods of heavy freight traffic are the result of congestion and that Amtrak should respond to such congestion in the same manner as the freight railroads do by increasing its run times during such periods. BNSF and AAR recommended that the effective speed baseline be adjusted seasonally to account for seasonal variations in rail operations.

Response: The baseline covers an entire fiscal year, thereby accounting for a full four-season spectrum of traffic and climate conditions. The FRA agrees that the result for a single quarter could potentially reflect a seasonal skew, and has therefore adjusted the Metrics and Standards to use a four-quarter rolling average instead. However, to directly adjust the effective speed (or any other OTP) standard on a seasonal basis would be undesirable in that it would contradict one of the basic tenets and inherent advantages of passenger rail transportation—consistency of schedules and performance in all seasons.

Connection between effective speed and delays. ***Comment:*** NS stated that Effective Speed has no direct relation to delays or to the causes of delays. ***Response:*** Effective Speed is indeed related to delays since it incorporates the average lateness of trains, which results from the delays that trains encounter.

Deletion of effective speed measure. ***Comment:*** One respondent recommended simply eliminating Effective Speed and proposed substituting in its place the average running speed of individual trains. ***Response:*** The FRA and Amtrak perceive no reason to substitute, for effective speed, a measure that does not incorporate the effects of both OTP and scheduled train timings.

c. Comments on Endpoint OTP Measure

Despite a number of issues raised by respondents and discussed below, the FRA and Amtrak maintain that the Endpoint OTP measures are useful. For example, Performance Improvement Programs resulting from OTP scores that fall below the standard will act as catalysts for identifying operational improvements and near-term infrastructure projects in which to invest.

Schedules and recovery time. ***Comment:*** VDOT recommended utilizing the FRA's methodology for calculating recovery time when adjusting schedules. ***Response:*** As mentioned above under "Suitability of Amtrak schedules," schedule-setting *per se* remains primarily the responsibility of Amtrak, the host railroads, and a route's sponsoring State (if any). The FRA's recovery time calculation, included in the guidance manual "Railroad Corridor Transportation Plans" (http://www.fra.dot.gov/us/content/ 1415), is one tool that can be used to help assess the need for adjusted schedules. However, the FRA and Amtrak realize that the model's applicability varies among actual operating environments, which may necessitate significant adjustments to the calculations.

Endpoint OTP Tolerances. ***Comment:*** Related to the issue of schedule is that of OTP tolerances. CSX and the AAR commented that on-time arrival tolerances associated with the long-distance trains are insufficient for their route length. As described in the Proposed Metrics and Standards, a train is considered "late" if it arrives at its endpoint terminal more than 10 minutes after its scheduled arrival time for trips up to 250 miles; 15 minutes for trips 251-350 miles; 20 minutes for trips 351-450 miles; 25 minutes for trips 451-550 miles; and 30 minutes for trips of 551 or more miles; except that all Acela trips are considered late if they arrive at their

endpoint terminal more than 10 minutes after their scheduled arrival time. ***Response:*** Long-distance trains already have more recovery time built into their schedules than corridor-type services,[8] which compensates for on-time arrival tolerances being capped at 551 or more miles. Thus, we are not persuaded of the need to change the tolerances.

Endpoint OTP and freight traffic levels. ***Comment:*** The AAR also stated that, historically, Amtrak OTP levels above 80 percent have occurred during periods of decreased demand for freight rail. ***Response:*** By definition, to be "reliable," the quality of passenger rail service should be consistent over time, from season to season and year to year, regardless of the demand levels for freight and commuter service. If, in future periods of freight traffic growth, the application of these Metrics and Standards reveals negative trends, Section 207 will have served an important purpose: the identification of routes needing improvement to restore operating consistency. Once that identification is made, focused studies and Performance Improvement Programs can reveal specific remedies and assist stakeholders in setting priorities and seeking funding.

Limitations and proposed changes to Endpoint OTP. ***Comment:*** Some respondents pointed to limitations of, and possible changes to, the Endpoint OTP metric. CSX, for example, observed that Endpoint OTP does not reveal Amtrak's performance on individual host railroads or the causes of substandard OTP. As such, CSX requested that Endpoint OTP be deemed an insufficient trigger for STB investigations.

Response: Section 213 of PRIIA mandates that percent on-time standards be used by the STB as a basis for initiating investigations on Amtrak's service: "If [among other possible reasons] the on-time performance [i.e., Endpoint OTP] averages less than 80- percent for two calendar quarters," the STB's investigative discretion or mandate takes effect. Each of the OTP metrics, by itself, reveals only one aspect of service reliability. Train delay data by cause and by host railroad has been incorporated into the Metrics and Standards to complement the Endpoint OTP figures, which only illustrate the frequency of lateness.

Endpoint OTP and host railroad performance. ***Comment:*** AAR recommended reporting Endpoint OTP by host railroad while CSX and NS recommended using host railroads' contract performance with Amtrak instead. ***Response:*** As noted above, individual host railroad performance will be illustrated through the train delay metrics. Thus, the FRA does not believe that it is necessary to also report Endpoint OTP by host railroad. (Nor would it be consistently meaningful: many routes make use of more than one host, and Endpoint OTP says nothing about responsibilities for late delivery of trains at intermediate junctions between hosts.) In response to the comments by CSX and NS, the standards embedded in host railroad contracts are not suitable as general performance measures for the purposes of this effort as contracts differ among the host railroads, significantly limiting their comparability. Furthermore, as mentioned above, Congress directed Amtrak and the host railroads to adopt these Metrics and Standards in their access and service agreements—not the reverse.

Proposal for site-specific standard-setting. ***Comment:*** Caltrans stated that the performance standards should be based on current track conditions and track improvements that will realistically occur by 2013. ***Response:*** Although useful, this concept raises practical

[8] For example, trains in the San Joaquin corridor between Bakersfield and Oakland, CA (316 miles) have approximately 40 minutes of recovery time and other adjustments incorporated into their schedules. The Auto Train between Sanford, FL and Lorton, VA (855 miles) has approximately 2 hours, 45 minutes of recovery time and other adjustments.

difficulties in that (a) implementation of these Metrics and Standards must precede project selection decisions in the HSIPR program, thus making track conditions impossible to predict; (b) the concept implies separate standards for each route, a source of undesirable complexity; and (c) for intercity passenger rail to attract the kind of demand that will allow it to reach its full potential to yield public benefits, the standards for 2014—while achievable—must also be customer-centric and competitive with other modes, rather than constrained by current conditions.

d. Comments on All-Stations OTP Measure

Numerous parties expressed misgivings about the All-Stations OTP measure and its potential impact on operations. The FRA and Amtrak, however, firmly believe that the benefits of this measure will more than counterbalance its potential drawbacks. Furthermore, as a matter of principle, the nature of passenger rail service mandates All-Stations OTP: a single train, unlike an airline flight, can serve hundreds of origin/destination pairs, the passengers on each of which deserve a consistently high quality of service that can only be obtained if trains are on time throughout their runs.

Potential drawbacks. ***Comment:*** The CCJPA, AAR, and several freight host railroads stated that analysis of All-Stations OTP data would be an excessive administrative and financial burden, which the AAR claimed would be unjustified given the light passenger traffic at intermediate stations. VDOT implied that All-Stations OTP might actually have the effect of harming Amtrak's Endpoint OTP. Caltrans stated that spreading out recovery time for the All-Stations OTP metric will require thorough analysis and consideration of current operating practices. BNSF commented that Amtrak trains holding at intermediate stations because of reallocated recovery time will create additional delays down their rail line.

Response: FRA analysis shows that passengers utilizing intermediate stations amount to a significant portion of Amtrak's ridership—indeed, on many routes, a majority of the riders. Moreover, FRA and Amtrak believe that every intercity rail passenger deserves a consistently high quality of service under the OTP and other metrics and standards. Thus, both principle and travel demand patterns call for the measurement of OTP at intermediate points, despite the potential burden and operational impacts of this standard as identified by the respondents.

Scheduling implications. ***Comment:*** Both State agencies and freight host railroads acknowledged that the All-Stations OTP metric will require Amtrak and host railroads to agree to schedule adjustments to reallocate recovery time among intermediate stations.

Response: The FRA and Amtrak fully realize that introduction of the All-Stations OTP standard will involve a challenging process of readjustment, in which Amtrak, its railroad hosts, and (where applicable) State sponsors of service will collaboratively analyze and, as needed, modify train schedules. The FRA encourages these parties to develop a strategy and plan to address this challenge as soon as possible. To allow for an orderly transition to All-Stations OTP, the FRA and Amtrak have adjusted the implementation schedule: the All-Stations standard will not go into effect until FY 2012, two years after the other standards, to provide additional time for needed operational and scheduling adjustments. (All-Stations OTP data will, however, be published for information only, beginning with the first quarterly Metrics and Standards report.)

Effects of planned construction and maintenance. ***Comment:*** NS stated that freight host railroads have inadequate input into the schedule setting process, and that—even with

revised schedules—All-Stations OTP will unfairly penalize host railroads when conducting planned track work and receiving late Amtrak trains in the midst of such work. ***Response:*** Annex 1 provides a means of revising public schedules (hence the operation of All-Stations OTP) during periods of major construction and maintenance as agreed upon by Amtrak, the freight railroad host, and (as appropriate) the State sponsor of service.

Alternative approaches. ***Comment:*** Several parties proposed alternatives to the All-Stations OTP or alternative methods for calculating All-Stations OTP. CSX and multiple State agencies recommended simplifying the All-Stations OTP metric by calculating OTP only at strategic intermediate points. Caltrans, on the other hand, recommended maintaining this metric but calculating it based on the average minutes of early or late arrivals at each station. The CCJPA recommended eliminating the All-Stations OTP measure on shorter routes, while NS recommended eliminating the measure completely. ***Response****:* The Final Metrics and Standards retain "All-Station OTP" as originally proposed. Reducing the number of stations covered raises serious questions about how the list of stations is to be pruned, and implies that some passengers' and some cities' quality of train service is more important than that of others. As Amtrak has assured the FRA that the production of All-Stations OTP data is eminently feasible, there is no reason to implement changes to it on the grounds of data availability.

Other issues. ***Comment:*** Caltrans asserted that the All-Stations OTP standards are unrealistically high and, further, that results for this metric will necessarily be lower than for Endpoint OTP. ***Response****:* FRA's own analysis suggests that, at least for some routes, All-Stations OTP could be comparable to or even higher than Endpoint OTP. It should also be noted that the calculation of All-Stations OTP uses a 15 minute grace period, which allows for that level of delays while still recording on-time operation. Even if All-Stations OTP temporarily yields less favorable results than those of Endpoint OTP, the heightened attention to intermediate stations will have long-term benefits both for rail passengers and for Amtrak's traffic volumes and revenues. ***Comment:*** Caltrans also requested confirmation that State agencies will not be responsible for collecting and analyzing the All-Stations OTP data. ***Response****:* Amtrak—and not State agencies or other parties—will be responsible for collecting All-Stations OTP data, which will be analyzed by both Amtrak and FRA personnel.

d. Comments on Train Delay Measures

Which delays to report? ***Comment:*** The AAR and CSX stated that measuring delays for trains that are on-time is an excessive burden and irrelevant to passengers (i.e., this performance measure should only be used to report delays for late trains). ***Response:*** Reporting delays only for late trains limits the insight and comparability of the train delay data. Reporting all delays experienced by all trains better aligns the metric with the OTP standards, which utilize all train operations in their calculations (as opposed to only late train operations), and it gives an average amount of delays experienced during the operations of each route. A train that is meeting its OTP standard may still experience some high levels of delay along its route, a situation that might ultimately lead to revision of the train's schedule to remove excessive recovery time. Reporting all train delays gives Amtrak, host railroads, and FRA an opportunity to analyze comprehensively a route's performance and to develop plans to mitigate any challenges that are revealed, thereby further improving the route's OTP.[9] As a result, train delays has been retained as a key element in the Final Metrics and Standards.

[9] Beyond these objective benefits of tracking all delays, it is not necessarily true that train delays are irrelevant to individual passengers: For some passengers at least, anecdotal evidence suggests that sitting on a stopped train in the

Pure vs. scheduled run time. ***Comment:*** Multiple stakeholders objected to the use of pure run time as the basis for train delay data outside of the NEC.[10] CSX argued that freight railroads are held to a higher performance standard than Amtrak, which measures itself on scheduled run time within the NEC. Several freight railroads argued that use of pure run time does not align with the public's service expectations, which are based on schedules. WSDOT stated that pure run time does not account for planned capital improvement projects, while Caltrans commented that use of pure run time oversimplifies train operations on congested corridors. BNSF stated that OTP measures are only relevant if they are compared to Amtrak's public timetable. Both State agencies and freight railroads recommended basing this metric on scheduled run time. ***Response:*** Again, reporting all train delays gives Amtrak, host railroads, and FRA a better opportunity to identify areas of frequent delays on routes, to further improve route reliability. On the NEC, which at this time is a unique high-speed intercity passenger rail operation, the levels of allowable train delays have been significantly lowered to account for Amtrak's use of scheduled run-time. (Total delay allowances off the NEC amount to 1,225 minutes per 10,000 train-miles; on the NEC, there is a total allowance of only 260 minutes for Acela and 470 minutes for all other services.)

Adjustments for out-of-slot trains and track work. ***Comment:*** Metro-North and Caltrans, respectively, argued that train delay data should be adjusted for out-of-slot trains and for planned track work. ***Response:*** The standard for train delays off the NEC has been increased to 900 minutes per 10,000 train-miles (from the original 700 minutes) in the final Metrics and Standards, which will help host railroads absorb delays they incur as a result of receiving late Amtrak trains. Additionally, delay-minute standards may be temporarily adjusted to account for major track maintenance and construction projects that have been planned by host railroads (see Annex 1 for conditions and other details).

Source of delay data. ***Comment:*** Both State agencies and freight host railroads questioned the source of data on delays. In particular, they criticized the use of Amtrak's conductor delay reports as the primary data source for assessing delays due to concerns with the accuracy of those reports. The AAR and BNSF recommended that the freight railroads' delay data also be considered when analyzing delays. The AAR and CSX stated that a more automated source of delay data is needed. ***Response****:* While we understand these concerns, the source of delay data for the Metrics and Standards is based on the valuable, consistent, comparable information it provides. While some individual host railroads have stated that they produce their own train delay data, no uniform database for minutes of delay across the Amtrak system exists that can replace Amtrak's conductor delay reports. However, individual host railroads can use their own data, when practicable following reporting of the delay, to help resolve discrepancies with Amtrak and help identify the incidents that may have contributed to delays. The FRA agrees that more automated sources of delay data would be beneficial; as noted above, Amtrak has said it will examine integrating more automated OTP measurement mechanisms into future IT implementation efforts (e.g., GPS tracking).

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middle of a cornfield is not only frustrating but also cause for anxiety, as it implies that the train might be late at the passenger's destination. Passengers cannot be expected to know the intricacies of train scheduling, dispatching, and recovery time.

[10] In simplified terms, "pure" run time means that between any two points (say, A and B), Amtrak and the freight railroad will have agreed on how long it should take an Amtrak train to make the run in the absence of any delaying factors. This "pure" run time, plus an allowance ("recovery time" or "pad") for delays, yields the scheduled running time between A and B. Outside the NEC, all delays that cause a train to exceed its "pure" run time are registered as delays, even if the train makes the run between A and B within the scheduled running time.

Source of delay standard. ***Comment:*** Questions arose regarding the regression analysis methodology used to establish the various standards for measuring train delays (as described in the Proposed Metrics and Standards). Both CSX and Caltrans stated that regression analyses and resulting performance standards related to delay data should be implemented on a route-by-route basis instead of collectively to account for different characteristics among Amtrak's routes. ***Response****:* A separate delay standard for each route is not practicable; for example, such a standard would need to be altered each time a route or its schedule is changed. Still, the FRA recognizes that different characteristics exist among Amtrak's routes; to account for such variations, 200 minutes have been added to the off-NEC host-responsible train delay standard of 700 delay-minutes per 10,000 train-miles that was originally proposed. Annex 3 describes the derivation of the delay allowances used in the Final Metrics and Standards.

Delay categories. ***Comment:*** State agencies and host railroads commented that the off-NEC train delay categories are too broad, making it difficult to identify incidents which may have contributed to delays. Both CSX and Metro-North recommended that proposed groupings of delay categories be broken out to provide more detail. Multiple freight railroads indicated that the proposed categories wrongly suggest that many delays are dispatching-related. BNSF further stated that some delays may actually improve Amtrak's overall trip performance, which is not reflected in the proposed Metrics and Standards format. ***Response****:* The inclusion of a train delay allowance in the Metrics and Standards (rather than a zero-tolerance standard) recognizes that a subset of train delays may arise in the normal course of operations, as part of a good-faith effort by all parties to expedite the passage of passenger trains over a complex railway network, or to improve the infrastructure used in passenger service. In terms of the level of detail that will be provided on the source of train delays, these will be provided as metrics for informational purposes only.

Measurement of delays. ***Comment:*** Metro-North requested an explanation as to whether delay minutes on the NEC will be reported on a per 10,000 train-miles basis. ***Response****:* To clarify, train delays on the NEC will be reported on a per 10,000 train-mile basis, which is the same format used to report delays off the NEC. This text was inadvertently left out of the table in the draft.

Comment: NS argued that Delays per 10,000 Train-Miles is an inappropriate measure since no route operates such a distance. NS also commented that the proposed train delay measure does not indicate the frequency and severity of late trains. Furthermore, it recommended removing the entire performance measure from the Metrics and Standards. ***Response****:* Clearly, even the longest Amtrak routes are significantly shorter than 10,000 miles. However, reporting delays on a uniform per train-mile basis is important since there is no consistent route length in the Amtrak system. Amtrak's regularly scheduled services all operate well over 10,000 train-miles each month. With respect to the proposed deletion of the delay standard, PRIIA Section 207 explicitly requires that the FRA and Amtrak jointly develop "metrics and minimum standards for . . . on-time performance and minutes of delay [emphasis added]." Furthermore, although train delay does not indicate the frequency or the severity of late trains, it can provide a starting point for research into the reasons for poor OTP. This initial indicator may be valuable to Amtrak, the host railroads, and any sponsoring State(s) as they seek to raise service quality levels on specific routes.

d. Additional OTP measures proposed

Several recommendations were submitted proposing additional OTP measures.

OTP for other services. ***Comment:*** Maryland Transit recommended including data on commuter and freight train OTP on reports pertaining to the NEC. ***Response:*** While data on commuter and freight OTP might shed further light on operational issues and challenges on the NEC, such data falls outside the scope of these Metrics and Standards. (Section 207 of PRIIA specifically states that the Metrics and Standards are for measuring the performance of intercity passenger train operations.)

Host railroad metric. ***Comment:*** The AAR proposed including a new host railroad metric that would measure performance on the host railroads' own lines based on factors that they can control. ***Response:*** The AAR did not explain how its proposed host railroad metric would be developed or calculated; therefore, this proposal was not sufficiently elaborated for evaluation as part of the docket review.

Measures of the severity of lateness. ***Comment:*** The AAR and CSX proposed including a performance measure calculated based on increments of late train arrivals, e.g., the percentage of trains arriving within 30, 60, and 90 minutes of schedule, in order to enable investigations to be focused on trains that are relatively more late. ***Response:*** The severity of late train arrivals is a component of the Effective Speed measure, of which the total train run time (scheduled time plus endpoint terminal lateness) makes up the denominator. Accordingly, there is no pressing need in the Metrics and Standards for an analysis of train arrivals by lateness increment. Nevertheless, for specific purposes—for example, the development of performance improvement plans for the worst-performing long-distance routes under Section 210 of PRIIA—such a distribution may prove highly informative and beneficial.

D. Other Service Quality Measures

1. Summary of the Proposal and of the Final Metrics and Standards

In the Other Service Quality area, most metrics and standards are derived from Amtrak's Customer Satisfaction Index (CSI). The topics cover the full range of the passenger experience on and off the train. Of these, most require a "very satisfied" rating from 80 percent of passengers in 2010, and 90 percent in 2014; the only divergences from this standard is for overall service in 2010 (82 percent). As the measures for the "overall station experience" and the "overall sleeping car experience" are not currently included in the CSI, their implementation continues to be deferred.

Two other metrics, not based on the CSI, fall within this category: Equipment-caused service interruptions per 10,000 train-miles, and the presentation of Amtrak passenger comment data by subject matter and major route grouping. No standards would attach to these items, which would be included in the quarterly Metrics and Standards report for information only.

2. Comments and Responses

a. Additions to the Customer Satisfaction Index (CSI) in the Proposed Metrics and Standards

Comment: NARP expressed support for including CSI metrics for passengers' station and sleeping car experiences. ***Response:*** While sufficient CSI data to create standards for stations and sleeping cars currently do not exist, the FRA will work with Amtrak on incorporating these topics into the CSI and developing metrics and standards for them.

b. Other proposed topics

Comment: An individual of unknown affiliation commented that food service should be available on all trains over one hour in duration, that clean restrooms should be standard on all trains, and that safe boarding/detraining should be standard at all stations. The FRA inferred that the respondent was recommending these items for inclusion as performance standards.

Response: The suggested metric on food availability is too prescriptive, in view of the wide-array of operational characteristics that exist across Amtrak's routes, to be incorporated into the Metrics and Standards. In addition, the suggested standard for safe boarding/detraining is outside the scope of the PRIIA Section 207 mandate, particularly as safety issues fall under Division A of Public Law 110-432, the Rail Safety Improvement Act of 2008, of which Section 404 mandates a study of methods to improve or correct passenger station platform gaps "to minimize the safety risks associated with such gaps for railroad passengers and employees." Also, clean restrooms are already considered in the Metrics and Standards as an aspect of the "On-Board Cleanliness" measure.

c. Sources of Other Service Quality Standards

Comment: WSDOT asked about the source of the Other Service Quality standards and whether comparable foreign data were used to assist in setting these standards. ***Response:*** While acknowledging the potential insights that data from foreign countries and other modes might provide, the FRA and Amtrak regard the CSI as the most practical and readily available source for metrics and standards in the area of Other Service Quality factors.

d. Objectivity of Data Sources

Comment: The TWU noted that the Other Service Quality measures are largely tied to subjective customer response data that are strongly correlated with OTP. The TWU encouraged the use of more objective and credible data sources in establishing standards and stated that the Metrics and Standards should not be implemented until the Other Service Quality data sources are strengthened. ***Response:*** FRA and Amtrak acknowledged in the Proposed Metrics and Standards that the CSI has some limitations—for instance, the correlation of responses in all areas with on-time performance. Still, as mentioned above, the FRA and Amtrak believe that the CSI provides a practicalfoundation for the Other Service Quality standards in compliance with the PRIIA. Moreover, the PRIIA's stringent deadlines did not allow for, nor did the PRIIA authorize or fund, extensive research into methods for setting and reporting on Other Service Quality criteria and standards; nor did the PRIIA provide for any new survey instruments or inspection mechanisms, which would likely have been necessary to implement any research recommendations.

e. Level of Other Service Quality Standards

Comment: Several parties submitted comments regarding the appropriate level at which the Other Service Quality standards should be set. NARP, WSDOT, and Caltrans indicated that the Other Service Quality goals were too high, while WisDOT stated they were too low. WSDOT noted that many stations used by Amtrak are not in fact owned by Amtrak, and that standards prescribing station improvements will be a burden for the (often local) station owners to implement. WSDOT recommended the removal of the metric on On-Board Food Service satisfaction due to the inconsistent nature of responses, while TWU requested more information on the Equipment-Caused Service Interruptions measure to better assess its appropriateness.

Response: The FRA believes that the Other Service Quality standards are appropriate. These standards were based on the historical trends of the CSI data, which demonstrate a pattern

of annual improvement. With regard to stations, the proposed metric is Percent of Passengers "Very Satisfied" with the overall station experience. The FRA and Amtrak have not yet proposed a standard for this metric, for which data do not yet exist. However, assessing passenger reactions to the station experience is worthwhile—regardless of the availability of funding for any investments that would improve that experience, and irrespective of the stations' ownership. With regard to on-board food service, despite discrepancies in how respondents rate Amtrak's food service, this metric is valuable as a basic indicator of how well Amtrak's investment in food service aligns with customer needs and expectations. Finally, regarding Equipment-Caused Service Interruptions, this metric is intended to offer some insight into the reliability and soundness of the fleet as experienced by passengers. While details are yet to be fully worked out, the Proposed Metrics and Standards provided a definition of service interruption as well as a brief description of the mechanics to be used in calculating this metric. Also, to reiterate, this metric would be calculated on a route-by-route basis, not for the system as a whole; and no standard is being proposed for this metric.

E. Public Benefits, Including Service Availability and Connectivity

The original proposal contained a fourth category of metrics, "service availability/connectivity," that would measure the degree to which long-distance passengers are transferring among routes and the availability of train service to communities lacking other public transport options—topics mandated by Congress in PRIIA Section 207. In recent months, the implementation of a new Federal policy toward intercity passenger rail—as exemplified by the HSIPR program and its strategic plan and interim guidance—has focused the Nation's attention on the full spectrum of public benefits inherent in the rail mode. Accordingly, the scope of the former "service availability/connectivity" category has been expanded to address "public benefits" generally. The measures of "connectivity" and "availability of other modes" will remain intact, as originally proposed, as part of "Public Benefits"; in addition, an analysis will be undertaken of opportunities for incorporating energy-saving and environmental measures into the Metrics and Standards. Proposals emanating from this analysis of Public Benefits will, of course, be made available for public comment.

With regard to the service availability/connectivity category of the original proposal, the only comment received was from NARP. ***Comment:*** NARP stated that intermediate stations currently receiving late night service should receive daytime service through increased frequencies rather than by adjusting schedules. NARP also recommended that language be modified to leave open the possibility of future additions to service. ***Response:*** The reduction in passenger rail service over the past half-century has left many long-distance routes with one daily train each way—a situation inevitably leaving many communities with poorly-timed service in one or both directions. Thus, NARP's comment treats a serious and difficult issue. Still, scheduling issues, including whether or not to increase train frequencies on a particular route, are a business decision outside the scope of these Metrics and Standards—and indeed, are referred to in a separate section of PRIIA (Section 208).

METRICS AND STANDARDS FOR INTERCITY PASSENGER RAIL SERVICE

In accordance with Section 207 of the Passenger Rail Investment and Improvement Act of 2008 (PRIIA), the Federal Railroad Administration (FRA) and Amtrak are jointly issuing the following Metrics and Standards for intercity passenger rail service. All Metrics and Standards will be measured and applied on a quarterly basis, except where otherwise noted.

Metric/ Stand-ard Category	Metric/Standard Subcategory	Standard Applies By	Statutory Require-ment	Added Measure	Standard; Comments
Financial	Percent of Short-Term Avoidable Operating Cost[11] Covered by Passenger-Related Revenue (exclude capital charges), both with and without State subsidy included in revenue	**route**	✓		Continuous year-over-year improvement on a moving eight-quarter average basis. Dollar-denominated metrics (surpluses/losses per passenger-mile) will be reported in constant dollars of the reporting year (based on the OMB GDP Chain Deflator).
	Percent of Fully Allocated Operating Cost[12] Covered by Passenger-Related Revenue (exclude capital charges), both with and without State subsidy included in revenue	**route**	✓		
	Long-term avoidable operating loss[13] per PM (exclude capital charges), both with and without State subsidy included in revenue	**route**		✓	
	Adjusted (Loss)[14] per passenger-mile, both with and without State subsidy included in revenue	**system**		✓	
	Passenger-Miles per Train-Mile	**route**	✓		

[11] "Short-Term Avoidable Operating Costs" are those costs that would cease to exist one year after a specific route ceases to operate.

[12] "Fully-Allocated Costs" of a route are the total costs of operating the route, including all types of production costs (direct materials, direct labor, and fixed and variable overhead) and also a share of marketing, administrative, financing, and other central corporate expenses.

[13]The "long-term avoidable operating loss" of a route is the improvement in Amtrak's bottom line that would accrue five years after, and solely due to, the elimination of a given route.

[14] The definition of Adjusted (Loss) is: Net Loss of Amtrak's Operating Business Lines, adjusted to eliminate the effects of Depreciation, Other Post-Employment Benefits (OPEB's), project costs covered by capital funding, and net interest expense.

Metric/ Stand-ard Category	Metric/Standard Subcategory	Standard Applies By	Statutory Require-ment	Added Measure	Standard; Comments
On-Time Performance	**On-Time Performance (OTP).** This congressionally-mandated metric/standard will consist of two tests (Nos. 1 and 2) starting in FY 2010, and three tests (Nos. 1, 2, and 3) beginning in FY 2012. All tests applicable in a given quarter must be met.	**Route**[15]	✓		
	Test No. 1: Change in "Effective Speed"—which is defined as a train's mileage, divided by the sum of (a) the scheduled end-to-end running time plus (b) the average endpoint terminal lateness.				Effective speed for each rolling four-quarter period must be equal to or better than the average effective speed during FY 2008.
	Test No. 2: Endpoint OTP[16]				In FY 2010, Endpoint OTP must be at least 80% for all routes except Acela (90%) and other Northeast Corridor (NEC) corridor routes (85%).[17] By FY 2014, Endpoint OTP must be at least 95% for Acela, 90% for all other NEC and non-NEC corridor routes,[18] and 85% for long-distance routes. If public Amtrak schedules are adjusted for major maintenance and construction projects (see Annex 1), Endpoint OTP will be calculated against the adjusted schedule.

[15] Each route comprises two or more trains (at least one in each direction). The Internet version of the quarterly Metrics and Standards report will contain a link to train-by-train information that will allow all stakeholders to characterize performance at the train level and facilitate compliance with all relevant sections of PRIIA.

[16] A train is considered "late" if it arrives at its endpoint terminal more than 10 minutes after its scheduled arrival time for trips up to 250 miles; 15 minutes for trips 251-350 miles; 20 minutes for trips 351-450 miles; 25 minutes for trips 451-550 miles; and 30 minutes for trips of 551 or more miles. These tolerances are based on former ICC rules. The exception is that all Acela trips, regardless of run length, are considered late if they arrive at their endpoint terminal more than 10 minutes after their scheduled arrival time.

[17] For purposes of the Change in Effective Speed, Endpoint OTP, and All-Stations OTP metrics and standards, "other NEC corridor trains" are all Northeast Regional and Keystone service trains, including the Northeast Regional trains operating between Washington and points in Virginia.

[18] "Non-NEC corridor trains" refers to trains in all Amtrak services other than the Northeast Corridor trains (Acela, Northeast Regional, and Keystone), and other than the long-distance trains (Auto Train, California Zephyr, Capitol Limited, Cardinal, City of New Orleans, Coast Starlight, Crescent, Empire Builder, Lake Shore Limited, Palmetto, Silver Meteor, Silver Star, Southwest Chief, Sunset Limited, and Texas Eagle.)

Metric/ Stand-ard Category	Metric/Standard Subcategory	Standard Applies By	Statutory Require-ment	Added Measure	Standard; Comments
	Test No. 3 (Effective as of FY 2012): All-Stations OTP—which is defined as the percentage of train times (departure time from origin station and arrival time at all other stations) at all of a train's stations that take place within 15 minutes (10 minutes for Acela) of the time in the public schedule.[19]				Effective FY 2012, All-Stations OTP must be at least 80% for all routes except Acela (90%) and other NEC corridor routes (85%). By FY 2014, All-Stations OTP must be at least 95% for Acela, 90% for all other NEC and non-NEC corridor routes, and 85% for long-distance routes. Results for this metric will be published beginning with the first report under Section 207, even though the test is not in effect until FY 2012. If public Amtrak schedules are adjusted for major maintenance and construction projects (see Annex 1), All-Stations OTP will be calculated against the adjusted schedule.
Train Delays	**Train Delays**.[20] This Congressionally-mandated metric/standard will consist of two groups of tests—"off" and "on" the Northeast Corridor (NEC)[21]: See Annex 1 for special provisions with respect to train delay due to major planned maintenance and construction projects.		✓		Annex 3 describes the rationale for the standards adopted in the Train Delay category.
	Train Delays—Off NEC				
	Amtrak-Responsible[22] Delays per 10,000 Train-Miles	**Route**[15]			Delays must be not more than 325 minutes per 10,000 Train-Miles.

[19] The 15-minute tolerance for All-Stations OTP is based on 49 U.S.C. Section 24101(c)(4).
[20] As calculated by Amtrak according to its existing procedures and definitions.
[21] For this purpose, the NEC is defined as the entire main line between Boston, New York, and Washington, except for the portion owned by Metro-North between New Rochelle and New Haven. Also included in the NEC definition are the Keystone line between Philadelphia and Harrisburg and the Springfield line between New Haven, Hartford, and Springfield. Metro-North, on its New Rochelle-New Haven segment, is the host railroad.
[22] "Amtrak-responsible" refers to delays coded on Amtrak Conductor Delay Reports as Passenger-Related (ADA, HLD), Car Failure (CAR), Cab Car Failure (CCR), Connections (CON), Engine Failure (ENG), Injuries (INJ), Late Inbound Train (ITI), Service (SVS), System (SYS), or Other Amtrak-Responsible (OTH).

Metric/ Stand-ard Category	Metric/Standard Subcategory	Standard Applies By	Statutory Require-ment	Added Measure	Standard; Comments
	Host-Responsible[23] Delays per 10,000 Train-Miles	**Route**[15] **and host**			Delays must be not more than 900 minutes per 10,000 Train-Miles. Major reported causes of delay will also be shown for information (with no standard attached to them). The 900-minute standard is intended to absorb routine/seasonal maintenance, track work, and other routine construction projects. On a case-by-case basis, an additional delay allowance above this standard may also be applied to account for major maintenance and construction projects. See Annex 1 for further details.
	Train Delays~~—~~ On NEC: Total Delays[24] per 10,000 Train-Miles	**Route**[15] **and host**			Delays must be not more than 265 minutes per 10,000 Train-Miles for Acela, and 475 minutes per 10,000 Train-Miles for all other services on the NEC. Reported causes of delay will also be shown for information (with no standard attached to them). The 265- and 475-minute standards are intended to absorb routine/seasonal maintenance, track work, and other routine construction projects. On a case-by-case basis, an additional delay allowance above this standard may also be applied to account for major maintenance and construction projects. See Annex 1 for further details.

[23] "Host-responsible" refers to delays coded on Amtrak Conductor Delay Reports as Freight Train Interference (FTI), Slow Orders (DSR), Signals (DCS), Routing (RTE), Maintenance of Way (DMW), Commuter Train Interference (CTI), Passenger Train Interference (PTI), Debris Strikes (DBS), Catenary or Wayside Power System Failure (DET, used in electrified territory only), or Detours (DTR).

[24] "Total delays" for purposes of the NEC delay standard is all delays except 3rd Party delays.

Metric/ Stand-ard Category	Metric/Standard Subcategory	Standard Applies By	Statutory Require-ment	Added Measure	Standard; Comments
Other Service Quality	**The following metrics and standards are based on Amtrak's Customer Satisfaction Index:**				
	Percent of Passengers "Very Satisfied"[25] with Overall Service	**route**	✓		82 percent in 2010; 90 percent by 2014
	Percent of Passengers "Very Satisfied" with Amtrak personnel	**route**	✓		80 percent in 2010; 90 percent by 2014
	Percent of Passengers "Very Satisfied" with Information Given	**route**	✓		
	Percent of Passengers "Very Satisfied" with On-Board Comfort	**route**	✓		
	Percent of Passengers "Very Satisfied" with On-Board Cleanliness	**route**	✓		
	Percent of Passengers "Very Satisfied" with On-Board Food Service	**route**	✓		
	Future: Percent of Passengers "Very Satisfied" with the overall station experience	**route**	✓		Future metric and standard; standard to be determined
	Future: Percent of Passengers "Very Satisfied" with the overall sleeping car experience	**route**	✓		Future metric and standard; standard to be determined
	The following measures are for information only and are based on sources other than the Customer Satisfaction Index.				
	Equipment-caused service interruptions per 10,000 train-miles	**route**	✓		Metric only. This is an initial metric, intended to reflect objectively the quality of mechanical maintenance as perceived by the passenger. No standard is proposed.
	Presentation of Amtrak passenger comment data by subject matter and major route grouping (NEC, other corridors, long-distance)	**type of route**		✓	Information only. No standard proposed; presented as supplementary information.

[25] "Very Satisfied" with the service quality is defined as a score in the top three steps on a scale of eleven evaluation ratings that respondents can ascribe to each facet of the service. For a given service factor, "80 percent" means that 80 percent of respondents rated Amtrak in the top three of the eleven steps of the scale.

Metric/ Stand-ard Category	Metric/Standard Subcategory	Standard Applies By	Statutory Require-ment	Added Measure	Standard; Comments
Public Benefits	Connectivity measure: Percent of passengers connecting to/from other routes. To be updated annually.	**long-distance route**	✓		Metric only. No standard possible; improvement could require network changes
	Availability of other modes: Percent of passenger-trips to/from underserved communities.[26] To be updated annually.	**route, system**	✓		Metric only. No standard possible; improvement could require network changes
	Energy-Saving and Environmental Measures. This is a new grouping of one or more measures under "Public Benefits." A forthcoming analysis will identify various methodologies for incorporating environmental benefits and energy savings into these Metrics and Standards at a later date. Any proposals in this regard will be made available for public comment.				

[26] "Underserved communities" would be defined for this purpose as those more than 25 miles from a place with 50,000 or more inhabitants. This definition, which assumes that places with a population of 50,000 or more (and their environs within a radius of 25 miles) are not "underserved," is preliminary and subject to change as research progresses.

List of Annexes

Annex 1: Additional Delay Allowance for Major Maintenance and Construction Projects

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Annex 3: Explanation of Train Delay Analysis

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Annex 1: Additional Delay Allowance for Major Maintenance and Construction Projects

- To facilitate advance planning for major maintenance and construction projects and thereby minimize customer impact of such projects, Amtrak and individual host railroads may agree that during a specific quarter, a specific train will incur more Host- or Amtrak-responsible delay than usual due to a major maintenance and construction project.
- The Section 207 delay standards (e.g., 900 minutes of host-responsible delay per 10,000 train-miles off-NEC) are intended to absorb routine track work, signal, and related maintenance (including seasonal work), and other routine or small projects. As such the process described herein applies only to major maintenance and construction projects. "Major maintenance and construction projects" are typically characterized by:
    - Sufficient scale and scope that they cannot be absorbed by normal recovery time and delay standards. "Sufficient scale and scope" are typically indicated by a combination of at least three of the following:
        - System gang rather than Division gang
        - Host is changing freight schedules
        - Project duration at least 4 days
        - Affects at least half of Amtrak trains in the affected Amtrak service
    - Planned sufficiently in advance to allow at least 4 weeks advance notice to Amtrak (e.g., to allow schedules to be adjusted and passengers to be notified as appropriate)
    - Duration of the work is limited in both time and geography (the project has dedicated resources, a timeline, and a conclusion; it is not ongoing maintenance on a route all season long)
- FRA's quarterly report will indicate any major maintenance and construction allowance agreed upon by Amtrak and the host for that quarter.
    - Amtrak will keep records of any major maintenance and construction allowances, and will provide this information to FRA quarterly for inclusion in the report
    - Delay minutes will continue to be recorded and reported normally
- Where a major maintenance and construction allowance has been agreed upon by Amtrak and a host, the delay standard is considered to be met if either of the following is true:
    1. Delays are within the applicable standard (e.g., 900 minutes of host-responsible delay per 10,000 train-miles off NEC; 325 minutes of Amtrak-responsible delay per 10,000 train-miles off NEC), or
    2. Delays are within the applicable standard plus applicable major maintenance and construction allowance
- Where public Amtrak schedules are adjusted in response to major maintenance and construction, All-Stations OTP and Endpoint OTP will be reported against the adjusted schedules. Therefore, the OTP standards will not be adjusted for major maintenance and construction.

Due to the increased impact to customers when major maintenance and construction plans are changed close to the actual date of the work, unless otherwise agreed by Amtrak and the host, major maintenance and construction allowances shall apply only if the work is done in accordance with the plan (e.g., agreed-upon dates, schedule changes, etc.) originally agreed to by Amtrak and the host.

Annex 2: Collaboration Anticipated in Achieving Metrics and Standards

Good-faith collaboration between Amtrak and host railroads, as well as State and other stakeholders as appropriate, will be needed to ensure that the implementation of the above Section 207 standards is a success. Subject to the parties' statutory rights, examples of such collaborative efforts may include:

- Review of passenger and freight schedules, in particular to ensure that Amtrak schedule Recovery Time is appropriately allocated to support the All-Stations OTP standard. Amtrak and hosts may also explore temporarily lengthening Amtrak schedules vs. today during periods with seasonal operating variations, such as major maintenance and construction projects,[27] and potentially shortening Amtrak schedules vs. today where appropriate. The preferences of, and of course the contractual obligations of Amtrak and the host railroads toward State stakeholders will be fully taken into account in any such exploratory talks. Where available, joint host-Amtrak simulation modeling may be used as a source of information in evaluating schedules and recovery time assumptions, within the context of the Performance Improvement Program process.
- Collaborating to establish new analytical and reporting processes based on the Section 207 Standards. For example, for hosts that today measure themselves internally based on the compensation (incentive/penalty) provisions of their operating agreements with Amtrak, Amtrak and FRA anticipate that host internal management reports will need to be revised to monitor compliance with Section 207 Standards. Amtrak and hosts can work collaboratively to design new reporting processes.
- Potential automation of station arrival and departure time recording. Amtrak is currently working on these data enhancements.
- Expansion of Performance Improvement Programs as an opportunity to focus in more detail on potential operating, maintenance, and capacity improvements on individual routes, including incorporating the above processes as appropriate. Performance Improvement Programs may be used to analyze traffic patterns and to validate freight and passenger train operating plans to ensure they are designed to allow passenger trains to achieve the Section 207 Standards.

<u>The above is not intended to affect, add to, or detract from the responsibilities of any party under the Section 207 Metrics and Standards.</u>

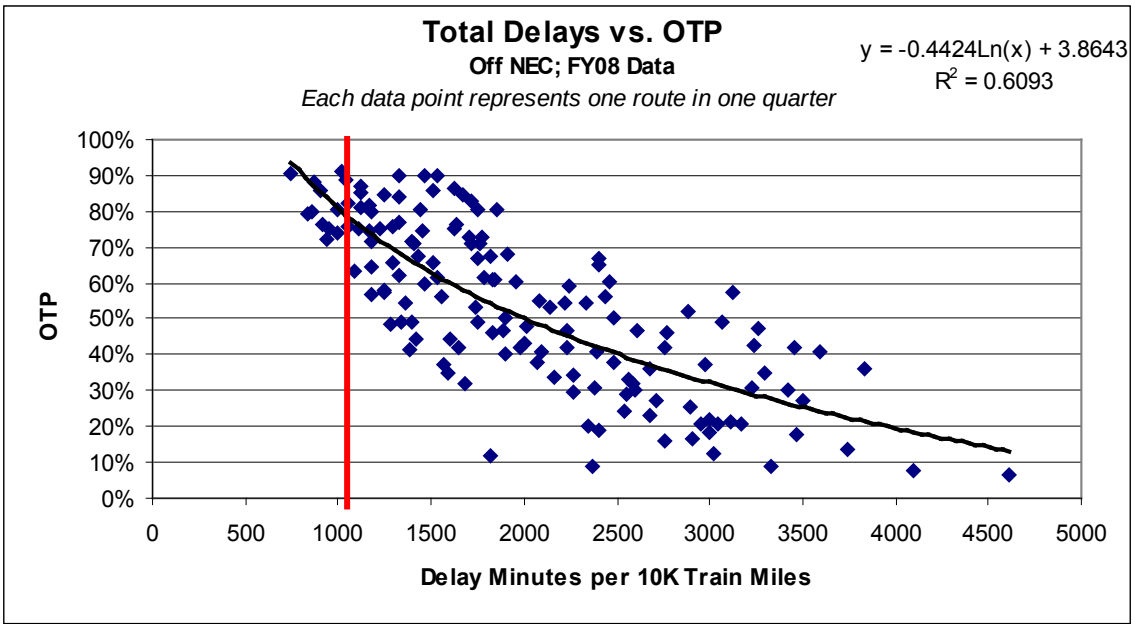
[27] Variations for major maintenance and construction projects will be subject to the process outlined in Annex 1.

Annex 3: Explanation of Train Delay Analysis

Regressions were run to determine the relationship between percent on time and delay minutes per 10,000 train-miles. Separate studies were undertaken for Northeast Corridor (NEC) and off-Northeast Corridor routes, in order to account for the difference in how delays are measured in the Northeast Corridor as well as the desire to set tighter standards for Northeast Corridor operations than for host railroad operations.

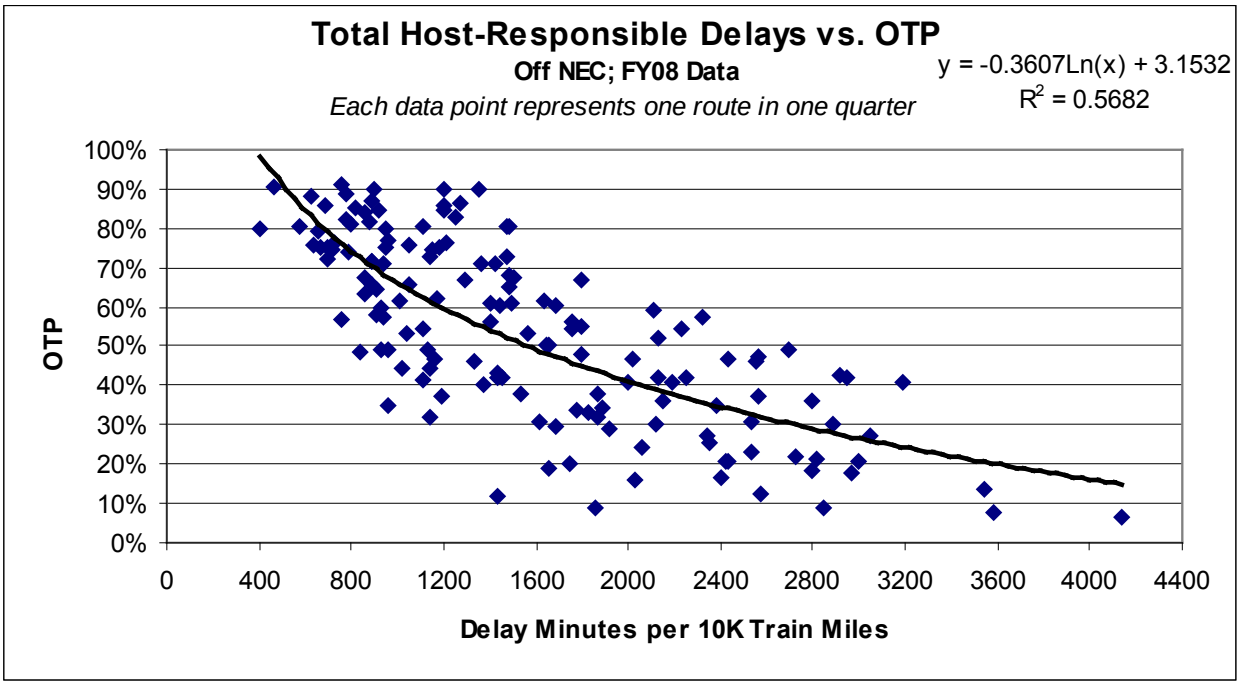
Off the Northeast Corridor, it was determined that 1,030 minutes of delay per 10,000 train miles correlates with an 80 percent endpoint on time arrival rate (see Figure A-1). After rounding up to 1,050 minutes, this delay must be apportioned between Host, Amtrak, and 3rd Party responsible causes.

Figure A-1: Total Delays off the NEC Corridor vs. Percent On Time



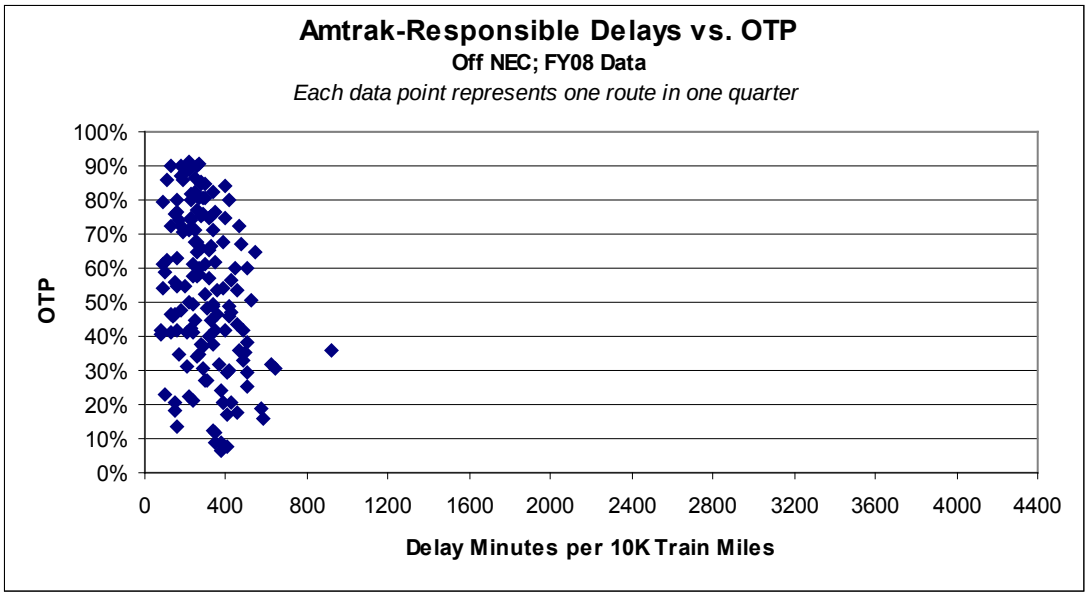
Regressions were then run to determine the relationship between host-responsible delays and OTP. This analysis found that 690 minutes of host-responsible delay per 10,000 train miles correlates with 80% OTP (Figure A-2). This number was rounded up to generate the originally-proposed standard of 700 minutes per 10,000 train miles.

Figure A-2: Total Host Responsible Delays off the NEC vs. Percent On Time



As illustrated in Figure A-3, Amtrak-responsible delays off the Northeast Corridor are not a large enough portion of total delays to independently drive OTP up or down. Therefore, the non-Host delays (1,050 – 700 = 350 mins) were apportioned between Amtrak and 3rd Party responsibility based on historical experience. During the study period of Amtrak's FY 2008, Amtrak delays represented 70% of combined Amtrak and 3rd-Party (i.e., non-Host) delay minutes. The standard for Amtrak-responsible delays therefore was originally proposed as 70% of 350 minutes = 245 minutes, rounded up to 250 minutes per 10,000 train miles.

Figure A-3: Amtrak Responsible Delays off the NEC vs. Percent On Time



The final delay standards for Host- and Amtrak-responsible delays have been adjusted to 900 minutes and 325 minutes, respectively, per 10,000 train miles. This standard represents a 30 percent increase in allowable delays but is within the regression range that correlates to OTP. This adjustment is intended to:

- Ensure that the delay standards are sufficient to absorb any seasonal variations and/or routine maintenance or construction projects where the Major Maintenance and Construction adjustments outlined in Annex 1 have not been granted
- Allow Amtrak and hosts additional flexibility to collaborate in how to achieve the OTP standards, which must be met regardless of whether or not the delay standards also are met in a particular situation.

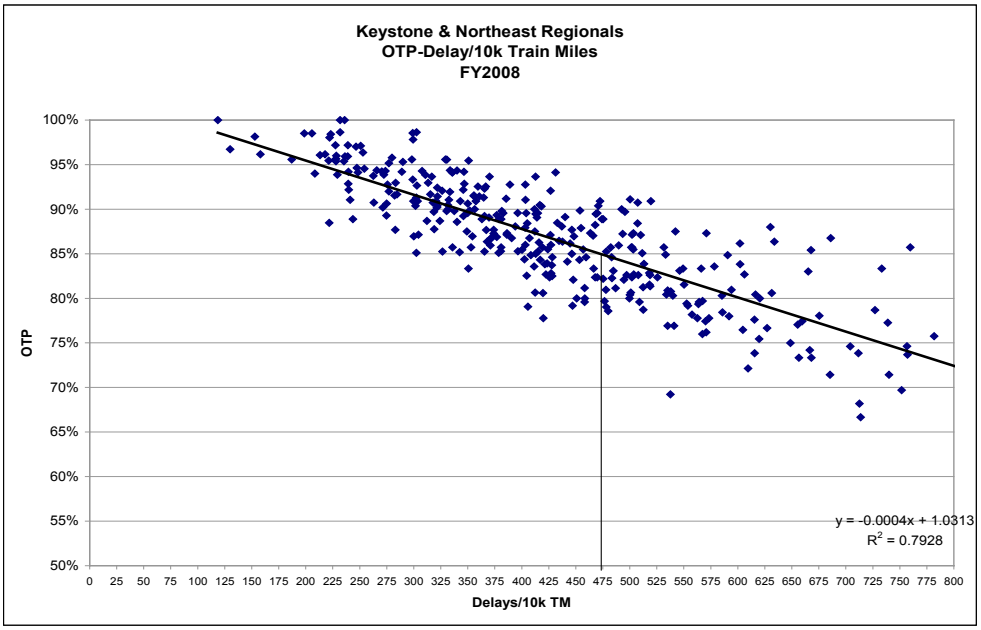
Similar regression studies were undertaken to determine the correlation between endpoint on-time performance and minutes of delay on the Northeast Corridor[28]. Two separate studies were completed, one for Acela Express service using a 90% endpoint arrival rate and one for Northeast Regional/Keystone services using an 85% endpoint arrival rate.

An existing Acela Express mathematical regression model was applied using daily FY08 data to determine the minutes of delay threshold that correlates to 90% endpoint on time performance. It was determined that 285 minutes of delay per 10,000 train miles was the mid-point of the high-low delay minutes range that correlates with a 90% endpoint on time arrival rate. Delays per 10,000 train miles were then apportioned across the delay categories based on minutes of delay incurred by each category in FY08.

The Keystone & Northeast Regionals On Time Performance (OTP)-Delay study used daily performance and delay data from FY08. The study evaluated the relationship between OTP and delays. OTP was defined as the share of trains that arrived at endpoint within their endpoint tolerance for a particular day and delays were defined as total delay minutes incurred normalized to 10,000 miles operated. The OTP and delay data were plotted and the relationship (shape, slope, intercept, R^2) calculated. The total delay target of 470 minutes of delay per 10,000 train miles was derived by finding the total delays incurred on days when endpoint arrival performance was 85% or better. It was determined that 470 minutes of delay per 10,000 train miles was the mid-point of the high-low delay minutes range that correlates with an 85% endpoint on time arrival rate (Figure A- 4). Delays per 10,000 train miles were then apportioned across the delay categories based on minutes of delay incurred by each category in FY08.

[28] Off-Northeast Corridor Host railroad delay standards apply to Metro North Railroad.

Figure A- 4: Total Delays on the NEC vs. Percent On Time for Northeast Regional and Keystone Services



Similar to off-Northeast Corridor delays, the final delay standards for on-NEC delays where Amtrak is Host and is responsible for all delays except third party delays has been adjusted to 265 minutes of delay per 10,000 train miles for Acela Express and 475 minutes of delay for all other services. These standards represent total delays not including third party delays and represent an adjustment in allowable delays that is within the regression range that correlates to OTP. The adjustment of the standards is intended to ensure that the delay standards are sufficient to absorb any seasonal variations and/or routine maintenance or construction projects where the Major Maintenance and Construction adjustments outlined in Annex 1 have not been used.

Annex 4: Lists of Parties Submitting Written Comments

Listing by Type of Respondent

State Departments of Transportation
California Department of Transportation, Division of Rail (Caltrans)
Maryland Transit Administration (MTA)
Virginia Department of Rail and Public Transportation (VDOT)
Washington State Department of Transportation (WSDOT)
Wisconsin Department of Transportation, Railroads and Harbors Section (WisDOT)
State Intercity and Commuter Passenger Rail Agencies
Capitol Corridor Joint Powers Authority (CCJPA)
Metro-North Commuter Railroad Company (MNR)
Southern California Regional Rail Authority (SCRRA)
Freight Host Railroads
Burlington Northern Santa Fe Railway (BNSF)
CSX Corporation (CSX)
Norfolk Southern Corporation (NS)
Railroad-Related Organizations
Association of American Railroads (AAR)
Midwest High Speed Rail Association (MHSRA)
National Association of Railroad Passengers (NARP)
Labor Unions
Transport Workers Union of American, Railroad Division (TWU)
Unaffiliated Individuals
Anne Marie Desiderio
Federal Agencies
Surface Transportation Board (STB)

Alphabetical Listing of Respondents

Anne Marie Desiderio
Association of American Railroads (AAR)
Burlington Northern Santa Fe Railway (BNSF)
California Department of Transportation, Division of Rail (Caltrans)
Capitol Corridor Joint Powers Authority (CCJPA)
CSX Corporation (CSX)
Maryland Transit Administration (MTA)
Metro-North Commuter Railroad Company (MNR)
Midwest High Speed Rail Association (MHSRA)
National Association of Railroad Passengers (NARP)
Norfolk Southern Corporation (NS)
Southern California Regional Rail Authority (SCRRA)

Surface Transportation Board (STB)
Transport Workers Union of America, Railroad Division (TWU)
Virginia Department of Rail and Public Transportation (VDOT)
Washington State Department of Transportation (WSDOT)
Wisconsin Department of Transportation, Railroads and Harbors Section (WisDOT)

Exhibits 52-61 redacted

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EXHIBIT 62

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Transportation Research Forum

Improving On-Time Performance for Long-Distance Passenger Trains Operating on Freight Routes
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The Transportation Research Forum, founded in 1958, is an independent, nonprofit organization of transportation professionals who conduct, use, and benefit from research. Its purpose is to provide an impartial meeting ground for carriers, shippers, government officials, consultants, university researchers, suppliers, and others seeking exchange of information and ideas related to both passenger and freight transportation. More information on the Transportation Research Forum can be found on the Web at www.trforum.org.

Improving On-Time Performance for Long-Distance Passenger Trains Operating on Freight Routes

by Carl D. Martland

This paper discusses on-time performance (OTP) for long-distance passenger trains operating over tracks that are owned and operated by freight railroads. OTP is addressed primarily from the point of view of the host railroad. A brief literature review identifies practices that are commonly used by railroads and other modes to develop and implement achievable schedules. Analysis of travel time, train delay and other data for Amtrak trains operating on CSXT's I95 Corridor documents actual levels of reliability and the primary causes of poor OTP. Comparison of performance for passenger trains and various classes of freight trains demonstrates that Amtrak trains operate much faster and more reliably than CSXT's trains. Potential means of improving the OTP of Amtrak trains are discussed. While providing high quality track with sufficient capacity is the long-run solution for upgrading OTP, a short-run solution is to base schedules on past performance ("experience-based scheduling"). After Amtrak increased the schedule of the Auto Train by one hour in 2006, OTP improved from less than 10% in early 2006 to 82% for the first half of 2008. Analysis of the travel time distributions of the other long-distance Amtrak trains operating on CSXT's I95 Corridor from 2004 to 2008 indicates that a similar schedule increase would also have brought these other trains close to Amtrak's goal of 80% OTP. Schedules that reflect track maintenance requirements and other known seasonal and weekly factors would allow further improvements in measured OTP. Additional measures of performance concerning the probability and extent of late arrivals would be beneficial to travelers in planning their trips.

INTRODUCTION

This paper explores the on-time performance (OTP) of long-distance passenger trains operating over freight railroads. From the perspective of the freight railroads, the basic cause of poor OTP is that schedules for long-distance passenger trains are unrealistic. Having schedules that reflect actual operating conditions and capabilities is essential for achieving high levels of reliability. This paper shows that a small increase in the scheduled time of long-distance passenger trains could lead to a dramatic increase in the measured OTP, based upon analysis of data provided by CSXT.

In the United States, long-distance passenger rail services are operated by Amtrak over a rail network that is predominantly owned and used by freight railroad companies. Amtrak was created in 1971 to relieve the private railroads from the losses associated with passenger services (Wilner 1994). Except for the Northeast Corridor, which it owns, Amtrak must negotiate with the railroads for operating passenger services. The basic framework is that railroads give priority service to Amtrak trains, while Amtrak pays the railroads for the use of their track. Amtrak has never been profitable, and it relies on federal appropriations for investments in capacity and for operating subsidies. The appropriations process has at times been very difficult, and there have been numerous calls for restructuring, reducing or replacing Amtrak (Amtrak Reform Council 2001).

The high cost and poor reliability of long-distance trains are continuing problems for Amtrak. The two problems are linked, as the ability to provide reliable service depends upon having a track structure suitable for comfortable passenger service and a railroad that is willing and able to provide the capacity required for reliable passenger train operations.

Compensation for the use of private trackage has long been a matter of dispute among Amtrak and the railroads. Since Amtrak was created at a time when rail capacity far exceeded demand, the major costs imposed by passenger trains concerned the need to maintain the track structure for passenger trains that operated at higher speeds and required better track quality than most freight trains. Amtrak and the freight railroads debated whether or not the methodologies embedded in their contracts properly considered such things as the effects of speed and traffic volume on track maintenance costs (Resor and Smith 1993). By the mid-1990s, the excess capacity in the rail network had largely been eliminated, and the freight railroads were also concerned with costs related to capacity and train delay (Resor 1995). With more trains operating on fewer route-miles, the rail industry suffered from periods of congestion, resulting in service problems, customer complaints and eventually a congressional hearing (House of Representatives 2006). As the system approached capacity, the costs imposed by an additional train – especially a high-priority, high-speed train – became greater for the host railroads, and it became more difficult for the railroads to provide reliable service for long-distance passenger trains.

Train performance is one of the key concerns for rail passengers. In Europe, consistent OTP has been found to bolster rail market share (Steer Davies Gleave 2006). In the US, poor OTP is frequently cited as a short-coming for long-distance passenger trains, and improving the on-time performance of Amtrak trains is a continuing federal objective (Office of Management and Budget 2005). Acceptable levels of train performance are often specified in service contracts between passenger agencies and the host railroads, and Amtrak and other passenger agencies may offer incentive payments to host railroads based upon their ability to meet train schedules. OTP is a measure that has been highlighted in its annual reports since Amtrak was created.

APPROACHES TO SCHEDULING OF TRANSPORTATION SERVICES

There are two ways to ensure that train schedules are feasible. They can be established based upon past experience ("experience-based scheduling") or upon analysis of train capabilities and route characteristics. These two types of scheduling are applicable to two different types of operations, which White (2005) calls improvised and structured. Improvised operations are the norm in North America, while structured operations are common in much of the rest of the world. According to White, improvised scheduling works best when capacity is much greater than demand. Improvised operations are attractive on freight routes because it is often possible to enhance system performance by adjusting train make-up and departure times to reflect current conditions (Kwon 1994; Dong 1997). Structured operations are most necessary on routes that operate close to capacity and routes that are dominated by passenger trains, as it is important for these trains to operate very close to their schedules.

When most trains do not operate on or even close to schedules, past experience will be a more reliable indicator of achievability than the results of models or detailed planning for meets and passes. In the United States and Canada, many trains operate without fixed schedules, and those that have schedules seldom adhere to them. The standard deviation of the actual departure and arrival times of freight trains is typically measured in hours, not minutes (Martland 2008). With such wide variation from schedules, it is necessary to focus on dispatching as much as scheduling in order to manage train operations and performance. If schedules are based upon experience, the time allowed for movement along a route and the time required in terminals can be based upon the actual distribution of times required in the past. With this method, buffers are implicitly built into the schedules and the schedules are easily seen to be realistic. This method does not require careful assessment of meets and passes, because it is assumed that meets and passes that were feasible in the past will be feasible in the future, so long as traffic volumes are similar.

Simulations can be run to determine when growth in traffic will require investment in track or signals, and these simulations can take into account variability in traffic volume, maintenance, and other factors that affect running time (Van Dyke and Davis 1991). White (2005, p. 41) cautions

that simulations "may not accurately represent the interaction between traffic and infrastructure" and concludes that "improvised operation still defies a completely accurate determination of the necessary infrastructure."

When operations are structured rather than improvised, sophisticated planning models can be used to develop schedules that take into account track configuration and condition, as well as train characteristics (Harker 1992; Ruffing 2003; Smith 1990). These models produce graphical results (string lines) that illustrate the paths that trains should take through the network. A carefully structured operating plan can specify times and locations for all meets and passes, and these times can be built into the train schedules (Ben-Khedher et al. 1998). If these models are to produce feasible schedules, then they must make reasonable and realistic assumptions about train speeds, the likelihood of delays, and the ability of trains to recover from delays. Allowing extra time in the train schedule will allow trains to make up time lost as a result of delays, whether those delays are related to equipment problems, track problems, congestion, weather, or a lack of crews or power.

How much recovery time to allow is a key issue in developing transportation schedules. Whether it is desirable or feasible to add buffers depends upon the nature of the operation. In rail transit operations, scheduling a few more seconds for each stop would help trains to stay on schedule, but increase the cycle time for the equipment and reduce the frequency of service (Lee 2002). Since transit commuters are very concerned with train frequency and are generally unaware of the schedules, transit operators are likely to minimize buffer time in order to maximize frequency of service and utilization of equipment on high density routes. If trains fall behind schedule, there will be time to recover at the end of rush hour.

Commuter rail operations are similar to transit operations in that there is time for the system to recover after rush hour. They are different in that trains operate less frequently, so that passengers are more likely to plan their trips based upon published schedules. Late arrivals will be noticed, and passengers may be upset. Adding a few minutes of recovery time to the schedule may enhance OTP, improve customer satisfaction, and only cause a minor change in perception regarding the length of the trip.

Airlines, like Amtrak, are under pressure from travelers and from public agencies to provide realistic schedules (Bowen and Headly 2005). In addition to allowing for the actual flight time, airline schedules must add time for moving to and from the gates and for take off and landing to get the equivalent of the "fastest possible time." They must also allow time for queues at both the originating and the terminating airports, as well as for air traffic control delays related to weather or other capacity problems. OTP has been shown to be a factor influencing demand for air travel; poor performance during one period tends to reduce demand during following periods (Susuki 1998). Hence, the time scheduled for a flight may be more than double the fastest possible travel time.

Railroads operating over long distances compete with airlines, but they do not have the option of adding airline-sized buffers to their schedule to ensure reliable operations. Even a buffer that is a small percentage of the total trip time can add hours to the schedule, possibly causing higher crew costs or changing arrival and departure times that were carefully planned to meet the needs of key market segments.

MEASURES OF TRAIN PERFORMANCE

Various measures are commonly used to measure the performance of passenger trains operating over freight rail systems, including OTP, average train speed, and average delays. This section provides some historical perspective on each of these measures, with some recent information concerning the performance of Amtrak trains operating on CSX routes.

On-Time Performance of Amtrak Trains

Amtrak has long sought, but seldom achieved OTP in excess of 80%. Table 1 shows OTP for Amtrak trains during the first 20 years of its existence. OTP bottomed out at 57% in 1978, reached a peak of 80% or more for the three years from 1982-84, then dropped to the mid-70s for most of the following 10 years. OTP was generally above 80% for the shorter distance trains and below 70% for the long distance trains. The period with best performance occurred at a time when freight train miles fell sharply from an average of more than 430 million per year in the late 1970s to a low of 345 million in 1982 and 1983 (AAR 1986, p.33). OTP was also less than the goal of 80% for the period from 1995 to 2005 (Table 2). Performance for short-distance trains was close to the goal, averaging 79% for this 11-year period, but performance for the long-distance trains exceeded 60% only in 1999.

Table 1: Amtrak's On-Time Performance: The First 20 Years (Percent of trains arriving on-time at their final destination)

Year	Total Trips	Trips Under 400 miles	Trips Over 400 miles
1972	75	82	53
1973	60	70	30
1974	75	80	63
1975	74	76	69
1976	62	66	48
1977	62	65	52
1978	57	61	48
1979	69	71	64
1980	77	77	64
1981	79	79	81
1982	82	81	82
1983	80	81	77
1984	81	82	78
1985	74	76	69
1986	74	78	62
1987	71	76	54
1988	75	81	54
1989	76	82	53
1990	77	82	59
1991	77	82	61
1992	72	79	47

Source: Frank Wilner (1994, p. 103)

Recent performance has been similar, as indicated by Table 3, which shows OTP for fiscal 2005, 2006, and 2007. The categories in Table 3 reflect a revised measurement system introduced by Amtrak in 2001. During each of these three years, OTP exceeded 78% for both the Northeast (NE) Corridor and for other corridor services. OTP was 65-70% for the other short-distance services, but only 30-42% for the long-distance services. Overall OTP was just below 70%.

Average Speed of Freight Trains and Passenger Trains

Average train speed is another measure that has long been used as an important indicator of train performance. Freight trains have, on average, seldom operated much faster than 20 mph. Figure 1, which presents data from the Depression years and World War II to the mid-1960s, shows freight train speeds slowly increasing from 15 to 20 mph. This figure also shows average passenger train speeds, which increased from about 35 to nearly 45 mph over this 40-year period. Passenger trains were generally given priority over freight trains and therefore were able to achieve higher average speeds.

Table 2: Amtrak's On-Time Performance: 1995-2005 (Percent of trains arriving on-time at their final destination)

Year	Total Trips	Trips Under 400 miles	Trips Over 400 miles
1995	76	81	57
1996	71	76	49
1997	74	79	53
1998	79	81	59
1999	79	80	61
2000	77	82	52
2001	75	78	55
2002	76	81	46
2003	74	78	50
2004	71	75	41
2005	70	74	42

Source: Bureau of Transportation Statistics

Table 3: Amtrak's Recent On-Time Performance: 2004-2008 (Percent of trains arriving on-time at their final destination)

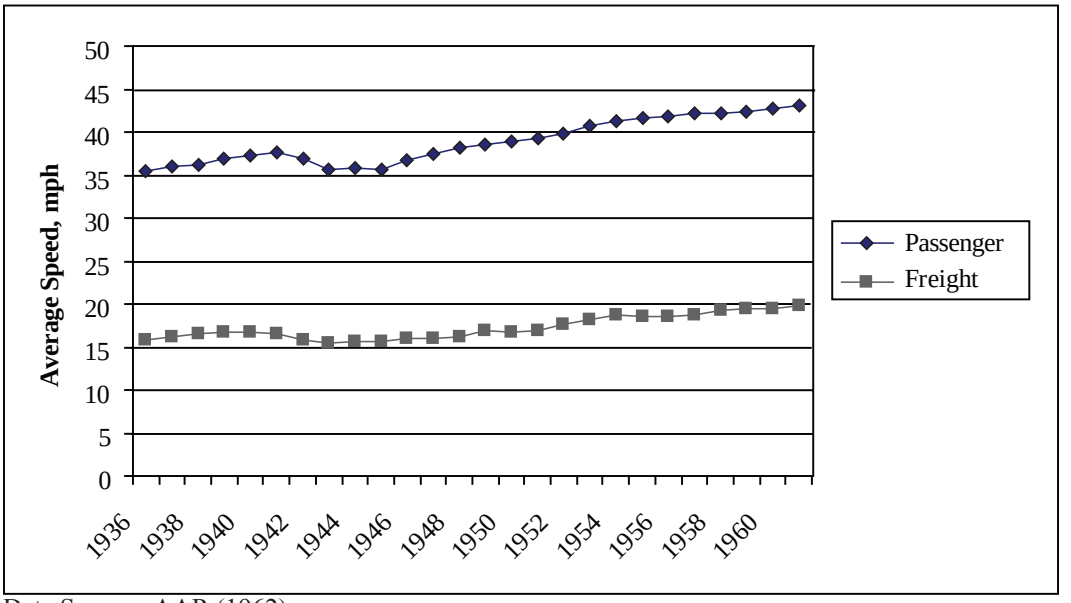
Amtrak Service	System	Northeast Corridor	Corridor	Short Distance	Long Distance
2004-05	69.8	78.2	78.1	70.4	41.4
2005-06	67.8	84.7	79.7	67.3	30.0
2006-07	68.6	87.8	80.3	66.6	41.6
October 2007 – June 2008	72.6	84.6	81.1	69.7	58.5

Source: Amtrak Host Railroad Performance Reports, September 2006, September 2007 and April 2008

Figure 2 shows the same measures for the 10 years following the creation of Amtrak. Freight train speeds continued at or near 20 mph, while passenger train speeds ranged from the low 50s at the beginning of the period to the mid-40s at the end of the period. Amtrak trains were able to operate much faster than freight trains because they continued to receive preferential treatment in dispatching.

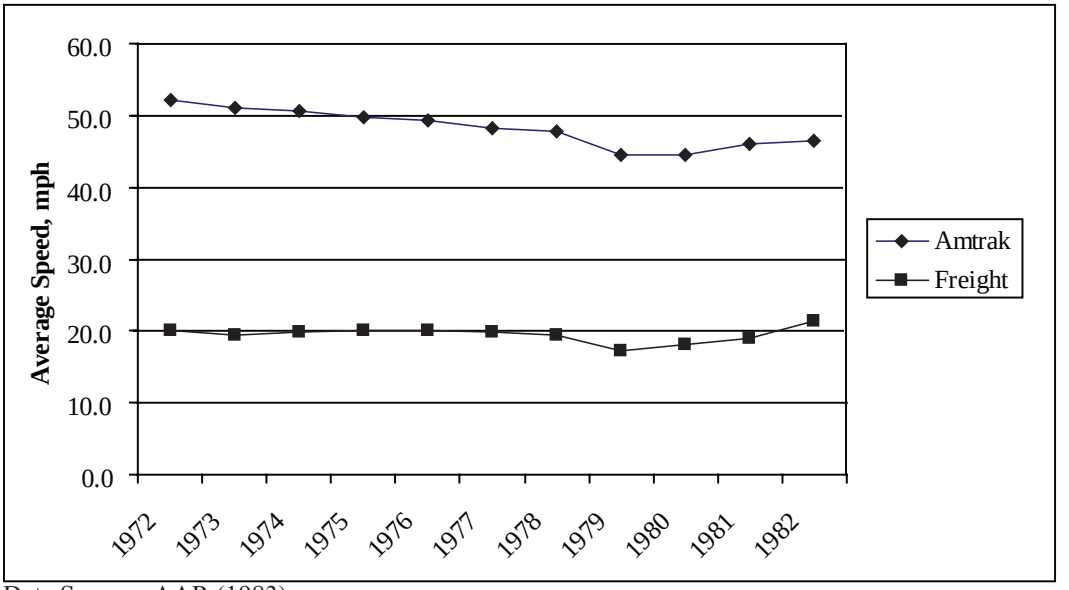
Average train speed is not used as a measure of performance for Amtrak trains. Amtrak does not emphasize – or even mention – train speed in its advertising or in its routine performance reports. The fact that passenger trains operate at much higher average speeds than freight trains indicates that

Figure 1: Average Train Speeds in the Pre-Amtrak Decades



Data Source: AAR (1962)

Figure 2: Average Train Speeds in the Decade Following the Creation of Amtrak



Data Source: AAR (1983)

passenger trains receive priority over freight trains, although it does not mean that passenger trains operate at a level anticipated by or acceptable to Amtrak.

Train Delays

OTP and average speed are just two of many ways of measuring train performance. Another approach to monitoring and managing train reliability is to focus on train delays. Delays can be categorized by type and ultimate cause of delay. Delays related to weather are different from delays related to accidents or delays related to maintenance or congestion. Unanticipated delays are likely to be a greater concern to travelers than delays that are known in advance.

Amtrak's Schedules and Measurement of On-Time Performance

In addition to the time required for unimpeded train operation and station stops, Amtrak's schedules include recovery time that is designed to allow the train to remain on schedule despite minor delays. Trains also have an allowance (30 minutes for long distance trains) that allows trains that arrive close to their scheduled arrival to be considered on time. The stated goal of 80% OTP allows the host railroads to achieve satisfactory OTP even if one train in five encounters serious delays. Amtrak schedules are generally not adjusted to reflect changes in traffic volumes, capacity, or maintenance activities on the host railroads. In some cases, Amtrak has adopted weekend schedules (Amtrak 2007). Amtrak monitors OTP and publishes various monthly reports showing OTP by train and by railroad.

CSXT analysis (CSXT 2006a) indicates that some portions of Amtrak's schedules are very close to the limits of operating performance. CSXT compared Amtrak's schedules to results from a train performance simulator for the four trains operating from Washington D.C. to Richmond. The simulation results indicated that the fastest possible run time for this route would be 2:02, based upon the average tonnage and horsepower of a typical Amtrak train. The scheduled times over this route allowed at most eight additional minutes (7% of the fastest possible run time) for recovery, and one train's schedule was actually seven minutes shorter than the simulated time. The average time for all Amtrak trains over this segment was 2:16 for the entire year, which was six minutes over the longest scheduled time for any of these trains, but just 11% over the fastest possible run time for the route.

OTP suffers because a wide variety of delays are encountered, as documented in Amtrak's monthly Host Railroad Performance Report. In this report, Amtrak defines a delay as anything that prevents a train from operating at its maximum allowed speed. Delays are separated into various categories that are attributed to the host railroad, to Amtrak, and to third parties. For example, in February 2007, the top causes of delay were as follows:

- Amtrak (19.6% of total delay minutes)
    a. Engine failure (3.1%)
    b. Passenger holds (2.9%)
    c. Crew related delays (2.6%)
    d. Other (10.9%)
- Host railroad (75.7%)
    a. Freight train interference (24.4%)
    b. Slow orders (16.9%)
    c. Communications & Signal Work due to defect (10.6%)
    d. Other (23.8%)
- Third Party (including weather) (4.7%)

Train delays do not automatically result in late trains, because the scheduled recovery time and the leeway included in the definition of on-time will be sufficient to cover minor delays. The

vast majority of delays are related to freight train interference, track work and other host railroad problems.

VARIATIONS IN TRAIN PERFORMANCE BY CLASS OF TRAIN ON CSX

The speed and reliability of rail service is largely a result of the infrastructure that is available (e.g. single-track or multi-track), the track class and condition of the track (i.e. speed limits and slow orders), traffic volume, and dispatching policy. In single track territory, it is necessary to plan for meets and passes, and delays will be greatest for the lowest priority trains. As traffic volume approaches capacity, delays will increase, eventually affecting even the highest priority trains.

CSXT compared performance by class of train for three different operating environments in what they call their I95 corridor between Albany, New York, and Miami, Florida. The first segment, a 32-mile portion of the double-track route between Albany and New York City, is dominated by passenger trains (26 Amtrak trains, commuter service, and four or five freight trains per day). The second segment, 144 route-miles between Washington, D.C., and Richmond, Virginia, is a high-density double-track route with substantial volumes of both passenger and freight trains (18 Amtrak trains, commuter service along a portion of the route, and 25-30 freight trains). The third segment, 126 route-miles between Richmond and Rocky Mount, North Carolina, is a single-track segment dominated by freight trains (10 Amtrak trains, no commuter service, and 25-30 freight trains per day).

Not unexpectedly, the OTP was best for the first segment (82%), because of the high-capacity infrastructure and the minimal level of freight traffic. OTP was lowest for Amtrak on the third segment (40%), because of the difficulty of operating passenger trains on a single-track route that is operating close to capacity. OTP was 52% for the middle segment, which benefited from having double tracks, but also experienced the highest overall level of traffic of these three segments, especially where commuter trains shared the right-of-way with Amtrak and the freight trains.

CSXT documented the mean and standard deviation of travel times for the major classes of trains over each segment for the entire year of 2005 (Tables 4-6). The average speed and the coefficient of variation (the standard deviation divided by the mean time) are shown in order to make the results more comparable for routes of different lengths. Amtrak trains were always faster and more reliable than any category of the freight trains. The commuter trains, which made frequent stops, naturally could not match the average speed of Amtrak trains, but their travel times were less variable. Intermodal trains were faster and more reliable than merchandise trains, which in turn were generally faster and more reliable than the unit trains.

Table 4: Train Performance in 2005 for a 32-mile Segment Between Albany and New York City

Class of Train	Average Speed (mph)	Average Time	Standard Deviation	Coefficient of Variation
Amtrak	58	0:33	0:10	0.30
Merchandise	30	1:04	0:34	0.53
Unit	19	1:39	3:11	1.93

Source: CSXT (2006b)

Table 5: Train Performance in 2005, Washington D.C., to Richmond, Virginia

Class of Train	Average Speed (mph)	Average Time	Standard Deviation	Coefficient of Variation
Amtrak	47	2:16	0:26	0.19
Commuter (Washington to Fredericksburg)	34	1:35	0:16	0.17
Intermodal	32	4:48	1:01	0.21
Merchandise	21	6:46	3:01	0.45
Unit	21	6:48	2:51	0.42

Source: CSXT (2006b)

Table 6: Train Performance in 2005, Richmond to Rocky Mount, North Carolina

Class of Train	Average Speed (mph)	Average Time	Standard Deviation	Coefficient of Variation
Amtrak	46	2:45	0:33	0.20
Intermodal	33	3:47	1:12	0.33
Merchandise	15	7:48	4:10	0.53
Unit	18	6:27	3:58	0.61

Source: CSXT (2006b)

IMPROVING ON-TIME PERFORMANCE

This section is based upon discussions at a workshop sponsored by CSXT on "Passenger Operations on Freight Railroads" that was held in Tampa, Florida in June 2007. The workshop participants included officials from Amtrak, CSXT, BNSF, UP, and five commuter rail agencies. The discussions addressed various ways to measure and improve on-time performance (OTP), along with other issues of mutual interest such as maintenance planning and liability. The options for improving OTP were categorized as follows:

- Develop more achievable schedules
  - Experience-based scheduling: base schedules on past performance in order to ensure achievability
  - Use dispatching models to ensure that schedules are feasible
  - Ensure that sufficient time is allowed for loading and unloading trains
  - Adjust schedules for track maintenance programs
  - Schedule substantial recovery time at regular intervals (e.g. provide a 30 minute buffer every three hours for long-distance trains
- Increase operating discipline: ensure that all trains operate within their proper slots
- Improve coordination among inter-city, commuter, and freight operators
- Enhance the infrastructure
  - Short term: maintain or upgrade existing facilities so as to reduce slow orders
  - Long term: expand facilities so as to provide more capacity

The first category in this list includes various ways to improve the achievability of the schedules, beginning with experience-based scheduling. Using this method, the scheduled trip time for the coming period could be defined to be, say, the 75th or 80th percentile of the actual trip times for

the previous period, and schedules could be adjusted periodically to reflect prior performance. Experience-based schedules should be achievable so long as there are no dramatic changes in traffic volume, no unusual and continuing weather-related disruptions, and no significant increases in the amount of infrastructure maintenance that is required. What was achievable in the past would remain achievable in the future, especially with annual or semi-annual adjustments in schedules. The underlying assumption is that train dispatching is – and would continue to be – effective, so that the highest priority trains would continue to get the best service, and actual service would not deteriorate if additional buffer time was added to the schedules. This is the approach that has been used by airlines to enable them to provide reasonable OTP despite the marked increase in congestion at major airports and along major flight paths. CSXT officials have hypothesized that "minor adjustments to the current schedules would improve performance, reliability, and customer satisfaction" (CSXT 2006a).

A similar approach would be to base schedules on models of operations. By using models, it is possible to take into consideration the effects of changes in traffic volumes, maintenance schedules, changes in the track structure, and other factors that affect train performance. With this approach, it is essential that the models be well-calibrated to ensure that the model results are in fact indicative of likely performance. As discussed above, the model-based approach is superior to the experience-based approach when operations are highly structured (as is the case for many commuter operations) or when major changes in traffic volumes or operating conditions are expected.

Commuter operators emphasized the importance of allowing enough time for loading and unloading trains, especially during rush hour. Since track maintenance and rehabilitation programs may disrupt normal operations over an extended period of time, it can make sense to adjust schedules on a temporary basis to reflect what is likely to happen. This is relevant both for commuter operations and for corridor or long-distance operations. The final suggestion was to take a new approach to scheduling long-distance passenger trains. By adding a large buffer every several hours, these trains would have a better chance to catch up if there are delays; the buffer could be added in locations where there are high volumes of passengers boarding so as to provide on-time departures for the highest number of people. This approach would increase OTP at the expense of higher crew costs and lower utilization of equipment.

The next two categories discussed at the workshop call for improved management, first within the railroad operating the passenger trains, and second among all of the agencies involved in scheduling and operating freight, commuter and inter-city passenger trains. Relating performance to schedules is useful for the operator and the transportation agency as well as for the travelers. The agency that provides the service may view the schedule as the product – a product that will be compared to the services offered by competitors. The schedule and various delay or OTP measures can be incorporated into the contracts between agencies and operators, who will have to negotiate a balance between shorter schedules and higher OTP.

The final category addresses what was felt to be the fundamental problem underlying poor OTP of passenger trains operating over freight railroads, namely the lack of sufficient capacity to handle actual traffic reliably. The long-run solution would be to expand capacity, while the short-run solution would be to adjust schedules to reflect the capabilities of the existing infrastructure. The ability to invest in capacity will depend upon the public and private benefits from, and commitment to the services provided along any particular route.

There was also discussion of other measures of train performance. If schedules are known to be unreliable, then travelers will need information about typical trip times in order to make plans that will not be disrupted by the normal variations in service. Travelers will also be concerned about the possibility of a major disruption, e.g. cancellation of all or a portion of the trip or the possibility of extremely long delays that will cause serious disruptions and inconvenience. Amtrak officials indicated that they are developing other measures to complement their measures of OTP and train delay, and they have an internal reporting system that measures the percentage of trains that arrive no more than 30, 60 or 90 minutes late.

PERFORMANCE OF AMTRAK TRAINS RUNNING ON CSX

This section uses data provided by CSX to illustrate two concepts. First, many different measures can be used to monitor the performance of long-distance passenger trains. Second, the historical performance of Amtrak trains can be used to estimate how much improvement in on-time performance (OTP) could be achieved by implementing experience-based scheduling. In 2007, adding time to the schedule for the Auto Train, in fact, achieved very significant improvements in performance. Adjusting schedules to provide additional time for predictable daily or seasonal factors, such as planned track maintenance, will also enhance OTP.

Performance of Long Distance Trains in the I95 Corridor

Table 7 compares the median and the 75th percentile of travel times for the long distance Amtrak trains operating in the I95 corridor for two recent 12-month periods. In each case, the 75th percentile was on the order of an hour longer than the median trip time, which gives an easily understood measure of the typical variability to plan for in using this service. The performance of these trains was stable, as illustrated by the last column, which shows the percentage change in the 75th percentile of the trip time distribution from one year to the next. For each train, this change was less than 2%.

Table 7: Performance of Long Distance Trains in the I95 Corridor
April 2005 to March 2006 vs. April 2006 to March 2007

Service	Train	Median Time 05/06 (Minutes)	Median Time 06/07 (Minutes)	75th Percentile 05/06 (Minutes)	75th Percentile 06/07 (Minutes)	Change in 75th Percentile
Auto Train	P052	1043	1026	1098	1085	-1.3%
	P053	1063	1043	1112	1096	-1.5%
Palmetto	P089	720	735	772	784	+1.6%
	P090	720	726	766	769	+0.3%
Silver Star	P091	1612	1586	1668	1651	-1.0%
	P092	1549	1564	1640	1635	-0.3%
Silver Meteor	P097	1341	1321	1397	1384	-1%
	P098	1358	1332	1406	1398	-0.5%

Data source: data provided by CSXT

For the three year period from April 2004 to March 2007, the Silver Star and the Silver Meteor generally had mean times and median times slightly better than their schedules, while the Palmetto generally had mean and median times slightly longer than its schedule. To get a normalized view of the variability of these trains, the difference between the median and the 75th percentile was expressed as a percentage of the median trip time. Since the median times were roughly the same as the scheduled trip time, the ratio indicates approximately how much longer the schedules would have to be to achieve OTP of 75%. The difference between the 75th percentile and the median averaged 4.3% of the median time for these long distance trains in 2004, 4.8% in 2005, and 5% between April 2006 and March 2007. This measure varied from as low as 2.8% (for the Silver Star operating from Washington to Miami in the winter of 2004) to a high of 8.4% (for the Silver Star operating from Miami to Washington during the summer 2005). The average for all four trains over the three-year period was less than 5%. Thus, an increase of about 5% (i.e. an hour) in the scheduled time for these trains would have been sufficient to bring OTP close to Amtrak's goal of 80% OTP.

The Auto Train Experience: Experience-Based Scheduling Improved OTP

The Auto Train, which operates between metropolitan Washington D.C., and Sanford, Florida (near Orlando), was of great interest to Amtrak and CSXT because its OTP was very low. To test whether experience-based schedules would in fact improve OTP (rather than lengthen actual travel times), Amtrak agreed to increase the scheduled trip time of the Auto Train by 6%, from 16.5 to 17.5 hours, effective April 1, 2007. This increase represented a large (57%) increase in the scheduled recovery time from 105 to 165 minutes or 16% of the new schedule. The impact on measured reliability was immediate, decisive, and continuing, as is evident from examining Amtrak's monthly Host Railroad Performance Reports. In April 2007, the average delays attributable to CSX as the host railroad for the Auto Train were less than the scheduled recovery time – the first time in more than 2.5 years that any CSX train had achieved this level of performance. OTP averaged 64% for the three months beginning in April 2007 compared to less than 7% for the same period in 2006. For the 12 months ending September 2007, OTP improved from 17% in 2006 to 62% in 2007. For the period from October 2007 to April 2008, OTP increased to 82%. In this case, a small increase in scheduled travel time did, in fact, lead to a dramatic improvement in OTP.

Seasonal Effects

Looking at performance for an entire year masks important seasonal differences in performance, notably the fact that rail track maintenance disrupts service primarily during the summer months from April to September. Table 8 shows seasonal variations in service for the Amtrak trains operating in the I95 corridor. All of these trains performed better in the winter than in the summer. The 75th percentile of trip times increased by 4% to 7% in the summer, while the absolute differences in the trip times for these trains ranged from about 30 to 90 minutes. The observed seasonal differences were more than double the less than 2% year-to-year variations in performance described above.

Table 8: Seasonal Variations in Performance for the Silver Services (minutes)

Service	Train	Median Time Winter	Median Time Summer	75th Percentile Winter	75th Percentile Summer	Change in 75th Percentile
Auto Train	P052	1002	1059	1044	1111	7%
	P053	1020	1064	1068	1111	4%
Palmetto	P089	711	752	760	806	6%
	P090	705	737	753	792	5%
Silver Star	P091	1554	1625	1600	1671	4%
	P092	1533	1604	1608	1697	5%
Silver Meteor	P097	1288	1357	1334	1417	6%
	P098	1299	1381	1342	1430	7%

Data source: data provided by CSXT

Day-to-Day Variations: the Palmetto

Variations in performance were measured in more detail for the Palmetto, which operates 829 miles between New York City and Savannah, Georgia. These trains move along the Northeast Corridor between New York and Washington D.C. and on CSX between Washington and Savannah. During the first half of 2006/07, the Palmetto's OTP of 43% was between that of the Silver Star (34%) and the Silver Meteor (63%). January 2007 was a typical month for the Palmetto: 26 trains arrived on time as defined by Amtrak, 19 trains arrived late, and 17 trains that were terminated

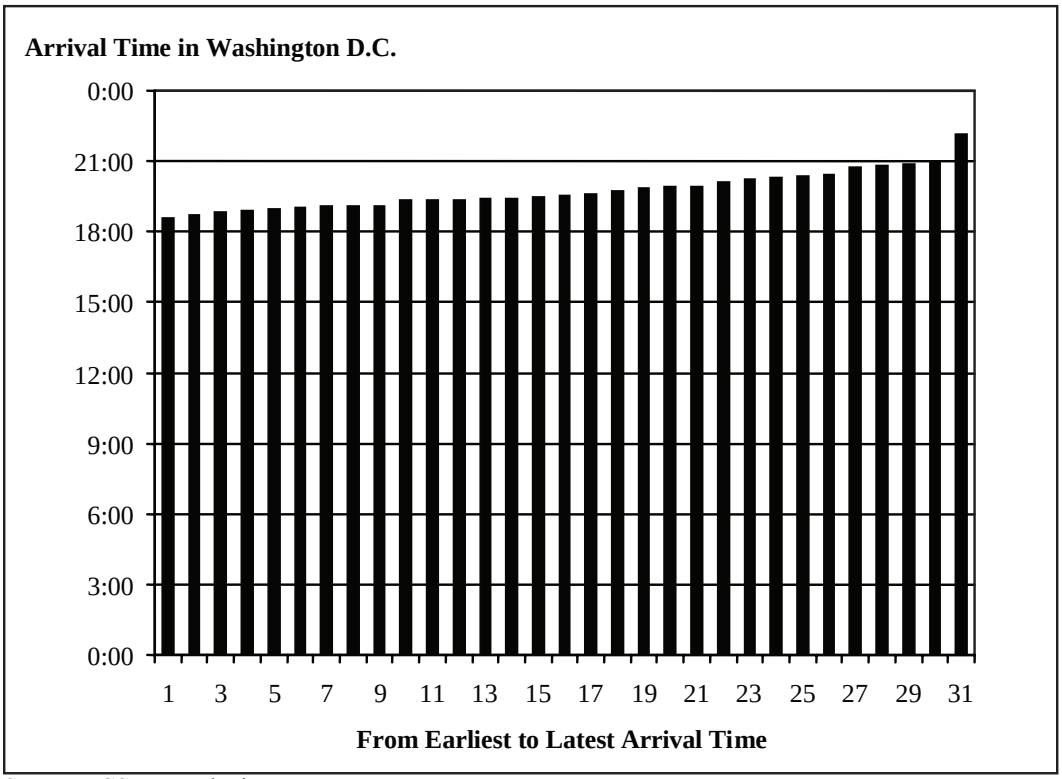
before they reached their destination (in order to accommodate track rehabilitation, passengers were provided bus service on weekdays between Dillon and Savannah). For purposes of measuring OTP, southbound trains that were terminated at Dillon were reported as not completing their run, while northbound trains originating at Dillon were reported as being on time or late depending upon when they reached Washington D.C.

Figure 3 shows the arrival times of the northbound trains in Washington D.C., sorted from the earliest to the latest arrivals. The train almost always arrived between 6:30 and 8:30 P.M., and only once was delayed after 9 P.M. Table 9 shows various measures of performance for the northbound trains. OTP of 61% was above average for Amtrak's long distance trains, but somewhat below the goal of 80%. The 80th percentile of the arrival times was 8:21 P.M., 76 minutes later than the scheduled arrival time of 7:05 P.M.

Amtrak's measurement of OTP does not charge the host railroad for delays caused by Amtrak or third parties. Hence the OTP of 61% was greater than the 52% of trains that arrived less than 30 minutes late. OTP would have been greater than 68% if an hour had been added to the schedule, and adding 1.5 hours would have increased OTP to more than 84%. There was also a notable difference in OTP by day of the week: arrivals were nearly always on-time on Sunday and Monday, always late on Friday, and mixed on the other days. Adding time to the schedules for Tuesday through Thursday would be another way to achieve better OTP.

The data could be further broken down for the major O-D pairs served by this train. During the week of January 1, this train carried 1590 passengers. At least 100 passengers boarded the train at each of six stations: Savannah, GA; Charleston, SC; Kingstree Lane, SC; Florence, SC (Myrtle Beach); Fayetteville, NC; and Richmond, VA. Most (971) were destined to points beyond Washington, 278 disembarked at Washington, and 342 disembarked prior to Washington (including 80 at Richmond, VA, 73 in Alexandria, VA, and 63 in Wilson, NC). On-time arrival at Washington D.C. was therefore the primary concern of only about a quarter of the passengers, since the great majority were headed further north or had already left the train before it reached Washington. It is likely, however, that OTP at Washington was indicative of train performance along the way, while late arrivals at Washington would lead to late arrivals further along on the Northeast Corridor. OTP for long-distance trains is more an indicator of overall performance than something of direct interest to travelers.

Figure 3: Distribution of Arrival Times of the Palmetto in Washington D.C., January 2007



Source: CSXT analysis

SUMMARY AND CONCLUSIONS

There is a very long history of passenger and freight trains operating over the same routes. Records going back more than a half century show that passenger trains have been given priority so as to achieve much faster average speeds than freight trains. Following the creation of Amtrak, passenger trains were required to be given preference when operating on freight railroad lines, and the historical data confirm that Amtrak trains have, in fact, operated at much higher average speeds than freight trains.

Recent studies by CSXT went into considerable detail to demonstrate that passenger trains operating on the I95 corridor between New York and Florida have faster speeds and greater reliability than freight trains. These results suggest that Amtrak trains are indeed given preference over freight trains in this corridor. Moreover, the divergence in performance between passenger and freight trains seems similar to what persisted for decades prior to the creation of Amtrak.

While Amtrak trains operate faster and more reliably than freight trains, that does not mean that Amtrak trains are reliable or that their performance is acceptable to Amtrak or to travelers. According to measures used by Amtrak, average on-time performance (OTP) is very low for essentially all trains other than the premium services offered on the Northeast Corridor and Amtrak's other corridor services. The measure used by Amtrak to document performance is the percentage of trains that operate on time, where on time is defined as arriving within a specified time (30 minutes for the long distance service) of their scheduled arrival. Many of the long distance trains have OTP less than 50%, and some have OTP less than 20%.

The major factors that limit OTP for Amtrak trains operating in this corridor appear to be the capacity of the infrastructure, the density of freight and passenger operations, and the amount of time

Table 9: Various Measures of Performance for the Northbound Palmetto, January 2007

Scheduled arrival time	19:05
On-time within 30 minutes (Amtrak's measurement of host railroad performance)	61.3%
Average arrival time	19:45
Standard deviation of arrival time	0:47
Median arrival time	19:32
75th Percentile	20:17
80th Percentile	20:21
Scheduled trip time	11 hours, 5 minutes
Scheduled recovery time	58 minutes (8.7% of total scheduled trip time)
(80th Percentile-Scheduled Arrival)/Scheduled Trip Time	5.5%
% less than 30 minutes late	52%
% less than 60 minutes late	68%
% less than 90 minutes late	84%
% less than 120 minutes late	96%
% less than 2.5% late	53%
% less than 5% late	76%
% less than 7.5% late	91%
% less than 10% late	98%

Data sources: Schedules from Amtrak (2007); recovery time from Amtrak(a); arrival data from CSXT

devoted to track maintenance, rehabilitation, and expansion of capacity. The long-term solution to service problems would be expansion of the infrastructure, so as to reduce the need for meets and passes and to reduce the disruption caused by maintenance and other track work. However, such expansion will be feasible only if justified financially and politically. On-going programs for improving track quality and eliminating bottlenecks will enhance OTP by reducing slow orders, maintenance requirements, and congestion delays, thereby helping both freight and passenger operations. Better coordination among Amtrak, the host railroads, and commuter agencies will help improve operations in the most congested areas, especially when major track work is underway.

The most promising short-term solution for improving OTP is to adopt experienced-based schedules, i.e. to increase the recovery time that is included in the schedule. Because the recovery time included in Amtrak's schedules is small (8-16% for the trains operating in CSXT's I95 Corridor), a substantial increase in recovery time would have only a small increase in the scheduled time for long-distance trains while immediately producing a significant increase in OTP. After Amtrak added an hour to the Auto Train's schedule in 2007, OTP for the three month period April-June improved from less than 10% in 2006 to 64% in 2007 and 82% in the first half of 2008. Analysis of the trip time distributions of the other long-distance Amtrak trains operating in CSXT's I95 Corridor indicates that increases of about 5% in scheduled time would be sufficient to increase OTP close to Amtrak's goal of 80%.

OTP of Amtrak trains varied by an average of 5.5% between winter and summer, more than the year-to-year variations of less than 2% in CSXT's I95 Corridor. Measured OTP therefore could be improved by adjusting schedules semi-annually to reflect the effects of planned track work and other

seasonal factors on expected travel times. In some cases, there may also be significant day-of-week variations in performance that should be reflected in the schedules.

It would be very useful to have additional measures of train performance available to potential riders and to the public at large. The OTP and delay measures currently used by Amtrak are designed for the contractual relationship between Amtrak and the host railroads or for Amtrak's reports to Congress. These measures can provide a useful means of understanding and then dealing with the most important problems, e.g. the most common causes of delays. It may be good management for Amtrak to resist relaxing the objectives included in contractual incentive clauses, and it may be worthwhile to preserve a long record of performance based on stable schedules and criteria. However, the details of contracts between Amtrak and host railroads and the clarity of historical performance records should not drive public and congressional perceptions of Amtrak's current service levels. Additional measures – or new ways of presenting the available information – would help Amtrak and the host railroads to present a better image of rail passenger service to prospective customers, the public at large, and to funding agencies.

It is not helpful to travelers to have schedules that are known to be unrealistic, and it is necessary to go beyond saying that OTP is low. Potential passengers would like to consider arrival and departure times, total trip time, reliability of trip times and many other factors when contemplating a trip on Amtrak. They need a reasonable estimate for the expected trip time, plus a reasonable estimate of the likelihood that the train will be late – and how late it might be. Amtrak should make additional measures available to their customers, such as the 80th percentile of the trip time distribution or the percentage of trains that are less than 30, 60, or 90 minutes late. Any of these measures could be normalized relative to the scheduled time or to the median time (e.g. the measure could indicate that the 80th percentile is 4% greater than or 50 minutes longer than the scheduled time). It would also be useful to passengers to provide measures of arrival time performance for all of the major city-pairs served by trains, not just for major trip segments and the final destination.

For experience-based scheduling to work effectively, it will be essential to ensure that revised schedules do not lead to lower priorities for Amtrak trains and a downward spiral in service. CSXT railroad officials maintained that their dispatchers indeed give Amtrak trains highest priority and would continue to do so if the schedules were revised. Amtrak officials and Amtrak riders are probably not convinced. Conceivably, contractual incentives or penalties could be devised to encourage host railroads not to allow service to decline. Monitoring performance before and after changes in schedules, as was done by CSXT and Amtrak with the Auto Train, would make it possible to identify situations where performance was slipping.

In situations where traffic volumes are growing faster than capacity, it is likely that Amtrak performance will suffer along with the performance of freight and commuter trains. A better understanding of what levels of performance are achievable at what cost would facilitate public-private partnerships aimed at boosting rail capacity and improving rail service.

Future research could help determine what aspects of performance are most related to the demand for and cost of long-distance rail service. Performance measures could then be devised that more clearly relate to the needs of customers, Amtrak and the host railroads. Having realistic measures of performance would also help the public debate concerning the future of long-distance intercity passenger service in the US by providing a more accurate and not necessarily so dismal a portrayal of current service levels of long-distance trains.

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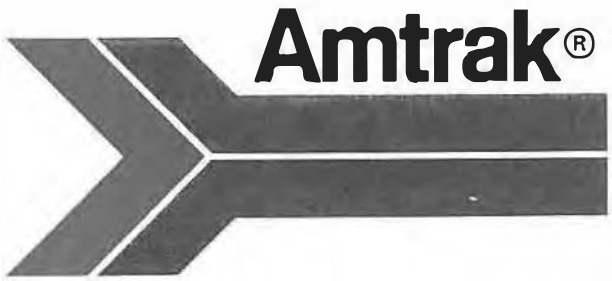
NATIONAL RAILROAD PASSENGER CORPORATION

THE ART OF SCHEDULING TRAINS

THE IMPACT OF DELAYS

AND

THE ART OF SCHEDULE ANALYSIS



THE ART OF SCHEDULING TRAINS

THE IMPACT OF DELAYS

AND

THE ART OF SCHEDULE ANALYSIS

National Railroad Passenger Corporation
Operations Department
Second Edition
August 8, 1996

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Introduction and Acknowledgments

During 1995, at the request of Private Car Owners, I prepared a paper on the Art of Scheduling Trains. It was presented to the Private Car Owners at Nelson, British Columbia and to the Lexington Group in Transportation History at Portland, Oregon. The strong response we received prompted us to rewrite the paper as a more technical presentation on scheduling and the impact of delays.

In this second edition, the paper on The Art of Scheduling Trains and The Impact of Delays and a companion paper on the Art of Schedule Analysis have been consolidated to provide direction to the course on scheduling and schedule analysis and to assist those who will be trained to conduct schedule evaluations, although there may be some redundancy between the papers.

Several years ago we developed a course on scheduling and schedule analysis that is still used on a regular basis for Amtrak management, and upon request it is also presented to the freight railroad personnel who are involved in analysis of Amtrak schedules. The ability to properly analyze a schedule is truly an art. The following paper is intended to be a guide for people who are qualifying on how to properly evaluate schedules. It is based on experience gained by a small cadre of experienced riders over a 20-year period and represents hundreds of thousands of miles and thousands of hours of making field checks.

I wish to acknowledge the assistance of Arthur Prentiss and Al Walton of my staff who carefully critiqued the draft. I also wish to acknowledge the assistance of Chris Dort and Rande Jones, locomotive engineers for Amtrak who reviewed the final draft of the first edition. I also appreciated the editorial assistance from R. H. Young, Assistant Vice President Passenger Services, CSX; Howard Godwin, Director of Passenger Operations, CSX and Ray Shields, Manager of Passenger Operations, all of whom are certified locomotive engineers as well as Cliff Russ, Director of Passenger Services for CSX, their input was most valuable.

Our final comment to all who are about to board the engine, whether in engine service or to perform a schedule evaluation, is "Have a safe trip."

James L. Larson
Washington, DC
August 8, 1996

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PART I

THE ART OF SCHEDULING

Background:

In 1971, Amtrak inherited the schedules in place at that time on each of the carriers where passenger service was assumed. Some of the schedules were good, some were poor and some needed restringing. Thereafter, performance began to deteriorate. That deterioration continued until the first incentive contracts were negotiated with a limited number of carriers in 1974. However, no concerted effort was made to address the quality of schedules until the Second Amendment contracts were negotiated starting in 1976.

The carriers' solution to improved scheduling was to add more time to the schedules. This, in turn, led to more abuses of passenger train priority which, in turn, led to later trains. Since all performance was measured at endpoints, the carriers sought schedules that were extremely tight to the next to last station and then had virtually all recovery time built into the final terminal on that carrier. That led to performance where a train might be 45 minutes late at the next to last station yet arrive at the final station 20 minutes ahead of time.

The period from 1974 to 1976 under the first incentive agreements was an important learning period for both Amtrak and the freight carriers. There was a growing awareness that properly strung schedules and the elimination of excess time promoted improved performance. Since 1976, Amtrak's schedules have been negotiated with the carriers just as compensation provisions are negotiated.

Subsequently, the addition of intermediate point performance and performance penalties in 1981 further refined the process. When it comes to preparing proper schedules that both Amtrak and the railroads can accept, much has been learned over the years. What was unique about this process was the widespread operation of trackage rights, over 24,000 route miles, where passenger trains were operated over the infrastructure maintained and controlled (dispatched) by another company.

The relationship between Amtrak and the freight railroads has matured over the years and although the working relationship may vary significantly from one carrier to another, in general the working relationship has materially improved, as has the process of developing schedules.

Basic Principles:

The basic principles underlying proper scheduling are quite simple. Too much time in the schedule, the train will run late. Not enough time in the schedule, the train will run late. And with the right amount of time in the schedule, the train may still run late, depending upon delays. The key: (1) having the correct amount of time in the schedule and (2) having the schedule properly strung.

Even though Amtrak is frequently criticized in the media, the fact still remains that nine out of ten Metroliners arrive on time, eight out of ten Northeast Corridor trains arrive on time, and seven out of ten trains overall arrive on time.

Scheduling has three basic components:

- Pure Running Time
- Dwell Time
- Recovery Time

Pure Running Time is based upon running time developed at maximum authorized speeds, without delays, on a predetermined power to weight ratio. The power to weight ratio is the relationship of locomotive horsepower to trailing tonnage. It is a critical factor in scheduling trains.

Pure running time will vary depending upon the maximum authorized speeds and the power to weight ratio; therefore, these factors must be established before the pure running time can be determined.

Establishing the power-to-weight ratio has been somewhat oversimplified in the past by using the number of locomotive units to trailing cars, without regard to the units or the types of cars. Since the F-40 was the predominant locomotive type outside of electrified territory, it was fairly consistent in the establishment of power to weight ratios on all trains operated with F-40 locomotives. The more recent introduction of other diesel locomotive types such as the Dash-8 or P-40 locomotives, which have significantly different power and operating characteristics, has necessitated further

refinement to reflect the "normal" power consist operated on specific trains. Car weights vary generally between 50 tons and 74 tons, depending upon type, but the type of cars operated on a given train normally does not change from day-to-day. However, the number of cars often does.

Each train has a published "normal" consist, and while this establishes a good base for building a power to weight ratio, it should not be used as an average train. Additional cars may be required and, therefore, every time a car is added beyond the "normal" consist, it could adversely affect the power to weight ratio. It is good practice to allow for one or two additional cars in building a schedule so that extra cars can be operated without adversely affecting the performance of the train.

The additional time required for each additional car is not a straight line relationship. For example, with one F-40 locomotive and from four to six cars, the pure running time differences should be negligible. The seventh car may show some differential, depending upon the territory, while the eighth and ninth cars will definitely show a differential and the tenth car is not recommended.

It is interesting to note that the performance of one F-40 and six cars will not be materially different from two F-40's and twelve cars. Although the second train has six extra cars, about 500 feet in length, to pull through each restriction, only one unit provides head end power. Therefore the extra horsepower available for traction

provided by the second unit will generally compensate for the additional train length, as will a third unit with 18 cars.

Summary:

In developing a power to weight ratio, the type of power normally operated on the train, whether it is turbo, electric. or diesel should be used. This should be further refined by type. such as E-60 or AEM-7 or, for diesels, FL-9, F-40, Dash-8, P-40 or P-42 or any combination thereof. In selecting the number of trailing cars, the "normal" consist should be used, plus one or two cars to allow for extra cars in addition to the "normal" consist.

Pure Running Time Determination:

Once the power to weight ratio is determined, it can be applied to the authorized speeds to develop the pure running time, generally in one of three ways, as follows:

1. Field Riding Program
2. Manual Desk Calculation
3. Computerized Train Performance Calculation (TPC)

What is amazing is that regardless of the methodology used, the end results are usually very close -- generally within one or two percent.

The field riding program is performed by a team that rides the engine over the entire trip, factors out delays, and measures pure running times and dwell times to the nearest tenth of a minute. This is discussed in detail in a companion paper, "The Art of Schedule Analysis."

The manual desk calculation can be performed by only a very limited number of people who can manually calculate performance including acceleration, braking, curve speeds and other restrictions generally to the nearest tenth of a minute. If done correctly, it can be very accurate. This is used primarily to establish new service where unfinished capital work or other factors prevent actual field tests at prospective speeds.

Finally, TPC programs allow the computer to calculate performance over a line of railroad with amazing accuracy, provided accurate data are used in the program.

TPC programs are recommended and although they may or may not be as accurate as field tests, which measure actual performance, they are a great time-saver compared to multiple trips on long distance trains. They are especially useful in developing additional running time required for changing power-to-weight ratios. As an example, a TPC evaluation for a train with 2 units and 12 cars can be checked for accuracy with a field test with the same size consist and then used to determine the additional time required for 2 units and 14 cars, 16 cars and 18 cars. The user is cautioned that if the correct coefficients are not used, the results will not be accurate. The following three examples demonstrate common errors:

(1) The original passenger car rolling resistance factor included a factor for the Spicer drive mechanical transmission under each car which was used to generate power, using roughly 50 horsepower per car; however, modern equipment which uses head end power (HEP) does not have a Spicer Drive. Therefore, if the old rolling resistance factor is used in addition to factoring in the traction horsepower reduction for the HEP load, the resulting factor is a double count.

(2) Head end power is drawn off of only one unit, with a resulting reduction in horsepower available for traction. This train draws only as much power as is actually needed for HEP. The absolute maximum draw is about 625 horsepower from one unit. If horsepower needed to operate HEP is overcounted, the horsepower available for traction is understated.

(3) Some freight railroads use TPC programs which reflect normal freight train braking procedures, which, if applied to passenger trains, substantially overstate the pure running time.

Again, the accuracy of TPC programs should not be understated, provided errors such as those shown above are avoided. Amtrak once had the opportunity to review a TPC printout while making a field test between Seattle and Portland. It was surprising how close the two sets of data were. The TPC, however, failed to reflect that the station at Tacoma had been relocated some years earlier. so it is equally important to have up-to-date and accurate engineering data.

It should be remembered that TPC printouts only produce pure running time and do not include dwell time and recovery time. Recently, one carrier produced a printout that also included hypothetical en route delays which, of course, made the document worthless.

Dwell Time:

This is the amount of time required to perform station work. Smaller stations generally require three minutes or less, as does a crew change. Larger stations require more time depending upon train and locomotive servicing and/or switching, mail, baggage and express.

Dwell time is the second major component in developing satisfactory schedules. Dwell time is important to provide adequate time (but not excess time) to perform station work. It will vary significantly from one station to the next, depending upon requirements. In like manner, it may vary significantly at the same station from one day to the next. Some dwell times are only one minute at small stations. A crew change can be accomplished normally within three minutes. If the number varies significantly from one day to the next, one way to obtain a "normal" dwell is to average the times over a representative period. However this produces an "average," which means that half the time the train is on target or under, and half the time the train uses more than the allotted dwell time. Amtrak recommends the "75% Rule," which says: "Look at the time in the 75th percentile as the normal amount of dwell time required -- the balance is covered by recovery time."

There is a hypothesis that says: "Station work tends to expand to fill all available time." This says that if 15 minutes is currently required at Station "A" and 5 minutes additional time is added, making the scheduled dwell time 20 minutes, the work will, in a

short period of time, expand (or the pace of the work will slow down) to require 20 minutes -- and the recovery time is lost. Adding dwell time beyond actual requirements is not a good practice.

In like manner, adding excess dwell time because there are a lot of skiers on Fridays and Sundays during the season or because the train occasionally carries groups of boy scouts in the summertime is also not a good practice. This adds excess time 180 or 365 days a year for something that occurs perhaps 40 times a year. Again, this is the purpose of recovery time.

What about second stops at a station? Second stops are generally considered evil but may be a necessity. An extra stop generally costs less than two minutes, about one minute to pull forward and a minute or less for loading. Sometimes, the length of the platform or the makeup of a train necessitate second or even third stops. At unstaffed stations, the passengers tend to gather together under the platform light near the closed station building, and even the longest platform will not result in the passengers locating themselves along the platform. At those stations, it is doubtful that even a "wagon locator" such as is used in Europe would make any difference.

Second stops delay trains and therefore their use should be judicious and only as conditions require. At staffed stations, advance notice to the passengers on where to stand should be universal; often it is not done and thus additional stops are required. Alexandria, Virginia, is probably the best station in the nation for having passengers

properly spotted on the platform. Clearly, a second spot is better than walking passengers with their luggage through several cars on a moving train. Conversely, making a second, or even a third spot, just so a crew member can conveniently board the rear of the train is unacceptable.

The key is that if a second or third stop is made on a fairly regular basis, 50 percent or more, the time for the stop should be built into the dwell time. If it occurs seldom or only on a random basis, it should be covered by recovery time.

Other practices such as "streetcarring" passengers (collecting tickets on the platform) can have a disastrous impact upon dwell time. Finally, dwell time requirements may change over a period of time and must be revisited periodically. All employees must be monitored, encouraged and directed where necessary to minimize dwell times.

Summary:

Dwell time should be established to meet the exigencies of the service. Excess dwell time results in the station work expanding (or slowing down) to fill the available time. Additional spots are sometimes necessary, but their use should be judicious and incorporated into dwell times when necessary. Finally, dwell time requirements may change and scheduled dwell time must be adjusted on a recurring basis.

Recovery Time:

Recovery time is time added to the schedule, generally six percent[1] to eight percent, to compensate for all contingencies (delays) encountered en route. It may be as much as three hours per trip on a long distance train.

Recovery time by any other name -- fat, rubber, pad, etc. -- is still recovery time, and it is the third critical factor in proper schedule construction. It is an essential element, and how that time is spaced is addressed in the section on schedule stringing. The key point is:

WHEN THE AMOUNT OF DELAY EXCEEDS THE AVAILABLE RECOVERY TIME, THE TRAIN IS LATE

Negative recovery time will be discussed further in the section on schedule stringing; however, it can be defined as the difference in time when pure running time plus dwell time exceeds schedule time. To put this in perspective, if the pure running time between A and B is 40 minutes, and B has 5 minutes dwell time but the schedule is 43 minutes, there is -2.0 minutes recovery time or a negative recovery time of 2 minutes. From a practical standpoint, it means that with a perfect run with no delay and a stop equal to the scheduled dwell time, the train would be two minutes late. Negative

[1] Recovery time can be measured as a percent of pure running time only, or as a percent of pure running time plus dwell time, which together are sometimes called the "base schedule."

recovery time was an old scheduling practice to keep the schedule tight; the train would never wait for time because it could never make its schedule. It is not currently a recommended practice because it ensures the train being late. If a train needs 40 minutes running time and 5 minutes dwell time, then the schedule should be not less than 45 minutes.

Passenger Train Meets:

Beyond the three basic scheduling components -- pure running time, dwell time, and recovery time -- certain other allowances are necessary for proper scheduling. This includes passenger train meets. When such meets occur on single track, time is factored into the schedule to accommodate the meet. Which train will take siding will vary from day to day; and if the trains have equal priority, not even a crystal ball will predict a day in advance where the meet will occur or which train will take siding. Since 76 percent of the Amtrak system operations are in traffic control territory (TCS), the practice is to add 5 minutes additional recovery time to each train for the meet. While this becomes a windfall for the train holding the main track, provided it has clear signals, it mitigates the impact upon the train taking siding; the balance of the delay, if any, is covered by recovery time. Amtrak may request that some trains, especially those running toward critical connections with other passenger trains, be given priority in meets with their counterparts in the opposite direction.

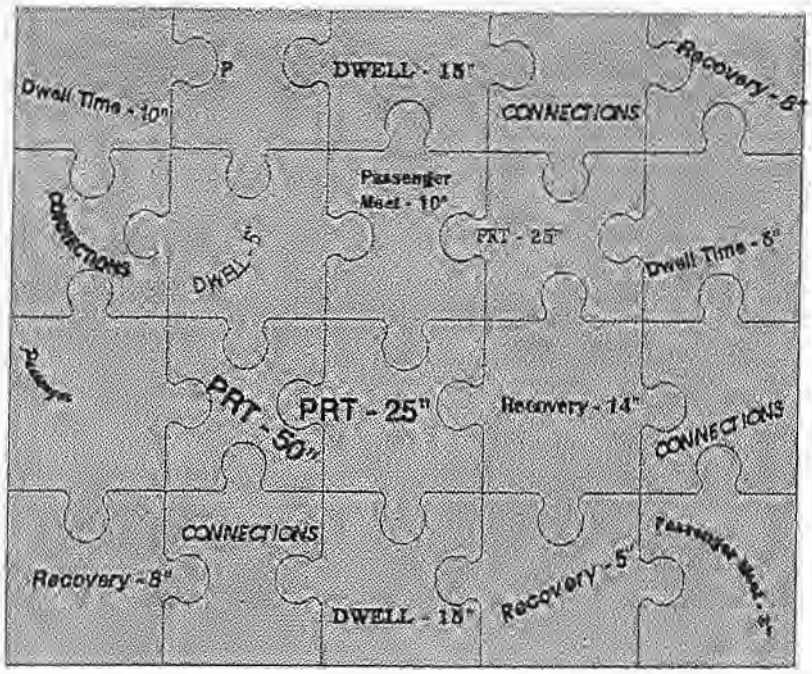
Other Scheduling Considerations:

Each train may encounter certain conditions peculiar to that or unique to that train which may require special consideration in building a schedule. One example is Customs and Immigration delay, which, technically, is dwell time, and which occurs at different stations depending upon the direction of the train.

Probably, the most unusual example is the inclusion of the 5 extra minutes in the schedule of Train 3 to stop and cool traction motors at the summit of Raton Pass in Colorado (one direction only), as the ascending grade at 3 ½ percent is the steepest grade on the Amtrak system.

Examples such as the ones cited above are rare; therefore, this discussion on schedule construction will be limited to pure running time, dwell time and recovery time, plus passenger train meets.

Schedule Stringing:



Now that the pure running time and dwell time requirements have been identified and the appropriate amount of recovery time determined, what will be done with it? The analogy of putting together a jigsaw puzzle is very close to the task of developing a schedule.

The critical skill is stringing the schedule. This means putting the time together in a meaningful way that permits the train to operate, generally without "killing time"[2], and yet reasonably close to one time. This is "the art of scheduling."

Proper stringing of the schedule is critical because it plays a significant role in whether the train operates on time or late. It is also important to maintain on-time

[2] Waiting for scheduled departure time at a station or running slow in advance of a station.

performance at en route stations. When all the recovery time is bunched at the end point, the train becomes later and later en route as delays occur, but it arrives at its end point on-time or ahead of time. This is a disservice to all passengers entraining or detraining en route, which is often the overwhelming preponderance of the passengers, but it does help performance statistics and is the preferred methodology of freight railroads. In one extreme case on a long-distance train, the train could be 45 minutes late at the next to last station and ahead of time at its final station. This has since been corrected, but must be continually watched to avoid a recurrence.

Pure running times and dwell times are essentially a given, so the real variable is recovery time and how it is distributed. This discussion previously touched upon negative recovery time and took the position that it is not a good practice because it guarantees a late train in order to "preserve" recovery time for later use. Clearly, it is desirable to keep the schedule times "tight" (but not negative) at the first and second stations on a segment to avoid killing time which may be needed later. A well-strung schedule will be scheduled tight at the first one or two stations but will then distribute one-third to one-half of the recovery time before the intermediate contract railroad incentive checkpoint(s) or the end point. There is no ironclad rule to stringing recovery time; good judgment must be exercised.

What about killing time, which often is perceived as being evil. It is not bad in moderation, for example, one or two minutes. It only means the train is on-time. However, it would not be desirable to have a schedule where the train would kill time at

every station. That would be a bad schedule, and inordinately long. Killing excess amounts of time, say five or ten minutes or more on a regular basis, is also a bad practice and should be corrected through restringing, except at key stations where switching or major servicing is performed. Remember, a well-strung schedule materially contributes to a good operation.

As previously mentioned, an allowance should be made for passenger train meets that occur on single track. That allowance, which is actually additional recovery time, should be built into the schedule one or even two stations beyond the scheduled meeting point in the event that if one or the other train is late and the meet does not occur at the intended siding, the recovery time is not wasted by killing time prior to where the meet actually takes place.

On the following page are examples of poorly strung and properly strung schedules.

SCHEDULE STRINGING EXAMPLES

Pure Running Time	Dwell Time	Station	Poorly Strung Schedule "A" AM	Poorly Strung Schedule "A" RT	Poorly Strung Schedule "B" AM	Poorly Strung Schedule "B" RT	Properly Strung Schedule "C" AM	Properly Strung Schedule "C" RT
		A	1000		1000		1000	
45"								
	5"	B	1045	-5"	1055	5"	1050	0"
35"								
	3"	C	1120	-3"	1135	2"	1130	2"
50"								
	1'	D	1205	-6"	1230	4"	1223	2"
75"								
	4"	E	115	-9"	155	6"	145	3"
40"								
	2"	F	157	0"	245	3"	230	3"
20"								
		G	303	46"	303	3"	303	13"
265"	15"		PM		PM		PM	

8% = 23" Recovery Time (RT)

In Example A the schedule is strung too tight, with negative running times, or with no allowance for dwell times. As a result, the train is guaranteed to be late at all intermediate points, getting later and later from station to station until the end point is reached where all the recovery time is buried.

In Example B the schedule is strung using too much recovery time at the front end which may necessitate waiting for time at the first station and subsequent stations and running out of recovery time by the last station.

In Example C the properly strung schedule is tight to the first and second stations, has a moderate distribution of recovery time en route and preserves just over half of the recovery time at the end point. This is a schedule that with good dispatching practices, can be reasonably adhered to.

Summary:

"WHEN THE AMOUNT OF DELAY EXCEEDS THE AVAILABLE RECOVERY TIME, THE TRAIN IS LATE." A well strung schedule will distribute the recovery time judiciously and will avoid extreme bunching of the recovery time at the endpoint.

String Graphs:

Once schedules for a single-track railroad have been strung, it is a good practice to prepare a string graph. A string graph has time on one axis and stations or mileposts on the other axis. It is a graph of the operation. Some countries use string graphs as their official operating timetables.

The term "string graph" comes from a large panel used over 100 years ago to graph the trains with yarn. The original intent of a string graph was to avoid "cornfield meets" (head-on collisions). Today, it is used to determine if there is a siding available to facilitate meets, to identify passing locations, and to identify and avoid congestion points. When lines cross on a string graph, it is a meet between opposing trains or a faster train overtaking a slower train.

With modern day technology, computers are capable of preparing complicated string graphs. This procedure is currently used throughout the industry. There are a number of different systems in use. Amtrak uses PROTIM, which is a series of programs and databases developed by British Rail Business Systems. This system has the capability of developing schedules, station reports and string graphs with extreme accuracy. It is in use on Amtrak's Northeast Corridor, where some segments handle over 300 trains each weekday. The illustrations on the following pages are a computer generated string graph for the Union Pacific in Oregon and Idaho.

TTMS - STRING GRAPH AND STICK MAP

HISTORY DATA - GRANGER TO PORTLAND - 21 JAN 1996, SUN

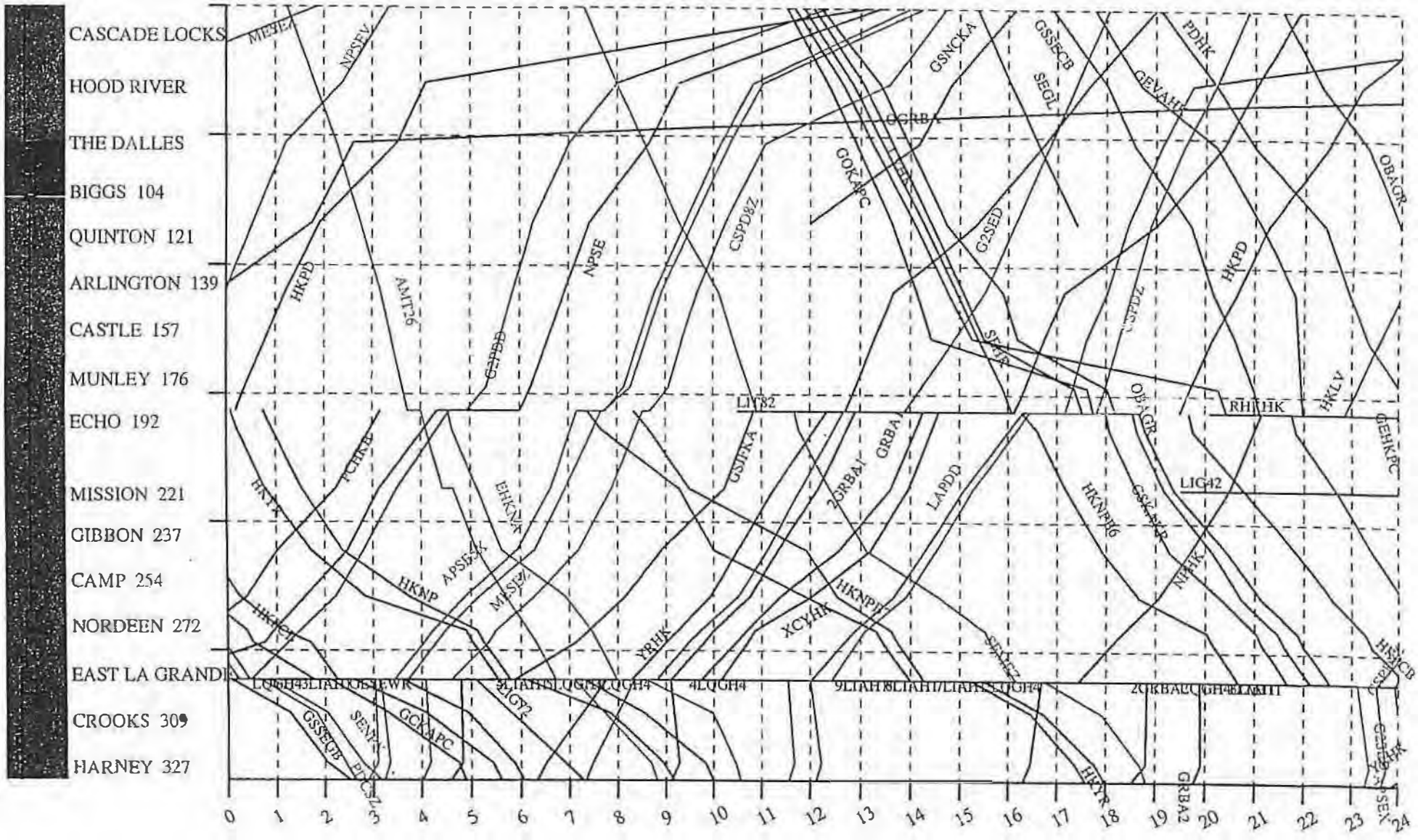
Train Priority

1 2 3 4-5 6-9

Project Priority

1-2 3-4 5-6 7-10

Y-Axis Increment = 50 miles, X-Axis Increment = 1 hour



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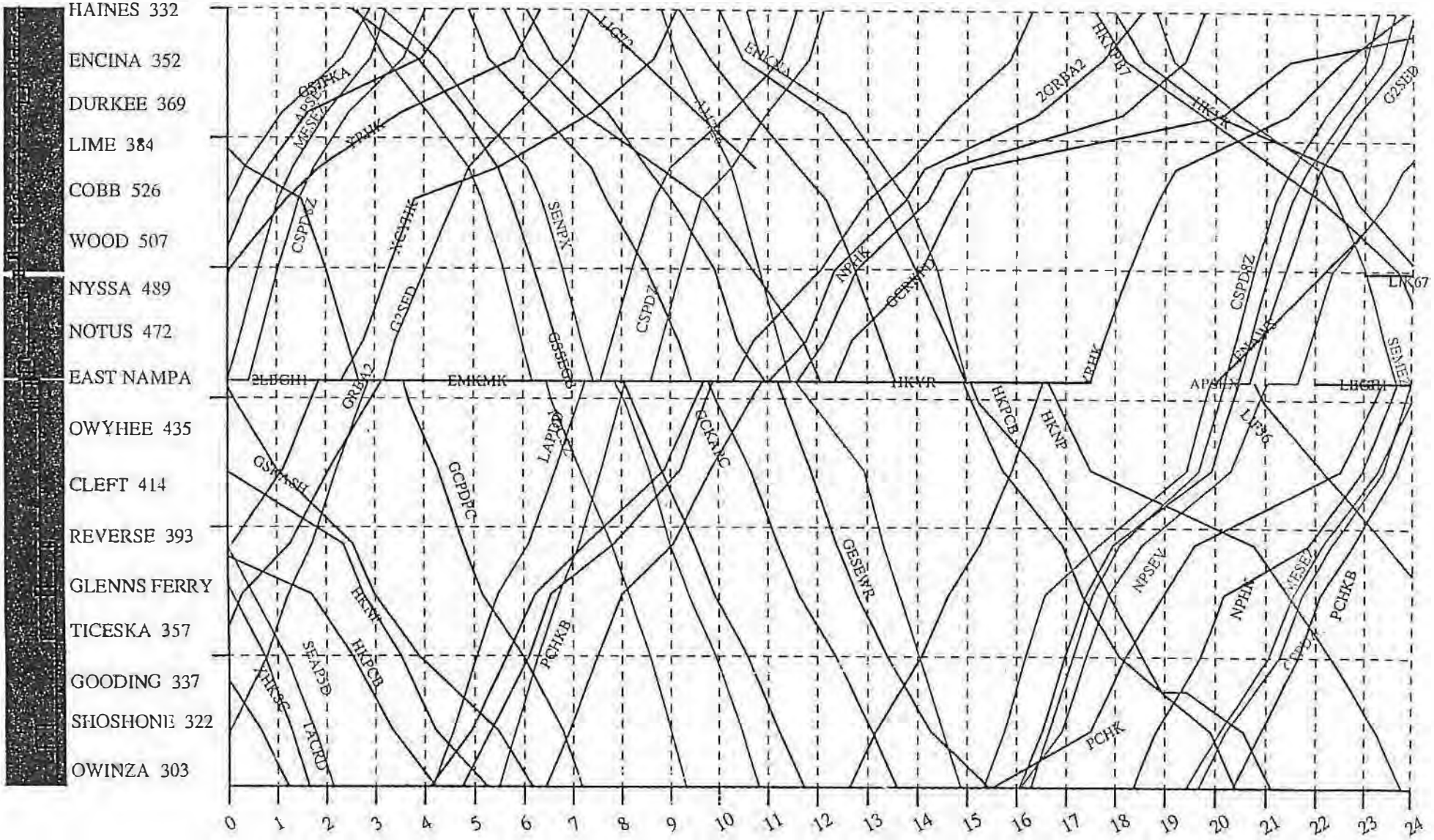
Train Priority

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Y-Axis Increment = 50 miles, X-Axis Increment = 1 hour



Connectivity:

Amtrak's entire system is a grid with connections generating a significant portion of the corporation's revenue. Some trains may have a significant number of passengers connecting to another train. There are many connecting points, but Chicago is the real hub of the Amtrak system. Sometimes an adjustment in one schedule will require a similar adjustment in a connecting schedule.

Negotiations:

Many people do not realize that Amtrak's schedules are negotiated with the railroads over which Amtrak trains operate. As noted at the beginning of this paper when Amtrak inherited the passenger train schedules in the early 1970's, some schedules were good, some schedules were bad and some overall were okay but needed restringing. Starting in 1976, Amtrak made a concerted effort to bring reasonable uniformity to the schedules in use throughout the system, but this is an ongoing process that demands time and personnel to stay in tune with operational changes.

Railroads are sensitive to schedules for two reasons: (1) they do not want passenger trains to interfere with their primary freight operations, and (2) on-time performance may drive millions of dollars in incentive payments. Both the length of schedules and schedule times are negotiated.

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Another critical factor is scheduling of commuter trains and intercity passenger trains so that conflicts are minimal. This is called slotting trains. Commuter trains and intercity trains may operate on three-minute headways, and passing locations are critical between express trains and local trains making all stops. In like manner, meeting opposing commuter trains is also a critical element.

The negotiation of schedules is as important as all other aspects of scheduling.

PART II

THE IMPACT OF DELAYS

The Impact of Delays

After consideration of all the factors essential to proper schedule construction, why don't trains run on time? The missing element is delay. Some delays are covered by recovery time; some are not. The causes of delays could fall into hundreds of categories, which in Amtrak's performance reporting system have generally been condensed into ten, plus "miscellaneous," which is a catch-all. Recently, the "miscellaneous" category has been further divided into Amtrak-other, Railroad-other and third party delays.

When the amount of delay exceeds the available recovery time, the train is late.

Some delays are considered to be under Amtrak's control, such as:

- Mechanical failures
- Servicing delays
- Passenger related delays, the preponderance of which are excess station dwell times. This is a category of delay that must be carefully monitored by

field supervision due to the tendency of dwell time delays increasing over a period of time.

Some delays are considered under the freight railroads' control:

- Freight train interference
- Signal delays
- Maintenance-of-way/slow order delays

Some delays are beyond the control of either organization:

- Firehoses over the tracks
- Snowslides, rockslides
- Heat orders, cold orders
- Grade crossing or trespasser accidents
- Vandalism
- 1,000 other things

These types of delays are known generally as "third-party" delays.

Some of the more bizarre delays Amtrak has experienced include striking and killing a buffalo in North Dakota, a World War II mine washing up on the shore of Puget Sound, and extracting an obese passenger from the toilet on the Broadway Limited.

Freight railroad causal factors generally account for 40 to 50 percent of the total delays -- while Amtrak-related delays generally account for 20 to 30 percent and all other delays for the remaining 20 to 30 percent

Signal Delays:

The frequency of signal delays closely follows freight train interference and is often the result of the signals working as intended because of a train ahead, as opposed to a true signal system failure.

It would be desirable to divide signal related delays into two sub-categories, i.e., working as intended or a signal failure. However accurate information is frequently not available until later and it would be difficult to segregate this information. When a signal is at "stop" because there is a freight train ahead, it should not be reported as a signal failure, it is freight train interference. Unfortunately, a crew delay report reading "Ajax, 10 minutes, red signal" will be reported by the person entering the data into the system as simply a signal delay for lack of any better information.

Slow Order Delays:

In like manner, maintenance-of-way/slow order delays are very significant delay factors and fall into two major categories:

The first is slow orders because of deteriorating track.

The second is slow orders or work orders because of routine maintenance or rehabilitation of track. Modern maintenance practices with production gangs frequently require taking the track out of service, or require slow orders and lookout orders which impact upon performance. However, just as in the case of signal delays, it would be desirable to sub-divide this category between slow orders due to track conditions and slow orders due to maintenance-of-way work. This should be easier to quantify and segregate than signal delays. However, train crews, and thus their delay reports, may not know or specify the causal factor of any given slow order.

Seasonal Schedules:

The issue of maintenance of way delays raises the question of whether train schedules should be modified to provide summer schedules (as opposed to winter schedules) to compensate for delays expected to result from major maintenance projects. The answer to this is clearly "yes" if the maintenance project will be of

sufficient duration to have a significant impact upon on-time performance. As new maintenance procedures have evolved with the use of large production gangs that take a segment of track out of service, and with the difficulties and production loss associated with clearing to allow a train or trains to pass, it is important to coordinate train operations and maintenance programs to minimize delays and to maximize productivity.

A more fundamental question is whether circumstances justify summer and winter schedules for more than just maintenance-of-way work; for example, ski resort travel that exists only in winter or other seasonal requirements, such as variance in station dwell time requirements.

Coordinating Maintenance Projects With Train Schedules:

Maintenance operations usually have a twelve-month window in the southern half of the United States, while the same work must be compressed into an engineering season, generally April to November, in the northern half of the States. Timetables generally change in early April and late October, which provides a nearly seven-month summer schedule and a slightly over five-month winter schedule. If a major 30-day maintenance-of-way project is going to occur, it is probably not practical to amend a schedule for seven months because of one month of impact. However, if a 90-day project is scheduled, a temporary schedule for that train, say June 1 to August 30, is

preferable to operating the train late every day or four or five days per week until the project is completed.

Coordinating maintenance-of-way projects with train operations is a relatively new concept that has not reached its full potential. Adjusting maintenance-of-way starting times or working night schedules may materially reduce potential delays; however it is equally important once this has been done to keep trains on time to protect or honor that window to minimize any maintenance-of-way delays as well as delays to the workforces.

There is frequently resistance to operating around or bussing around a major maintenance-of-way program. However it is often better to disrupt operations for a short period of time and let the work be promptly completed than to prolong the work and the delays resulting from a lengthy program.

Engineering Practices, Schedules, and Delays:

Since maintenance-of-way/slow order delays are a major factor in on-time performance, over the years there have been a number of poor practices that actually increase the amount of delay unnecessarily and which, if monitored judiciously, could significantly reduce delays.

Minimizing Delays Resulting From Maintenance-of-Way Practices:

1. Point restrictions (i.e., road crossing at MP 508.0 or bridge at MP 475.5) should be just that; however, we frequently find restrictions one mile either side of the point which results in a two mile restriction.

2. Frequently T&S restrictions will be imposed for several miles or for the entire length of the project even though the track has not been disturbed. Keeping the limits as short as possible and progressing as the work is done will minimize delays.

3. When slow orders result in a lower class of track, some carriers fail to recognize the passenger train speed differential (i.e., Class I: 10 mph freight, 15 mph passenger; Class II: 25 mph freight, 30 mph passenger).

4. Low speed rock and roll restrictions are not applicable to passenger equipment. Therefore, a 15 or 20 mph speed limit prohibition should not apply to passenger trains.

5. Failure to promptly lift restrictions once the condition is corrected unnecessarily delays trains. This is the result of either the M of W employee not notifying the dispatcher, or the dispatcher not promptly annulling the restriction.

6. Failure to properly place M of W flags will adversely affect the operation, as will a failure to properly remove the flags when work is completed. Frequently, the failure to place flags for slow orders has resulted in excessive delays.

7. Where speed restrictions apply while passing M of W gangs, the foreman may let the restriction apply throughout the entire work limits even though the gang has been passed or is working in one reasonably compact area.

8. When a significant or lengthy restriction applies on one main track, dispatchers may overlook crossing the trains over to an adjacent main track in traffic control territory to avoid the restriction and minimize delay when conditions permit. Dispatchers need to be much more sensitive to these delays.

9. In many cases there is a reluctance to go to 3-inch unbalanced curve speeds as it allows no tolerance. A waiver authorizing 4-inches will provide tolerance to go to a full 3-inches.

10. A series of curves may not be satisfactory for 35 mph in accordance with the FRA track safety standards, so they are restricted to 30 mph whereas an odd speed such as 33 mph would minimize delay. On one carrier, increasing the speed to 27 or 28 mph saved nearly 20 minutes. The slower the speed the more

significant the time savings. Using odd speeds (other than ending with 5 or 0) can result in improved performance.

11. Heat orders are necessary when the ambient temperature exceeds certain predetermined limits. However, issuing heat orders the day before (i.e., 10:00 a.m. until 8:00 p.m.) even though the ambient temperature during those times is not known or equally as bad when the dispatcher fails to annul the restriction once the condition no longer exists, can result in significant delays. In one extreme case, a cold front with a cold rain moved through the area and even though the crew notified the dispatcher, nothing was done to remove the heat order.

All of the above points are the result of some actual experiences which have been encountered during Amtrak's riding programs. While not all of the above delays have occurred on all carriers, those railroads which actively police their properties to avoid such occurrences have not only benefited in minimizing delays to passenger trains and improving their incentive payments, but have also materially reduced delays to their freight operations. Unless a program is maintained to constantly monitor the operations, delays of the types listed above will occur.

There is actually a third category of maintenance-of-way delay that does not generally get recorded as a delay. Examples of this category include a long-standing slow order that eventually gets moved to a more permanent bulletin and, when no one is looking, slips from a bulletin into the new timetable and becomes a permanent restriction. A similar example is skimming some superelevation out of a series of curves and then through the same process slowing down the railroad -- a few miles at first, then a few more, until a hundred or more miles have been slowed down. Once the reduced speeds are entered into the timetable they are no longer reported as delay; however the overall impact is that they erode recovery time, until there are sufficient speed reductions which may result in trains running late. It can also result in thousands of minutes of delay each year that are not reported as delays. This practice is usually in violation of a carrier's contractual obligation to Amtrak, but restoration of speeds or other speed increases to compensate for the reduced speeds is difficult at best. This practice is analogous to taking a few cents out of the till each day, then a dollar or two, that nobody misses until an audit is performed. Delays are seldom reported in this area until a train cannot make its schedule. Sometimes this will be reported as a "running time" delay.

Passenger Train Meets:

The next major delay category is passenger trains or what is referred to as passenger train interference. This is the delay that occurs to one or both trains when two passenger trains meet. Freight railroads charge these delays against Amtrak since,

but for the presence of a second passenger train, the delay would not have occurred. Amtrak charges these delays against the railroad, since train dispatching is performed by the railroad and time is allowed in the schedules to compensate for the meets.

While the responsibility for the delay may never be resolved, this becomes a stand-alone delay category over which reasonable control exists through good dispatching practices. On some lines where several pairs of passenger trains operate on single track, such as the San Diego Line or the San Joaquin Valley line, passenger train meets may be a leading cause of delay. Under these circumstances, one late train may cause the "domino effect," delaying the opposing trains that it is scheduled to meet. They in turn delay the opposing trains they are scheduled to meet. All this results from being at the wrong place at the wrong time. This raises the issue of "out of slot."

Out of Slot- A Myth or For Real?

There is a long-standing theory within the industry of the impact of a train being out of slot. The theory is that a train that is on-time is easier to keep on-time than it is for a late train to avoid becoming later.

It appears to be a fairly universal theory, or at least a perception, that once a train becomes late it is more difficult to keep on time than when it is on schedule.

However, even if this is true on dark (unsignalled) rail lines or perhaps in train order ABS (track warrant) territory, the very nature of a traffic control system (TCS) would mitigate against this being true in TCS territory.

For example, being late in TCS territory may simply move the meet from one controlled siding to another without material impact. It should be kept in mind that the degree to which scheduled freight trains actually adhere to their schedules is also a significant variable. Passenger train meets at locations other than the programmed siding may or may not have a negative impact upon one or both trains.

There are some out of slot factors that do have a direct impact upon a train getting later without regard to TCS territory -- for example, commuter trains where a late train may take multiple hits, or maintenance-of-way work or programmed work that would have been avoided if the train had been on time. In like manner, opposing or following fleets of freight trains could have an impact. Conversely, a late train might also avoid such delays by virtue of the fact that it is late, so the impact of being late cuts both ways.

As a result of these discussions, a study was conducted on whether the out of slot theory has any statistical merit in today's operation. [1]

[1] See paper entitled "Out of Slot -- Fact or Myth," dated January 2, 1996.

The study addressed the performance of nearly 600 trains over seven railroads and totaled in excess of 500,000 train miles. The current Amtrak route system mileage includes approximately 3 percent which is unsignalled, 21 percent with an Automatic Block Signal System, and 76 percent with a Traffic Control System. Only 4 percent of the route mileage is over rail lines with both commuter and intercity passenger trains.

The study recognized that "out of slot" may be a problem in certain limited applications such as in a joint commuter/intercity operation.

The end result of that study was a conclusion that in today's operation the out of slot theory, except in limited applications such as stated above, is generally a myth. The percentage of on-time trains or late trains losing more time was not materially different, while late trains lost slightly less time than on-time trains. Whether the theory was ever more than a perception -- as opposed to having statistical validity -- cannot be proven since records no longer exist to substantiate the theory. One unexpected by-product of the study showed that trains are generally not abandoned from a dispatching standpoint once they become late.

Heat Orders and Cold Orders:

The use of heat orders and cold orders has grown significantly over recent years. The practice has considerable merit from an engineering standpoint, as it reduces stresses to the track structure during periods of extreme temperatures -- generally

ambient temperatures above 95 degrees F or below zero degrees F. Some carriers place heat or cold orders when there are extreme temperature changes within a prescribed period of time. Inconsistency is where the difficulty occurs. Generally, there is no standard practice, throughout the industry, either on when to apply such restrictions, or on the severity of such restrictions. Some carriers watch ambient temperatures carefully, place restrictions only when the temperature threshold is exceeded, and promptly remove restrictions when they no longer apply. Other carriers are not as precise. One carrier will issue a bulletin at midnight restricting train speeds from 10:00 a.m. until 8:00 p.m. the following day or days. Other carriers are responsive to placing the restrictions, but lax in removing them. On one carrier a long distance train was restricted by a heat order. A cold front passed through and the crew reported a cold rain to the dispatcher, who refused to annul the restriction, and the train received an unnecessary hour of delay.

Another issue is how such restrictions should be categorized. There are arguments that say they should be charged as maintenance-of-way delays, or weather related, or miscellaneous. Currently, they are generally captured as weather-related delays.

Avoidable Amtrak-Related Delays:

Another type of delay related to dwell time, but which often occurs under the cover of darkness and is probably underreported, is what is referred to as the "Grey

Poupon Syndrome." This occurs when two passenger trains meet on the road between stations and stop to hand off provisions to each other. These may include sheets or pillowcases, marinara sauce or Grey Poupon mustard and an occasional carryby passenger. This is not an accepted practice, but when it does occur it should be reported as a delay.

Similarly, the practice of "streetcarring" passengers, i.e., collecting tickets one at a time on the platform, which results in delay to the train, is not an acceptable practice and is probably never reported as a delay, but appears as excess dwell time and finally as a "passenger related" delay. This is a difficult delay to quantify -- i.e., what would the delay have been if normal boarding practices had occurred? Generally, it amounts to the number of minutes in excess of scheduled dwell time.

Killing Time:

Finally comes the question of "killing time" -- is it a delay? The answer is "yes" it is a delay, but it is a good delay when used in moderation because it means the train is on time. Killing time comes in two forms. The first is running somewhat slower to avoid arriving at the next station too far ahead of scheduled departure time. The second is sitting at a station when the work is completed, waiting for the scheduled time to depart.

In any riding program it is essential to capture this time and record it as a delay. Killing one or two minutes is not evil; however when five or ten or more minutes are

frequently killed, it is a sign that the schedule needs to be restrung and the time used elsewhere where it will be more beneficial.

Late Connections:

This discussion addresses whether late connections are really a delay or whether they represent a duplicate counting of an accumulation of other delays.

Late connections are a delay en route if a train is held for a connecting train or bus. For example, Trains 8 and 28 connect at Spokane and Trains 92 and 82 are joined at Jacksonville, as are Trains 49 and 449 at Rensselaer. If a train is held for the other train, it is late-connection delay. Another example is in the San Joaquin Valley of California, where numerous busses connect with each train. Again, if a train is held at a point for a bus connection, it is a delay.

Conversely, if Carrier A delivers a train late each day to Carrier B at Denver, it is not a "delay" that occurs on Carrier B. It is a result of delays which actually occurred and are already accounted for on Carrier A. Another example: if a train is held in Chicago for connecting trains, it is late but it is not a delay that occurred on the carrier that received the train late.

The question may be raised, "So what? What difference does it make?" The answer lies in the example shown above at Denver. Carrier B reported thousands of

minutes of delay on late connections -- so many thousands of minutes, which did not occur on their railroad, that the statistics of what really happened on Carrier B were obscured by delays that actually occurred somewhere else. Carrier B used this as a subterfuge to obscure their own shortcomings. This type of obfuscation eventually led Amtrak to conduct the "out of slot" study described earlier, which showed that a late connection did not make a material difference in the train's performance. In the case of Carrier B, the late train did impact upon maintenance-of- way forces the next day but not on the overall performance of the train.

Just as some carriers may abuse or overreport late-connection delays, some conductors may enter "late arrival" as a delay on their delay reports just because the train arrives late at an intermediate crew-change point. However, the late arrival was caused by delays that already occurred on previous crew districts, and as such should have been accounted for by those previous crews.

Selective Delay Reporting:

Selective delay reporting is an old railroad practice of reporting only enough delay to cover the amount of time lost on schedule. This was generally done in the dispatcher's office. Does anyone recall seeing a delay reading "Ajax, 20 minutes, bad meet"? Not really. Perhaps "Ajax, 20 minutes, inspection," or "hard throwing switch" or "signal would not clear," but not a "bad meet."

Since all trains have recovery time, a train is not late until the amount of delay exceeds available recovery time. For example, if a train has 20 minutes available recovery time over a segment, it would generally (but not always), need 40 minutes of delay to be 20 minutes late. Selective delay reporting gave the dispatcher the opportunity to "select" which delays they would report to cover the 20 minutes of time lost on schedule.

The primary disadvantage of selective delay reporting was that only a portion of the delay was reported, so when it came to analyzing or identifying the problem areas the delay reports were worthless. Amtrak believes that all carriers have dropped this practice. It is essential to know where all the delays occur so that the problem areas that need to be addressed can be identified.

Today the Conductor's Delay Report is the document that Amtrak and most carriers recognize as the "official" delay report. Amtrak and one of the carriers conducted a detailed study in 1994 to evaluate delay reporting. The Conductor's Reports and dispatching reports were each compared to the actual delays as observed in the field by the study participants. It was concluded that the Conductor's Report was by far the more reliable document.

Train Dispatching:

The key to the performance of the trains rests with the train dispatcher. Sometimes the dispatcher is faced with several different choices, such as.

Which train gets preference?
• No. 199 with the its intermodal trailers and containers
• LABRF with its hot manifest
• Madame X – the division cleanup train
• The Night Crawler - a puller handling empty camp cars
• The Dogpatch Local - with two empty cars for the mill
• Yard engine - going to the beanery to eat or switching the car repair tracks
• All of the above
OR
• Passenger trains

What it all boils down to is the quality of train dispatching. The train dispatcher generally responds to the policies established by senior management. Which train gets the priority is the railroad's call.

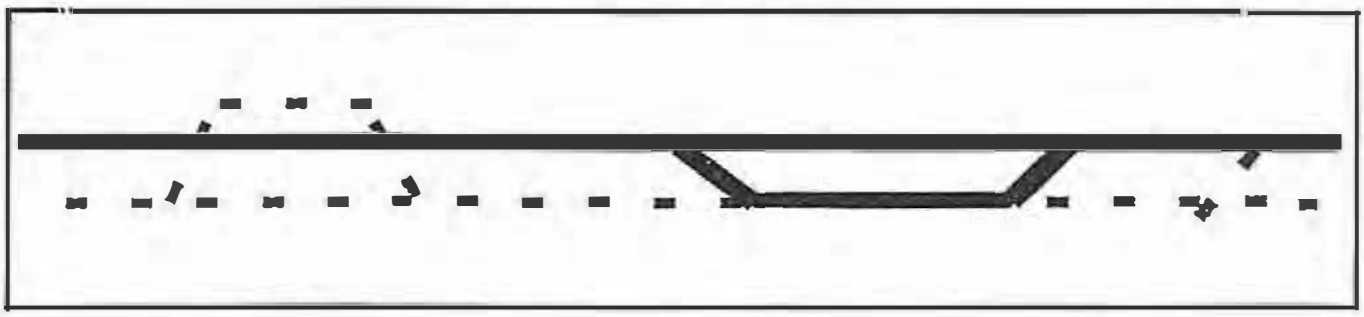
The policy varies significantly from one carrier to another. One key element is that passenger trains have priority over freight trains by statute, under the Rail

Passenger Service Act. All railroads profess to give passenger trains priority, but it just doesn't always happen. Statutory preference does not mean that passenger trains must always hold the main track at meeting points. On the contrary, in traffic control territory, the passenger train taking siding for a fast freight may expedite the meet and minimize the delay to both trains.

Computer Aided Dispatching or CAD (which perhaps should actually be known as Dispatcher Aided Computers) permits the computer to dispatch trains -- just plug in the priorities and watch them roll. Well, sort of. The computer can make some bad decisions unless the dispatcher catches the error and overrides the decision. Some dispatcher's territories are analogous to the old television skit of the one-man cake factory where cakes spew off a conveyor belt until chaos reigns. Conversely, where train dispatching territories have not been consolidated and expanded to the point where only the computer can dispatch the overall territory, CAD can be a valuable aid.

Software experts continually refine programs to correct situations where trains take siding with no train to meet -- known as meeting ghost trains -- or the local freight receives priority over the hottest train on the division. One thing generally agreed upon by all is that CAD-generated delay reports are for the most part worthless. Conversely, dispatchers can override the system and sometimes set up a situation that may negatively impact priority trains. It is a delicate balance.

Rationalization:



Rationalization, a buzzword of the 1980's and 90's, means reducing the physical plant to the maximum extent possible, often without regard to potential increases in traffic. It comes in two forms. The first is where mergers result in generally parallel routes. One is downgraded and the other becomes the primary line with resulting traffic increases. The second, which is actually more common, is where a conversion is made from two main tracks to single track. Sidings or main tracks are removed and the resulting plant has less capacity.

The situation is made worse if the segments of single track are made too long, if sidings or leftover segments of double track are made too short to enable "running meets" wherein neither opposing train has to stop for the other, or if sidings are left unsignalled or slow speed turnouts are installed, requiring trains to crawl into the sidings at slow speed. All of these "short-cuts" may lessen the initial cost of the single-tracking project or increase short-term savings, but by creating a less-fluid main line, they lower overall capacity and increase long-term costs and delays.

The increase in traffic over the past several years has left many railroad management scratching their heads about how to increase capacity quickly and economically. Some carriers with critical choke points are now hurting in trying to expedite freight traffic in addition to passenger trains. Threading a passenger train through congested areas is a difficult task.

Summary:

Finally, there is a logical question: If the train runs late every day, why not add time to fix it? There are three basic reasons:

1) If there is excess time in the schedule the train dispatchers tend to take liberties with the trains.

2) Station work tends to expand to fill all available time.

3) If a schedule is basically adequate and a train runs 30 minutes late each day and 30 minutes is simply added to the schedule, in 90 days it will be running 30 minutes late each day. It is essential to fix the basic problem.

The opening comments stated that a train with too much time in the schedule will run late. The reason for this is that the first dispatcher will put the passenger train in the siding and advance a freight train, thus causing, for example, 25 minutes delay, and

using the rationale that there is an abundance of time in the schedule to make up the delay. The second dispatcher's rationale is "I got the train 25 minutes late and I delivered it 25 minutes late. I broke even with no delay to report." The third dispatcher says: "Damn, every day I get the train late and they expect me to make it up." And so the train runs late. In many instances, implementing faster schedules has actually improved performance.

A well strung schedule with a reasonable amount of recovery time is the first step to improve performance. The second step is receiving the appropriate priority and a commitment from the carrier to maintain good on-time performance. The third step is good train dispatching.

A sufficient amount of recovery time is very important. Several years ago, the schedule of a long-distance train on one carrier was tightened up so much that almost all recovery time was removed. The dispatchers discovered that no matter how hard they tried they could not reliably keep the train on time. Soon they gave up and began giving priority to freight trains. After the real problem of insufficient recovery time was identified and after recovery time was added back into the schedule, dispatching and on-time performance both improved dramatically.

But excess time in the schedule can be a performance killer. One on carrier, 30 minutes was added to the schedules of four trains to compensate for a major engineering project. On-time performance improved substantially. However, once the

project was completed, performance dropped as the excess time was used for flagrant freight train interference which far exceeded the additional 30 minutes. On another carrier, it was pointed out that delays were occurring because the two passenger trains met on a single track and that with only a one-hour adjustment, the meet could be moved to double track. This was done, but the performance did not improve. Passenger train interference dropped significantly, but freight train interference increased dramatically.

Fortunately, the examples in the preceding paragraph are atypical for the industry. There is a concerted effort being made between carriers and Amtrak to improve on-time performance, to identify and evaluate operating problems, and to better control the delays that are controllable.

Scheduling Trains: A Summary

Scheduling has three basic components and an important secondary factor:

- Pure running time
- Dwell time
- Recovery time
- Passenger train meets

Once the above data are known:

- The schedule is strung.
- It is checked on a string graph.

Connections are a critical part of scheduling

Once proposed schedules are developed they are negotiated with the freight railroads:

- Schedule times
- Length of schedules

When delay time exceeds recovery time, the train is late.

Delays are measured in broad categories:

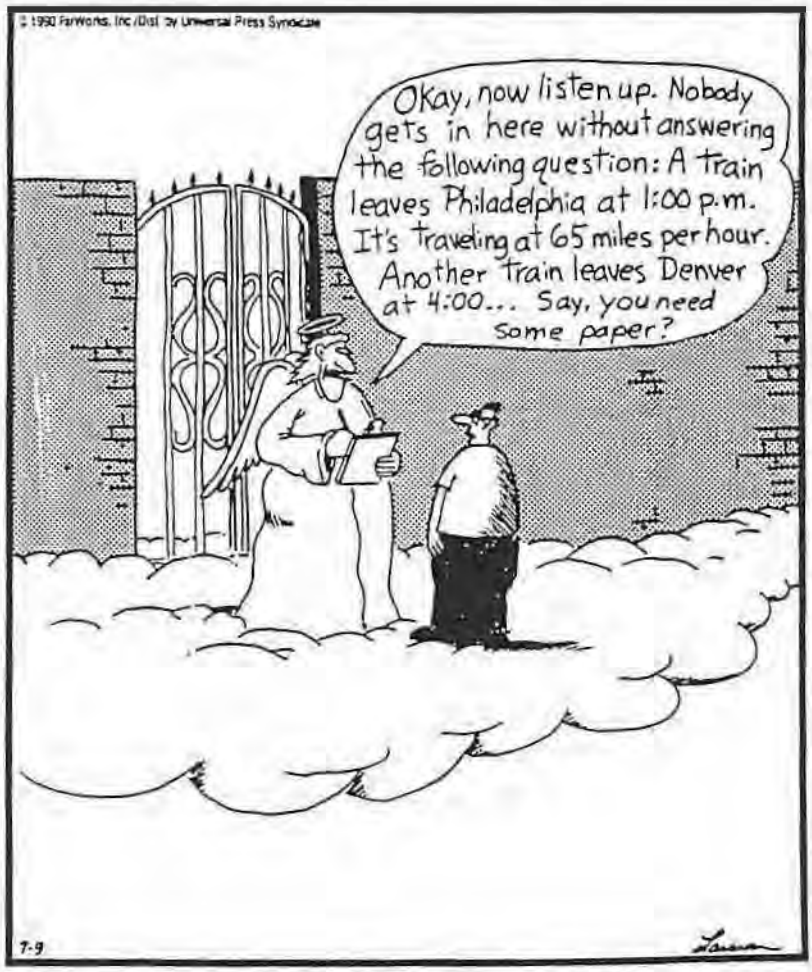
- Amtrak related delays
- Freight carrier related delays
- Passenger train meets
- Delays beyond control of either party

Control is vested in the train dispatcher, who governs priorities consistent with corporate policy. The dispatcher has the ultimate control.

Schedules must be coordinated with both freight and commuter operations.

Schedules impact upon the carriers' ability to earn millions of dollars in incentives.

THE FAR SIDE By GARY LARSON



Math phobic's nightmare

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PART III

THE ART OF SCHEDULE ANALYSIS

Background:

When Amtrak assumed responsibility for the operation of Intercity passenger trains in 1971, it inherited the existing schedules of the freight railroads. Some of these schedules were poor, some were good, and some needed restringing. From 1971 until 1974, there was no strong working relationship between Amtrak and the railroads that addressed on-time performance and schedules. As a result, performance deteriorated. In 1974, the first incentive agreements were negotiated with the carriers but little was done to rationalize or improve schedules. Many lessons were learned from those First Amendment Agreements and in 1976, with the advent of the Second Amendment Agreements, refinement and negotiation of schedules became an integral part of the operating agreement and of financial arrangements between Amtrak and the freight railroads.

As a result, the 1976 contract negotiations resulted in the development of the schedule analysis program which, with moderate refinements, is in use today. In 1976, incentive payment potential was tied to the quality of the schedule and appropriate speeds. Since the Third Amendment Agreements of 1980, essentially all long-distance trains have been tied to intermediate point on-time performance. This is measured from A to B, A to C and A to D, etc., with A being the initial point on the railroad. This methodology does not permit a carrier to have a poor operation from A to B and get a fresh start from B to C or from C to D.

The Third Amendment Agreements also contain penalty provisions for poor performance. This is required by the Rail Passenger Service Act. Both the intermediate performance and penalty provisions are critical components of the post-1996 agreements as well.

Performance payments are measured on an individual train basis each month. Incentives are paid if the train operates between 80% and 100% on time. Performance between 70% and 80% does not earn incentives, and performance below 70% incurs penalties at the same rate as incentives are paid above 80%. The penalties are against incentives earned during the previous twelve months.

Incentives are not an insignificant item. The maximum potential for the industry is approximately $55.5 million per annum. During the five years FY '91 to FY '95 Amtrak paid an average of $22.5 million per annum. This is not an insignificant amount of money. If Amtrak were a freight shipper and the industry transportation ratio was 80%, it would take approximately $110 million in gross revenue to produce the same results for the freight railroads. Amtrak encourages the industry to seek incentive payments. The down side of the numbers quoted above is that the industry has only earned approximately 40% of its incentive potential over the past six years. Reasonable diligence in expediting passenger trains should earn 50% of the potential (some carriers earn 80% or more of their potential), which means that approximately $11 to 22 million is left on the table each year. A critical element of the incentive program is the quality of the schedules.

One final comment on schedule performance and incentives. An order of magnitude on incentive potential on an 1800-mile train would be $5,400 per trip or $162,000 in a 30-day month. At 90% on time, it would earn $81,000 in that month. However, some railroads look at the potential from a different perspective. The first 24 trains must be operated on time before they are "in the money," then each of the remaining 6 trains is worth $27,000. Their perception that each train lost is money left on the table is absolutely correct.

Why are the incentives such a significant item when it comes to preparing schedules? The answer is, that well strung schedules are critical to on-time performance and therefore play a critical roll in generating incentives.

In our paper on scheduling, we pointed out that with a schedule that has too much time the train will run late, just as a train without sufficient time will run late. The train with too much time is likely to take a beating from the dispatcher because of the excess time and it will frequently run late just as the train with insufficient time.

Remember, there are three basic components to schedule construction. They are:

1) Pure Running Time.

2) Dwell Time.

3) Recovery Time

What might be considered a fourth component is passenger train meets, but that is actually extra time built into the schedule to compensate for the meets.

Pure Running Time is the amount of time required to go from one station to the next, without delay, and is based upon a predetermined power-to-weight ratio.

Dwell Time is the amount of time required at a station to perform station work. In addition to passenger handling it may also include time for mail, baggage or express, crew change, switching, inspection or servicing.

Recovery Time is the amount of time added to the above components to compensate for delays encountered en route. It is generally in the range of 6% to 8% added to the above times.

Remember, when the amount of delay exceeds the available recovery time, the train is late.

The task in analyzing a schedule is to factor out all delays en route and to divide the schedule into the three basic components. The task is not easy but once an individual is familiar with the proper procedure it can be accomplished with amazing accuracy. Frequently, Pure Running Time is calculated over long segments by different

riders with only a fraction of a minute variance in their respective reports between stations or over the entire route.

Objective:

Welcome to the world of schedule evaluation. Once you have completed the classroom instruction and field training with this program, you should be able to divide a schedule into its three basic components:

- Pure Running Time
- Dwell Time
- Recovery Time

In addition, you should be able to quantify delays by causal factors and determine the percentage of recovery time. A final check is determining how well the train was handled consistent with the rules and applicable speed restrictions. Remember, the purpose of this program is to effectively analyze schedules, not to perform crew evaluations.

Preparation:

Life all night on an engine can be a grueling experience, especially riding the jump seat on an F40. There is much you can do prior to the trip to make life considerably easier during the evaluation; however, there is nothing you can do to make life easier on the jump seat except stand up.

On longer trips where two or three team members will participate, the segments each person will check must be determined in advance. At locations where riders are going to change, it is the responsibility of the relieving rider to record the arrival and departure times at the change-off point; however, it is also good practice for the arriving rider to do the same. It is also important for the riders to synchronize their watches before the trip.

If the check is to address operating problems or freight train interference it is best for the dispatcher to be unaware of the riding program. However, there are times when a joint riding program is made to evaluate schedules, it is advisable to inform the dispatcher of the test in order to obtain data with a minimum of delays.

A major portion of the task is quantifying delays; therefore, it is necessary to know the maximum authorized speeds and station locations. This comes from the operating timetable; however, operating timetables of today are not easy to carry, may be only slightly smaller than a telephone book, and frequently require the reader to hop from one page to another as districts or subdivisions change. Therefore, the first tools you need are a scissors and tape to make yourself a customized timetable that follows the route of the train. A sample of the cut and paste (tape) timetable is shown in Exhibit 1. This is an important part of the evaluation.

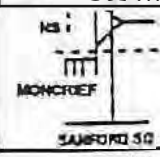
In addition, it is a good practice to review the Special Instructions and the track charts at the office before you go on the road, especially when you are not familiar with the territory to be evaluated. However, it is not recommended that you carry this information because it is normally too bulky and heavy to carry conveniently. In reviewing the track charts or timetable, watch for equations in Mile Posts.

In addition, you should prepare in advance the Summary Sheet (Trip Report) for the train showing the pertinent information for that train including station stops and checkpoints and current schedule. The rest of the information will be written on the form as the trip progresses. This form is shown as Exhibit 2.

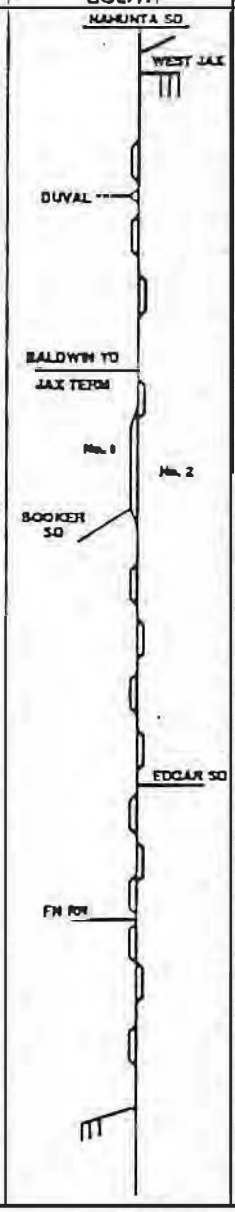
The consist book should be reviewed to determine the normal consist of the train Sometimes it is necessary to add one or more cars to obtain the proper power to weight ratio forthe test, or to hold a deadhead car for movement at a later date in order to maintain the integrity of the test. In like manner the power consist should also match the desired test. This should not be left solely to chance.

EXHIBIT 1

10.0 NAHUNTA SUBDIVISION-NH

MP/ Ctr Pt	SOUTH	STATIONS	SDG CAP (Ft)
A639.4		Jacksonville (Pasgr Station)	
1441–1442		2.1	
A642.5		Beaver St.	

50.0 WILDWOOD SUBDIVISION-BL

MP/ Ctr Pt	SOUTH	STATIONS	SDG CAP(Ft)
SP635.1		Beaver St.	
		3.8	
SP635.2		Seminole Connection	
		3.8	
SP639.0		Carnegie	4003
1506		4.9	
SP643.9		Whitehouse	7010
1508–1509		6.7	
SP652.6		East Pass	7327
1513		0.7	
S653.3		Baldwin Yard	
		2.5	
S655.8		Baldwin	
1514		22.6	
S678.4		Starke	
1518		1.9	
S680.1		Newman	
1518		6.0	
S685.1		Hampton	
1519–1520		4.9	
S690.0		Waldo	10,290
1522–1523		6.6	
S696.6		Orange Height	10,273
1524–1525		6.7	
S703.3		Hawthorne	10,214
1526–1527		7.0	
S712.3		Lochloosa	10,228
1529–1529		7.5	
S719.8		Sparr	11,708
1530–1531		15.5	
S735.3		Ocala	S10,119
1530–1534		6.2	N3869
S743.5		Santos	10,218
1536–1537		6.5	
S752.0		Summerfield	10,152
1538–1539		7.4	
S759.9		N Wildwood	
1540		1.8	
S761.2		Wildwood	
1542			

126.1 MILES
BEAVER ST. TO WILDWOOD

13.1 MAXIMUM AUTHORIZED SPEED

Table 4. Maximum Authorized Speed

Between Location/Mile Post	MPH
A506.0, and A638.7	79
A638.7 and A642.5	40

53.1 MAXIMUM AUTHORIZED SPEED

Table 38. Maximum Authorized Speed

Between Location/Mile Post	MPH
Jacksonville and SP635.2	40
SP635.2 and Wildwood	79

53.2 SPEED RESTRICTIONS

Bold MPH denotes city ordinance.

Table 39. Speed Restrictions

Between Location/Mile Post	Psgr. MPH	Other MPH
SP635.0 (A642.5) and SP635.3 (Honeymoon Wye)	15	10
SP635.3 and SP635.5	30	30
SP635.5 and SP639.1	—	45
Beaver Street Tower-Diverging Moves	15	15
SP652.4 and SP653.0	30	30
S653.0 and S653.9	70	—
S670.8 and S672.1	—	60
S678.4 and S679.0	45	45
S690.0 and S690.2	45	45
S690.2 and S690.6	45	45
S704.4 and S705.4	45	45
S709.5 and S710.7	75	—
S731.1 and S731.7	60	60
S731.7 and S733.9	70	60
S733.9 and S734.7	60	60
S734.7 and S736.2	30	30
S736.2 and S740.8	55	55
S746.7 and S747.5	40	40
S747.5 and S750.8	70	—
S760.2 and S760.6	65	60
S760.6 and S761.2	20	20

Table 39. Speed Restrictions

Between Location/Mile Post	Psgr. MPH	Other MPH
Signaled Sidings at Whitehouse, Baldwin, Orange Height, Hawthorne, Sparr, Ocala (Southward Siding), Santos	25	25

EXAMPLE OF SUMMARY SHEET

EXHIBIT 2

TRIP REPORT

Date 2-5-96

Train 91 Engs. 401-263

Rider JLL

Consist 9 CARS

SCHEDULE	ACTUAL	STATION	SCHED. TIME	ELAPSED TIME	DWELL	DELAYS	PURE-RUNNING TIME	RECOV. TIME
635 Am		Jacksonville						
734 Am		Waldo	59					
819 Am		Ocala	45					
848 Am		Wildwood	29					
926 Am		Dade City	38					
1016 Am		Winter Haven	50					
1057 Am		Sebring	41					
1132 Am		Okeechobee	35					
1235 Pm		West Palm Beach	63					
1256 Pm		Delray Beach	21					
115 Pm		Deerfield Beach	19					
133 Pm		Ft Lauderdale	18					

Equipment:

Each person can develop their own equipment kit to suit their own needs; however, certain basic items are essential. First, you need proper footwear, ear plugs, and safety glasses, and always remember that compliance with safety rules and operating rules is essential. For recording purposes you need a pad of paper, pens (at least two colors), a clipboard or something to hold the pad firm, a small flashlight, extra batteries, a calculator, and a reliable watch because you will need to record times to the nearest second. A digital watch makes life much easier, especially while bouncing on the engine in the middle of the night trying to discern whether the minute hand is at 32 or 33. A copy of a previous riding report can also be a valuable aid but is not essential. While a stop watch is recommended by some, you can generally rely on the engine crew to have one or to check the accuracy of the speedometer once you are on the road. You can only carry so much equipment conveniently. Finally, don't forget your headend permit. Crews should ask for it; however, you should always volunteer it.

Now, with this preparation, we are ready to board the engine.

Boarding the Engine:

Boarding the engine is a ritual. Remember, you are invading the sanctum sanctorum of the engine crew. They may eye you with suspicion and wonder "what that (expletive deleted) wants." Introduce yourself and advise the crew that you are doing a schedule check from A to Z and offer them your headend permit. It is important to break the ice at this point so they are comfortable with your presence and understand you are

not there to check their performance. They will ask you a standard line of test questions such as:

1. What do you do for the railroad?
2. How long have you worked for the railroad?
3. What railroad did you work for before you came to Amtrak?
4. Have you ever been on an engine before?
5. Have you ever been over this line before?

The last question is a good one because, if the answer is no, they are most likely prepared to give you an operational guided tour over their railroad.

There are also some key points or questions you want to discuss with them such as:

1. How is the schedule over your segment? This is a good ice breaker as it indicates you are interested in their opinion and you can usually get some good information from them. Some engineers can give you precise information on the operation; others will give you important tips or have recommendations that can improve the schedules. Their recommendations are important.

2. Ask them not to advise the dispatcher that you are there because you want to see what they have to put up with on a normal day. Crews generally appreciate and honor this.[1]

3. Request of them that since this a schedule check, they should run as close to the speed limit as they can. This always results in the same answer, "We always do." But in actuality they do not always do that. Your presence may cause them to run 3 mph under the speed limit or perhaps they do this on a regular basis. In any event this destroys the integrity of the schedule check and your efforts and loss of sleep may be for naught. In like manner, speeding destroys the integrity of the check; however, this is seldom, if ever, a problem today.

4. Advise them that if they have to kill time on the road to advise you in advance of slowing down so you can capture the delay.

5. Finally, and most important of all, ask them to review with you all of their restrictions, bulletins and track warrants for work orders, slow orders and other restrictions. These must be recorded in the upper right-hand corner of your work sheet as you will have to watch for them and capture the delay as the schedule check progresses.

[1] As previously mentioned, there may be occasions, such as a joint riding program, where it is desirable for the dispatcher to be aware of the test.

All of the above should be completed before you are on the move, if possible. Once you are on the move there are two key rules, as follows:

1. Conversation – Avoid idle conversation to the maximum extent possible. Don't volunteer any such conversation.

2. Call Signals -- Calling signals doesn't require much effort but it is a good sign to the crew that you are a professional. Most important, it is required by the rules.

Remember, it is perfectly proper while en route to ask questions pertaining to the operation such as: "What is your normal speed here?" or "Do you normally get an Approach Medium signal at this location?" or "Do we have authority to go through Smith's work limits?"

Questions such as "Are you going moose hunting again this year?" or "Do you think the Cubs are going to make it this time?" are superfluous and distracting and are not proper conversations on the headend.

Remember, when engine crews change, thank them for their hospitality and for the information provided. Also remember to brief the relieving crew on items 1 to 5 above.

What Are the En Route Tasks?

The key is to record the operation of the train so you can properly quantify delays or so you can reconstruct the trip at some later date. Depending upon the circumstances, you could even be called to testify from your notes at some future date before a panel or even in court. It is therefore necessary to develop your own style of shorthand. The key is having sufficient information to reconstruct the trip. Writing down the time and speed at every mile post is overkill and is not really necessary; however, more frequent records at first may help you in quantifying delays.

If we are measuring the running time between stations, why is it necessary to write down intermediate mile post times? The answer is that you don't unless the train is going to be delayed, which you cannot always anticipate. However, once a delay occurs you need that time and location to reconstruct the amount of delay.

So what kind of information do I record? There are a number of key elements to record; you can keep as busy as time permits. You must record the arrival and departure times at all stations and key checkpoints. For example, 21st Street Tower in Chicago is a junction between Amtrak and Conrail and the Illinois Central; therefore, the time at that point must always be recorded. Mile Posts are a good point because they represent a finite location that you can always relate to; however, you must always be on guard for equations such as MP 795 follows MP 793 (there is no 794) or where line changes have been made, for example, after MP 793 the next MP is 825. The times at

sidings may be checked at the siding switches or at the station sign. It is a good idea to show all trains met or passed and their locations. On congested lines noting the status of each siding, whether clear or occupied, is a good idea, and all signals that are displaying other than their "normal" indication should be recorded. In addition, where a speedometer is readily available, it is a good idea to record the speed at a mile post when accelerating or when the maximum speed cannot be maintained.

What if I lose my location, how can I tell where I am? Obviously the Mile Post is the best method; however, some Mile Posts are missing, obscured, or may be hard to find. Some carriers, such as the Union Pacific, mark 1/4, 1/2 and 3/4 miles with one, two or three rings around the C&S poles. Beware of signal numbers because the last number is normally not related to tenths of a mile. For example, Signal 962-1 is somewhere between MP 962 and 963 but the 1 may indicate it is a Westward signal, or that it governs Track 1, not that it is located at MP 962.1. Do not try to use signal numbers to measure distances. Numbered control points are generally in relation to mile posts but do not relate to specific mile posts unless the location is identified in the timetable. Finally, if you don't know your precise location, ask the engineer, who will know.

A sample of a worksheet is shown as Exhibit 3. As delays are quantified on the worksheet, they should be circled with a pen of a different color or highlighted with a marking pen, so they can be easily identified. The worksheet becomes the underlying

document for the Summary Sheet (Trip Report). You will be surprised at the amount of information that can be recorded by being diligent and observant in making your notes.

Remember, engineers are professionals and generally take pride in their work. Their input can be valuable. Their estimation of delay is not always accurate and is generally not precise enough for this study, but it can be used as a reality check against your more precise calculations.

EXAMPLE OF WORK SHEET — EXHIBIT 3

No. 91 2-5-96 2 F40s 9 CARS JZL Weather Clear, 61° (Below Freezing)
Engs 401, 263

No. 81 Arr Jax 7:18:38 Left 7:49:55

No. 91 doubled to train 8:00:05
Wait to complete working mail
Air test 8:10:44 Rls. 8:12:57
(Blue flag down 8:16:44)

Left JAX	8:17:50
Beaver St.	8:24:45
W. End Honeymoon Wye	8:25:47
Stop	8:26:33 DBHB Indication
	8:30:43 Head Coach
Mp 638	8:34:28 (4.3' Inspn)
Mp 641	8:34:43
Mp 650	8:43:28
Baldwin	8:45:34
Mp 660	8:52:44 Mt. Local 2317N
Mp 670	8:57:47
Mp 676	9:04:17 Approach Signal
Mp 679	9:07:28
Mp 680	9:09:35-43 End of DT
Stop + Proceed at Rest. Speed	
Mp 681	9:13:23 To MP 682
Mp 682	9:17:09 (Signal 7.7')
Clear Sig. 682.5	9:19:19
Mp 690	(4.4' Signal)
Waldo s	9:28:32
	9:32:20
Mp 692	9:34:52
Mp 695	9:37:14 (3.2' S/O)
Mp 700	9:41:16
stop	9:44:40 Stop for Inspn.
	9:50:44 HBD did not report
Mp 704	9:51:29 (7.5' Inspn)
Mp 713	9:59:21
Mp 715	10:00:50 (4.5' S/O)
Mp 720	10:08:59

RESTRICTIONS

MP 682.4-690.7	0900 L. Work order
Mp 682.4-682.5	30 MPH
Mp 683.9-684.1	30 MPH
Mp 688.5-686.6	30 MPH
Mp 695.5-696.6	60 MPH
Mp 704.5-718.7	0830 L. Work Order
Mp 784.6-784.8	25 MPH
Mp 718.1-718.5	25 MPH
Mp 711.3-717.3	25 MPH
Mp 1003.4-1003.5	0900-Now L Work Order
Mp 1004.8-1007.7	Main Trk 0700 Work Order
Mp 1012.4-1018.5	0700 L. Work Order

Mp 721	10:09:51
Ocala s	10:22:23
	10:27:05
Mp 743	10:36:17
Mp 750	10:42:50
Mp 760	10:50:27
Wildwood s	10:53:48
	10:54:06 Must 7088N
Mp 765	10:59:21
Mp 770	11:04:20
Mp 771	11:05:13 App. Med Sig N. end of sdg - Slow Approach
Bushnell Fl.	
Extra 8490 Clearing	Stop Sig S. end of sdg. Cleared 11:08:52
Mp 777	11:12:10 (0.9' Sig.)
Mp 780	11:14:43
Mp 788	11:23:02 (2.0' S/O)
Mp 790	11:24:57
Mp 825	11:27:47
Mp 830	11:32:27
Dade City s	11:33:10
	11:33:34 (2.1 Signal)
N. end Stokes Y125	Not in Clear X4310

Remember, you started the Summary Sheet (Trip Report) before you left. the Summary Sheet is where you break the schedule into the basic components. This is an important task since the Summary Sheet is the final document that goes into the files and will be used for future schedule evaluation. The Trip Report should be completed (at least for your segment) if possible, while you are en route. First, it is much easier to record the data when it is fresh and you don't have to reconstruct the trip from your notes. Second, it is hard to find time to sit down and reconstruct the trip at a later date. An example of a completed trip report is included as Exhibit 4.

Here are a few points on completing the summary.

Actual Time at stations (and in some instances at key check points) is recorded in the second column from the left. It may be done in seconds, but the arithmetic is easier if it is converted to tenths of a minute. Schedule time is the number of minutes from the departure at one station to the next station, as shown in the current timetable. This column should be filled out in advance of the trip.

Elapsed Time is the number of minutes from the departure at the last station until departure at the next station or arrival at the final station. At en-route stations where both an arrival time and a departure time are shown, such stations are generally shown as a separate entry.

Dwell Time is the number of minutes standing at the station shown, and for second or third spots it is the amount oftime from the first stop until the last departure.

Delays are recorded directly from your Work Sheet from one station to the next.

Pure Running Time is elapsed time minus dwell time and delays. For example, on Exhibit 4, the elapsed time between Waldo and Ocala was 54.7 minutes. Pure Running Time was 54.7 less 4.7 minutes dwell and 12.2 minutes of delay or 37.8 minutes.

Recovery Time is the difference between Pure Running Time (PRT) plus Dwell Time and Schedule Time. This number may be negative or positive. Using the above example between Waldo and Ocala, the PRTwas 37.8 minutes plus a dwell of 4.7 minutes for a total of 42.5 minutes. Under schedule time you note that 45 minutes is allowed; therefore, the recovery time is a positive 2.5 minutes. The recovery time station to station is recorded in the upper left portion of the recovery time column, while the cumulative recovery time is recorded in the lower right portion. Again, looking at the same example, there is 2.5 minutes recovery time between Waldo and Ocala and 7.6 minutes recovery time between Jacksonville and Ocala. As a second example, look at Deerfield Beach to Ft. Lauderdale. There is a negative 3.6 minutes recovery time between those stations, but there is a positive 37.4 minute recovery time between Jacksonville and Ft. Lauderdale.

As a check on your arithmetic, the bottom lines on your Summary Sheet (Trip Report) should total, PRT plus Dwell Time plus Recovery Time should equal Schedule Time.

SUMMARY SHEET (Trip Report) EXHIBIT 4

Date 2-5-96

Rider JL

TRIP REPORT

Train 91 Engs. 401-263

Consist 9 Cars

SCHEDULE	ACTUAL	STATION	SCHED. TIME	ELAPSED TIME	DWELL	DELAYS	PURE-RUNNING TIME	RECOV. TIME
635Am	8:17:50	Jacksonville						
734Am	9:28:32 9:32:20	Waldo	59	74.5	3.8	4.3 Insp'd, 4.1 Sigs + S/L 7.7 Sigs,	50.1	5.1 / 5.1
819Am	10:22.4 10:27.1	Ocala	45	54.7	4.7	4.7 Slow order 7.5 Insp'd.	37.8	2.5 / 7.6
846Am	10:53.8 10:54.1	Wildwood	29	27.0	0.3	None	26.7	2.0 / 9.6
926Am	11:33.2 11:33.6	Dade City	38	39.5	0.4	Slow order 2.0 0.9 Signal	36.1	1.5 / 11.1
1016Am	12:18.1 12:20.8	Winter Haven	50	47.3	1.7	3.6 Signals	42.0	6.3 / 17.4
1057Am	12:55.1 12:58.5	Sebring	41	37.6	3.4	None	34.2	3.4 / 20.8
1132Am	1:40.3 1:40.6	Okeechobee	35	42.1	0.3	7.2 local freight	31.6	3.1 / 23.9
1235Pm	2:30.6 2:34.5	West Palm Beach	63	53.9	3.9	None	50.0	9.1 / 33.0
1256Pm	3:14.6 3:15.3	Delray Beach	21	40.8	0.7	WPB 7.6 Tri Rail Lk Worth 6.1 #98 Boynton S.C. #92	19.0	1.3 / 34.3
115Pm	3:31.8 3:34.6	Deerfield Beach	19	19.3	2.8	Yamato 7.0 Tri Rail	9.5	6.7 / 41.0
138Pm	3:58.0 4:01.0	Ft. Lauderdale	18	26.4	3.0	4.8 Slow order	18.6	-3.6 / 37.4
			418	=	25.0	+	355.6	37.4

Delays:

What constitutes a delay?

A broad definition is any condition which prevents the train from making normal speed between stations or to remain standing at a station in excess of the scheduled dwell time.

A delay begins when the engineer first sets the brake to slow down and continues until normal speed is resumed. This means that deceleration and acceleration are components of the delay – not just standing time or time lost running at the slower speed. The territory from the beginning to the end of the delay is the Delay Zone.

Station dwell time delays are the amount of time that the train is in the station in excess of its scheduled dwell time. This would include time for second or even third spots. The dwell time would be from the first stop until the last departure, but the delay would be the elapsed time less the allotted dwell time. Although the practice appears to be disappearing, some crews still may report all standing time as a delay. This is not correct, delay is only the amount of time in excess of the scheduled dwell time. Remember, dwell time for each station is built into the schedule. The actual amount of time the train is at a station should be recorded in the dwell time column of the Summary Sheet (Trip Report) even if it includes some delay.

Killing time is a delay. It comes in two forms. The first is operating slower than the authorized speed in order to kill time before arriving at some point too early. The second is the amount of time standing at a station once the work is completed waiting for the departure time. These must be recorded as delays.

The explanation of station delays should be based upon the function that caused the train to be late -- in other words, the last function or functions performed. If the passengers are loaded on time and there is a 3-minute delay to complete baggage and express work, the delay is baggage and express, not passenger loading. In like manner, if there is a 7-minute delay to water the diner, that is the delay, not mail and baggage.

En route delays are harder to quantify but should include all explanations as to why the train cannot operate at the maximum authorized speed. This would include slow orders, bulletin restrictions, work orders and all similar restrictions. Signals are also a significant cause of delay but are somewhat more complicated to identify.

When an Advance Approach or an Approach Medium signal is encountered, you need to capture the time at a finite point before the engineer sets the brake and the delay continues until a Clear signal is encountered and normal speed is resumed. Signal delays generally fall into two categories. The first is a signal failure where there is a malfunction of the system. This is always a signal delay. The second is where the signals are functioning as intended but are restrictive because there is a train ahead or

an opposing train is clearing. If the cause is known, these delays should be reported as a meet or following a train.

Following are some examples of signal occurrences.

1. Engineer says, "Dispatcher is asleep again," and slows for an Approach signal. He then keys in the dispatcher on the radio but before a conversation takes place, the signal mysteriously clears. This is a delay.

2. You ask the engineer, "Do you normally get a Restricting signal here?" He responds, "No, we normally get a Medium Clear." This is a delay, but the delay is the difference between what the Medium Clear running time would have been and the actual time caused by the Restricting signal. This is not necessarily the track speed.

3. You encounter an Approach Medium signal followed by 3 or 4 Approach signals, a Restricting signal, finally a Clear signal. This is a signal delay, but you do not have to quantify the delay at each signal, only beginning to endpoint for a total signal delay.

4. You receive an Approach Medium signal and you ask the engineer if he normally gets this indication. He responds, "Yes, we go to single track at Ajax." This is not a delay.

5. You receive a similar indication on a two main track rail line and the engineer says, "Yes, we have to crossover to be on the south side for the platform at Elyria." This also is not a delay.

6. A gray area is where two or more main track are in service and the dispatcher periodically crosses you over to go around traffic or to meet opposing traffic. This is a normal operating practice in multiple track territory with reverse signaling. Although it is a good practice to quantify this as a delay, the need to crossover must be considered in schedule construction. When two crossover moves can be attributed to a specific causal factor, such as operating around a freight train or a M of W gang, the justification for reporting it as a delay is much stronger.

What about an engine "not loading properly"?

An engine not loading properly effectively kills a schedule check. First, it is hard to quantify unless you know what the appropriate time should be. Second, if the unit is isolated, it destroys the power-to-weight ratio. A test with two units and 14 cars effectively becomes one unit and 16 cars if a unit is isolated. If this occurs, sit back and relax and watch the dwell times.

In addition to quantifying delays, what else am I looking for?

There are three basic areas you need to observe during the course of the riding program that are by-products or benefits gained by virtue of the fact that you are checking the schedule. The first is the quality of the existing schedule -- does it need to be restrung? Second is the quality of the train dispatching -- how well is it executed? The engineer will often give you valuable tips in this area. Third is the quality of the train handling. It is critical to the integrity of the test. Remember, you are not there to certify or test the engineer, but his handling of the train is critical to the integrity of the test. Operating above the speed limit is rare, below the speed limit is more common. Remember, operating below the speed limit is a delay. When this is observed you have two options -- either start recording the lost time as a delay[2] which is a continuing and difficult task, or, as an alternative, a firm request should be made to run at the speed limit; a second request is also appropriate if necessary. If this does not result in an improvement, then you categorize the engineer as a Type III engineer and make a note on the riding report accordingly. Engineers are professionals but they also vary somewhat in performance and fall into various general types. The following matrix may appear facetious but it is not. It ties back to the integrity of the schedule check as you will see later.

[2]Technically, operating above the speed limit is a negative delay and would have to be quantified and factored into the PRT to maintain the integrity of the check.

Engineers Profile:

Profile	Handles Train	Station Stops
Engineer Type I	Maintains speed limit for miles. Brakes for speed restrictions, kicks off brake at 45, right on 40 mph at beginning of 40 mph restriction, maintains speed through restriction, notches out on throttle as rear car leaves restriction.	Comes in at a good speed; advises spot is second light pole past elevator. Is stopping when conductor says one car; stops on mark.
Engineer Type II	Runs within 1 or 2 mph of speed limit, brakes a little early for restrictions, is 1 or 2 mph under restrictions but compensates for same.	Comes into station some-what slower but is well under control when conductor says three cars, stoos on spot.
Engineer Type III	Runs 3 mph below speed limit, brakes early for restrictions, kicks brake off for 40 mph restriction at 40 and promptly slows to 35 mph but accelerates to 37 mph.	Cornes into station slow, not sure where spot is, loses a little time at each station.
Engineer Type IV	Runs 3 mph below speed limit unless can get away with 5 under. Brakes early, kicks off brake at 40 for 40 mph restriction, at least 1/10 mile before restriction, promptly slows to 33 mph and jogs through restriction at 33, slow to respond at end of restriction.	Comes into station very slow, about 4 mph; nearly stalls or stalls as conductor calls three cars.

Type I and Type II engineers will probably represent 90% or even 95% of the trips. The quality of these schedule checks will be very good. Type III engineers represent only a small percentage of the trips, but those trips need to be clearly identified as "soft" times so they do not distort the good trips. Some "soft" times include station stops where time can be lost coming into a station slow looking for a spot. On those rare occasions when a Type IV engineer is encountered, throw the riding report away as it has no value and is likely to badly distort the data obtained from the good trips. A conscientious engineer can be a valuable team member. Listen to their advice; they can be a real help.

Calculating the Impact of Delays:

Before we get into the calculation of delays, consider the "3600 Rule." This is an important element in calculating speeds or delays, as follows:

- 3600 divided by Seconds Per Mile equals Miles Per Hour.
- 3600 divided by Miles Per Hour equals Seconds Per Mile.

Example: $\frac{3600}{\text{mph}}$ = Seconds Per Mile (or) $\frac{3600}{60 \text{ mph}}$ = 60 Seconds Per Mile.

$\frac{3600}{\text{spm}}$ = Miles Per Hour (or) $\frac{3600}{45 \text{ spm}}$ = 80 Miles Per Hour

This should be memorized and will become invaluable in calculating delays.

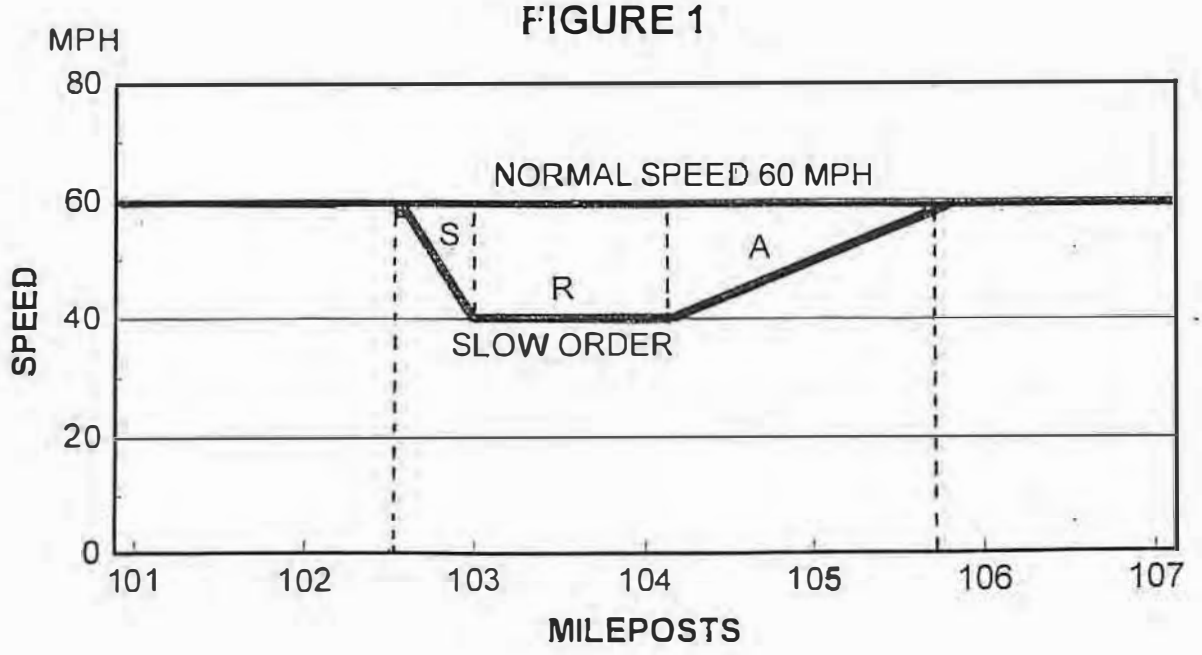
The amount of delay is the difference between theoretical running time, if the train was not delayed, and actual running time.

The delay starts when the engineer first sets the brake to reduce speed and continues until the maximum speed is restored.

In calculating authorized speeds do not overlook the length of the train, generally 0.1 to 0.3 miles, which must be added to each restriction before the train can accelerate. Some road crossing restrictions identified as "head end only" apply only until the crossing is occupied.

Consider the following basic example where a 40 mph slow order exists on trackage that is normally 60 mph: "Do not exceed 40 mph between MP 103 and MP 104."

FIGURE 1



The delay consists of three components:

1. Deceleration S
2. Restriction R
3. Acceleration A

The total delay (D) is equal to S + R + A

In the above Figure, S is the amount of time lost to slow down, R is the time lost due to the restriction and train length, and A is the time lost due to accelerating.

If the train passes MP 102 at 10:40:00, at the maximum speed of 60 mph, it would pass MP 106 at 10:44:00
Running Time: 4.0 minutes

Actual performance:	MP 102	at	10:40:00	60 mph
	MP 103	at	10:41:44	40 mph
	MP 104	at	10:43:14	40 mph
	MP 105	at	10:44:33	54 mph
	MP 106	at	10:45:35	60 mph

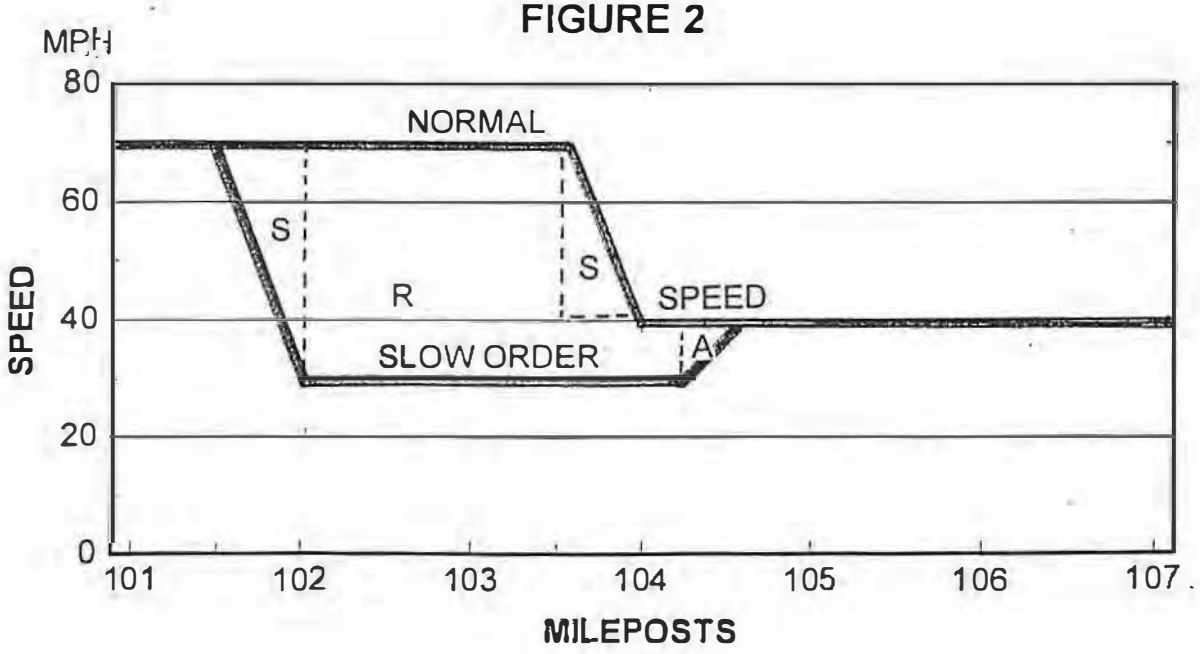
Running Time: 5.6 minutes
Actual Delay: 1.6 minutes

In measuring the delay you do not need the intermediate mile posts, only MP 102 and MP 106. What if you miss MP 106 and catch MP 107? Since the speed limit between MP 106 and MP 107 is 60 mph and the train is running at 60 mph, the amount of delay will not change if it is calculated to MP 107.

It should be noted that a delay cannot be accurately measured from the point where the engineer applies the brake without a finite point where the time can be recorded. The same is true when the maximum speed has been resumed.

In Figure 2 we explore calculations where the maximum authorized speed change within the slow order zone. The restriction is "Do not exceed 30 mph between MP102 and MP104."

FIGURE 2



In Figure 2 the normal speed changes within the delay zone. The train does not decelerate between MP 103 and MP 104 as it normally would but accelerates after it has left the restriction. This requires separate calculations to determine the delay.

Normal Speed

MP 101	11:10:00	70 mph
		Seconds
MP 101.0-103.5	70 mph	129
MP 103.5-104.0	70 to 40	33
MP 104.0-107.0	40 mph	270
Elapsed Time:		432"
or		7'12"

Slow Order Speed

MP 101	11:10:00	70 mph
MP 107	11:20:33	40 mph
Elapsed Time:		633"
or		10'33"

The delay is 3'21" or 3.3 minutes.

Now the question is, how do you calculate the delay?

There are two basic methodologies, remember D = S + R + A. Also remember that the amount of delay is the difference between normal speed and actual speed. While the above example is in its simplest form with one normal speed change within the delay zone, it is possible to have five or six normal speed changes and two or three slow order speeds in the same zone which thoroughly complicates the procedure.

In the above example there are two deceleration and one acceleration zones. Excluding these areas, the common area (R) for the restriction is only 1.5 miles in length. This is easy to calculate since it is the differential (or delta) between the two speeds. The difficult calculations are deceleration and acceleration.

The first methodology is using the Acceleration/Deceleration Tables which are included in Appendix I. This is analogous to using the tax tables to determine your income tax. The tables were developed some time ago from actual field observations and show the amount of delay resulting from decelerating and accelerating based upon F-40 locomotives and three different train consists. The tables are a reasonable guide for the new evaluators. Remember, however, the terrain over which the train is being operated may have a material effect upon acceleration characteristics and some impact upon braking distances. The tables are based upon level track and do not compensate for grades.

Over a period of time you may want to develop your own tables based upon different power-to-weight ratios from your own experience, but don't worry about that until you have significant experience.

The second methodology is Speed Averaging. Note the example above in Figure 2 which shows two tables -- normal speed and slow order speed. The normal speed table used speed averaging. Under this methodology deceleration and acceleration calculations are made by averaging the beginning and the final speed and then multiplying the average by the distance in order to determine the time required.

Example: If we assume the deceleration rate is 10 mph per 0.1 mile plus 0.1 mile for actuation, and the speed is to be reduced from 70 mph to 30 mph, it will

require one-half mile. The beginning speed is 70 mph; the final speed is 30 mph; and the average speed is 50 mph or 72 seconds per mile times 0.5 mile or 36 seconds. At 70 mph this same half mile would consume 25.7 or 26 seconds, so the time lost is actually 10 seconds.

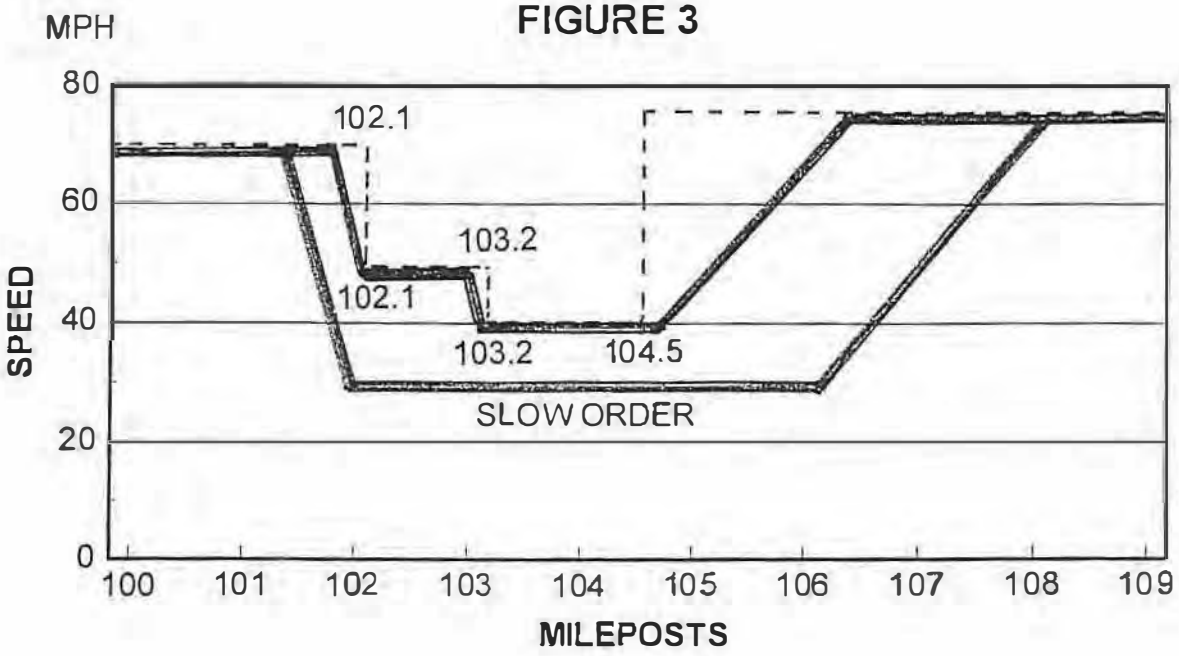
Acceleration requires longer distances and therefore more time is lost. If acceleration from 30 mph to 70 mph requires 1.5 miles, the average speed is again 50 mph but the distance is 3 times longer than deceleration. If you again multiply 72 seconds by 1.5 miles, the time to accelerate is 108 seconds. At 70 mph this same 1.5 miles would consume 77 seconds so the time lost is 31 seconds.

The above examples total 41 seconds lost; however, if you did the same calculation using the 2 + 9 speed table, the result would be 43 seconds lost. The table for a three-car train shows a loss of 27 seconds.

When you have to make comparative calculations, make a table such as the one shown, following Figure 3 below. Remember, deceleration must be completed before the restriction is entered, and the length of the train must be factored into the end of the restriction before acceleration can begin.

Let us look at a more detailed calculation where the normal speed changes within a speed restriction. This is not a more complicated process, it is just a longer process because of the speed changes. The methodology is the same.

FIGURE 3



Important Facts:

Time Table Speeds		Restriction	Actual Time
MP 100.0-102.1	70	Do not exceed 30 MPH	MP 101 10:01:30
MP 102.1-103.2	50	between MP 102 and MP 106	MP 108 10:12:59
MP 103.2-104.5	40		
MP 104.5-108.0	75		Equals 11 mins. 29 secs. or 689 seconds

The length of the train is 0.2 miles.

Q. How much time is lost due to the slow order?

A. It is the difference between what the normal running time would have been and what was the actual amount of time consumed.

Q. How do I calculate the delay?

A. You must calculate the amount of time that would have been consumed at normal speeds, as if the slow order did not exist. This is accomplished by establishing what the normal speeds would have been, including deceleration and acceleration. Note the following table. This is the kind of table you should make in your notes to calculate normal running times. It is the red line on Figure III.

Mile Posts	Segment Speed	Average* Speed	Seconds* per Mile	Distance* (Miles)	Time (Seconds)
101.0-101.8	70	70	51.4	0.8	41
101.8-102.1	70-50	60	60	0.3	18
102.1-103.0	50	50	72	0.9	65
103.0-103.2	50-40	45	80	0.2	16
103.2-104.7	40	40	90	1.5	135
104.7-106.2	40-75	57½	62.6	1.5	94
106.2-108.0	75	75	48	1.8	86
					455 Seconds

*** These columns may be deleted after the schedule evaluator gains experience.**

Q. Now that the calculation has been completed,. how do you determine the amount of delay.

A. The actual amount of time consumed was 689 seconds

The above calculation determined normal time 455 seconds

The delay was 234 seconds

This equates to 3.9 minutes delay

How accurate are these methodologies? Over years these methodologies have been compared, including Train Performance Calculator (TPC) computer runs. Comparisons have shown a variance in 100 miles of less than 30 seconds; or a field calculation and a TPC run comparison to the second over a 40-mile segment. If the calculations are carefully done, the results are unbelievably close.

Conclusion:

The calculation of delays and breaking a schedule into its basic components is not an exact science; however, it can be done with great accuracy. Armed with the knowledge contained in this paper, you should be able to properly evaluate a schedule. However, one critical element is experience. As you gain experience you should improve your proficiency and the task becomes easier. For those persons who are new riders, it is important to make a training trip with an experienced rider as soon as possible to put into practice what you have learned in the classroom. This should be followed with a second trip on your own. If the end results of the early rides are not good, throw them in the wastebasket just as you would for a trip with a Type IV engineer, so they do not distort the findings of other trips when it comes to schedule stringing. Finally, always remember that safety is of first importance, not only your personal safety but also the safety of other employees and the passengers. The operation of the train must be in conformity with the rules in order to maintain a safe operation. In closing, we would offer this advice: "Have a safe trip."

APPENDIX I

DECELERATION AND ACCELERATION

DELAY TABLES

Note: Distance (miles) shown in the following tables is distance required to accelerate, not to decelerate.

ACCELERATION & DECELERATION DELAYS
ONE F-40 LOCOMOTIVE & THREE CARS

Speed Increase	Distance (Miles)	Time (Sec.): Accel.	Decel.
0-20 =	.075	6	3
25 =	.15	10	5
30 =	.23	13	7
35 =	.3	16	8
40 =	.4	18	9
45 =	.5	20	10
50 =	.7	25	12
55 =	.9	29	14
60 =	1.1	33	16
65 =	1.4	38	19
70 =	1.7	43	21
75 =	2.1	49	24
80 =	2.5	55	27
10-20 =	0.5	2	1
25 =	.1	4	1
30 =	.18	6	3
35 =	.25	8	4
40 =	.35	10	5
45 =	.50	14	7
50 =	.65	17	8
55 =	.85	21	11
60 =	1.05	24	12
65 =	1.35	29	15
70 =	1.65	34	17
75 =	2.15	41	22
80 =	2.45	45	23
20-25 =	.05	1	0.5
30 =	.1	2	1
35 =	.2	3.5	2
40 =	.3	5	3
45 =	.4	7	4
50 =	.6	10	5
55 =	.8	14	7
60 =	1.0	17	8
65 =	1.3	21	11
70 =	1.6	26	13
75 =	2.0	31	16
80 =	2.4	36	18

Speed Increase	Distance (Miles)	Time (Sec.): Accel.	Decel.
30-35 =	.1	1	0.5
40 =	.2	2	1
45 =	.3	3	2
50 =	.5	5	3
55 =	.7	8	4
60 =	.9	11	6
65 =	1.2	14	7
70 =	1.5	18	9
75 =	1.9	22	11
80 =	23	26	13
35-40 =	.1	1	0.5
45 =	.2	2	1
50 =	.4	3	1.5
55 =	.6	5	3
60 =	.8	8	4
65 =	1.1	11	6
70 =	1.4	14	7
75 =	1.8	18	9
80 =	2.2	21	11
40-45 =	.1	1	0.5
50 =	.3	2	1
55 =	.5	3	2
60 =	.7	5	3
65 =	1.0	8	4
70 =	1.3	12	6
75 =	1.7	15	8
80 =	2.1	18	9
45-50 =	.2	1	0.5
55 =	.4	2	1
60 =	.6	3	2
65 =	.9	5	3
70 =	1.2	9	5
75 =	1.6	12	6
80 =	2.0	15	8

Speed Increase	Distance (Miles)	Time (Sec.): Accel.	Decel.
50-55 =	.2	1	0.5
60 =	.4	2	1
65 =	.7	3	2
70 =	1.0	6	3
75 =	1.4	9	5
80 =	1.8	12	6
55-60 =	.2	1	0.5
65 =	.5	2	1
70 =	.8	3	2
75 =	1.2	6	3
80 =	1.6	8	4
60-65 =	.3	1	0.5
70 =	.6	2	1
75 =	1.0	4	2
80 =	1.4	6	3
65-70 =	.3	1	0.5
75 =	.7	2	1
80 =	1.1	6	3
70-75 =	.4	1	0.5
80 =	.8	2	1
75-80 =	.4	1	0.5

TABLES SHOWING TIME LOST IN ACCELERATION & DECELERATION & DISTANCE TRAVELLED IN ACCELERATION

ACCELERATION & DECELERATION DELAYS
ONE F-40 LOCOMOTIVE & EIGHT PASSENGER CARS (AMFLEET)

Speed	Seconds for: Accel.	Decel.
0-10 =	6	3
15 =	9	5
20 =	12	6
25 =	18	9
30 =	24	12
35 =	27	14
40 =	32	16
45 =	37	19
50 =	43	22
55 =	52	26
60 =	62	31
10-15 =	3	2
20 =	5	3
25 =	9	5
30 =	13	7
35 =	17	9
40 =	20	10
45 =	25	13
50 =	31	16
55 =	40	20
60 =	48	24
15-20 =	2	1
25 =	5	3
30 =	8	4
35 =	11	6
40 =	15	8
45 =	19	10
50 =	25	13
55 =	33	17
60 =	41	21

Speed	Seconds for: Accel.	Decel.
20-25 =	2	1
30 =	4	2
35 =	7	4
40 =	9	5
45 =	13	7
50 =	19	10
55 =	25	13
60 =	33	17
25-30 =	2	1
35 =	3	2
40 =	5	3
45 =	9	5
50 =	13	7
55 =	20	10
60 =	27	14
30-35 =	2	1
40 =	5	3
45 =	9	5
50 =	13	7
55 =	16	8
60 =	23	12

Speed	Seconds for: Accel.	Decel.
35-40 =	2	1
45 =	4	2
50 =	7	4
55 =	11	6
60 =	16	8
40-45 =	1	1
50 =	4	2
55 =	8	4
60 =	12	6
45-50 =	1	1
55 =	4	2
60 =	7	4
50-55 =	1	1
60 =	3	2

ACCELERATION & DECELERATION DELAYS
TWO F-40's & NINE SUPERLINER CARS

Speed	Distance (Miles)	Time (Sec.): Accel.	Decel.
0-20 =	.1	9"	4"
25 =	.2	14"	7"
30 =	.3	18"	9"
35 =	.4	20"	10"
40 =	.5	24"	12"
45 =	.7	28"	14"
50 =	.9	32"	16"
55 =	1.2	39"	19"
60 =	1.6	47"	23"
65 =	2.0	55"	27"
70 =	2.5	65"	32"
75 =	3.1	74"	37"
80 =	3.8	84"	42"
85 =	4.6	95"	47"
90 =	5.5	110"	55"
10-20 =	.1	4"	2"
25 =	.2	7"	3"
30 =	.3	10"	5"
35 =	.4	13"	6"
40 =	.5	15"	7"
45 =	.7	19"	9"
50 =	.9	23"	11"
55 =	1.2	30"	15"
60 =	1.6	36"	18"
65 =	2.0	44"	22"
70 =	2.5	52"	26"
75 =	3.1	59"	29"
80 =	3.8	69"	34"
85 =	4.6	79"	39"
90 =	5.5	91"	45"
20-25 =	.1	1"	.5"
30 =	.2	3"	2"
35 =	.3	5"	2"
40 =	.4	7"	3"
45 =	.6	10"	5"
50 =	.8	14"	7"
55 =	1.1	14"	9"
60 =	1.5	25"	12"

Speed	Distance (Miles)	Time (Sec.): Accel.	Decel.
25-30 =	.1	1"	.5"
35 =	.2	2"	1"
40 =	.3	4"	2"
45 =	.5	7"	3"
50 =	.7	10"	5"
55 =	1.0	15"	8"
60 =	1.4	20"	10"
65 =	1.8	26"	13"
70 =	2.3	33"	16"
75 =	2.9	39"	19"
80 =	3.6	47"	23"
85 =	4.4	55"	27"
90 =	5.4	68"	34"
30-35 =	.2	2"	1"
40 =	.3	4"	2"
45 =	.5	7"	3"
50 =	.7	10"	5"
55 =	1.0	12"	6"
60 =	1.4	17"	8"
65 =	1.8	22"	11"
70 =	2.3	29"	14"
75 =	2.9	35"	17"
80 =	3.6	42"	21"
85 =	4.4	50"	25"
90 =	5.3	58"	29"
35-40 =	.2	1"	.5"
45 =	.4	3"	2"
50 =	.6	5"	2"
55 =	.9	8"	4"
60 =	1.3	12"	6"
65 =	1.7	18"	9"
70 =	2.2	24"	12"
75 =	2.8	29"	14"
80 =	3.5	35"	17"
85 =	4.3	43	21"
90 =	5.2	53"	26"

Speed	Distance (Miles)	Time (Sec.): Accel.	Decel.
45-50 =	.3	1"	0.5"
55 =	.5	3"	2"
60 =	.9	5"	2"
65 =	1.3	8"	4"
70 =	1.8	13"	6"
75 =	2.4	17"	8"
80 =	3.1	23"	11"
85 =	3.9	30"	15"
90 =	4.8	38"	19"
50-55 =	.3	1"	0.5"
60 =	.7	2"	1"
65 =	1.1	5"	2"
70 =	1.6	9"	4"
75 =	2.2	13"	6"
80 =	2.9	17"	8"
85 =	3.7	24"	12"
90 =	4.6	32	16"
55-60 =	.4	1"	0.5"
65 =	.8	1"	1"
70 =	1.3	6"	3"
75 =	1.9	9"	4"
80 =	2.6	13"	6"
85 =	3.4	18"	9"
90 =	4.3	25"	12"
60-65 =	.4	1"	0.5"
70 =	.9	3"	2"
75 =	1.5	5"	2"
80 =	2.2	9"	4"
85 =	3.0	13"	6"
90 =	3.0	20"	10"
65-70 =	.5	1"	0.5"
75 =	1.1	2"	1"
80 =	1.8	5"	2"
85 =	2.6	8"	4"
90 =	3.5	14"	7"

ACCELERATION & DECELERATION DELAYS
TWO F-40's & NINE SUPERLINER CARS

Speed	Distance (Miles)	Time (Sec.): Accel.	Decel.
20 - 65 =	1.9	32"	16"
70 =	2.4	39"	19"
75 =	3.0	46	23"
80 =	3.7	55"	27"
85 =	4.5	65"	32"
90 =	5.4	74"	37"

Speed	Distance (Miles)	Time (Sec.): Accel.	Decel.
40-45 =	.3	1"	0.5"
50 =	.5	3"	1"
55 =	.8	6"	3"
60 =	1.2	9"	4"
65 =	1.6	13"	6"
70 =	2.1	18"	9"
75 =	2.7	23"	11"
80 =	3.4	30"	15"
85 =	4.2	35"	17"
90 =	5.1	46 "	23"

Speed	Distance (Miles)	Time (Sec.): Accel.	Decel.
70-75 =	.6	1"	0.5"
80 =	1.3	2"	1"
85 =	2.1	5"	2"
90 =	3.0	9"	4"
75-80 =	.7	1"	0.5"
85 =	1.5	2"	1"
90 =	2.4	6"	3"

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EXHIBIT 68

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PASSENGER RAIL INVESTMENT AND IMPROVEMENT ACT OF 2008:

Accomplishments and Requirements that Deserve Consideration for Future Authorizing Legislation

Audit Report OIG-A-2014-003 | January 9, 2014



AMTRAK
NATIONAL RAILROAD
PASSENGER CORPORATION

Office of Inspector General

REPORT HIGHLIGHTS

Why We Did This Review

Section 221 of the 2008 Passenger Rail Investment and Improvement Act (PRIIA) requires the Department of Transportation Office of the Inspector General (DOT OIG) to assess Amtrak's progress implementing the Act's provisions within three years of enactment, and two years thereafter. With the approval of the Authorization Committees, we reached agreement with the DOT OIG that we would assess Amtrak's progress implementing provisions assigned to it. We issued our first audit report on October 26, 2011. This report provides the results of our second audit.

Our reporting objectives were to provide an assessment of (1) the corporation's progress implementing Amtrak-assigned PRIIA provisions by comparing the provision's requirements to the progress it has made to address them, and (2) the areas that present opportunities for savings and improved performance and service quality.

This report addresses the following Amtrak OIG Focus Area:

Train Operations and Business Management

For further information, contact Dave R. Warren, Assistant Inspector General for Audits (202) 906-4600

The full report is at www.amtrakoig.gov/reading-room

Passenger Rail Investment and Improvement Act of 2008: Accomplishments and Requirements that Deserve Consideration for Future Authorizing Legislation

Audit Report OIG-A-2014-003, January 9, 2014

What We Found

Amtrak has made significant progress implementing PRIIA by addressing 24 of the 29 assigned provisions. The corporation continues to work on incorporating eight categories of information that were not fully addressed in the last five-year financial plan, and on developing new agreements for allocating costs, revenues, and compensation for Northeast Corridor commuter facilities and services. Amtrak has not had to react to three provisions because the events that trigger a response have not yet occurred.

Three areas provide opportunities for savings and improved performance and service quality:

- Amtrak with Treasury's assistance has successfully completed restructuring its debt on 13 capital leases, saving about $173 million; however, the authorization for this provision expired in October 2010. Amtrak with Treasury's assistance could reduce its costs and federal subsidy requirements by about $393 million ($282 million in present-value dollars) from FY 2014 through FY 2019 if this provision is reauthorized.
- In July 2013, the U.S. Court of Appeals for the D.C. Circuit ruled that the performance metrics and standards developed under PRIIA were not enforceable. This ruling invalidated the metrics and standards, eliminating those that measure on-time performance and the requirement to incorporate metrics and standards into the operating agreements with host railroads. It also eliminated the authority for the metrics and standards to be unilaterally reissued absent new authorizing legislation.
- Additional time and resources are needed to fully implement the Northeast Corridor state of good repair plan, the Northeast Corridor infrastructure and operations improvements, and the compliance requirements of the Americans with Disabilities Act. Reauthorizing the reporting requirements in these three provisions would provide information to stakeholders to help make informed decisions to execute these long-term efforts.

We recommend that Amtrak fully address the requirements for the annual five-year financial plan. Congress may want to consider three areas that present opportunities for savings and improved performance and service quality in future authorization legislation. These areas include the provisions related to early buyout options for capital leases, performance metrics and standards, and reporting for plans that require additional time to complete.

Agency Corrective Actions

In commenting on a draft of our report, Amtrak agreed with our recommendation.

AMTRAK
NATIONAL RAILROAD
PASSENGER CORPORATION

The Inspector General

Memorandum

To: Joseph Boardman, President and CEO

From: Ted Alves, Inspector General

Date: January 9, 2014

Subject: *Passenger Rail Investment and Improvement Act of 2008: Accomplishments and Requirements that Deserve Consideration for Future Authorizing Legislation* (Audit Report OIG-A-2014-003)

This report provides the results of our audit of Amtrak's progress implementing the provisions of the 2008 Passenger Rail Investment and Improvement Act (PRIIA). Section 221 of the Act requires the Department of Transportation (DOT) Office of the Inspector General (OIG) to assess the progress of Amtrak and the Federal Railroad Administration (FRA) implementing the Act's provisions within three years of PRIIA's enactment, and two years thereafter. With the approval of the Senate and House Authorization Committees, we reached agreement with the DOT OIG that Amtrak OIG would assess the corporation's progress and the DOT OIG would address FRA's progress implementing PRIIA provisions. We issued our first audit report on October 26, 2011.[1] In keeping with the arrangement, this report provides the results of our second audit.

We initiated this audit in April 2013. Our reporting objectives were to provide an assessment of (1) the corporation's progress implementing Amtrak-assigned PRIIA provisions by comparing the provision's requirements to the progress it has made to address them, and (2) the areas that present opportunities for savings and improved performance and service quality. For a discussion of our scope and methodology, see Appendix I.

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[1] *Passenger Rail Investment and Improvement Act of 2008: Amtrak Has Made Good Progress, but Continued Commitment Needed to Fully Address Provisions* (Report No. OIG-A-2012-001, October 26, 2011).

AMTRAK ADDRESSED MOST PROVISIONS AND CONTINUES TO WORK ON TWO; THREE NOT YET REQUIRED TO ACT

The corporation has made good progress meeting the Act's provisions, which is a significant accomplishment given the magnitude of the issues:

- Amtrak addressed or responded to 24 of the 29 provisions assigned to it. For example, the corporation issued performance improvement plans for its long-distance routes and, with the assistance of DOT and the Department of the Treasury (Treasury), restructured some of its capital leases, saving $173 million ($115 million in present-value dollars).

- Amtrak continues to work on responding to two provisions. First, Section 204, *Development of Five-Year Financial Plan*, requires the corporation to address at least 16 categories of information, including projected revenues and expenditures and projected ridership, in its annual five-year financial plan. The corporation has issued all of the required annual five-year financial plans. However, the five-year financial plan for fiscal year (FY) 2013 through FY 2017 did not fully address eight data categories—expenditure forecasts for non-passenger operations; projected capital and operating requirements, ridership, and revenue for any new passenger service operations or service expansions; assessments of the corporation's ability to efficiently recruit, retain, and manage its workforce; annual cash flow forecasts; projected operating ratio, cash operating loss, and cash operating loss per passenger on a route, business line, and corporate basis; prior fiscal year and projected specific costs and savings estimates resulting from reform initiatives; projected labor productivity statistics on a route, business line, and corporate basis; and prior fiscal year and projected equipment reliability statistics.

- Second, the corporation is a member of the Northeast Corridor Infrastructure and Operations Advisory Commission, which continues to develop and implement a methodology for allocating costs, revenues, and compensation required by Section 212, *Northeast Corridor Infrastructure and Operations Improvements*. Within 2 years of PRIIA enactment, the Commission is to develop a standardized formula for determining and allocating costs, revenues, and compensation for Northeast Corridor commuter rail passenger transportation. This section also requires Amtrak and public authorities providing commuter

rail passenger transportation on the Northeast Corridor to implement new agreements for usage of facilities or services based on this standardized formula. Further, if the entities fail to implement such new agreements in accordance with the timetable, the Commission shall petition the Surface Transportation Board to determine the appropriate compensation amounts for such services. The Vice President of Operations estimates that the development of the methodology will be completed in the summer of 2014, and implemented in October 2014.

- Amtrak has not had to react to three provisions because the events that trigger its response have not yet occurred. For example, no Amtrak-operated route has been eliminated under Section 215, *Employee Transition Assistance*, which is the precondition for the corporation to certify that it made a reasonable attempt to reassign affected employees.

For a detailed discussion of the corporation's progress implementing each provision, see Appendix II.

THREE AREAS THAT PROVIDE OPPORTUNITIES FOR SAVINGS AND IMPROVED PERFORMANCE AND SERVICE QUALITY

We identified three areas in the 2008 legislation that warrant consideration in future authorization legislation because they provide opportunities for savings and improved performance and service quality:

- provisions related to early buyout options for long-term debt and capital leases, providing the greatest opportunity for savings
- metrics and standards for improving and measuring the performance and service quality of intercity passenger rail service
- reporting requirements for programs that require additional time and resources to implement

These areas are discussed below.

Reauthorizing the Authority to Restructure More Long-Term Debt and Capital Leases Would Generate Savings (Section 205)

Exercising buyout options can significantly lower Amtrak's lease payment and debt service costs. Under PRIIA, Amtrak and Treasury have successfully completed restructuring Amtrak's debt on 13 capital leases. Their actions have saved about $173 million ($115 million in present-value dollars) from FY 2011 through FY 2013. Section 205, *Restructuring Long-Term Debt and Capital Leases*, authorized the Secretary of the Treasury—in consultation with the Secretary of Transportation and the corporation—to enter into negotiations with holders of Amtrak debt and repay that debt. However, the authorization for this section expired two years (October 16, 2010) after PRIIA enactment. If the corporation was able to exercise future early buyout options with Treasury's support, it could reduce its financing costs and federal subsidy requirements by about $393 million ($282 million in present-value dollars) from FY 2014 through FY 2019.[2]

Table 1 shows the breakout by fiscal year of the 13 capital leases that Treasury selected and that Amtrak restructured, which resulted in $173 million ($115 million in present-value dollars) in savings. Treasury selected leases whose buyout options could be exercised after the date of the signed memorandum of understanding by DOT and Treasury (October 15, 2010)[3] and before September 30, 2013. The corporation exercised approximately $427 million of the early buyouts and saved approximately $600 million in future payments, in effect saving approximately $173 million ($115 million in present-value dollars).

[2] Amtrak originally provided Treasury with a listing of 52 leases with early buyout options from FY 2010 through FY 2019. It has completed early buyouts of 13 leases from FY 2011 through FY 2013. For the remaining 39 leases, the corporation bought out six leases, leaving a balance of 33 leases.
[3] *Memorandum of Understanding between the Secretary of the Treasury and the Secretary of Transportation*, October 15, 2010, set forth the terms and conditions for the exercise of certain early buyout options on some leases entered into by Amtrak.

Table 1. Early Buyout of Capital Leases from FY 2011–FY 2013
(dollars in millions)

Fiscal year	Number of leases	Maturity value	Early buyout amounts	Estimated savings	Estimated savings (present value)[a]
2011	2	$75	$52	$23	$15
2012	6	364	265	99	63
2013	5	161	110	51	36
Total	**13**	**$600**	**$427**	**$173**	**$115**

[a] Present value is based on the dates of the early buyout options.
Note: Figures do not total due to rounding.
Source: OIG analysis of Amtrak data

As shown in Table 2, the corporation has 33 capital leases with early buyout options from FY 2014 through FY 2019. Restructuring these leases could result in savings of $393 million ($282 million in present-value dollars). To accomplish early buyout of these leases, $571 million would be required, but funding from Treasury to finance the buyouts will not be available for future buyout options because the authorization for this section expired two years (October 16, 2010) after the date of PRIIA enactment.

***Table 2. Capital Leases with Early Buyout Options from FY 2014–FY 2019* (dollars in millions)**

Fiscal year	Number of leases	Maturity value	Early buyout amounts	Estimated savings	Estimated savings (present value)[a]
2014	9	$304	$197	$108	$65
2015	3	17	10	7	5
2016	2	71	36	36	33
2017	8	230	138	92	68
2018	8	278	154	124	91
2019	3	64	36	28	21
Total	**33**	**$965**	**$571**	**$393**	**$282**

[a]Present value is based on the dates of the early buyout options.

Notes: Figures do not total due to rounding.

Amtrak is considering whether or not to exercise early buyouts of 20 leases eligible from FY 2016 through FY 2019 because the equipment may not be needed after their lease periods end.

Source: OIG analysis of Amtrak data.

To fund the FY 2014 early buyouts, the corporation has requested almost $200 million to exercise early buyouts of the nine leases as part of its FY 2014 federal capital grant request. If this funding is not provided, the corporation is also considering obtaining loans to exercise early buyouts of the nine leases eligible in FY 2014. Also, Congress could reauthorize the provision to give Treasury the authority to make agreements to restructure and pay the corporation's indebtedness, including leases.

Authorizing FRA to Develop and Issue New Metrics and Standards Is Key to Measuring and Improving Performance and Service Quality (Section 207)

Section 207, *Metrics and Standards*, required the corporation and FRA—in consultation with the Surface Transportation Board, host railroads, states, labor organizations, and rail passenger associations—to develop metrics and minimum standards for measuring and improving the performance and service quality of intercity passenger train service, including cost recovery and measures of on-time performance. This section is important because one of the underlining purposes of this section was to increase on-time

performance through the requirement that Amtrak incorporate those metrics and standards into its operating agreements with host railroads to the extent practicable. The corporation worked with FRA to develop the required metrics and standards, which became effective on May 12, 2010.

In July 2013, the U.S. Court of Appeals for the D.C. Circuit ruled that the performance metrics and standards developed under PRIIA were not enforceable.[4] This decision invalidated (1) the metrics and standards, including those that measure on-time performance of Amtrak trains operating on host railroad tracks, financial metrics (e.g., requiring continuous year-over-year improvement in percentage of short-term avoidable operating cost covered by passenger-related revenue); (2) the corollary requirement that Amtrak incorporate those metrics and standards into its operating agreements with host railroads to the extent practicable; and (3) likely, the quality or customer service metrics (e.g., requiring certain percentages of passengers reporting "very satisfied" with service). It also eliminated the authority for the metrics and standards to be unilaterally reissued if there is no new authorizing legislation.[5]

Although the court ruled that the metrics and standards were not enforceable, Amtrak continues to use a series of internally-developed metrics and performance targets to measure and track progress in accomplishing each of its strategic goals. Performance plans for employees at all levels of the corporation are tied to these metrics beginning with the executive committee and cascading throughout the corporation. This process is expected to help to ensure that all employees are contributing not only to their group or department, but also to the corporation's overall strategic goals. The metrics include:

- *financial and operating*—cost recovery, loss per passenger-mile, and passenger-miles per train-mile

[4] Representing the freight railroads, the Association of American Railroads had bought a lawsuit against DOT, the Secretary of Transportation, FRA, and the FRA Administrator that challenges the constitutionality of Section 207 and argued that the court should strike down Section 207. The Association contends that because regulating host freight railroads performance is a governmental function, it is unconstitutional to delegate to a private entity, Amtrak, the authority to participate in crafting those regulations.

[5] It should be noted that the government requested the court of appeals to rehear this appeal before all of the appellate judges (*en banc*), contending that Section 207 does not delegate to a private party regulatory authority having the force of law. On October 11, 2013, the court of appeals denied the government's petition for rehearing en banc.

- *on-time performance and train delays*—effective speed, endpoint on-time performance, all stations on-time performance, and host railroad and Amtrak train delays
- *customer satisfaction*—overall satisfaction, personnel, communications, on-board service, train station, and sleeping car experience

Reauthorizing the Reporting Requirements in Three Provisions Would Ensure Information for Congress and Other Stakeholders to Help Make Informed Decisions About Three Long-term Programs (Sections 211, 212, and 219)

Additional time and resources are needed to implement the Northeast Corridor state of good repair plan, Northeast Corridor infrastructure and operations improvements, and the Americans with Disabilities Act of 1990, as amended (ADA) compliance requirements at intercity rail stations. During their implementation, reauthorizing the reporting requirements would provide information for Congress and other stakeholders to help make informed decisions about these long-term programs. Some of the issues related to these provisions are:

- **Section 211, Northeast Corridor State-Of-Good-Repair Plan.** This provision requires the corporation—in consultation with the Secretary of Transportation, Washington D.C., and the states that make up the Northeast Corridor—to prepare a capital spending plan for projects required to return the Northeast Corridor main line to a state of good repair. The plan is to be updated at least annually. Amtrak reported that the state of good repair includes the costs to maintain assets within their useful lives or replace them if they exceed their useful life.[6] The corporation estimated that approximately $10.4 billion will be needed between FY 2009 and FY 2023 to return the Northeast Corridor infrastructure to a state of good repair and eliminate the infrastructure backlog of deferred investment. According to Amtrak's plan, if it fails to fund these projects or greatly extends the timeline, the total cost of obtaining a state of good repair

[6] On July 25, 2008, the Secretary of Transportation defined the state of good repair as "A condition in which the existing physical assets, both individually and as a system, (a) are functioning as designed within their useful lives and (b) are sustained through regular maintenance and replacement programs; state of good repair represents just one element of a comprehensive capital investment program that also addresses system capacity and performance."

will be significantly greater. Ordinary maintenance costs will rise and individual component renewals will become more frequent. Also, the corridor will suffer a decrease in the reliability of commuter and intercity passenger rail service.

However, the corporation has not received the necessary funding to fully implement the plan. Amtrak reported that recent funding has only allowed it to prevent the backlog from growing.[7] There has been inadequate funding to replace major assets, such as tunnels and bridges, that are beyond their designed life. This has resulted in choke points, rough track beds, and outdated signals, bridges, and electric traction infrastructure that continue to limit speeds within the Northeast Corridor. Therefore, further extensions are likely to the corporation's estimated completion date in the Northeast Corridor state of good repair plan.

Amtrak management believes that the annual state of good repair spend plan required under PRIIA should be incorporated within a broader comprehensive capital investment planning framework. That framework would address state of good repair and growth needs on the corridor for Amtrak, as well as, the eight commuter agencies that rely on the Northeast Corridor. Because the corridor is currently at or reaching its capacity limits on many segments, they believe capital investment plans designed to achieve a state of good repair and accommodate reasonable forecasts of future growth, are the most cost effective in the long-term. They also noted this would help to minimize disruption to existing services during construction, a critically important consideration on a rail line that is among the busiest in the world, handling more than 2,000 trains a day.

Amtrak management also stated that a comprehensive five-year plan, that includes state of good repair and growth needs, is currently being developed in cooperation with the Northeast Corridor Infrastructure and Operations Advisory Commission and its member agencies including DOT, Amtrak, and the northeast states. The Commission, created under PRIIA, is responsible for making recommendations to Congress on capital investment needs, and the comprehensive plan. The five year plan will include investment needs on non-Amtrak owned portions of the corridor in New York and Connecticut, and will form the basis for recommendations to Congress. Preliminary estimates, that will

[7] *Amtrak's Fiscal Years 2013 – 2017 Five Year Plan*, May 2013.

be further refined by upcoming state of good repair assessments and five-year capital planning process, suggest that the complete costs of efforts, including normalized replacement, programmatic backlog and major project backlog amounts, will significantly exceed the 2011 estimate.

- **Section 212, Northeast Corridor Infrastructure and Operations Improvements.** This provision requires the corporation to issue a report detailing the infrastructure and equipment improvements necessary to provide regular high-speed service between Washington D.C. and New York City; and between Boston, Massachusetts, and New York City. In 2009, the corporation reported that achieving significantly reduced trip times on the Northeast Corridor has become increasingly difficult because of a combination of factors, including the continuing backlog of deferred investment, growing demand and increased utilization of the corridor leading to significant capacity constraints, and limitations of existing equipment.[8] The corporation also reported a listing of projects and an order of magnitude estimate of costs from FY 2010 through FY 2023.

  However, according to Amtrak's report, funding has not been sufficient to achieve these trip time goals for the corridor. The corporation also reported that continued reliance on annual appropriations to fund the Northeast Corridor capital program will continue to frustrate efforts to meet trip time goals for the corridor. Other significant challenges to meeting the goals include coordinating among numerous owners, operators, and other stakeholders; and developing and apportioning sufficient financial resources to improve the infrastructure and sustain growth.

- **Section 219, Study of Compliance Requirements at Existing Intercity Rail Stations**. This provision requires the corporation, in consultation with station owners and other railroads, to issue an evaluation of the improvements necessary to ensure that the stations it serves comply with ADA. The evaluation is to include a detailed plan and schedule for bringing all applicable stations into compliance, along with recommendations for funding the necessary improvements. The corporation reported to Congress on its progress to comply

[8] Amtrak, *Interim Assessment of Achieving Improved Trip Times on the Northeast Corridor—PRIIA Section 212 (d)*, October 21, 2009.

with ADA in February 2009, and updated its evaluation in October 2010, August 2011, May 2012, August 2012, December 2012, and October 2013.

In September 2011, we reported that the October 2010 plan update refocused the corporation's ADA compliance program.[9] First, while the February 2009 plan focused on both ADA compliance and "state of good repair" work, the plan update focused solely on ADA compliance work. Second, the 2009 plan focused on all Amtrak served stations that were required to be ADA-compliant, while the plan update initially focuses efforts on the stations for which the corporation has sole responsibility but are not fully ADA-compliant, and then the stations at which the corporation shares responsibility and also are not fully compliant. Third, the October 2010 update did not include an estimate of the funding required to achieve compliance by Amtrak's goal date.

In its 2011 update,[10] the corporation reported that it will work to achieve the Act's compliance, at all stations for which it has responsibility, by the end of FY 2015. It also noted that progress has been slower than anticipated because of the challenges associated with management of a program of this size and complexity. Further, Amtrak expects that coordination with and cooperation from other entities who own the stations or land will continue to be a major challenge.

In 2012,[11] the corporation reported that this effort was a large, multi-year undertaking that will require significant financial resources and staff time. The corporation reported to Congress that additional, substantial changes would be required at numerous stations because of the DOT's boarding rule issued in

[9] *Americans with Disabilities Act: Leadership Needed to Help Ensure That Stations Served By Amtrak Are Compliant* (Report No. 109–2010, September 29, 2011).
[10] Amtrak, *Intercity Rail Stations Served by Amtrak: An Update on Accessibility and Compliance with the Americans With Disabilities Act of 1990*, August 2011.
[11] Amtrak, *Update to Congress on Amtrak Accessible Stations Development Program*, August 7, 2012.

September 2011.[12] These changes will expand the necessary scope of work at many stations. As a result, implementing the compliance requirements will take longer and cost more to complete than initially proposed. The extent to which the rule will lengthen the program and increase its costs is unclear. According to Amtrak, further refinements to the corporation's evaluations of the compliance requirements of ADA are likely. We are conducting a follow-up audit of the issues identified in the 2011 report.

RECOMMENDATION

To complete the efforts to improve financial reporting based on Section 204, we recommend that the President and Chief Executive Officer direct the departments responsible for developing annual five-year financial plans to fully address the 16 information categories required by PRIIA, including

- expenditure forecasts for non-passenger operations
- projected capital and operating requirements, ridership, and revenue for any new passenger service operations or service expansions—the new Richmond/Norfolk segment
- assessments of the corporation's ability to efficiently recruit, retain, and manage its workforce
- annual cash flow forecasts

[12] See 76 FR 57924 (September 19, 2011). In summary, the regulations provide: "The Department is amending its Americans with Disabilities Act (ADA) regulations to require intercity, commuter, and high-speed passenger railroads to ensure, at new and altered station platforms, that passengers with disabilities can get on and off any accessible car of the train. Passenger railroads must provide level-entry boarding at new or altered stations in which no track passing through the station and adjacent to platforms is shared with existing freight rail operations. For new or altered stations in which track passing through the station and adjacent to platforms is shared with existing freight rail operations, passenger railroads will be able to choose among a variety of means to meet a performance standard to ensure that passengers with disabilities can access each accessible train car that other passengers can board at the station."

- projected operating ratio, cash operating loss, and cash operating loss per passenger on a route, business line, and corporate basis
- prior fiscal year and projected specific costs and savings estimates resulting from reform initiatives
- projected labor productivity statistics on a route, business line, and corporate basis
- prior fiscal year and projected equipment reliability statistics

MATTERS FOR CONGRESSIONAL CONSIDERATION

Since Congress is in the process of developing new passenger rail authorization legislation, it may want to consider the following actions given the potential to generate savings and improve Amtrak's performance and service quality:

- reauthorizing the Secretary of the Treasury, in consultation with the Secretary of Transportation and Amtrak, to enter into negotiations with the holders of Amtrak debt, including leases, for the purpose of restructuring and repaying that debt
- authorizing FRA, in consultation with the Surface Transportation Board, Amtrak, rail carriers over whose rail lines Amtrak trains operate, states, Amtrak employees, nonprofit employee organizations representing Amtrak employees, and groups representing passengers, to develop new or improve existing metrics and minimum standards for measuring the performance and service quality of intercity passenger train operations
- reauthorizing the reporting requirements for three key long-term programs—the Northeast Corridor state of good repair, the Northeast Corridor infrastructure and operations improvements, and the ADA compliance requirements at intercity rail stations

MANAGEMENT COMMENTS AND OIG ANALYSIS

In commenting on a draft of our report, the President and Chief Executive Officer agreed with our recommendation to fully address the 16 information categories

required under section 204 of PRIIA and stated that it would ensure that the corporation's next annual five-year financial plan would include the required information. He also agreed that the three areas we identified as matters for congressional consideration would have a positive impact on the corporation's ability to improve service and stated that the actions like those described would impact the corporation's financial bottom line and customer satisfaction, which are pillars in its strategic vision.

For a copy of Amtrak's comments, see Appendix III. Management also provided technical comments, which we addressed as appropriate in this report.

Appendix I

SCOPE AND METHODOLOGY

This report provides the results of our audit to examine (1) the corporation's progress implementing Amtrak-assigned PRIIA provisions by comparing the provision's requirements to the progress it has made to address them, and (2) the areas that present opportunities for savings and improved performance and service quality. We issued our first audit report on these areas in October 2011,[13] and this report provides the results of our second audit. We conducted this audit work from April through November 2013 in Washington D.C. and Philadelphia, Pennsylvania.

To determine the status of Amtrak actions to implement individual provisions, we (1) compared the corporation's deliverables and responses with the Act's requirements, deadlines, and suggestions; and (2) discussed our observations with responsible officials across most departments within the corporation, including Finance, Operations, Northeast Corridor Infrastructure and Investment Development, Transportation, Engineering, Policy and Development, Marketing, General Counsel, and Government Affairs and Corporate Communications. During these discussions, we did the following:

- validated instances in which Amtrak had not fully addressed PRIIA provisions
- identified the reasons why the corporation missed a deadline or only partially addressed a requirement
- resolved any uncertainties and outstanding questions

To evaluate areas that present opportunities for savings and improved performance and service quality, we reviewed the corporation's actions to implement five provisions:

- Section 205, *Restructuring Long-Term Debt and Capital Leases*
- Section 207, *Metrics and Standards*
- Section 211, *Northeast Corridor State of Good Repair Plan*
- Section 212, *Northeast Corridor Infrastructure and Operations Improvements*
- Section 219, *Study of Compliance Requirements at Existing Intercity Rail Stations*

[13] *Passenger Rail Investment and Improvement Act of 2008: Amtrak Has Made Good Progress, but Continued Commitment Needed to Fully Address Provisions* (Report No. OIG-A-2012-001, October 26, 2011).

We judgmentally selected these provisions because they present opportunities for savings and improved performance and service quality that warrant consideration in future authorization legislation. To help us determine which PRIIA provisions to select for more detailed review, we relied on DOT OIG audit reports and our prior work.

For Section 205, *Restructuring Long-Term Debt and Capital Leases*, our methodology included determining the status of the 52 leases Amtrak identified to Treasury for potential early buyout from FY 2010 through 2019. We reviewed information on the 13 leases from FY 2011 through FY 2013 selected by Treasury for early buyout. For the remaining 39 leases, Amtrak provided information showing that it bought out 6 leases, leaving 33 eligible for early buyouts from FY 2014 through FY 2019. We analyzed the lease data the corporation provided to Treasury for these 33 leases, but were not selected for debt reduction. From these data, we identified the following for each lease:

- *maturity value*—the amount paid if the lease goes to maturity
- *buyout amount*—the amount needed to pay off the lease early
- *savings from paying off the lease early*—the difference between the maturity value and buyout amount

In addition, we evaluated the corporation's present-value savings calculations made using Treasury's methodology. Also, because the authorization for this section expired two years (October 16, 2010) after the date of PRIIA enactment, we solicited responses from the Acting Chief Financial Officer, Treasurer, and Senior Director of Corporate Finance on the options the corporation is considering to further reduce debt and realize savings. We did not, however, review or validate the business case used to support the leased equipment proposed acquisition.

For Section 207, *Metrics and Standards*, our methodology included reviewing the ruling of the U.S. Court of Appeals for the D.C. Circuit that the metrics and standards developed and promulgated jointly by the corporation and FRA under this provision are not enforceable.[14] We also discussed with the Managing Deputy General Counsel

[14] The Association of American Railroads had brought a lawsuit against DOT, the Secretary of Transportation, FRA, and the FRA Administrator that challenged the constitutionality of PRIIA Section 207, arguing that the requirements unlawfully delegate regulatory power to a private institution (Amtrak).

the effects of the ruling and options to address the potential impacts of the ruling on operations.

For Section 211, *Northeast Corridor State of Good Repair Plan*; Section 212, *Northeast Corridor Infrastructure and Operations Improvements*; and Section 219, *Study of Compliance Requirements at Existing Intercity Rail Stations,* our methodology included discussing the status of the programs authorized by each provision with officials of the Government Affairs and Corporate Communications office and of the Northeast Corridor Infrastructure and Investment Development office. We also reviewed and discussed with appropriate management officials the reporting requirements for each and how reauthorization measures could help ensure improvements in the affected programs.

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Internal Controls

In conducting this audit, we reviewed the corporation's internal controls related to the implementation of PRIIA by comparing its deliverables and responses with the Act's requirements, deadlines, and suggestions. Specifically, we identified and assessed internal or management controls, including procedures for monitoring and tracking the corporation's compliance with PRIIA provisions.

Computer-Processed Data

Several of the corporation's deliverables and responses to the Act's requirements are based on computer-processed budget, expenditure, and performance data. We did not validate the budget and financial data, but relied on the general and application review of financial systems performance that is a part of the financial statement audit performed by the corporation's external auditors. We did not validate the performance data, but relied on our prior audits of on-time performance invoices, which found that performance data were generally accurate and reliable when compared with source documents. We found sufficient assurance that we could rely on the computer-

processed data to accomplish our audit objectives. Given the focus of our work and the steps we took to verify the reliability of the computer-generated data used in our work, we concluded that the data are sufficiently reliable for the purposes of our objectives.

Prior Coverage

In conducting our analysis of issues, we reviewed and used information from the following audit reports:

- *Food and Beverage Service: Potential Opportunities to Reduce Losses*, Amtrak OIG (Report No. OIG-A-2014-001, October 31, 2013)

- *Annual Report on Amtrak's Budget and 5-Year Financial Plan*, DOT OIG (July 25, 2013)

- *Audit of Grant Agreement: Next Generation Equipment Committee Materially Complied with Terms of the Grant Agreement*, Amtrak OIG (Report No. OIG-A-2013-012, March 27, 2013)

- *Amtrak's New Cost Accounting System Is a Significant Improvement But Concerns Over Precision and Long Term Viability Remain*, DOT OIG (March 27, 2013)

- *Annual Financial Statement Audits: Observations for Improving Oversight of the Independent Public Accountant*, Amtrak OIG (Report No. OIG-A-2012-017, September 27, 2012)

- *American Recovery and Reinvestment Act: Some Questioned Invoice Charges and Minimal Benefit from Duplicative Invoice-Review Process*, Amtrak OIG (Report No. OIG-A-2012-021, September 21, 2012)

- *Food and Beverage Service: Initiatives to Help Reduce Direct Operating Losses Can Be Enhanced by Overall Plan*, Amtrak OIG (Report No. OIG-A-2012-020, September 7, 2012)

- *Analysis of the Causes of Amtrak Train Delays*, DOT OIG (July 10, 2012)

- *Passenger Rail Investment and Improvement Act of 2008: Amtrak Has Made Good Progress, but Continued Commitment Needed to Fully Address Provisions*, Amtrak OIG (Report No. OIG-A-2012-001, October 26, 2011)

- *Americans with Disabilities Act: Leadership Needed to Help Ensure That Stations Served by Amtrak Are Compliant*, Amtrak OIG (Report No. 109-210, September 29, 2011)

- *Progress and Opportunities in Amtrak's Implementation of the Passenger Rail Investment and Improvement Act of 2008*. Statement of Ted Alves, Inspector General, National Railroad Passenger Corporation, before the Subcommittee on Surface Transportation and Merchant Marine Infrastructure, Safety, and Security, Committee on Commerce, Science, and Transportation, United States Senate, September 14, 2011.

- *Food and Beverage Service: Further Actions Needed to Address Revenue Losses Due to Control Weaknesses and Gaps*, Amtrak OIG (Report No. E-11-03, June 23, 2011)

Appendix II

AMTRAK HAS MADE GOOD PROGRESS ADDRESSING PRIIA

This appendix discusses Amtrak's actions to address the 29 PRIIA provisions assigned to it. The corporation has addressed 24 provisions, continues to address 2 provisions, and has not reacted to 3 provisions because the events that trigger the response have not yet occurred.

The Corporation Has Addressed 24 Provisions

The requirements specified in the 24 provisions that the corporation has addressed range from such diverse topics as establishing an improved financial accounting system to producing technical specifications for the next generation of train equipment. The actions the corporation took to address these provisions are summarized in Table 3.

Table 3. Amtrak Has Addressed 24 Provisions

PRIIA Section	Title	Requirement	Action
202	***Amtrak Board of Directors***	PRIIA revised the composition of the corporation's Board of Directors to establish a nine-member board. No later than 60 days after the end of each fiscal year, the Board must report all travel and reimbursable business travel expenses for each member to specific congressional committees.	The corporation has reported the required annual travel and reimbursable business travel expenses for each Board member to specific congressional committees.
203	***Establishment of Improved Financial Accounting System***	Amtrak must implement a modern financial accounting and reporting system within three years of PRIIA's enactment. No later than 90 days after the end of each fiscal year through FY 2013, Amtrak must issue a comprehensive report that allocates all of its revenues and costs to each route, line of business, and major activity within each route and line of business activity.	The corporation's new financial accounting and reporting system became fully operational in May 2012, according to the Acting Chief Financial Officer. In March 2013, DOT OIG reported that the new cost accounting system allows the corporation to capture and report its financial performance by route, business line, and major activity—as required by PRIIA. It also reported some concerns related to timeliness and precision of reports. It also reported that the avoidable cost methodology FRA developed to determine the cost savings from an Amtrak route's

PRIIA Section	Title	Requirement	Action
			termination has limitations that would substantially reduce the value of the saving estimates. The OIG made four recommendations to FRA to improve Amtrak's financial performance reporting, including to evaluate alternatives for calculating avoidable costs. The corporation reports its revenues and costs on each of its routes, lines of business, and each major activity within each route in its annual five-year financial plan.
205	***Restructuring Long-Term Debt and Capital Leases***	The Secretary of the Treasury, in consultation with the Secretary of Transportation and the corporation, may make agreements to restructure the corporation's indebtedness. This authorization expired two years after PRIIA enactment. The corporation may not incur more debt after PRIIA enactment without the Secretary of Transportation's approval.	Amtrak and the Secretaries of the Treasury and Transportation signed an agreement to exercise early buyout options on 13 leases using Treasury funds—saving the corporation and the federal government approximately $173 million ($115 million in present-value dollars). Thirty-three additional leases have buyout options from FY 2014 through FY 2019; however, the authorization for this section expired two years (October 16, 2010) after PRIIA enactment. The corporation is exploring other options to finance the additional buyout opportunities. It has not incurred additional debt without prior approval from the Secretary of Transportation.
206	***Establishment of Grant Process***	The Secretary of Transportation has primary responsibility for the establishment of procedures for grant requests. The corporation is responsible for submitting grant requests consistent with the grant process to the Secretary of Transportation.	The corporation has complied with the newly established grant application process.
207	***Metrics and Standards***	Within 180 days after PRIIA's enactment, Amtrak and FRA—in consultation with the Surface Transportation Board, host railroads, states, the corporation's labor organizations, and rail passenger associations—must develop metrics and minimum standards for measuring the performance and service quality of intercity passenger train service. The metrics and standards must include	The FRA issued the required metrics and standards, effective May 12, 2010. On July 2, 2013, the U.S. Court of Appeals for the D.C. Circuit ruled that the metrics and standards developed under Section 207 were not enforceable. The practical effects of this decision are to invalidate the metrics and standards, and eliminate FRA's authority to

PRIIA Section	Title	Requirement	Action
		cost-recovery, on-time performance, ridership per train mile, onboard and station services, and the connectivity of routes. The section also requires Amtrak to incorporate these metrics and standards into its operating agreements with host railroads to the extent practicable. The corporation must provide reasonable access to FRA in order to enable it to carry out its duties under this provision, which include collecting the necessary data and publishing a quarterly report on the performance and service quality of intercity passenger train operations.	unilaterally reissue the metrics and standards without new authorizing legislation. The government requested that the court of appeals rehear this matter, before all of the appellate judges of the court. The court rejected the government's petition for rehearing.
209	***State-Supported Routes***	Within two years after PRIIA's enactment, the corporation—in consultation with DOT, relevant state governors, and Washington D.C. mayor—must develop and implement a nationwide standardized methodology for establishing and allocating operating and capital costs of intercity rail passenger service with affected states. The methodology must (1) ensure, within five years after PRIIA's enactment, equal treatment in the provision of like services of all states and groups of states, including Washington D.C.; and (2) allocate to each route the costs incurred only for that route and a proportionate share of costs incurred for the common benefit of more than one route.	The corporation worked with its state partners to develop a standardized cost-sharing methodology, and the Surface Transportation Board approved the methodology for implementation in March 2012. All affected states have signed a service agreement with the corporation to use the approved cost-sharing methodology.
210	***Long-Distance Routes***	Amtrak is required to annually evaluate and rank its long-distance routes according to their overall performance by the top-performing third of such routes, the second-best-performing third, and the worst-performing third. It must then develop and post on its website performance-improvement plans for its long-distance passenger routes and begin implementing those plans for the worst-performing routes in FY 2010, the second-best-performing routes in FY 2011, and the best-performing routes in FY 2012. The plans must address nine categories of information, including on-	The corporation completed the ranking of all of its 15 long-distance routes based on their performance during FY 2008 and issued plans for all 15 routes—the first five in September 2010, the second five in September 2011, and the final five in September 2012. Each of the plans addressed the required nine information categories.

PRIIA Section	Title	Requirement	Action
		time performance, the feasibility of restructuring service into connected corridor service, performance-related equipment changes and capital improvements, onboard amenities and service, and financial performance.	
211	***Northeast Corridor State-of-Good-Repair Plan***	Within six months of PRIIA's enactment, Amtrak—in consultation with the Secretary of Transportation, Washington D.C., and the states that make up the Northeast Corridor—must prepare a capital spending plan for projects required to return the Northeast Corridor main line to a state of good repair by the end of FY 2018. The spending plan must be consistent with the funding levels authorized by PRIIA. Also, the corporation must update the plan at least annually.	The corporation issued the required spending plan in April 2009 and has provided updates as part of its five-year plans for FYs 2012–2016 and FYs 2013–2017.
213	***Passenger Train Performance***	The Surface Transportation Board may initiate an investigation if the on-time performance of any intercity passenger train averages less than 80 percent for any two consecutive calendar quarters, or if the service quality of intercity passenger train operations fails to meet the minimum standards established under Section 207 for two consecutive calendar quarters. The Board is required to initiate an investigation upon the filing of a complaint by the corporation, an intercity passenger rail operator, a host railroad, or an entity for which the corporation operates intercity passenger rail service. The purpose of the investigation is to determine whether and to what extent delays or failure to achieve minimum standards are due to causes that could reasonably be addressed by the host railroad. The Board is also authorized to investigate whether delays or failures to achieve minimum standards are attributable to a host railroad's failure to provide preference, a statutory right that affords the corporation preference over freight transportation in using a rail line, junction, or crossing. The Board can award damages if it finds that the corporation's preference	The corporation hired additional employees to track on-time performance. Also, it developed a process to determine if and when to request an investigation by the Surface Transportation Board. The corporation presented a case to the Board against a freight railroad because it caused delays of passenger trains. Amtrak, the freight railroad, and the Board went to mediation and the parties agreed, per the freight railroad's suggestion, that they postpone the proceedings while the freight railroad proves it can operate within the 80 percent minimum standard.

PRIIA Section	Title	Requirement	Action
		rights are violated.	
216	***Special Passenger Trains***	The corporation is encouraged to increase the operation of special trains funded by, or in partnership with, private sector operators through competitive contracting to minimize the need for federal subsidies.	In August 2013, the corporation announced that the Autumn Express special train will operate through scenic and historical sites in Delaware, Maryland, and Pennsylvania in November. Due to overwhelming ticket sales, in September Amtrak added a second Autumn Express train to its November schedule. The Vice President of Operations stated that it was a unique venture for the corporation to test as a potential new source of revenue.
218	***General Amtrak Provisions***	The corporation may obtain services from the General Services Administration.	According to the Acting Chief Finance Officer, the corporation continues to work with the General Services Administration to use its vehicle and travel programs. No General Services Administration programs have been added since our prior PRIIA audit report in October 2011.
219	***Study of ADA Compliance Requirements at Existing Intercity Rail Stations***	In consultation with station owners and other railroads, the corporation must evaluate the improvements necessary to ensure that the stations it serves are accessible to and usable by individuals with disabilities, in compliance with ADA. The evaluation shall include a detailed plan and schedule for bringing all applicable stations into compliance by the Act's 2010 statutory deadline. The corporation must issue the evaluation by February 1, 2009, along with recommendations for funding the necessary improvements.	The corporation reported to Congress on its progress to comply with the Act in February 2009, and updated it in October 2010, August 2011, May 2012, August 2012, December 2012, and October 2013. Status reports were provided to Congress, although this was not required by PRIIA. The corporation reported that additional, substantial changes would be required at numerous stations because of the DOT level-boarding rule issued in September 2011. These changes will expand the necessary scope of work at many stations. As a result, implementing the Accessible Stations Development Plan will take longer and cost more to complete than initially proposed. The extent to which the rule will lengthen the program and increase its costs is still unclear.
222	***Onboard Service Improvements***	Within one year after the performance metrics and standards are established under Section 207, Amtrak must develop and implement a plan to	The corporation issued its *Amtrak On-Board Service Improvement Plan* to Congress on July 15, 2011, and begun implementation through

PRIIA Section	Title	Requirement	Action
		improve on-board service pursuant to the metrics and standards. The corporation must provide a report to specific congressional committees on the improvements in the plan and the timeline for implementing such improvements. The Act did not specify an issue date for the report.	initiatives to improve training and supervision of staff and change processes, procedures, and technologies to improve customer satisfaction.
223	***Incentive Pay***	The Board of Directors is encouraged to develop an incentive pay program for Amtrak management employees.	In November 2012, the Board of Directors approved a Total Rewards and Integrated Talent Management Strategy, which includes an incentive pay program. According to Amtrak, the program is modeled after industry best practices, including an integrated talent management program, short-term incentive plan, performance-based pay, health and wellness, and voluntary benefits, such as identity theft insurance and pet insurance.
224	***Passenger Rail Service Studies***	Within one year after PRIIA's enactment, the corporation must conduct studies of six prior and current routes to determine whether to reinstate passenger rail service or a station stop, expand service, or reduce ticket prices.	In October 2009, the corporation issued studies of six prior and current routes to determine whether to reinstate passenger rail service or a station stop, expand service, or reduce ticket prices.
226	***Plan for Restoration of Service***	Within nine months of PRIIA's enactment, the corporation must transmit to specific congressional committees a plan for restoring passenger rail service between New Orleans and Sanford, Florida. The plan must include an estimated timeline for restoring service, the associated costs, and any proposals for necessary legislation. The corporation must consult with representatives from selected states, railroad carriers, rail passengers, rail labor, and other entities as appropriate.	On July 16, 2009, the corporation issued the required plan, but has not taken any further action to restore passenger train service to the route.
301	***Capital Assistance for Intercity Passenger Rail Service***	The corporation may enter into a cooperative agreement with one or more states to participate in the Secretary of Transportation's grants to implement one or more ranked capital projects in states' rail plans.	Although the corporation did not enter into cooperative agreements with states, it provided advice and assistance to states in their efforts to obtain capital assistance and grants for intercity passenger rail service.
302	***Congestion Grants***	In cooperation with states, the corporation may participate in the	Although the corporation did not participate, it provided advice and

PRIIA Section	Title	Requirement	Action
		Secretary of Transportation's grants to states to finance the capital costs of facilities, infrastructure, and equipment needed to reduce congestion or facilitate ridership growth.	assistance to states in their efforts to obtain congestion grants.
304	***Tunnel Project***	Working with Amtrak; the Surface Transportation Board; Baltimore, Maryland; and rail operators, FRA must select and approve a new rail tunnel alignment in Baltimore no later than September 30, 2013. The new alignment should permit an increase in train speed and service reliability, and ensure completion of the environmental review process.	Amtrak selected and obtained initial approval from the stakeholders on a new rail tunnel alignment in Baltimore. In April 2011, FRA and Maryland executed a grant agreement to obligate $60 million for the completion of the preliminary engineering and environmental reviews for the tunnel project. The corporation awarded a contract for the preliminary engineering study on November 1, 2013. The Senior Contracting Officer, Procurement and Materials Management, and the Project Director expect to award the contract for the environmental study in early 2014.
305	***Next-Generation Corridor Train Equipment Pool***	Within 180 days after PRIIA's enactment, the corporation must establish a Next-Generation Corridor Equipment Pool Committee—with representatives from Amtrak, FRA, host freight railroads, passenger railroad equipment manufacturers, interested states, and other passenger rail operators. The committee is to design, develop specifications for, and procure standardized next-generation corridor equipment.	The corporation established the Next-Generation Corridor Equipment Pool Committee and produced the technical specifications for the next-generation train equipment, including the approved specifications for bi-level cars.
306	***Rail Cooperative Research Program***	The Secretary of Transportation must establish and carry out a rail cooperative research program. Amtrak representatives are required to be members of the advisory board for the program.	The corporation appointed its Chief Engineer to the advisory board for the program, which was funded only in 2012.
402	***Routing Efficiency Discussions with Amtrak***	Amtrak, commuter rail entities, regional and state public transportation authorities, and freight railroads are encouraged to engage in discussions on routing and timing of trains to improve performance.	The corporation meets with freight railroads and commuter rail entities on an ongoing basis to develop feasible train schedules to satisfy all users' requirements.
406	***Cross-Border Passenger Rail Service***	No later than one year after PRIIA's enactment, Amtrak—in consultation with the Secretary of Transportation, the Secretary of Homeland Security,	The corporation issued the required plan in October 2009.

PRIIA Section	Title	Requirement	Action
		the Washington State Department of Transportation, and relevant owners—must develop a strategic plan to facilitate expanded passenger rail service across the U.S.-Canada border during the 2010 Olympics.	
501	***High-Speed Rail Corridor Program***	The Secretary of Transportation is authorized to establish and implement a high-speed rail corridor development program. Eligible applicants include a state or Washington D.C., a group of states, an interstate compact, a public agency established by one or more states, and Amtrak. Eligible corridors include the high-speed-rail corridors designated by the Secretary of Transportation. These funds are to be used for acquiring, constructing, and improving rail structures and equipment.	DOT awarded the corporation nearly $450 million to upgrade support systems and tracks between stops in Pennsylvania and New Jersey—known as the New Jersey High Speed Rail Improvement Project. Of the approximately $450 million granted for this project, the corporation has spent more than $20 million, has more than $34 million in open purchase orders, and has about $33 million in open purchase requests as of June 2013. Amtrak's Senior Project Controls Analyst, New Jersey High Speed Rail Improvement Project, expects the project to take five years.

Source: OIG analysis of Amtrak data.

Amtrak Is in the Process of Addressing Two Provisions

The corporation is in the process of fully addressing the requirements specified in two provisions. These provisions are:

1. The corporation's five-year financial plan for FY 2013 through FY 2017 does not fully address eight of the 16 categories of information required by Section 204, *Development of Five-Year Financial Plan*. This section requires the corporation to address at least 16 categories of information, including projected revenues and expenditures, projected ridership, estimates of long-term and short-term debt, labor productivity statistics, and anticipated security needs. The corporation has issued all of the required annual five-year financial plans. However, based on our analysis, the five-year financial plan for FY 2013 through FY 2017 did not fully address:

    - expenditure forecasts for non-passenger operations

- projected capital and operating requirements, ridership, and revenue for any new passenger service operations or service expansions—the new Richmond/Norfolk segment
- assessments of the corporation's ability to efficiently recruit, retain, and manage its workforce
- annual cash flow forecasts
- projected operating ratio, cash operating loss, and cash operating loss per passenger on a route, business line, and corporate basis
- prior fiscal year and projected specific costs and savings estimates resulting from reform initiatives
- projected labor productivity statistics on a route, business line, and corporate basis
- prior fiscal year and projected equipment reliability statistics

2. The corporation is a member of the Northeast Corridor Infrastructure and Operations Advisory Commission, which continues to develop a formula for allocating costs, revenues, and compensation required by Section 212, *Northeast Corridor Infrastructure and Operations Improvements*. Within 2 years of PRIIA enactment, the Commission is to develop a standardized formula for determining and allocating costs, revenues, and compensation for Northeast Corridor commuter rail passenger transportation on the main line between Boston, Massachusetts, and Washington D.C., and also on the branch lines connecting to Harrisburg, Pennsylvania; Springfield, Massachusetts; and Spuyten Duyvil, New York. This section also requires Amtrak and public authorities providing commuter rail passenger transportation on the Northeast Corridor to implement new agreements for usage of facilities or services based on this standardized formula. Further, if the entities fail to implement such new agreements in accordance with the timetable, the Commission shall petition the Surface Transportation Board to determine the appropriate compensation amounts for such services. The Vice President for Operations estimates that the development of the methodology will be completed in the summer of 2014, and implemented in October 2014.

For Three Provisions, Amtrak Is Not Yet Required to Act

The corporation has not been required to react to three provisions because the events that trigger a response have not yet occurred:

- Because FRA has not recommended any methodologies to determine which intercity passenger routes and services to provide under Section 208, *Methodologies for Amtrak Route and Service Planning Decisions*, the precondition for the corporation to respond has not occurred.

- Because no Amtrak-operated route has been eliminated under Section 215, *Employee Transition Assistance*, the precondition for the corporation to certify that it made a reasonable attempt to reassign affected employees has not occurred.

- Because no state has selected an entity other than the corporation to operate an intercity passenger train route under Section 217, *Access to Amtrak Equipment and Services*, the precondition for it to develop an access agreement to its equipment and services has not occurred.

Appendix III

COMMENTS FROM AMTRAK'S MANAGEMENT

NATIONAL RAILROAD PASSENGER CORPORATION
60 Massachusetts Avenue, NE, Washington, DC 20002
tel (202) 906-3960, fax (202) 906-2850

Memo

AMTRAK

Date December 18, 2013
To Ted Alves
Inspector General

From Joseph H. Boardman
Department President and Chief Executive Officer
Subject *Passenger Rail Investment and Improvement Act of 2008: Accomplishments and Requirements that Deserve Consideration for Future Authorizing Legislation* (Draft Report No. 009-2013)
cc DJ Stadtler
Eleanor Acheson
Joseph McHugh
Stephen Gardner
Matthew Hardison
Alex Melnkovic
Jason Molfetas
Mark Yachmetz
William Herrmann
Jerry Sokol
Dan Black
Peggy Reid
Matthew Gagnon
Melantha Paige

Message This is in response to your Draft Report No. 009-2013 dated November 6, 2013, entitled *Passenger Rail Investment and Improvement Act of 2008:Accomplishments and Requirements that Deserve Consideration for Future Authorizing Legislation*. We have reviewed the report, and are thankful for the detailed and comprehensive work you have done, as well as for recognizing the significant work we have done in complying with PRIIA.

With regard to your section "Matters for Congressional Consideration," we agree with your assessment that legislation/authorization in those three areas would have significant positive impact on Amtrak's ability to improve our service. Actions like those you describe would impact our financial bottom line as well as our customer satisfaction – two of the three pillars in our strategic vision.

Our Response to your recommendation follows:

OIG Recommendation
To complete the efforts to improve financial reporting based on section 204, we recommend that the President and Chief Executive Office direct the departments responsible for developing annual five-year financial plans to fully address the 16 information categories required by PRIIA, including:

a) *Expenditure forecasts for non-passenger operations;*
b) *Projected capital and operating requirements, ridership, and revenue for any new passenger service operations or service expansions, such as the new Richmond / Norfolk segment;*
c) *Assessments of the corporation's ability to efficiently recruit, retain, and manage its workforce;*
d) *Annual cash flow forecasts;*
e) *Projected operating ratio, cash operating loss, and cash operating loss per passenger on a route, business line, and corporate basis;*
f) *Prior fiscal year projected specific costs and savings estimates resulting from reform initiatives;*
g) *Projected labor productivity statistics on a route, business line, and corporate basis;*
h) *Prior fiscal year and projected equipment reliability statistics.*

Management Response

Management agrees with the recommendation. As noted in your report, our five year plan has evolved since we first began preparing it, shortly after PRIIA was enacted. In our next version, due to be published after we receive an FY 2014 appropriation, we will ensure that the information listed above is included.

Appendix IV

ABBREVIATIONS

ADA	Americans with Disabilities Act of 1990, as amended
DOT	Department of Transportation
FRA	Federal Railroad Administration
FY	fiscal year
OIG	Office of Inspector General
PRIIA	Passenger Rail Investment and Improvement Act of 2008
Treasury	Department of the Treasury

Appendix V

OIG TEAM MEMBERS

David R. Warren	Assistant Inspector General, Audits
Mark A. Little	Senior Director
Al Murray	Auditor-in-Charge
Joseph Zammarella	Audit Manager
Courtney Catanzarite	Auditor
Dottie James	Consultant
Roy Judy	Consultant

OIG MISSION AND CONTACT INFORMATION

Amtrak OIG's Mission	The Amtrak OIG's mission is to provide independent, objective oversight of Amtrak's programs and operations through audits, inspections, evaluations, and investigations focused on recommending improvements to Amtrak's economy, efficiency, and effectiveness; preventing and detecting fraud, waste, and abuse; and providing Congress, Amtrak management, and Amtrak's Board of Directors with timely information about problems and deficiencies relating to Amtrak's programs and operations.
Obtaining Copies of OIG Reports and Testimony	Available at our website: www.amtrakoig.gov
To Report Fraud, Waste, and Abuse	Report suspicious or illegal activities to the OIG Hotline (you can remain anonymous): Web: www.amtrakoig.gov/hotline Phone: (800) 468-5469
Point of Contact	David R. Warren Assistant Inspector General, Audits Mail: Amtrak OIG 10 G Street, N.E., 3W-300 Washington, D.C. 20002 Phone: (202) 906-4600 Email: david.warren@amtrakoig.gov

Exhibits 69-74 redacted

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EXHIBIT 75

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TESTIMONY

OF

ALEX KUMMANT
PRESIDENT AND CHIEF EXECUTIVE OFFICER
AMTRAK

BEFORE THE

UNITED STATES
SURFACE TRANSPORTATION BOARD

WEDNESDAY, APRIL 11, 2007
8:00 A.M.
FIRST FLOOR HEARING ROOM, STB HEADQUARTERS
395 E STREET SW, WASHINGTON, DC

ATK0000057020

Chairman Nottingham, Vice Chairman Buttrey, and Board Member Mulvey, thank you for the opportunity to address the Board on the critical issue of rail capacity and infrastructure requirements. I am pleased to be here today with many of my colleagues from Amtrak's host railroads.

By way of introduction, I have been with Amtrak for just over six months, and in my short tenure here I have traveled to the headquarters of each of the major US-based freight railroads to speak with their Chief Executive Officers. I believe in the importance of maintaining regular contact with my counterparts at the host railroads, whose tracks Amtrak trains use to travel throughout the country every day. Amtrak's success outside the Northeast Corridor is closely linked to the success of the freight railroad industry, and I intend to work hard to strengthen our relationship.

The main body of my remarks is divided into two parts: Amtrak's view of the nature and magnitude of the rail capacity problem, and Amtrak's support for public investment in rail infrastructure. However, allow me to begin with an overview of the corporation today.

Amtrak operates over a large portion of the national rail network. Our trains traverse approximately 22,000 route miles in 46 states, serving over 500 stations. Amtrak employs approximately 19,000 people. In FY06, Amtrak ridership was 24.3 million passengers, up 1.1% from FY05. (Ridership is up 4.1% year-to-date in FY07). FY06

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ticket revenue was $1.371 billion, up 10.7% vs FY05 (Ticket revenue is up 10.3% year-to-date in FY07).

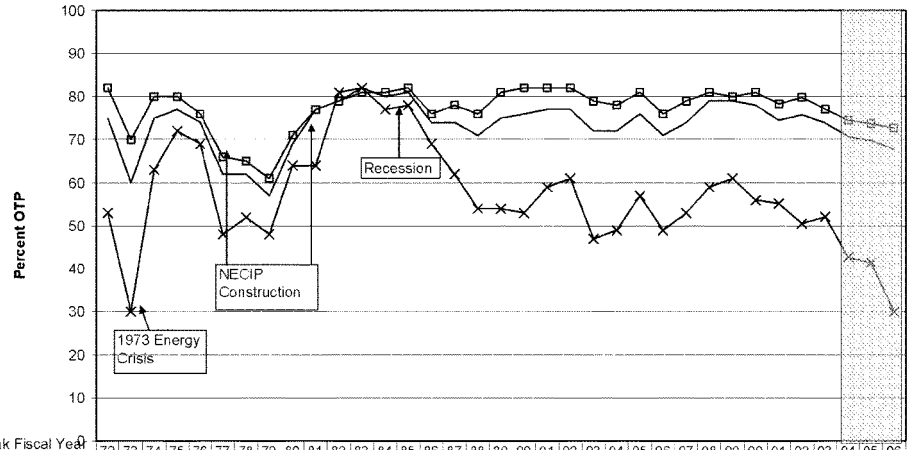
Systemwide on-time performance ("OTP") was 68% during FY06. However, OTP for Amtrak trains operating primarily on our own tracks was much higher. Nationwide, Amtrak controls train dispatching on fewer than 700 route miles of track, primarily the Washington to Boston Northeast Corridor ("NEC"). On the NEC, OTP of Amtrak's *Regional* trains was 79% during FY06, and 85% for *Acela Express*. *Acela* OTP was nearly 90% during the first half of FY07.

Outside the NEC, Amtrak's long distance and short distance corridor trains operate on host railroads' tracks, and their movements are controlled by those host railroads' dispatchers. Because of this arrangement, Amtrak is uniquely positioned to observe the state of the national rail network. Unlike shippers, who entrust their goods to the railroads to transport, Amtrak operates its own trains on host railroads across the country, with Amtrak conductors and Amtrak engineers in the locomotive cab, witnessing first hand the state of each railroad we travel each day.

Amtrak has been called the "canary in the coal mine," meaning that, because we operate trains filled with hundreds of passengers, each of whom expects to arrive on schedule, we are more sensitive to service disruptions than freight users of the rail network. When Amtrak trains experience declines in service, declines for the other users of the rail network are likely to follow.

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Amtrak has experienced significant service declines since 1999. Each route over which we operate has different challenges, but all of them, to a greater or lesser degree, encounter delays related to insufficient rail capacity and the need for additional infrastructure investment. OTP of Amtrak trains operating outside the NEC has declined in recent years, but the drop accelerated sharply in FY04, the same time that rail freight traffic began its current period of strong, sustained growth.



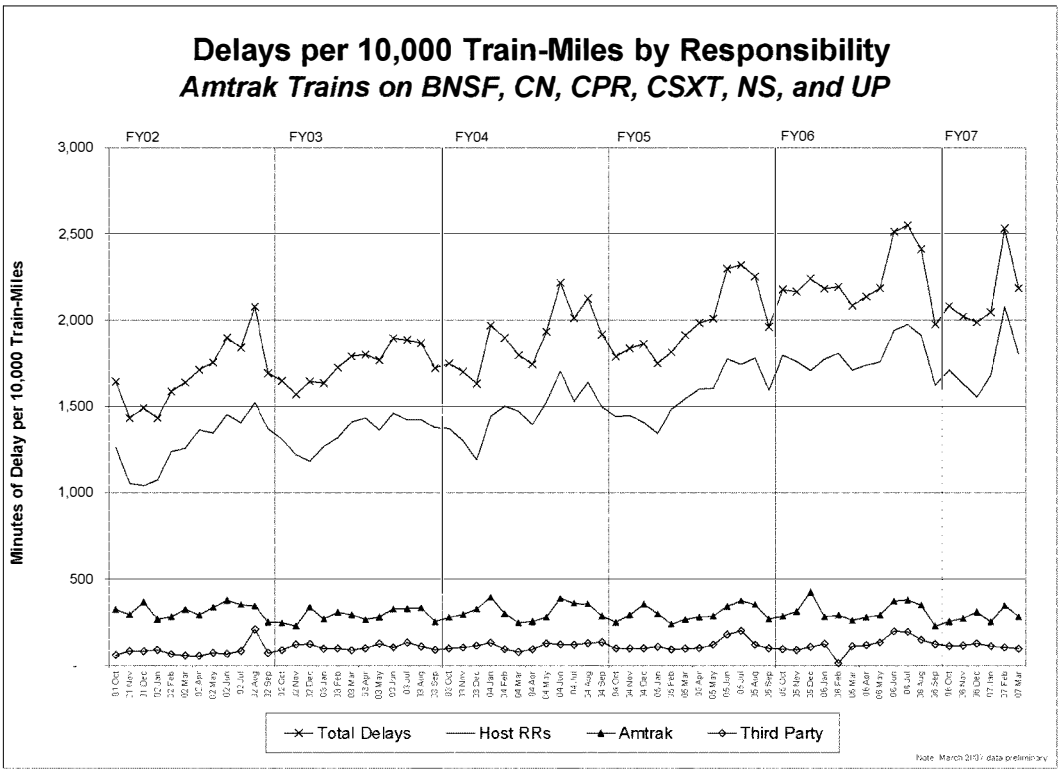
Amtrak Fiscal Year	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06
System	75	60	75	77	74	62	62	57	69	77	79	82	80	81	74	74	71	75	76	77	77	72	72	76	71	74	79	79	78	75	76	74	71	70	68
Long Distance	53	30	63	72	69	48	52	48	64	64	81	82	77	78	69	62	54	54	53	59	61	47	49	57	49	53	59	61	56	55	51	52	43	41	30
Short Distance	82	70	80	80	76	66	65	61	71	77	79	81	81	82	76	78	76	81	82	82	82	79	78	81	76	79	81	80	81	78	80	77	75	74	73

Sources: Through 2000, Amtrak Annual Reports; 2001-6, Amtrak OTP Monitor Report System

What is causing these OTP declines? Amtrak's train conductors, as they travel across the rail network, log every minute of delay experienced by their train. They also identify if the cause is the responsibility of the host railroad, Amtrak, or a Third Party (such as trespasser or weather-related delays). As a result, Amtrak has a comprehensive database

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of delay locations, durations, and causes experienced by our trains on the national rail network over the last six years.



Three patterns emerge from Amtrak's delay experience on host railroads:

1. The overwhelming majority (approximately 80%) of the delay minutes experienced by Amtrak trains operating outside the NEC are caused by host railroad issues. Amtrak is typically responsible for about 15% of delay minutes, and Third Party delays average about 5%.
2. Most of the variability in delay is also associated with the host railroads, while Amtrak and Third Party delays are consistently small and stable.

3. Host railroad delay minutes are increasing dramatically, up 50% during the five years from the first half of FY02 to the first half of FY07.

What is causing this increase in host railroad-related delays? While Amtrak believes that growth in freight traffic does not relieve freight railroads of their Amtrak performance obligations, the overall negative network effect of dramatically increased freight volume is inescapable.

The conditions our trains experience are very much like those experienced by drivers on the highway network. Imagine the Capitol Beltway at 4:00 in the afternoon. If any disturbance occurs, the problems cascade and traffic slows or stops. Do travelers eventually reach their destinations? Yes. But travel time is slow and highly variable, depending on whether there are any "hiccups" that day. This is the problem faced by the national rail network today. Traffic can move, and everything eventually gets where it is going, but trips are slower and more variable, which is the pattern experienced by Amtrak trains on our host railroads. Delays that might have affected only a few trains a couple years ago can now require several days to straighten out…just in time for the next shock to the system.

The tightly constrained national rail network also inhibits freight and passenger movement in another way: It limits growth. Given the demonstrated public demand for

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intercity rail passenger service, this aspect of a capacity shortage is particularly harmful to Amtrak and to the public.

As I recently testified before the Subcommittee on Transportation of the House Appropriations Committee, Amtrak's vision is one of growth (particularly in corridor services); product excellence (as we are demonstrating with Acela); and sound overall management. Capacity problems on the host railroads are thwarting two if not three of these goals: Amtrak's growth is constrained by a national rail network that has little available capacity; and we cannot provide product excellence if our trains are consistently late. As to the third goal, it is difficult to manage a business whose product has serious flaws over which we have relatively little influence or control. Late trains take a toll not only on our customers and revenue, but also on equipment maintenance and on our employees.

Late Amtrak trains also take a toll on the public perception of the freight railroad industry. Don Philips, one of our country's premier rail industry observers, has pointed out that what the American public knows about the US rail industry comes primarily from what they see through the windows of Amtrak trains.

So what can be done?

Everyone's interests are served by a fluid rail network where all trains move without delay. Railroads are motivated to add capacity to increase the efficiency and reduce the cost of handling current traffic, and to create room to grow their markets.

However, because investments in rail capacity are expensive and long-lived, railroads typically make them only when the need is clearly established. Service during the period until needed investments are completed is usually poor, raising the fundamental public interest question.

It is clearly in the freight railroads' interest to build most of the capacity that is needed, although their ability to generate return on capital is very challenging. The inherent lag between capacity need and investment will always drive social and environmental costs during the period when too much freight is crowded onto too little infrastructure. At the same time, the rest of the nation's infrastructure – our highways and airports – also experience the ripple effects of increasing congestion, interruptions and delays. In the face of these problems, public policy makers can choose to help host railroads *accelerate* investment, to capture public benefits now.

The freight railroads appearing before you today will thoroughly describe the public benefits of increasing their ability to move more freight by rail. Amtrak agrees with these public benefits, but there is no need to stop there. Public expenditure can be leveraged further by investments that generate public benefits by improving and expanding passenger rail as well.

There are many types of investment frameworks under discussion, including Investment Tax Credits; Public-Private Partnerships; Federal-State matching programs; Grant, and

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Loan programs for specific projects. I propose that each is needed for a particular purpose to address different aspects of the rail capacity problem.

Investment Tax Credits are advantageous for funding investments in remote, non-urban areas that benefit the entire rail network but have little local constituency. As the only entity other than the host railroads themselves that operates trains throughout the national network over thousands of miles of track, in urban and rural areas, Amtrak can attest that there are many crucial rail lines, junctions, and yards, such as at Rocky Mount, NC, or Porter, IN, or Elko, NV, whose functioning, or lack of it, can profoundly affect the efficiency of the national rail network, although few voters have ever heard of them.

Federal-state matching programs and Public-Private Partnerships allow building specific capacity in local projects where Amtrak and its state partners are focused on areas of population density. These projects are likely primarily to drive expanded intercity passenger or freight rail capacity in a particular area. Under these funding mechanisms, Amtrak and its public partners such as states must agree with host railroads on project needs, locations, specifications, and benefits, but must also provide some, if not all, of the funding to realize benefits specific to passenger needs.

Regardless of the specific funding method used, if policy makers choose to help accelerate capacity expansion on host railroads, as Amtrak believes they should, I would encourage being mindful of two key points:

First and foremost, private investment should continue to be the largest source of capital in the freight rail industry. Nothing should be done to reduce the flow of private capital into the industry, such as legislated open access provisions.

Secondly, when the public does invest in rail lines over which passenger trains operate, there must be identifiable and measurable benefits that are agreed to up front by the host railroad, the funding agency, and Amtrak: These benefits could include:

- Additional "slots"(e.g. new and expanded frequencies) for passenger trains
- Measurably sustained, improved on-time performance for specific passenger trains
- Increased capacity to move freight by rail along with timely passenger service

I encourage federal and state policy makers and appropriators to fund a variety of means to expand the national rail network. The public benefits are real, both for freight and for passenger transportation. For Amtrak, additional rail network capacity is critical to achieving growth and product excellence, which, if realized, can lead to long-term passenger rail growth and a real multi-modal solution to this country's transportation challenge.

Thank you again for the opportunity to discuss this subject, which we consider critical to the future of Amtrak and to the future of a competitive America.

Exhibit 76 redacted

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EXHIBIT 77

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AUTHENTICATED
U.S. GOVERNMENT
INFORMATION
GPO

110TH CONGRESS
2d Session
HOUSE OF REPRESENTATIVES
REPORT
110–690

PASSENGER RAIL INVESTMENT AND IMPROVEMENT ACT OF 2008

JUNE 5, 2008.—Committed to the Committee of the Whole House on the State of the Union and ordered to be printed

Mr. OBERSTAR, from the Committee on Transportation and Infrastructure, submitted the following

R E P O R T

[To accompany H.R. 6003]

[Including cost estimate of the Congressional Budget Office]

The Committee on Transportation and Infrastructure, to whom was referred the bill (H.R. 6003) to reauthorize Amtrak, and for other purposes, having considered the same, report favorably thereon with an amendment and recommend that the bill as amended do pass.

The amendment is as follows:

Strike all after the enacting clause and insert the following:

SECTION 1. SHORT TITLE.

This Act may be cited as the "Passenger Rail Investment and Improvement Act of 2008".

SEC. 2. AMENDMENT OF TITLE 49, UNITED STATES CODE.

Except as otherwise specifically provided, whenever in this Act an amendment is expressed in terms of an amendment to a section or other provision of law, the reference shall be considered to be made to a section or other provision of title 49, United States Code.

SEC. 3. TABLE OF CONTENTS.

The table of contents for this Act is as follows:

Sec. 1. Short title.
Sec. 2. Amendment of title 49, United States Code.
Sec. 3. Table of contents.

TITLE I—AUTHORIZATIONS

Sec. 101. Authorization for Amtrak capital and operating expenses and State capital grants.
Sec. 102. Repayment of long-term debt and capital leases.
Sec. 103. Other authorizations.
Sec. 104. Tunnel project.

TITLE II—AMTRAK REFORM AND OPERATIONAL IMPROVEMENTS

Sec. 201. National railroad passenger transportation system defined.
Sec. 202. Amtrak Board of Directors.

Sec. 203. Establishment of improved financial accounting system.
Sec. 204. Development of 5-year financial plan.
Sec. 205. Establishment of grant process.
Sec. 206. State-supported routes.
Sec. 207. Metrics and standards.
Sec. 208. Northeast Corridor state-of-good-repair plan.
Sec. 209. Northeast Corridor infrastructure and operations improvements.
Sec. 210. Restructuring long-term debt and capital leases.
Sec. 211. Study of compliance requirements at existing intercity rail stations.
Sec. 212. Oversight of Amtrak's compliance with accessibility requirements.
Sec. 213. Access to Amtrak equipment and services.
Sec. 214. General Amtrak provisions.
Sec. 215. Amtrak management accountability.
Sec. 216. Passenger rail study.
Sec. 217. Congestion grants.
Sec. 218. Plan for restoration of service.
Sec. 219. Locomotive biofuel study.
Sec. 220. Study of the use of biobased lubricants.
Sec. 221. Applicability of Buy American Act.
Sec. 222. Intercity passenger rail service performance.
Sec. 223. Amtrak Inspector General utilization study.
Sec. 224. Amtrak service preference study.

TITLE III—INTERCITY PASSENGER RAIL POLICY

Sec. 301. Capital assistance for intercity passenger rail service; State rail plans.
Sec. 302. State rail plans.
Sec. 303. Next generation corridor train equipment pool.
Sec. 304. Rail cooperative research program.
Sec. 305. Passenger rail system comparison study.

TITLE IV—COMMUTER RAIL TRANSIT ENHANCEMENT

Sec. 401. Commuter rail transit enhancement.

TITLE V—HIGH-SPEED RAIL

Sec. 501. High-speed rail corridor program.
Sec. 502. Additional high-speed projects.
Sec. 503. High-speed rail study.
Sec. 504. Grant conditions.

TITLE I—AUTHORIZATIONS

SEC. 101. AUTHORIZATION FOR AMTRAK CAPITAL AND OPERATING EXPENSES AND STATE CAPITAL GRANTS.

(a) OPERATING GRANTS.—There are authorized to be appropriated to the Secretary of Transportation for the use of Amtrak for operating costs the following amounts:

(1) For fiscal year 2009, $525,000,000.
(2) For fiscal year 2010, $600,000,000.
(3) For fiscal year 2011, $614,000,000.
(4) For fiscal year 2012, $638,000,000.
(5) For fiscal year 2013, $654,000,000.

(b) INSPECTOR GENERAL.—Out of the amounts authorized under subsection (a), there are authorized to be appropriated to the Secretary of Transportation for the Office of the Inspector General of Amtrak the following amounts:

(1) For fiscal year 2009, $20,368,900.
(2) For fiscal year 2010, $22,586,000.
(3) For fiscal year 2011, $24,337,000.
(4) For fiscal year 2012, $26,236,000.
(5) For fiscal year 2013, $28,287,000.

(c) AMERICANS WITH DISABILITIES ACT COMPLIANCE.—There are authorized to be appropriated to the Secretary of Transportation for the use of Amtrak for compliance with the requirements of the Americans With Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) the following amounts:

(1) For fiscal year 2009, $68,500,000.
(2) For fiscal year 2010, $240,000,000.
(3) For fiscal year 2011, $240,000,000.
(4) For fiscal year 2012, $240,000,000.
(5) For fiscal year 2013, $240,000,000.

(d) CAPITAL GRANTS.—There are authorized to be appropriated to the Secretary of Transportation for the use of Amtrak for capital projects (as defined in subparagraphs (A) and (B) of section 24401(2) of title 49, United States Code) to bring the Northeast Corridor (as defined in section 24102(a)) to a state-of-good-repair, for capital expenses of the national rail passenger transportation system, and for purposes of making capital grants under section 24402 of that title to States, the following amounts:

(1) For fiscal year 2009, $1,202,000,000.
(2) For fiscal year 2010, $1,321,000,000.

Committee is aware of significant delays for Amtrak trains entering the United States from Canada because of customs clearance procedures that occur en-route. It is expected that this authorization will lead to the establishment of pre-clearance operations in Canada to expedite travel to the United States by Amtrak, similar to pre-clearance arrangements used for certain airline flights between the two nations.

Section 215. Amtrak management accountability

Section 215 requires the DOT IG to complete an overall assessment of the progress made by Amtrak management and DOT to implement the provisions of this Act.

Section 216. Passenger rail study

Section 216 requires the U.S. Government Accountability Office ("GAO") to complete a study to determine the potential cost and benefits of expanding passenger rail service options in underserved communities.

Section 217. Congestion grants

Section 217 authorizes the Secretary of Transportation to make grants to States, or to Amtrak in cooperation with States, for financing the capital costs of facilities, infrastructure, and equipment for high-priority rail corridor projects. These projects would be funded if the Secretary finds that they would reduce congestion or facilitate ridership growth in intercity passenger rail transportation. Projects eligible for grants under this section include projects identified by Amtrak as necessary to reduce congestion or facilitate ridership growth in intercity passenger rail transportation along heavily traveled rail corridors; and designated by the Secretary as being sufficiently advanced in development to meet these goals. Grants awarded under this section shall not exceed 80 percent of the total cost of the project. Amtrak provided the Committee with information regarding 18 congested points along the national network where Federal funding could immediately improve on-time performance and ridership growth. These corridors are (1) Washington, DC, to Richmond, VA; (2) Richmond, VA, to Selma, NC; (3) Seattle, WA, to Portland, OR; (4) Portland, OR, to Eugene, OR; (5) Chicago, IL, to Porter, IN; (6) Chicago, IL, to Detroit, MI; (7) Chicago, IL, to Carbondale, IL; (8) Chicago, IL, to Joliet, IL; (9) Salinas, CA, to Paso Robles, CA; San Jose, CA, to Oakland, CA, to Sacramento, CA; (10) Oakland, CA, to Bakersfield, CA; (11) San Diego, CA, to Los Angeles, CA, to Santa Barbara, CA; (12) Selma, NC, to Jacksonville, FL; (13) Sebring, FL, to Dyer, FL; (14) Mineola, TX, to Ft. Worth, TX; (15) Syracuse, NY, to Rochester, NY; (16) Albany, NY, to Utica, NY; (17) Poughkeepsie, NY, to Albany, NY; and (18) Elkhart, IN, to Sandusky, OH.

Section 218. Plan for restoration of service

Section 218 directs Amtrak to complete a plan to restore passenger rail service between New Orleans, Louisiana, and Sanford, Florida. The plan shall include a projected timeline for restoring such service, the costs associated with restoring such service, and any proposals for legislation necessary to support such restoration of service. In developing the plan, Amtrak shall consult with rep-

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Exhibits 78-81 redacted

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EXHIBIT 82

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National Railroad Passenger Corporation

AMTRAK

Fiscal Year 2012 Budget and Comprehensive Business Plan

Operating, Capital Programs And Debt Service Expense Budget

February 2011, revised January 2012 in accordance with Public Law No. 112-36 "FY2012 Continuing Resolution."

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Introduction

The National Railroad Passenger Corporation (Amtrak) is a large, complex enterprise focused on the operation of intercity passenger trains in the U.S. Amtrak was incorporated in 1971 pursuant to the Rail Passenger Service Act of 1970 and is authorized to operate a nationwide system of passenger rail transportation. It operates more than 300 trains per day over more than 40 routes, carrying an average of 78,500 passengers daily. Amtrak has slightly more than 20,000 employees and had FY2011 revenues of $2.7 billion, which included intercity passenger revenues, revenues from related businesses and state capital payments. Despite recent growth, the United States still has one of the lowest intercity rail usages in the developed world.

In addition to providing the full range of functions and activities required to operate the national train system, Amtrak engages in related ancillary business that include:

- Operating commuter railroads under contract to their agencies
- Providing infrastructure access to commuter agencies and freight railroads
- Performing rail services for other rail operators, both commuter agencies and freight railroads, on a reimbursable basis
- Managing and leasing of commercial real estate

Strategic Vision and Key Management Actions

In October 2011 Amtrak released its new Strategic Plan, covering fiscal years 2011 through 2015. This plan communicates management's vision for Amtrak along with strategies and tactics to achieve that vision. The plan also places greater emphasis on improving financial performance. The following is an excerpt from the Strategic Plan:

> *The focus of this plan is to make Amtrak's bottom line the center of our attention. Certainly we must keep safety and security as our top priority, and we have other responsibilities to fill as America's Railroad. Our strategic plan is a crucial starting point to carrying out our mission in the most financially effective way possible.*

The Strategic Plan contains the following vision statement for Amtrak:

> *Amtrak is America's first intercity travel choice for connections to and between the nation's key metropolitan areas, providing customer-driven, safe, environmentally-sustainable, energy-efficient and inter-modally linked service to passengers, communities and partners. Through recognized organizational excellence, Amtrak's diverse and talented team will lead the development and growth of the high-speed and intercity passenger rail system in North America.*

In support of this statement, the Strategic Plan establishes the following corporate goals that align with the Amtrak vision:

- *Goal 1 – Safety and Security*: Become North America's safest, most secure railroad by creating a collaborative, team-oriented workplace culture that minimizes risks and maximizes passenger and employee safety.
- *Goal 2 – Customer Focus*: Advance customer service quality by responding to the wants, needs and expectations of our customers in order to improve their experience and maximize passenger and partner satisfaction.

- *Goal 3 – Mobility and Connectivity*: Improve national mobility and connectivity by growing Amtrak's business through new partnerships, routes and frequencies to increase ridership system wide.
- *Goal 4 – Environment and Energy:* Contribute to the nation's environmental health by attracting automobile and air travelers to trains, while improving Amtrak's efficiency and reducing transportation-related carbon emissions and fossil fuel consumption.
- *Goal 5 – Financial and Organizational Excellence:* Attain a standard of organizational excellence by aligning our products, services, processes and culture with stakeholder expectations to improve financial performance and overall business results.

The Strategic Plan includes measurable metrics and improvement targets for each of these goals. In order to accomplish these corporate goals and achieve the improvement targets, the Strategic Plan specifies the following seven corporate strategies:

- *Strategy 1 – Continue and expand Safe-2-Safer*, our proven behavior-based change initiative in order to improve our culture and other areas critical to financial and organizational excellence.
- *Strategy 2 – Integrate our field operating departments* within geographic divisions to maximize collaboration, efficiency and service delivery.
- *Strategy 3 – Implement best practices related to human capital* management in order to develop a workforce that is best equipped to achieve our corporate goals.
- *Strategy 4 – Expand our use of risk management principles* to further improve our multi-layered security program so we can better prevent and deter acts of terrorism and criminal behavior within our system.
- *Strategy 5 – Expedite our ongoing programs to make Amtrak accessible* for all individuals.
- *Strategy 6 – Identify and invest in systems and technologies* that will reduce both energy usage and operating expenses.
- *Strategy 7 – Establish business lines within the company* to better manage our financial performance and respond to the wants, needs and expectations of our various customer groups.

In particular, Strategy 7 calls for an extensive overhaul of Amtrak's corporate and management structure. This overhaul involves the establishment of six "business lines" that focus on the overall performance of specific Amtrak products and services. Each business line will have a management structure that is accountable for every aspect, including as appropriate infrastructure and fleet delivery, train operations, safety and on-time performance, passenger and customer interactions, and financial performance. The Strategic Plan includes detailed goals for each business line which are aligned with the corporate goals, as well as performance metrics and improvement targets. The six business lines are:

1. **Northeast Corridor Infrastructure and Investment Development**
   The host railroad operation, design, construction and maintenance of Amtrak-owned infrastructure, in order to support the operation of Amtrak trains and other rail service providers. This includes Northeast Corridor "state of good repair," high-speed rail investment and planning.

2. **Northeast Corridor Operations**
   The delivery of integrated high-speed rail services in the Northeast Corridor, including Acela Express, Northeast Regional and Keystone Service trains and the proposed high-speed "Acela II" rail system improvements.

3. **State Supported Services**
   Rail transportation and related services provided in partnership with state governments, including conventional passenger train operations, development of new high-speed rail services, equipment maintenance, service planning, marketing and reservation systems.

4. **Commuter Services**
   Rail transportation and related services provided as a contractor to local or regional commuter authorities, including passenger train operations, equipment maintenance and maintenance-of-way, as well as contract management services for access and other cost-sharing agreements that allow commuter agencies to utilize Amtrak property or services.

5. **Long-Distance Services**
   The operation of Amtrak's national network of 15 interstate routes of 750 miles or more that connect communities with the nation's major regions.

6. **Corporate Asset Development**
   The development and commercialization of latent Amtrak assets, such as real estate, mechanical services, technical expertise, intellectual property and other resources.

The implementation of the six business lines began in early fiscal 2012 with the naming of senior management for the NEC Infrastructure and Investment Development (NEC-IID) business line. The completion of this corporate realignment will continue throughout fiscal 2012 and will continue to mature in subsequent years.

Such reorganization necessitates significant changes to the existing corporate structure and its employees. With the establishment of the NEC-IID the company announced the dissolution of its former Policy & Development and High Speed Rail organizations, which impacted more than fifty management employees. The company has also announced that major reorganizations are in development for its Government Affairs Division, Marketing & Product Management Division and its Operations Division, which includes the Transportation (train operations), Mechanical (fleet maintenance) and Engineering (infrastructure maintenance) departments. The company expects that the organizational realignments taking place through 2012 will result in a reduction in the number of non-agreement employees across all departments, and a Reduction in Force is expected to begin in January 2012.

In order to ease the impact of a Reduction in Force, Amtrak offered a Voluntary Separation Incentive Program (VSIP) to all non-agreement employees with at least one year of service who wished to voluntarily leave the company. The VSIP offered severance pay of up to sixteen weeks based on length of service, as well as up to one year of health care coverage, through COBRA, again based on length of service. A total of 174 employees applied for the VSIP and the company accepted 161 of the applications. These employees, whose aggregate annual salaries totaled $14.9 million, ended their Amtrak employment by December 30, 2011. Some of these vacated positions may be filled by employees that are displaced as the company reorganizes, some may be filled externally, and others will be abolished.

Federal Support

As Table 1 below demonstrates, Amtrak has received decreasing levels of federal funding in recent years. During this period, through revenue growth and cost control efforts, the company's operations have absorbed hundreds of million of dollars in inflationary costs including contractual wage increases for agreement employees, volatile and increasing energy prices, and rapidly rising health care costs. While operational cost pressures may be offset with revenue growth and other management actions, decreasing federal appropriations have more detrimental impact on the capital programs. The recent capital appropriation levels allow for little more than maintaining the current status of the infrastructure and rolling stock; there are no available funds for addressing deferred maintenance, investing in improvements that would grow the business, or replacing aged rolling stock. Rolling stock that continues

to be used past its normal operating life results in higher maintenance costs, lower reliability and reduced equipment availability which negatively impacts on-time performance and other key operating metrics.

The need to invest in capital programs beyond federal support levels has caused the company to begin funding certain critical projects by reducing operating costs and allocating revenue to continue critical capital programs. As Table 1 indicates, Amtrak's FY2012 budget designates $121 million of revenue to be used to fund capital projects. Such use of revenue is only made possible by reductions of operating costs by a similar amount, and accordingly this budget reflects actions that are discussed later in this document.

In summary as shown in Table 1, the FY2012 budget from appropriations totals $1,409 million as follows:

- Operating support - $466 million
- Capital Programs - $671 million not including amounts designated to the Federal Railroad Administration for oversight and the NEC Advisory Commission (differences due to rounding)
- Debt Service – not to exceed $271 million.

Table 1 – Recent Federal Appropriations

Amtrak Funding *($millions) excluding Amtrak OIG*	PRIIA Authority	FY2010 Appropriation	FY2011 Appropriation	FY2012 Appropriation	FY2012 Budget
Operating Grant	101(a)	**563**	**562**	**466**	**345**
General Federal Capital[1]	101(c)	574	649	607	623
Americans with Disabilities Act Investment	219 (b)	144		50	50
NEC Gateway Project Capital Funds				15	15
Plus amount Retained by FRA from Capital & DS for Oversight[2]	103	10	9	10	10
Subtotal DOT Capital Grant		**728**	**658**	**681**	**697**
Capital Funded with Amtrak Ticket Revenue					**121**
Debt Service [3]	102(a)	264	264	271	255
Subtotal DOT Debt Service Grant		**264**	**264**	**271**	**255**
Total Amtrak Appropriation		**1,555**	**1,484**	**1,418**	**1,418**
Net Funding to Amtrak		**1,545**	**1,474**	**1,409**	**1,409**

[1] This FY2012 General Capital budget includes $16.5 million from the Debt Service portion of the Capital Appropriation

[2] Appropriations allow for FRA to deduct .5% for oversight of the capital programs and .5% to fund expenses associated with implementing PRIIA section 212 (NEC Infrastructure and Improvements.)

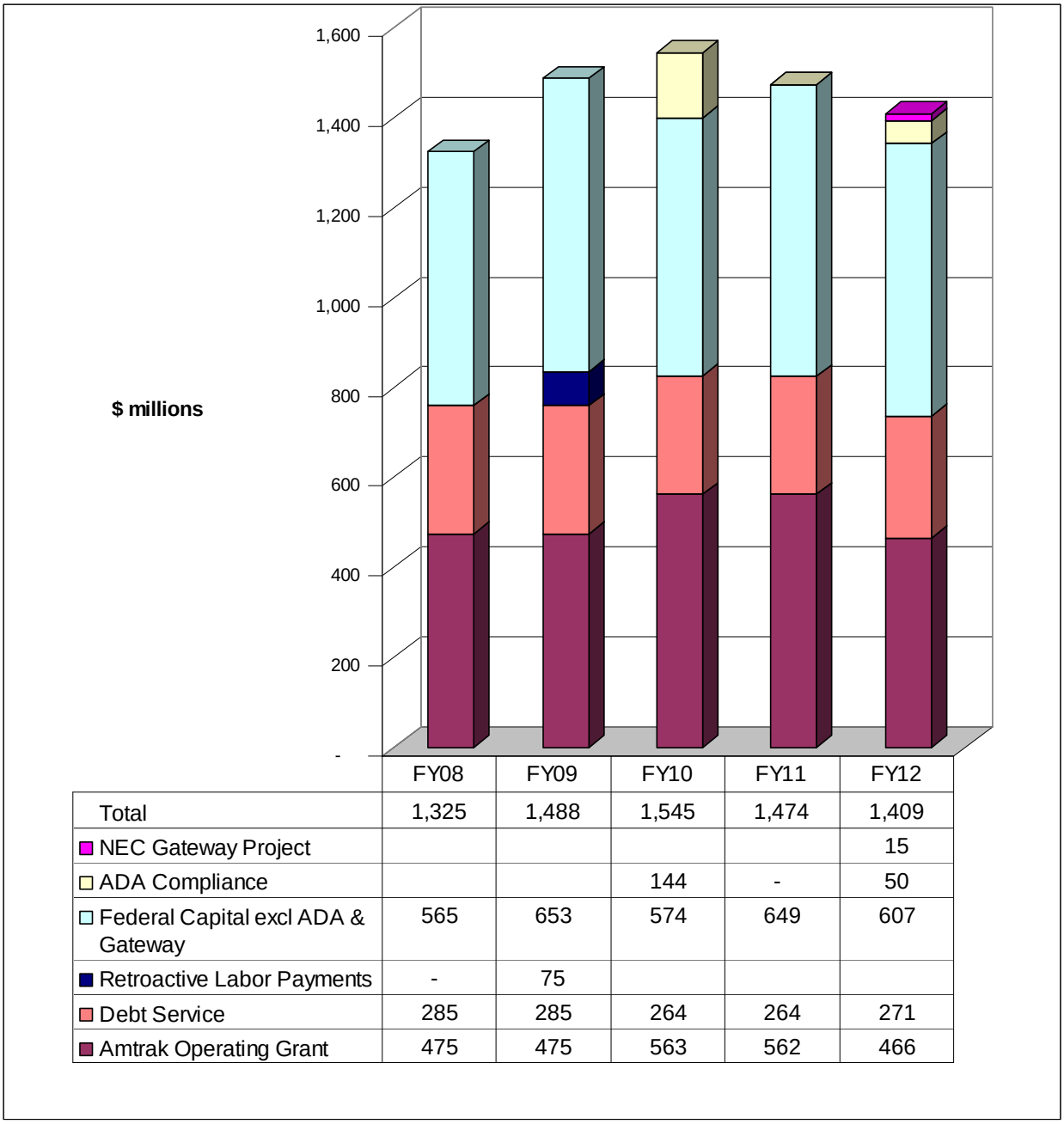
[3] Appropriations are designated as a not to exceed amount for scheduled principal and interest payments.

In addition to the appropriations shown in Table 1, Amtrak's FY2012 budget includes funding from other federal grants and loan programs such as the following:

- High Speed Inter-city Passenger Rail Grant: $ 7.3 million
- DHS Grants: $41.1 million
- DOT, Positive Train Control (V-ETMS) Grant: $ 7.7 million
- ARRA 2009 Police Operations Package: $ 2.1 million
- US Treasury Department Equipment Lease Early Buy-Outs: $258.8 million.
- Railroad Rehabilitation & Improvement Financing (RRIF): $119.6 million loan to replace aging rolling stock and add revenue capacity.

Chart 2 below displays the history of Federal support for Amtrak for operating expenses, capital investment and debt service from FY2009 to FY2012 from annual general appropriations from the Department of Transportation.

Chart 2 – Historical General Federal Appropriations (DOT Grant)



	FY08	FY09	FY10	FY11	FY12
Total	1,325	1,488	1,545	1,474	1,409
NEC Gateway Project					15
ADA Compliance			144	-	50
Federal Capital excl ADA & Gateway	565	653	574	649	607
Retroactive Labor Payments	-	75			
Debt Service	285	285	264	264	271
Amtrak Operating Grant	475	475	563	562	466

Budget Development

Each year Amtrak departments and finance staff formulate one-year budgets and five-year plan documents. These efforts are greatly impacted by the timing of federal appropriation actions and are

governed by the **Passenger Rail Investment and Improvement Act of 2008 (PRIIA)**. Typically our planning cycles involve the following major milestones:

1. A detailed one-year budget is developed and submitted in February each year as our annual grant request. Concurrent with this budget is the submission of the *FY2013 Legislative and Grant Request, Budget and Comprehensive Business Plan*.
2. Revisions to the one-year budget are performed throughout the ensuing months and finalized when a federal appropriation is enacted. Amtrak is statutorily required to submit this final document within sixty days after passage of the bill. Congress enacted the FY2012 Appropriations Act signed by the President on November 18, 2011. This document satisfies this requirement for FY2012
3. The Five Year Financial Plan is revised as necessary after passage of the annual appropriations bill and Amtrak is statutorily required to submit this document within sixty days of passage of the appropriations bill or October 1, whichever is later. The current version of this document is the *FY2012-FY2016 Five Year Financial Plan*.
4. A preliminary Five Year Financial Plan will be developed for FY2013-2017 and delivered not later than October of each year to satisfy requirements to communicate the next fiscal year plan for FY2014.

Although the Amtrak Office of the Inspector General (OIG) is a part of the National Railroad Passenger Corporation, federal funding is appropriated directly to the OIG and is not a part of this budget.

Operating Budget Base and New Activities

Consistent with the methodology of previous years, the FY2012 operating budget segregates costs by Continuing and New Activity.

1. Continuing Activity consists of activity in FY2012 that is consistent with FY2011 activity including, as necessary, annualized costs of partial year activity and cost inflation or deflation of prior year expenses.

2. New Activity captures costs and revenues of any activity that is wholly or primarily new in FY2012. This includes changes to service or business methods, new activity related to achieving corporate strategies and objectives, and other company priorities. Table 3 below lists the net impact for items categorized by activity in the FY2012 Budget.

Table 3 – New Activities and Initiatives

		$ Millions		
		Revenue	**Expenses**	**Net**
New Revenue Initiatives	Launch of Wi-Fi Systemwide	$13.7		$13.7
	Contact Center Booking Fee	$5.9	($2.5)	$8.4
	Marketing, Advertising & Social Media activities	$4.5		$4.5
	Launch of enhanced next generation eTicketing channel	$0.9		$0.9
	Other	($0.0)	$0.0	($0.0)
	Total FY12 New Revenue Initiatives	***$24.9***	***($2.5)***	***$27.4***
Mobility & Connectivity	HSR Business Plan Funding Study		$2.5	($2.5)
	HSR Next Generation Implementation Studies		$2.5	($2.5)
	Other HSR planning, marketing, and development support efforts		$2.6	($2.6)
	Additional resources for NEC Infrastructure planning, analysis, and support		$2.0	($2.0)
	Additional resources for Commuter contracting		$0.4	($0.4)
	Subtotal Mobility & Connectivity Initiatives		***$10.0***	***($10.0)***
Customer Service	Additional Ticket Agents Cary/Raleigh NC		$0.3	($0.3)
	Service/staffing increases on targeted long distance routes (route performance improvement		$3.8	($3.8)
	Subtotal Customer Service Initiatives		***$4.1***	***($4.1)***
Safety	Claims reductions from Safe-2-Safer program education		($2.3)	$2.3
	Abestos Management Plan		$0.9	($0.9)
	Other		$0.2	($0.2)
	Subtotal Safety Initiatives		***($1.2)***	***$1.2***
Security	Back-up security network operational cost		$1.5	($1.5)
	Amtrak's headquarter front desk – Contracted security officers		$0.3	($0.3)
	Maintenance and Way Inventory Security Initiative		$0.1	($0.1)
	Ivy City building – Contracted security officers		$0.3	($0.3)
	Operational fees for monitoring cameras at Penn Station NY		$0.3	($0.3)
	Safety Engineering		$0.5	($0.5)
	CCTV Maintenance		$0.5	($0.5)
	Issuance of Smart ID Cards for contractors access to Amtrak's property		$0.5	($0.5)
	Virtual Fence Monitoring Cost		$0.9	($0.9)
	Police Department Expansion - add 50 officers		$2.4	($2.4)
	Other		$1.9	($1.9)
	Subtotal Security Initiatives		***$9.1***	***($9.1)***
Environmental	Fuel Conservation Program		($3.3)	$3.3
	Utility conservation - installation of high efficiency lighting		($0.9)	$0.9
	Climate Registry Verification		$0.1	($0.1)
	Subtotal Environmental Initiatives		***($4.1)***	***$4.1***
Organizational Excellence	SAM Savings		($2.8)	$2.8
	Wellness Programs		$0.1	($0.1)
	Close Jacksonville Crewbase		$0.2	($0.2)
	Amtrak Leadership Program		$0.2	($0.2)
	Police Fitness Program		$0.5	($0.5)
	Fleet Other		$3.7	($3.7)
	Subtotal Organizational Excellence Initiatives		***$1.8***	***($1.8)***
Organizational Excellence IT	Replace Outsourced Service with Employees		($1.2)	$1.2
	IT cost to support new Software and Applications		$10.1	($10.1)
	IT cost of SAP Center of Excellence		$7.3	($7.3)
	Subtotal Organizational Excellence Initiatives-IT		***$16.3***	***($16.3)***
	Total FY12 New Activity	**$24.9**	**$33.4**	**($8.5)**

Capital Budget Processes

When planning and documenting capital investment projects, specific information is submitted that enables Amtrak's compliance with mandatory reports to the Federal Railroad Administration (FRA). In addition, Amtrak conducts a review of the projects according to Generally Accepted Accounting Principles (GAAP) to properly account for operating versus capital costs.

The following is a summary and brief description of the information that is required for Capital budget submissions:

- Project Scope – A description of what the project is and the intended purpose/objective of the project.
- Project Justification – An explanation of why the project is necessary and how performance will be measured.
- Funding Sources – The assumed source of funds that will pay for the project.
- National Environmental Policy Act (NEPA) Codes – Codes that describe the status of environmental impact of a project.
- Project Phases – The capital planning process requires that costs be budgeted by phases. This information is required to conduct a Generally Accepted Accounting Principles (GAAP) review of the projects.
- Return on Investment Analyzer – The submissions included an analysis estimating the return on a capital investment. All projects that claim business improvement benefits were required to have this analysis completed; state of good repair programs including rolling stock rehabilitation are excluded.
- Project Outcome and Performance Measures – The submission included a worksheet to input outcomes and performance measures. This is a brief description of major outcome or outcomes anticipated upon completion of the project, and the measurement.

A Capital Budget Appendix that contains Program and Project Summaries in this budget is available.

Risks

We must address the possibility that matters beyond our control may alter our current estimate of our needs for capital and operating funding. The unsettled state of the economy and the fluctuations of fuel prices are serious concerns. Fuel prices have been particularly volatile in recent years and the potential for price increases poses a serious risk to the financial health of the company. Similarly, an economic downturn, particularly in the Northeast Corridor region could lead to unfavorable results in ridership and revenues. Budgetary issues faced by some of our state partners could likewise pressure our operating budget needs. Risks that can impact Amtrak's operating and capital funding needs include:

- If Amtrak does not receive sufficient Federal Government funding, Amtrak's ability to operate in our current form may be adversely affected.
- Amtrak's business is capital intensive, and without sufficient capital investment, Amtrak will be unable to maintain and improve current infrastructure and rolling stock.
- Instability or unavailability of Amtrak's information technology systems could have a detrimental effect on Amtrak's business.
- Legal proceedings may adversely affect Amtrak's business operations.
- Amtrak's business is subject to numerous operational risks – such as changes in general economic, weather or other conditions, equipment failure, disruption of its supply chain, war, acts of terrorism and other catastrophic events – which could result in significant disruptions to Amtrak's operations, increased expenses or decreased revenue.
- Amtrak's costs and revenues could be substantially adversely or positively affected by competition from airlines, buses and other modes of transportation.
- Amtrak's business is vulnerable to rising fuel costs and disruptions in fuel supplies.
- Amtrak's business is subject to federal, and to some state and local, laws and regulations.
- Amtrak's business is subject to environmental laws and regulations that may result in significant costs.
- Most of Amtrak's employees are represented by unions, and failure to negotiate reasonable collective bargaining agreements may result in strikes, work stoppages or substantially higher ongoing labor costs.
- Catastrophic events could result in liabilities exceeding Amtrak's insurance coverage.
- Amtrak has a mature work force, with substantial employee retirements expected in upcoming years, and therefore has large potential pension and other post-employment benefit obligations.

Operating Budget

Amtrak's FY2012 operating budget represents a significant change from previous years. As noted earlier, the recent trend of decreasing federal appropriations for capital investment has necessitated the use of revenue to continue critical capital projects. The Strategic Plan places increased emphasis on improving fiscal results while also improving operations and services. Accordingly, management has taken bold action to reduce Amtrak's operating costs for FY2012 and beyond. The actions taken are planned to reduce Amtrak's FY2012 net operating loss compared to appropriation by $120.7 million. The savings are primarily from reduced non-agreement headcount, reduced advertising, and reductions in usage of professional services including outside legal counsel and consultants. The details of these reductions are contained in Table 8 under the Expenses section of this document.

As previously stated, the savings will allow Amtrak to supplement federal capital appropriations with revenue funds in order to complete critical investments. In compliance with accounting principles, and for presentation purposes for this document, the capital programs are shown to exceed federal funding and the operations are shown to be favorable to federal funding due to the application of operating revenue to fund capital programs. As shown, Amtrak has an operating budget that is approved to require $345.3 million for operating expenditures not including the Office of the Inspector General. The FY2012 federal appropriation for operating needs is $466 million.

Table 4 – Profit and Loss Statement

$ millions	FY10 Actual	FY11 Actual	FY12 Budget	FY12 Fav/(Unfav) to FY11 $	FY12 Fav/(Unfav) to FY11 %
REVENUES:					
Passenger Related:					
Ticket Revenue	1,702.1	1,851.5	1,967.9	116.4	6.3%
Food and Beverage	97.5	109.4	109.3	(0.1)	-0.1%
State Supported Train Revenue	174.3	191.1	192.9	1.8	0.9%
Subotal Passenger Related Revenue	**1,973.9**	**2,152.0**	**2,270.1**	**118.0**	**5.5%**
Commuter	152.5	173.4	140.0	(33.4)	-19.3%
Reimbursable	100.7	84.1	103.0	18.9	22.4%
Commercial Development	74.8	76.2	71.8	(4.4)	-5.8%
Other Transportation	135.6	139.5	143.3	3.8	2.7%
Freight Access Fees and Other	47.0	50.6	59.0	8.3	16.5%
Subtotal Other Revenue	**510.5**	**523.8**	**517.0**	**(6.8)**	**-1.3%**
Total Operating Revenue	**2,484.4**	**2,675.9**	**2,787.1**	**111.2**	**4.2%**
Salaries, Wages and Benefits:					
Salaries	239.1	258.3	263.5	(5.2)	-2.0%
Wages & Overtime	941.8	1,008.5	998.1	10.4	1.0%
Employee Benefits	534.9	609.9	600.1	9.8	1.6%
Employee Related	26.1	33.3	27.6	5.6	16.9%
Salaries, Wages and Benefits	**1,741.9**	**1,909.9**	**1,889.3**	**20.6**	**1.1%**
Train Operations	262.4	253.6	271.8	(18.2)	-7.2%
Fuel, Power, & Utilities	299.7	337.9	369.5	(31.6)	-9.4%
Materials	184.2	191.7	200.6	(8.9)	-4.6%
Facility, Communication, & Office	178.0	172.5	176.6	(4.0)	-2.3%
Advertising and Sales	113.7	112.9	80.4	32.5	28.8%
Depreciation	602.5	602.6	671.4	(68.8)	-11.4%
Other Non-labor Fees and Services	177.1	210.6	208.0	2.5	1.2%
Total Expenses	**3,559.6**	**3,791.7**	**3,867.6**	**(75.9)**	**-2.0%**
Operating Loss	**(1,075.2)**	**(1,115.9)**	**(1,080.5)**	**35.4**	**3.2%**
Post Retirement (OPEB's)	79.1	61.8	102.5	2.0	3.2%
Pay-As-You-Go Offset (OPEB)	(26.4)		(38.7)		
Depreciation	602.5	602.6	671.4	68.8	11.4%
Adj for Non-Cash Depreciation/OPEBs/Impairment	655.2	664.4	735.2	70.8	10.7%
Net Operating Loss	**(419.9)**	**(451.5)**	**(345.3)**	**106.2**	**23.5%**
Federal Appropriation/PRIIA Authorized	**563.0**	**561.9**	**466.0**	**(95.9)**	**-17.1%**
Over/(Under) Federal Support	**(143.1)**	**(110.4)**	**(120.7)**		

This income statement represents the total federal support required for Amtrak operations. This is not a GAAP financial statement. As compared to a GAAP financial statement, this income statement excludes costs for Amtrak's Office of the Inspector General (funded independently), non-capitalizable costs and state contributions associated with capital projects (funded by capital appropriation), and net interest expense (funded by debt service appropriation).

FY2012 Operating Budget Assumptions

Revenue

Passenger Revenue, including ticket sales, was developed with the assistance of an outside firm. The consultant employs a complex model that takes into account numerous factors such as population growth, shifts, and preferences, travel industry competition including the price of gasoline, economic conditions, service schedules, and proposed pricing actions.

- **Ticket Revenue –** Other than a temporary setback in 2009 due to recession, Amtrak has experienced consistent growth in ticket revenue since 2003 through continued delivery of quality service, proactive revenue growth actions and modest pricing actions. Amtrak is positioned to deliver continued strong ridership with ticket revenue expected to achieve $1.97 billion in FY2012, representing an increase of $116.4 million (6.3%) over FY2011.
- **Food and Beverage Revenue -** Amtrak has Food and Beverage operations which provide consumers with meal options while onboard our trains and is projected to earn revenues of $109 million in FY12.

State Supported Revenue was budgeted in accordance with existing state contracts and projected route performance in those states. Currently, Amtrak has contractual agreements to operate in 15 states. These contracts will account for roughly $193 million of revenue in FY2012.

Ancillary Business Revenue, consisting of Commuter, Reimbursable, and Commercial Development revenue was budgeted according to the operating agreements and operating expenses needed to deliver those services.

- **Commuter Revenue -** In addition to providing 15 states with Amtrak service, we also partner with the states or regional transportation authorities in Maryland, Florida, Connecticut, California and Washington to provide commuter services with annual revenue contribution of $140 million in FY2012.
- **Reimbursable Revenue -** Amtrak performs reimbursable project work for a number of state agencies on as needed basis**.**
- **Commercial Development -** Amtrak earns revenue from its real estate operations by leasing retail space at its stations, operating parking garages and leveraging its land holdings by partnering with builders.
- **Other Revenue -** Amtrak leverages its ownership of track in the Northeast Corridor by charging freight railroads access fees in relation to their use of the NEC. Other revenue sources include resale of electric propulsion to state commuter agencies, commissions from co-branded credit cards, and revenue from other travel partners.

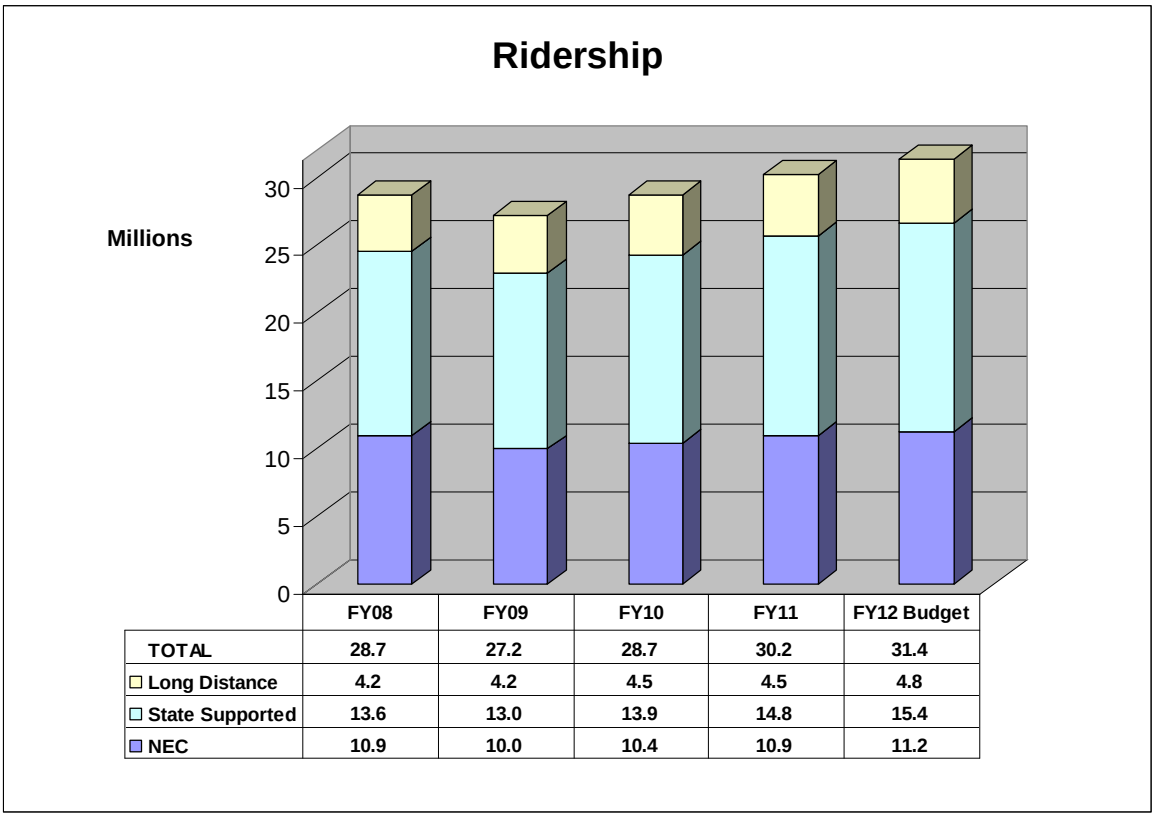
Total operating revenue in FY2012 is budgeted to be $2.79 billion, an increase of $111.2 million (4.2%) from FY2011 actual results. Included in this sum is $24.9 million from new revenue initiatives and $6.5 million in an effort to help fund capital projects by extending efforts with Amtrak.com partners. A summary of changes in Operating Revenue in FY2012 follows in Table 5. Chart of projected Ridership and Revenue growth follow in Charts 6 and 7.

Table 5 – Summary of Changes in Operating Revenue

		$ Millions
FY11 Total Actual		**$2,675.9**
Changes to Base Activity		
	Impact of changes in demographics and the economy	$53.0
	Inflation including ticket price increases, labor agreements, fuel prices, and other	$39.8
	Normalization of Reimbursable revenue expectations as compared to reduced activity in FY11	$18.9
	Additional day of ticket revenue in FY12 due to leap year	$5.0
	Increased capacity on Northeast Regional and Empire trains	$3.2
	Commercial revenue decrease due to one-time revenues in FY11 not recurring in FY12	($4.4)
	Decrease in Commuter revenue and expenses primarily due to loss of contract	($33.4)
	All Other	($2.2)
	Base Activity Increase/(Decrease) from Prior Year	**$79.8**
Total FY12 Base Activity Budget		**$2,755.7**
New Activity		
New Revenue Initiatives	Launch of Wi-Fi Systemwide	$13.7
	Contact Center Booking Fee	$5.9
	Marketing, Advertising & Social Media activities	$4.5
	Launch of enhanced next generation eTicketing channel	$0.9
	Other	($0.0)
	Total FY12 New Revenue Initiatives	***$24.9***
FY12 Budget before Management Actions		**$2,780.6**
Management Cost Reduction Actions		
Revenue Increase	***Incremental revenue from Amtrak.com related partners***	***$6.5***
FY12 Final Budget		**$2,787.1**

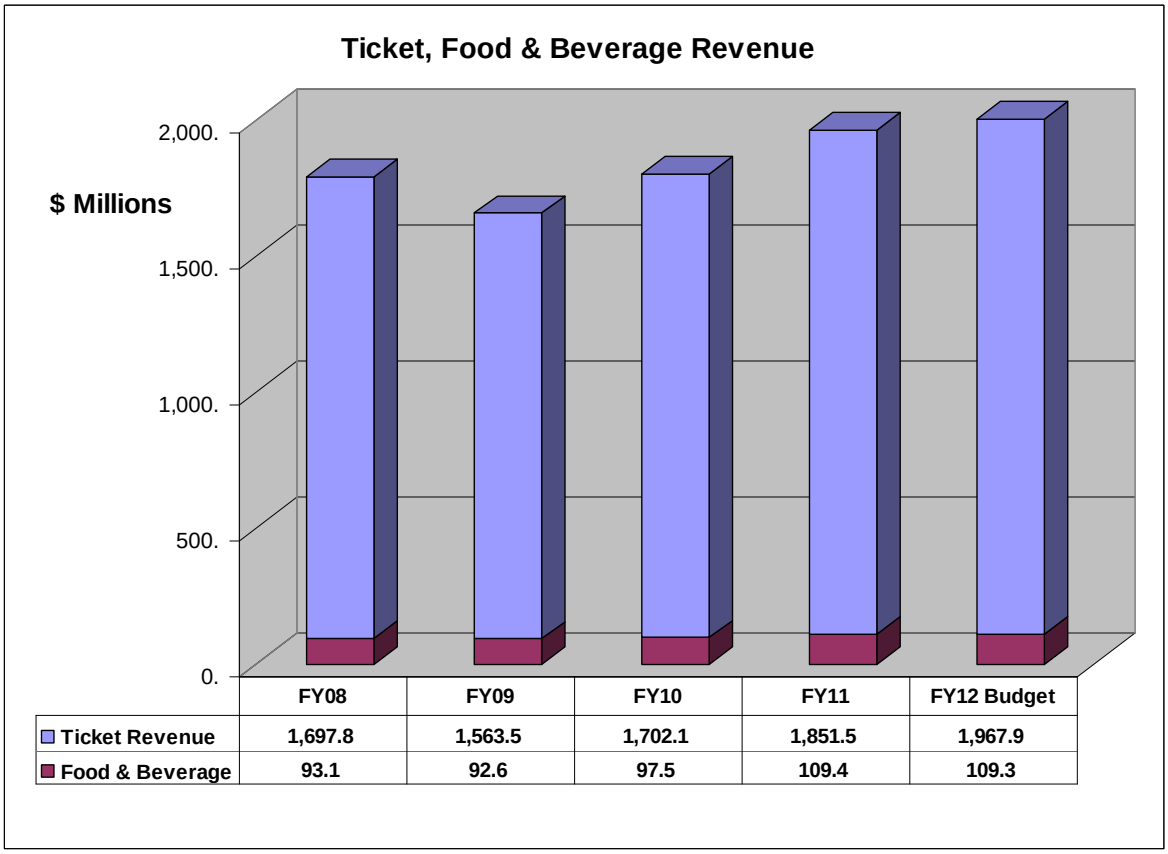
This represents revenue that contributes to the total federal support required for Amtrak operations. This is not a GAAP financial statement. As compared to a GAAP financial statement, this excludes revenue for state contributions associated with capital projects (funded by capital appropriation).

Chart 6 – Ridership Trends



	FY08	FY09	FY10	FY11	FY12 Budget
TOTAL	28.7	27.2	28.7	30.2	31.4
Long Distance	4.2	4.2	4.5	4.5	4.8
State Supported	13.6	13.0	13.9	14.8	15.4
NEC	10.9	10.0	10.4	10.9	11.2

Chart 7 – Ticket, Food and Beverage Revenue Trends



	FY08	FY09	FY10	FY11	FY12 Budget
Ticket Revenue	1,697.8	1,563.5	1,702.1	1,851.5	1,967.9
Food & Beverage	93.1	92.6	97.5	109.4	109.3

Expenses

Expenses in the FY2012 budget request were segregated between ongoing (base) activity, activity in support of corporate goals that is wholly or primarily new in FY2012, and management actions taken to reduce operating expenses in accordance with the strategic direction and the need to make revenue available to fund critical capital projects. Table 8 contains a crosswalk of expenses from FY2011 actual expenses to FY2012 budgeted expenses that differentiates between the types of activity.

Table 8 – Reconciliation of FY12 Operating Expense Budget to FY11 Expenses

		$ Millions
FY11 Total Actual		**$3,791.7**
Changes to Base Activity		
	Inflation including ticket price increases, labor agreements, fuel prices, and other	$114.1
	Increased depreciation expense due to increase in asset base	$68.8
	Decrease in Commuter expenses primarily due to loss of a contract	($43.3)
	Decrease in overhead transfer credits to capital projects due to reduced capital program in FY12	$20.6
	Increase in Train Operations due to expected higher payments for schedule adherence (see subsequent reduction in Management Actions below)	$19.8
	Increase in fleet maintenance materials primarily due to growth in active fleet from ARRA restorations	$8.4
	Increase in Commission Credit Cards due to higher revenue	$2.7
	Decrease in labor cost primarily due to expected reduced overtime wages in FY12	($9.4)
	Decrease in Payroll Taxes due to lower headcount	($4.8)
	All Other	($2.9)
	Base Activity Increase/(Decrease) from Prior Year	**$174.0**
Total FY12 Base Activity Budget		**$3,965.7**
New Activity		
New Revenue Initiatives	Contact Center Booking Fee	($2.5)
	Total FY12 New Revenue Initiatives	***($2.5)***
Mobility & Connectivity	HSR Business Plan Funding Study	$2.5
	HSR Next Generation Implementation Studies	$2.5
	Other HSR planning, marketing, and development support efforts	$2.6
	Additional resources for NEC Infrastructure planning, analysis, and support	$2.0
	Additional resources for Commuter contracting	$0.4
	Subtotal Mobility & Connectivity Initiatives	***$10.0***
Customer Service	Additional Ticket Agents Cary/Raleigh NC	$0.3
	Service/staffing increases on targeted long distance routes (route performance improvement program)	$3.8
	Subtotal Customer Service Initiatives	***$4.1***
Safety	Claims reductions from Safe-2-Safer program education	($2.3)
	Abestos Management Plan	$0.9
	Other	$0.2
	Subtotal Safety Initiatives	***($1.2)***
Security	Police Department Expansion - add 50 officers	$2.4
	All Other Initiatives to increase security for passengers, employees and assets	$6.7
	Subtotal Security Initiatives	***$9.1***
Environmental	Fuel Conservation Program	($3.3)
	Utility conservation - installation of high efficiency lighting	($0.9)
	Climate Registry Verification	$0.1
	Subtotal Environmental Initiatives	***($4.1)***
Organizational Excellence	SAM Savings	($2.8)
	Wellness Programs	$0.1
	Close Jacksonville Crewbase	$0.2
	Amtrak Leadership Program	$0.2
	Police Fitness Program	$0.5
	Fleet Other	$3.7
	Subtotal Organizational Excellence Initiatives	***$1.8***
Organizational Excellence IT	Replace Outsourced Service with Employees	($1.2)
	IT cost to support new Software and Applications	$10.1
	IT cost of SAP Center of Excellence	$7.3
	Subtotal Organizational Excellence Initiatives-IT	***$16.3***
	Total FY12 New Activity	**$33.4**
FY12 Budget before Management Actions		**$3,999.1**

Table 8 Continued – Reconciliation of FY12 Operating Expense Budget to FY11 Expenses

Management Cost Reduction Actions

Workforce Related Actions	Reduction of Management workforce including associated benefits	($25.7)
	Reduced FELA liability due to decrease in management workforce	($3.4)
	Reduction of Agreement overtime including benefits	($3.8)
	Reductions to employee travel and other employee related expenses	($2.8)
	Subtotal Workforce-related Management Actions	***($35.7)***
Other Actions	Reduce Advertising and Promotional expenditures	($43.6)
	Reduce usage of outside professional, legal, and consultant services	($27.3)
	Increase in transfer credits due to funding additional capital projects with revenue	($8.0)
	Adjustment to host railroad expense assumptions (see increases to base activity)	($4.2)
	Further reduction to electric locomotive propulsion power due to negotiation of favorable rates	($2.8)
	Reductions to telephone, long distance, and cellular phone usage	($2.5)
	Reduction to motor coach connecting services	($1.6)
	Decrease in fleet and track maintenance materials due to funding additional capital projects with ticket revenue	($1.5)
	Reductions to facility maintenance activities	($0.8)
	Reduction to on-board crew costs, primarily reduced layover costs	($0.8)
	Reductions to office supplies and express mail services	($0.3)
	All other actions	($2.4)
	Subtotal Other Management Actions	***($95.8)***
	Total Management Cost Reduction Actions	**($131.5)**
FY12 Final Budget		**$3,867.6**

This represents expenses that contribute to the total federal support required for Amtrak operations. This is not a GAAP financial statement. As compared to a GAAP financial statement, this excludes costs for Amtrak's Office of the Inspector General (funded independently), non-capitalizable costs and state contributions associated with capital projects (funded by capital appropriation), net interest expense (funded by debt service appropriation), non-cash depreciation, and non-cash post-retirement benefit accruals.

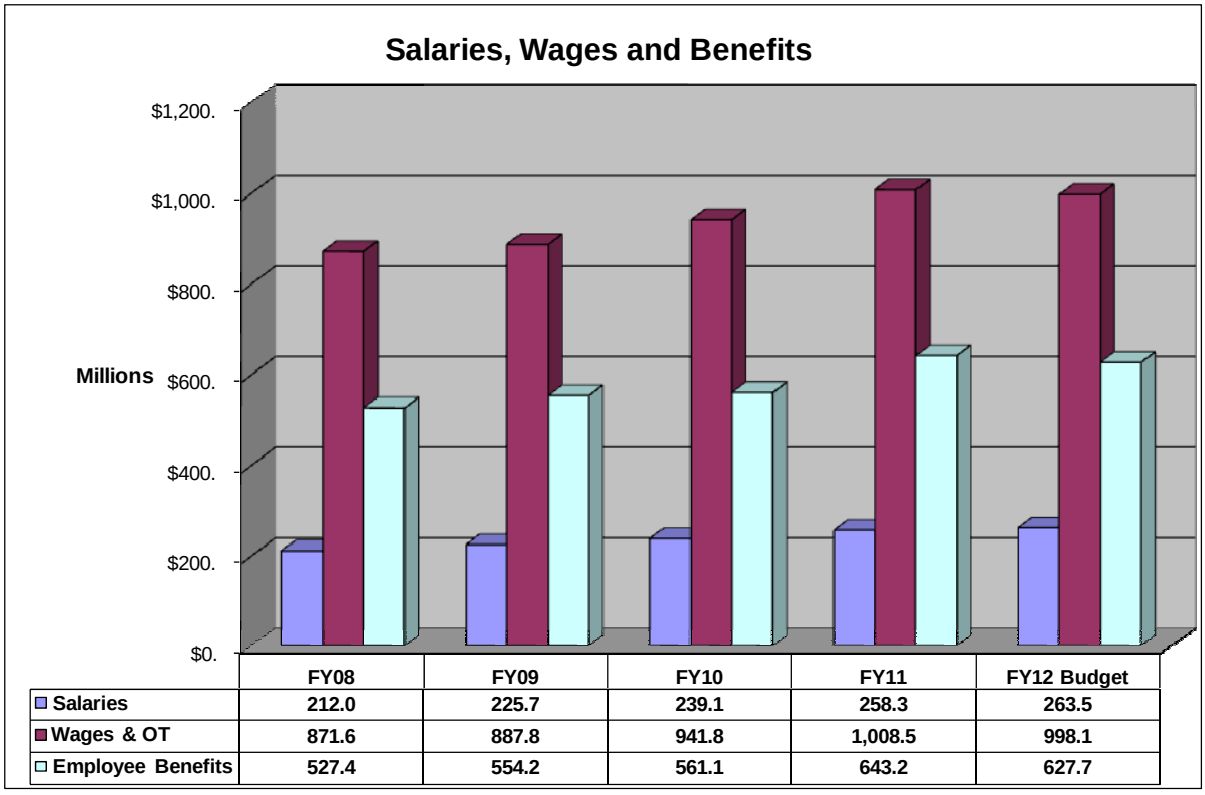
Salaries, Wages, Taxes and Employee Benefits

Salaries: Salaries are basically flat to FY2011. In FY2012, Amtrak has decided to forego performance pay increases to non-agreement employees, but the company did award one-time lump sum payments to eligible employees in lieu of performance merit raises. Also, as previously described, 162 employees voluntarily left Amtrak in December 2011 as a result of the VSIP program. However because many of these employees will receive severance pay through April 2012 and medical coverage for a full year, the savings in FY2012 are minimal but will be fully realized in future years. By not increasing base wages, over a period of five years the company is estimated to forgo approximately $50 million in salaries and payroll taxes.

Wages: Wage rates are governed by the new labor agreements that began being ratified in the summer of 2010 and which remain in effect until June 30, 2015. Agreements with all unions follow the same wage increase patterns, and accordingly all unions including those still not yet ratified by the unions were budgeted using the terms of the new agreements. FY2012 Wages are planned to decrease from FY2011 due to the loss of a commuter contract.

Employee Benefits: Employee benefit costs were calculated using total planned payroll expense across all business activity including capital and reimbursable projects. An outside consulting firm provided actuarial projections for the pension and retirement expense planning. Insurance costs were projected by Amtrak's Benefit Accounting group, with assistance from the outside firm, using the projected participation in each plan and the projected costs of those plans. Railroad taxes were planned in accordance with the prevailing tax rates applied to wage and salary budgets. The decrease from FY2011 is primarily due to a vacation accrual adjustment in FY2011 that is not recurring in FY2012.

Chart 9 – Salaries, Wages, Taxes and Benefits



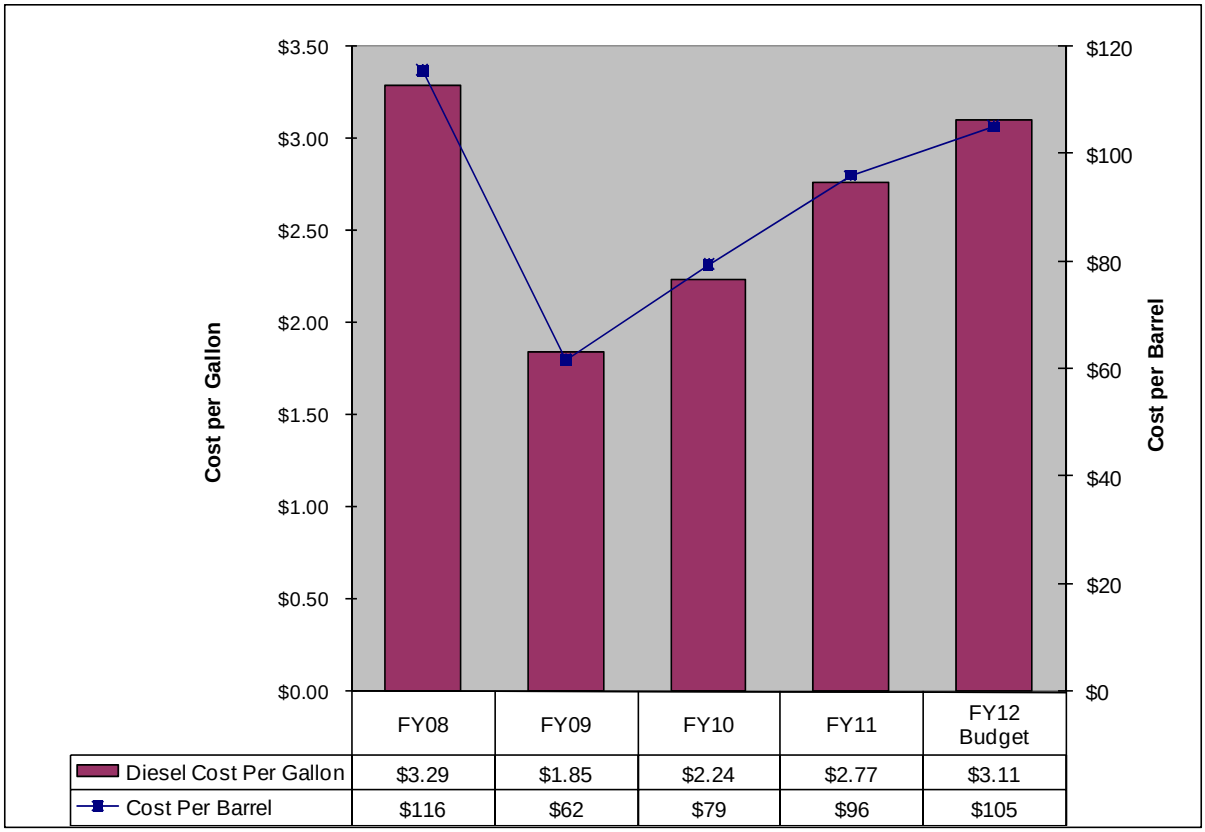
	FY08	FY09	FY10	FY11	FY12 Budget
Salaries	212.0	225.7	239.1	258.3	263.5
Wages & OT	871.6	887.8	941.8	1,008.5	998.1
Employee Benefits	527.4	554.2	561.1	643.2	627.7

Fuel, Power and Utilities

Train Propulsion: Electricity to power electric locomotives operating in the NEC was budgeted in accordance with projected contractual power costs and projected consumption based on the service schedule. Amtrak negotiates multi-year contracts for bulk electric power to be used for train propulsion. All propulsion power distribution is provided by the Philadelphia Electric Company (PECO) but three companies – Exelon, Constellation New Energy, and GDF Suez – are utilized as power generation resources. The most recent contracts became effective January 1, 2011 and provide favorable pricing that has kept this major expense at little to no inflation for several years.

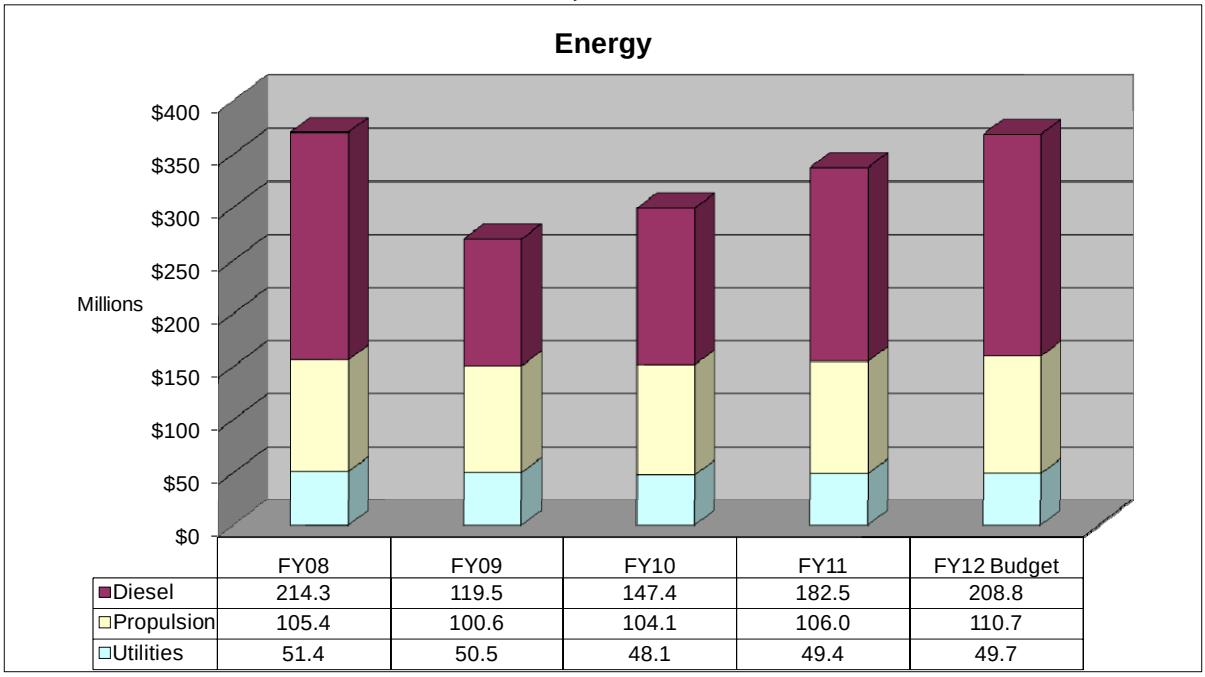
Gallon consumption of diesel fuel to power the off-corridor diesel locomotives was planned in accordance with the service schedule and historical per-mile consumption statistics. The price per gallon of diesel fuel was computed using a historic correlation between the price of oil (per barrel), retail gasoline, and diesel fuel. Diesel fuel prices vary by geographic region due to the sourcing, delivery and transportation options available in each area. Overall, the diesel fuel budget averages $3.11 per gallon. Two charts follow that show the trends for these costs.

Chart 10 – Diesel Fuel



	FY08	FY09	FY10	FY11	FY12 Budget
Diesel Cost Per Gallon	$3.29	$1.85	$2.24	$2.77	$3.11
Cost Per Barrel	$116	$62	$79	$96	$105

Chart 11 – Fuel, Power and Utilities



	FY08	FY09	FY10	FY11	FY12 Budget
Diesel	214.3	119.5	147.4	182.5	208.8
Propulsion	105.4	100.6	104.1	106.0	110.7
Utilities	51.4	50.5	48.1	49.4	49.7

Utilities:

FY12 utility budgets were developed with the assistance of an energy management consultant based upon historical utility cost analyses at a detail level.

Other Expenses

Materials: Materials consumed in the maintenance of track infrastructure and train equipment was budgeted by the Engineering and Mechanical departments according to the work production plans in each department.

Occupancy: Rent, Common Area Maintenance, and other occupancy costs were budgeted by the Real Estate department to reflect lease agreement terms in fiscal 2012 and are part of the "Facility, Communications and Office" Account.

Casualty Claims: Estimates for casualty claims including employee Federal Employers' Liability Act (FELA) and passenger liability were developed with actuarial assistance from outside actuarial consultants.

Capital Budget

Amtrak receives funds from state and local entities for capital programs as well as from Federal appropriations. The total FY2012 Capital Budget (not including debt service) is $1,086.4 million from all sources with $686.6 million from general federal appropriations after a deduction for FRA oversight estimated to be $9.5 million. Of this amount, $50 million is programmed for projects at stations that will advance compliance with the Americans with Disabilities Act (ADA) and $15 million to begin preliminary engineering for the NEC Gateway Project. This budget includes $41.1 million from

Department of Homeland Security grants and $127.5 million from state and local agencies and other sources. Amtrak's plans to replace its aging fleet begins with $62.6 million of internal revenue invested in the purchase of single-level long-distance cars while RRIF loan financing is estimated to be $119.6 million for the replacement of the electric locomotive fleet and the plan to purchase 40 additional Acela passenger cars.

Table 12 – Summary Capital Programs

	FY2010 Actual	FY2011 Actual	FY2012 Budget	FY2012 Variance to FY2011
Federal General Capital	$591.3	$658.4	$646.1	($12.3)
ADA Compliance Projects	$18.6	(Note 1)	$50.0	$50.0
Subtotal General Capital	$609.8	$658.4	$696.1	$37.7
Less FRA General Oversight & Section 212 Fu	($10.0)	($9.5)	($9.5)	
Net Capital to Amtrak	**$599.8**	**$648.9**	**$686.6**	**$37.7**
Internally Generated Funds	$5.5	$134.0	$94.6	($39.4)
Total Federal General & Internal Funds	**$605.3**	**$782.9**	**$781.2**	**($1.7)**
RRIF		$97.9	$119.6	$21.7
State, Local, Other	$98.1	$244.0	$176.3	($67.7)
Total Capital Program Funding before Stimulus	**$703.4**	**$1,124.8**	**$1,077.1**	**($47.7)**
Economic Stimulus	$731.9	$568.5	$9.4	($559.1)
Grand Total Capital Programs	**$1,435.3**	**$1,693.3**	**$1,086.4**	**($606.8)**

[1] $99.9 million of federal capital carried forward from the FY10 grant was spent on ADA projects in FY11. This amount is included in the State, Local, and Other FY11 total.

Table 13 – Summary FY2012 Capital Program Budget by Department (millions)

Department	General Federal Capital	Other Federal Grants	Homeland Security Grants	RRIF Loan	Internal Amtrak Funds	State, Local, & Other	Total Capital
Engineering	$300.0				$2.1	$114.3	$416.4
V-ETMS Interoperability on the NEC		$7.7			$1.9		$9.6
ADA Compliance	$50.0						$50.0
ARRA High Speed Rail		$7.3					$7.3
Mechanical	$250.0				$0.6	$2.6	$253.2
Rolling Stock Acquisitions				$119.6	$72.2	$2.4	$194.2
2009 ARRA TSGP Operations Package		$2.1					$2.1
Amtrak Police Department	($0.0)		$41.1		$2.4		$43.5
Chief Financial Officer					$0.4		$0.4
Chief Operating Officer							
Environmental					$3.8		$3.8
Information Technology	$30.3				$5.5		$35.8
Marketing and Product Management	$20.2				$3.0		$23.2
Policy & Dev/NEC IID	$6.5				$2.7	$8.2	$17.4
Procurement							
Real Estate	$17.0						$17.0
Transportation	$12.7						$12.7
Total Capital Programs	**$686.6**	**$17.1**	**$41.1**	**$119.6**	**$94.6**	**$127.5**	**$1,086.4**

ADA Compliance

Amtrak serves 482 rail stations that are required by the ADA to be "readily accessible to and usable by individuals with disabilities, including individuals who use wheelchairs, as soon as practicable". The funding requirement towards achievement of ADA compliance for rail stations served by Amtrak and subject to the ADA is estimated to be $50 million in FY2012.

Amtrak presented an estimate of its needs to the Congress on February 1, 2009, in its report "*Intercity Rail Stations Served by Amtrak: A Report on Accessibility and Compliance with the Americans with Disabilities Act of 1990* ("Access Report"). This report, which was delivered pursuant to section 219 of the PRIIA, detailed the scope of Amtrak's need and proposed the level of federal assistance necessary to attain full compliance. An update to this report was issued August 8, 2011 to update Congress on the progress made toward compliance with the ADA at stations we serve and to describe Amtrak's plans. This report is available on www.Amtrak.com/Inside Amtrak.

On September 19, 2011, DOT issued a final rule ("Rule") amending its ADA regulations regarding, among other things, level boarding, alternatives to level boarding, and procedures for obtaining approval of FRA and/or FTA in situations where level boarding is not provided. The Rule is based on a notice of proposed rulemaking ("NPRM") that DOT issued on February 27, 2006, as well as a public hearing held on August 20, 2010. The Rule as a whole takes effect on October 19, 2011, though certain provisions do not become binding until February 1, 2012.

The Rule generally requires Amtrak to provide level entry boarding at stations where the tracks are not shared with freight rail, and allows Amtrak to provide alternative boarding mechanisms at stations where tracks are shared with freight rail. However, for any station where Amtrak does not plan to provide level entry boarding, Amtrak has to provide FRA with detailed reports regarding how it proposes to board passengers with disabilities, and FRA (jointly with FTA where applicable) has responsibility to review, comment and approve all submitted plans. Due to the Rule Amtrak will not be able to achieve compliance at all remaining stations by our previous goal date of September 30, 2015.

The cost and duration impact of the Rule is currently being analyzed internally and results will be provided when complete. Achieving compliance at all Amtrak-served stations is a complex and resource-intensive challenge that will take several years to complete and it is anticipated the Rule will increase both the cost of the program and duration needed to complete that was previously forecasted.

As described more fully in Amtrak's supplemental reports to Congress regarding the status of the ADA compliance program, Amtrak had previously projected that by the end of 2011 it would have fully complied with its ADA obligations at 53 stations and progressed detailed design at more than 100 stations. Due to the Rule, the number of ADA compliant stations at the end of 2011 remains at 48. More detailed information about Amtrak's planned ADA compliance work at specific stations is contained in the document "*An Update on Accessibility and Compliance with the Americans with Disabilities Act of 1990*"on www.Amtrak.com.

Two sources of funding have underwritten a significant expansion of Amtrak's ADA compliance program. Legislation passed in FY2010 required that Amtrak invest $144 million towards this program. ARRA and appropriated capital funds have been used to jump-start a program of construction, with a total of $144 million being spent over the FY2010-FY2011 time period and $50 million planned for FY2012.

The greatest challenges to program completion will continue to be:

- The new DOT final rule and the impact on both cost and program duration.
- Agreements. Gaining agreement among the stakeholders for individual projects continues to be a challenge. To advance progress, those stations for which Amtrak has sole or primary

responsibility are advanced to the highest priority while planning and agreements on other stations are advanced.

- Timing. The scheduling of projects is controlled by the design, funding and agreement process. As such, program plans for future years will be advanced as later update reports are developed and released.
- Funding. As the program planning advances and project scopes and designs are advanced for each year of Amtrak's ADA station compliance program, funding requirements become more clearly defined.
- Linkage to Station Improvement plans. Many jurisdictions that own stations have plans for expansion, modification, and/or investments to create intermodal transportation centers or other commercial development concepts. Incorporation of ADA improvement elements that are Amtrak's responsibility into other agency plans will require considerable coordination and could complicate the scoping and agreement process.

Fleet Programs

To ensure that adequate rolling stock is in place to safely meet operating needs, Amtrak created the "Amtrak Fleet Strategy" and published an update in February 2011. The FY2012 update will be released in February 2012. In addition to operating requirements and state of good repair needs, this plan will identify "baseline" capacity needs and state of good repair requirements for the fleet and identifies the numbers and types of equipment that will be required to address projected growth on existing and planned services through 2024.

The following table shows the planned units to be 'shopped' in maintenance shops for maintenance and overhaul activity.

Table 14 - Rolling Stock Counts & Availability (includes Funded State Corridor Growth)

	End FY11 Actual			End FY12 Projected		
	Active	Planned Shop	Net Available	Active	Planned Shop	Net Available
Car Fleet						
Amfleet I	458	49	409	473	46	427
Horizon	95	17	78	95	17	78
Surfliner	49	9	40	49	9	40
California Cars	78	10	68	78	10	68
North Carolina Cars	12	-	12	12	-	12
Amfleet II	145	26	119	145	22	123
Heritage	73	13	60	73	13	60
Heritage Diner	20	5	15	20	5	15
Heritage Dome/Parlor Cars	6	2	4	6	1	5
Viewliner	51	10	41	51	10	41
SuperLiner	428	79	349	428	77	351
Auto Carrier	80	9	71	80	9	71
Cab Cars / NPCU	39	8	31	39	8	31
Other [1]	4	-	4	4	-	4
Total Car Fleet	**1,538**	**237**	**1,301**	**1,553**	**227**	**1,326**
Locomotives						
Electric Locomotives	62	18	46	62	17	45
Diesel Locomotives	309	46	246	309	45	264
Switchers	37	-	37	37	-	37
Locomotives Totals	**408**	**64**	**329**	**408**	**62**	**346**
Train Sets						
Acela						
- Cars	121	24	97	121	24	97
- Locomotives	40	8	32	40	8	32
Talgo						
- Cars	60	3	57	60	3	57
- Locomotives	6	1	5	6	1	5
Total Train Sets	**227**	**36**	**191**	**227**	**36**	**191**
Grand Total	**2,173**	**337**	**1,821**	**2,188**	**325**	**1,863**
Planned Availability %			83.8%			85.1%

[1] Other cars include two wheel cars, two track inspection cars, and one training car

Rolling stock that continues to be used past its normal operating life results in higher maintenance costs, lower reliability and reduced equipment availability which negatively impacts on-time performance and other key operating metrics. In fiscal year 2010, Amtrak completed negotiations and entered into purchase agreements for the delivery of:

- 130 single-level long-distance cars to replace old Heritage equipment, including 55 baggage, 25 baggage-dormitory, 25 dining and 25 sleeping cars for a total contract price of $298 million between FY2010 and FY2014.
- 70 electric locomotives to replace and augment locomotives in service on the Northeast Corridor at a total cost of $466 million to be paid starting in FY2011 and ending FY2016.

Amtrak is funding $62.6 million in payments for the single-level long-distance cars from internally generated revenue in FY2012. As previously discussed, operating costs have been reduced significantly in

order to support critical capital programs from revenue. Subsequent payments will be requested in annual appropriations.

The electric locomotive purchase is funded by a loan agreement under the Railroad Rehabilitation and Improvement Financing (RRIF) Program provided by the Department of Transportation. Amtrak projects that improved ticket revenue from more reliable locomotives can fund the debt service payments to repay this loan. $82.8 million is programmed into the FY2012 capital program for these locomotives.

Northeast Corridor (NEC) Investments

State of Good Repair (SGR): A Foundation for Growth

While Amtrak largely utilizes the rail infrastructure of the private freight railroads for the operation of most of its national network, Amtrak controls and is directly responsible for the condition and reliability of most of the Northeast Corridor (NEC) between Boston, New York, and Washington, which hosts the nation's most intense and complex passenger train operations. Additionally, Amtrak owns the Harrisburg and Springfield lines that connect with it; the 11-mile "Empire" connection linking Penn Station with Spuyten Duyvil on the Albany Line; a number of stations and yard facilities in major urban hubs, and the Michigan Line serving the Chicago to Detroit corridor.

The cost of managing, maintaining, and improving these assets is substantial. In the NEC Master Plan, published in May 2010, Amtrak estimated that the State of Good Repair (SGR) backlog alone on Amtrak-owned/operated NEC infrastructure is about $5.2 billion in FY10 dollars. On top of this, the incremental investment needed to renew these existing infrastructure assets once SGR has been achieved is estimated to be $330 million per year.

It is important to note that Amtrak reprioritizes SGR spending when necessary to allow it to address safety and operability issues as they arise. A backlog of SGR should not, therefore, be understood as an accumulation of disintegrating or unsafe structures; rather, it is a list of projects that have passed the end of their useful life but may continue to carry traffic safely, albeit at times with the additional burden of increased maintenance or impacts on reliability and performance.

The infrastructure backlog includes:

- more than 200 bridges, most dating to the turn of the last century;
- Baltimore's B&P Tunnels dating to the post-Civil War period;
- many rail interlockings (junctions and crossovers) that are functionally obsolete; and
- electric traction systems relying on 1930s-era components.

It also includes structural improvements to the tunnels serving New York and station backlog costs as reported in the February 2009 ADA Accessibility Report.

Amtrak estimates that even with adequate funding, resources and additional equipment, it will take a minimum of 15 years to resolve the backlog while still maintaining a reliable level of rail service throughout the necessary maintenance and construction work. Failure to adequately invest in this work on an annual basis will merely push the completion date out further and raise the costs and impacts of such work, as the backlog increases and Amtrak is forced to play "catch-up" year after year.

To achieve a 15-year SGR plan for Amtrak's infrastructure assets will require an average of $700 million per year – $350 million per year on average for the normalized replacement of assets and $350 million per year on average for addressing the SGR backlog. The following table shows how Amtrak intends to fund significant infrastructure projects for FY12.

Table 15 – State of Good Repair Funding Plan

$Million	FY2011 (a) Federal & Amtrak	FY2011 (a) Third Party & Special Grants	FY2011 (a) Total	FY2012 Federal & Amtrak	FY2012 Third Party & Special Grants	FY2012 Total
Bridges/Culverts/Tunnels	20.4	3.5	23.9	62.2	6.0	68.1
Facility/Station/Other	19.0	13.0	32.1	37.1	12.9	50.0
Signal Systems	16.3	1.8	18.1	35.7	5.8	41.5
Communication Systems	0.4	-	0.4	2.4	7.7	10.1
Overhead Catenary and Transmission systems	18.9	0.4	19.3	14.2	1.4	15.6
Substations/Frequency Converters	8.2	3.0	11.2	9.3	4.7	14.0
Track Replacement	149.4	25.1	174.5	102.6	64.2	166.7
Interlocking Renewal	20.1	5.0	25.1	9.0	6.9	15.9
Equipment Purchase/Replacement	19.0	-	19.0	13.9	(0.0)	13.9
Seattle King St. Coach Yd	32.8	-	32.8	7.0	0.0	7.0
Freight Railroad Improvements	2.4	-	2.4	-	-	-
ADA Compliance	94.6	-	94.6	50.0	-	50.0
Fire & Life Safety	5.2	24.9	30.1	10.7	12.5	23.2
Subtotal General Approp & Other	**406.8**	**76.7**	**483.5**	**354.0**	**129.3**	**483.3**
ARRA Funds						
Bridges/Culverts/Tunnels		106.1	106.1			
Facility/Station/Other		33.6	33.6			
Electric Traction		-	-			
Track		29.6	29.6			
Communication and Signals		-	-			
Security and Life Safety		68.0	68.0			
Subtotal ARRA Funds		**237.3**	**237.3**			
Total	**406.8**	**314.0**	**720.8**	**354.0**	**129.3**	**483.3**

(a) FY2011 Federal Capital includes FY2010 Federal Capital spent in fiscal 2011

Additional funding provided under the FRA-Administered High-Speed Intercity Passenger Rail Program (HSIPR) is providing resources for the design and environmental review of other major backlog projects, including the planned replacement of the 140 year old Baltimore and Potomac (B&P) tunnel south of Baltimore and the century old Susquehanna River Bridge in Northern Maryland.

Amtrak is also investing $450 million between 2012 and 2017 under a recently awarded HSIPR grant to Amtrak to upgrade catenary, track, signal and electric power systems on the four-track NEC main line between New Brunswick and Trenton, New Jersey. This budget includes $7.3 million in funding from this grant. When completed in 2017, this project will increase the top speed for high-speed train operations from 135 mph to 160 mph and improve reliability for all passengers including intercity and commuters on one of the most heavily trafficked sections of the Northeast Corridor.

Additional projects underway with HSIPR funding awarded to third parties but impacting the Amtrak network, include a new third track and platform improvements at Kingston, Rhode Island and double tracking key portions of the Springfield Line in Connecticut. Also planned is the construction of a new grade-separated "flyover" at Harold Interlocking in New York, at the junction where Amtrak and MTA Long Island Rail Road trains converge east of Penn Station New York; installation of a third NEC Main Line track segment in Delaware, and upgrade of State Interlocking in Harrisburg on the Keystone Line in Pennsylvania.

The above projects reinforce Amtrak's approach to SOGR which is to ensure that every project undertaken not only replaces an aging asset and improves the reliability of existing services, but provides a solid foundation for future growth as discussed in the following section.

Beyond SGR: A Vision for the Future

In addition to state of good repair needs, the Northeast Corridor faces capacity constraints. Some 2,200 trains operate on the corridor on a daily basis, including Amtrak, commuter and freight trains.

Amtrak's New York Penn Station and the Hudson River Tunnels that feed it traffic from New Jersey are at capacity today, and a number of other major segments are at or nearing their capacity limits, as documented in the Northeast Corridor Infrastructure Master Plan, published in May 2010.

In addition, Amtrak faces increasing demand for service due to high fuel prices combined with congestion and capacity constraints affecting many of the region's major highways and airports. This situation is likely to worsen in coming years as growth outpaces the region's ability to add transportation capacity due to funding, environmental and land constraints.

To help address these issues, Amtrak in September 2010 issued "A Vision for High-Speed Rail in the Northeast Corridor." The "Vision" outlined a conceptual framework and provided an initial review of the feasibility of improving the existing NEC alignment to handle growth in regional, commuter and freight services, while simultaneously planning and building a new, dedicated, two-track, high-speed rail alignment between Boston and Washington to serve the fast-growing intercity rail market, provisionally known as the NEC Next Generation High-speed Rail or "NextGen HSR" system.

This Vision is currently being further evaluated and refined so that it may serve as one of the bases for the more significant planning efforts in FY 2012 and beyond. Amtrak has presently underway, and to be completed by summer, a business and financial planning effort to further consider the financial feasibility and business strategies necessary to pursue improvements set forth in the Vision. Also early in 2012, the Federal Railroad Administration (FRA) is expected to begin work on a Tier 1 Programmatic Environmental Impact Statement (PEIS) for the Northeast Corridor that will consider various alternative development strategies and configurations for the future of the NEC with the aim of minimizing possible environmental impacts from the improvement and expansion of NEC intercity rail service.

Amtrak expects that the concepts set forth in the Vision will be one of the major alternatives evaluated under the PEIS. To advance these plans, Amtrak is also working closely with the Northeast Corridor Infrastructure and Operations Advisory Commission, which is primarily made up of representatives of the FRA, Amtrak and the Northeast states. The Commission, created under the Passenger Rail Investment and Improvement Act (PRIIA) of 2008, aims to help guide the EIS process and is developing policy, funding and financing options to improve intercity passenger rail service in the Northeast.

Implementing the Vision: A Phased Approach

While it is estimated that implementing Amtrak's total Vision for an improved NEC complemented by a new NextGen HSR system with a dedicated two-track alignment between Boston and Washington will take until roughly 2040 to fully complete, significant improvements to the NEC and intercity passenger rail service are achievable in the nearer term. Such opportunities through 2025 include targeted improvements to the existing NEC alignment, expansion of tunnel and station capacity in New York City, expansion of servicing facilities in Boston, MA, Queens, NY and Washington, DC and acquisition of new rolling stock that is will provide additional capacity and improved service on the NEC in the short to medium term.

Amtrak is currently in the initial phases of planning for these improvements, driven by the clear need for greater NEC intercity capacity and performance in the coming years and decades.

The initial Stair-Step Plan calls for expanding Acela Express train lengths from six to eight cars by 2016

The existing Acela train sets will be converted from a 1-6-1 to a 1-8-1 configuration (power car-passenger cars-power car). This adds two coach cars to each of the 20 train sets increasing ridership capacity by 130 seats per train set. Increasing the length of the train sets will require infrastructure changes including lengthening the Acela maintenance facilities in Washington, New York, and Boston in the future. The costs and expected revenue increases for this program are incorporated in Amtrak's Five Year Financial Plan. $36.8 million is programmed into FY2012 for these acquisitions.

Beyond 2020, however, no significant expansion of intercity service is possible in the Northeast without providing additional rail capacity into and through Midtown Manhattan. Under the "Gateway" portion of the Plan, Amtrak could triple premium high-speed service, to three round trips per hour, between New York and Washington by 2025. To facilitate this service expansion, the Gateway Program includes new tunnels under the Hudson River and replacement of the century-old Portal Bridge east of Newark, New Jersey with two new high level spans. Expansion of station facilities in New York is also necessary in conjunction with the construction of a new "Moynihan Station" directly across 8th Avenue from the existing Penn Station on the site of the former Farley Post Office. This budget includes $15 million in federal appropriations designated for the Gateway Program.

While significant planning work remains, initial estimates show that the Gateway Program is expected to cost approximately $14 billion to $16 billion, depending on the configuration of an expanded Penn Station to accommodate both commuter and intercity rail. Of the estimated cost for Gateway, $137 million of funding has already been made available to begin work on the program, including funding for design and early phase construction at Moynihan Station under a $83M TIGER grant; final design of one of two Portal bridges under a $38.5M million HSIPR grant, and the $15 million in federal general capital grants to Amtrak provided in the FY12 Appropriations Act.

Debt Service and Debt Related Equipment Purchases

Principal and Interest

Principal and interest payments for FY2012 amount to $254.5 million and are detailed in Table 16 below.

Table 16 - Debt Service

$ Millions	Q1	Q2	Q3	Q4	FY12
Principal	49.6	71.0	37.5	13.7	171.9
Interest	25.4	19.4	24.9	13.0	82.6
Total Cash P&I (DOT Debt Service Grant)	**75.0**	**90.4**	**62.4**	**26.7**	**254.5**

Early Buyout Options (EBO)

An Early Buyout Option is a contractual right for Amtrak to terminate a long term lease of equipment, in part or in whole, on favorable terms. The EBO gives Amtrak the rights to a) buy the equipment which is owned by a bank and, separately, to b) pay off the rest of Amtrak's lease payment obligations to the bank. The EBO occurs at a specified, fixed price, one time only, late in the term of the lease. It is the only right of voluntary pre-payment in the lease.

PRIIA Section 205 provides that the Secretary of the Treasury may make agreements to restructure (including repaying) Amtrak's indebtedness, including leases, outstanding as of the date of enactment of PRIIA upon such terms as Treasury deems favorable to the interests of the United States Government. Amtrak, Treasury and the Department of Transportation, acting through the Federal Railroad Administration (FRA) entered into a Memorandum of Understanding (MOU) to fund the exercise of certain EBOs on select leases entered into by Amtrak, up to the amounts and on the dates shown in Table 17.

Table 17 – Leases in Treasury MOU – Early Buyout Options

Lease Name	EBO Payment Date	FY2011	FY2012	FY2013
Trust 2001-L-B (2nd closing) for 16 GE P42-DC Locomotives	03-Jan-11	28.40		
Trust 2000-L-A (2nd closing) for 16 GE P42-DC Locomotives	30-Sep-11	23.34		
Trust 94B-A for 6 Superliners	3-Jan-12		11.92	
Trust 94B-C for 8 Superliners	3-Jan-12		17.73	
Trust 98C for 107 Superliners (Secured Note matures on 3-29-12)	31-Jan-12		134.02	
Trust 96A-B for 13 of 98 GE P-42 DC Single Mode Diesel Locomotives	1-Jul-12		20.18	
Trust 96B for 20 of 98 GE P-42 DC Single Mode Diesel Locomotives	1-Jul-12		30.97	
Trust 97D for 50 Amerail Viewliner Passenger Cars	2-Jul-12		44.01	
Trust 96A-C for 7 of 98 GE P-42 DC Single Mode Diesel Locomotives	1-Oct-12			11.12
Trust 97A for 25 of 98 GE P-42 DC Single Mode Diesel Locomotives	1-Oct-12			39.66
Trust 96A-D for 19 of 98 GE P-42 DC Single Mode Diesel Locomotives	1-Jul-13			28.70
Trust 94B-B for 7 Superliners	1-Jan-13			13.40
Trust 2000 SD-A (2nd closing) for 10 Surfliners	19-Jun-13			17.03
Total Leases in Treasury MOU		**51.74**	**258.85**	**109.91**
Grand Total				**420.49**

Sources and Uses of Cash – Budget Basis

Amtrak's FY2012 Simple Sources and Uses (Cash flow) is based on this budget and the receipt of federal funding of $1,408 million during the year. Amtrak continues to have no access to short-term credit lines.

The following summarizes Amtrak's planned source and use of funds for FY2012 based upon this budget assuming funding will be appropriated as presented in this document.

Table 18 – Simple Sources and Uses

	$Millions	
Beginning Available Cash (after outstanding payments)		**120.2**
Uses:		
Operating Expenses (Net operating loss including Depreciation & Non-Cash OPEB's [1]	1,080.5	
Non-Cash Adjustments (Depre & Non-Cash OPEB's)	(735.2)	
Net Operating Loss		345.3
Capital Expenditures		1,086.4
Debt Service Principal & Interest		254.5
Equipment Lease Buyout		258.8
Total Uses		**1,945.1**
Sources:		
Federal Grants:		
Operating	466.0	
Capital	671.5	
Debt Service Principal & Interest	271.0	
Subtotal Federal DOT Grants		1,408.5
EBO (from EBO Grant)		258.8
RRIF Loan Financing of Equipment Acquisitions		119.6
Third Party and Special Grants		185.7
Total Sources		**1,972.6**
Estimated Ending Cash		147.7
Net change in assets & liabilities		-
Total Cash		**147.7**

[1] OPEBs - Other Post Retirement Employee Benefits

[2] Does not include ARRA funds

Department Operating and Capital Programs

Amtrak Police Department

Overview of the Department

The Amtrak Police Department is committed to maintaining the safety and security of the rail traveling public, improving the quality of life of Amtrak personnel and safeguarding the trains and rails through Customer-Oriented Policing. This will be accomplished by building partnerships to enhance capacity to protect a nation in transit. The Amtrak Police organization consists of three Divisions:

1. Patrol Division makes up the majority of the department with officers nationwide at more than 30 locations protecting our passengers, employees and assets. The Patrol Division consists of professionally trained sworn police officers who work closely with local, state and Federal agencies.

2. The Special Operations Division includes a contingent of sworn Special Agents who work in concert with police officers to protect Amtrak passengers, employees and assets. This Division has oversight and coordination responsibilities of Amtrak's nationwide robust and expertly trained explosive detection canine program. Special Operations also includes Amtrak's Intelligence Unit consisting of contract intelligence analysts and sworn personnel assigned to Joint Terrorism Task Forces (JTTFs) in New York, Washington, and Chicago.

3. The Corporate Security Division identifies and implements counterterrorism mitigation strategies in the form of policies, programs and standards to ensure the protection of Amtrak's employees, passengers, assets and critical infrastructures. This Division collaborates with the Patrol and Special Operations Divisions on counter-terrorism and infrastructure protection projects. The Corporate Security function oversees corporate security improvements including security related capital investments.

The Amtrak Police Department total budget request for FY12 is $73.9M representing an increase of $10.3M compared to FY11 actual(s).

Base Activity:

The FY12 base budget is $65.3M, with initiatives of $9M and target budget reductions of ($0.4M) for a total request of $73.9M. A summary of the FY12 changes includes the following:

- Inflation of Prior Year expenses including labor agreements $1.2M
- Increase in Wages and Benefits due to vacant positions in FY11 $2.1M
- Decrease in Security expenses due to anticipated reduced activity in FY12 ($0.6M)
- Decrease in Professional Fees expenses due to anticipated reduced activity in FY12 ($1.1M)
- Other $0.1M

New Activity:

- Police Fitness Program-Testing and evaluating candidates to meet established physical fitness standards $0.5M
- Virtual Fence Monitoring Cost $0.8M
- Increase in Wages and Benefits due to new contract with the Fraternal Order of Police $1.9M

- Increase in policing and security scope and coverage $5.8M

Operating Expense Summary FY10 –FY12: Amtrak Police Department

$ millions	FY10 Actual	FY11 Actual	FY12 Budget	FY12 Incr/(Decr) vs FY11 $	FY12 Incr/(Decr) vs FY11 %
Salaries	$7.5	$6.4	$6.8	$0.4	6.0%
Wages & Overtime	$26.6	$29.5	$34.4	$4.9	16.7%
Employee Benefits	$16.3	$18.7	$20.4	$1.7	9.3%
Employee Related	$1.5	$1.8	$2.3	$0.5	27.5%
Salaries, Wages and Benefits	$51.9	$56.4	$64.0	$7.5	13.4%
Train Operations	$0.0	$0.1	$0.1	$0.0	49.7%
Fuel, Power, & Utilities	$0.0	$0.0	$0.0	$0.0	32.5%
Materials	$0.0	$0.2	$0.0	($0.2)	-80.2%
Facility, Communication, & Office	$4.2	$3.2	$5.6	$2.5	77.6%
Casualty and Other Claims Total	$1.2	$0.7	$1.3	$0.6	93.7%
Professional Fees	$1.7	$1.0	$1.2	$0.1	12.0%
Data Processing Services and Supplies	$0.0	$0.1	$0.0	($0.0)	-39.8%
Environmental and Safety	$0.4	$0.5	$0.1	($0.3)	-77.3%
M of W Services	$1.3	$1.4	$1.5	$0.0	3.3%
Total Operating Expenses	**$60.9**	**$63.6**	**$73.9**	**$10.3**	**16.2%**

Summary of Changes from FY11 to FY12

	$ Millions
FY11 Total Actual	**$63.6**
Changes to Base Activity	
Inflation of Prior Year expenses including labor	$1.2
Increase in Wages and Benefits due to vacant positions in FY11	$2.1
Decrease in Security expenses due to anticipated reduced activity in FY12	($0.6)
Decrease in Professional Fees expenses due to anticipated reduced activity in FY12	($1.1)
Other	$0.1
Base Activity Increase/(Decrease) from Prior Year	**$1.7**
Total FY12 Base Activity	**$65.3**
New Activity	
Police Fitness Program-Testing and evaluating candidates to meet established physical finess standards	$0.5
Virtual Fence Monitoring Cost	$0.8
Increase in Wage/Benefits due to new contract with the Fraternal Order of Police	$1.9
Increase in policing and security scope and coverage	$5.8
Total FY12 New Activity	**$9.0**
FY12 Budget before Reductions	**$74.3**
FY12 Reduction	($0.4)
FY12 Final Budget	**$73.9**

Capital Projects: Amtrak Police Department

$ Millions

Program Title	Project	GCAP	State, Local & Other	Total
Safety & Security	Special Operations Division Equipment	$0.0	$0.5	$0.5
	Security and Protection Interoperability (SPI)	$0.0	$2.0	$2.0
	Police Canine Expansion	$0.0	$1.8	$1.8
	Intelligence Support Phase II	$0.0	$0.6	$0.6
	DHS2010 Operational Packages	$0.0	$0.6	$0.6
Infrastructure Protection	Access Control System Expansion	$0.0	$1.2	$1.2
	CCTV and Communications	$0.0	$3.3	$3.3
	CCTV and Communications	$0.0	$2.4	$2.4
	CCTV Maintenance and Monitoring	$0.0	$0.3	$0.3
	Bridge and Tunnel - Security Improvements	($0.0)	$2.7	$2.7
	Bridge and Tunnel - Security Improvements	$0.0	$1.8	$1.8
	Substation - Security Improvements	$0.0	$0.8	$0.8
	Amtrak Police Department Personal Protection Equipment	$0.0	$0.4	$0.4
	Station Hardening	$0.0	$2.7	$2.7
	DHS2010 Communications Control Center	$0.0	$3.0	$3.0
	DHS2010 Infrastructure Protection	$0.0	$5.0	$5.0
Planning & Assessments	Security Systems - Future Design	$0.0	$0.5	$0.5
	Station Action Team (SAT) Tool Kit	$0.0	$1.5	$1.5
	DHS2010 Planning and Assessments	$0.0	$1.3	$1.3
Public Awareness	Public Security Awareness Program	$0.0	$0.6	$0.6
Exercises	Station Action Plan Testing and Implementation	$0.0	$1.8	$1.8
Training	Security Canine Procurement and Training	$0.0	$0.7	$0.7
	Security Training	$0.0	$1.5	$1.5
	DHS2010 Training and Public Awareness	$0.0	$1.6	$1.6
2011 DHS TSGP	DHS2011 Transit Security Grant Program (TSGP)	$0.0	$5.0	$5.0
ARRA Law Enforcement Grant	2009 ARRA TSGP Operations Package	$0.0	$2.1	$2.1
	Amtrak Police Department	**($0.0)**	**$45.6**	**$45.6**

Safety & Security Program: $5.5M

- Special Operations Division Equipment - $ 0.5M: This project involves the purchase of communication and tactical equipments (e.g. chemical and explosive detectors, vehicle transport equipment, satellite communication equipment and mobile handheld communication equipment) for Amtrak Police Department (APD) to support its increased counter-terrorism and operational activities pertaining to the intercity passenger rail system.
- Security and Protection Interoperability - $2.0M: This project will enable Amtrak to exchange useful data on demand in real time across disparate systems with each other and with law enforcement agencies, transit departments, emergency responders and federal agencies. This project coincides with the DHS SAFECOM Interoperability Continuum including conducting a technical and operational capabilities assessment and the creation and implementation of a security communications plan to enhance communication between Amtrak, and police, fire and emergency medical response services, essential in responding to incidents
- Police Canine Expansion - $1.8M: This project supports the expansion of the number of APD canine teams and the program overall to increase capacity for explosive detection. It covers canine teams with refresher training and recertification, startup equipment, supplies and vehicles.
- Intelligence Support Phase II - $0.6M: This project involves the continuous development and use of Intelligence unit to provide relevant, focused, and continuous threat assessment that will enable decision-makers to take cogent defensive/protective actions against threats. This project contracts intelligence professionals to liaison with fusion centers and other key intelligence organizations to conduct analysis of security information to enhance rail security.
- Department of Homeland Security (DHS) Operational Packages - $0.6M: This project provides equipment and reimbursement of operational expenses for a four-person mobile screening team in the New England region to augment surge, counter-surveillance and show of force activities.

Infrastructure Protection Program: $23.6M

- Access Control System Expansion - $1.2M: This project covers the expansion of access control systems and intrusion detection systems to additional facilities that will integrate alarm system with access control alarm monitoring. Current card access system contains over 300 access points throughout the corporation. Goal is to expand card access to larger facilities where key control is difficult due to large number of employees.
- Closed-Circuit Television (CCTV) and Communications – $5.7M: This project will provide funding to hire contractors to design and install CCTV surveillance systems including new CCTV cameras, conduit, wirings, recorders, monitors, accessories and an addition of new capabilities to existing cameras. The CCTV system will provide increased capability to monitor and respond to incidents at stations and enhance the security surveillance in support of counter terrorism efforts.
- CCTV Maintenance and Monitoring - $0.3M: This project will continue to create new CCTV and Communications capabilities in stations in East Coast Operations and Western Operations that will integrate into a video management system. The signals results can be transmitted to National Communications Center (NCC) or remote locations. The APD will have the ability to intelligently dispatch resources and give responding personnel real-time information.
- Bridge and Tunnel Security Improvements - $4.5M: The scope of this project is to control access, detect unauthorized entry, and deter the ability to carry out terrorist activities against critical infrastructure by hardening the bridges and tunnels in the national passenger rail system. It also intends to secure the right of way leading to each side of a bridge or tunnel and to install CCTV cameras, intrusion detection and motion sensors around the bridges and tunnels to alert security personnel of unauthorized entry in the secured zones.
- Substation Security Improvements -$0.8M: This project involves the installation of intrusion detectors, CCTV systems, and motion detectors to secure the areas near critical power infrastructure.
- Amtrak Police Department Equipment Purchase - $0.4M: This project is to purchase variety of equipment for the APD and Mobile Team to support their increased counter-terrorism and operational activities pertaining to the intercity passenger rail system. The Mobile Team consists of specialized counter-terrorism agents that work collaboratively with APD to detect, deter, and respond to potential acts of terrorism. The project also includes funding to supply both forces with communication and tactile equipment such as satellite communication equipment, mobile handheld, chemical and explosive detectors etc.
- Station Hardening - $2.7M: This project will increase security by designing and installing station hardening systems including new bollards, gateway checkpoints, and protection pillars integral to the stability of the building at top priority stations. This will provide increased capability to protect, monitor, and respond to incidents at the stations. Some of the stations may be registered as historic properties which require discussions and negotiations with the State Historic Preservation Offices before upgrades can be completed.
- Department of Homeland Security (DHS) 2010 Communications Control Center - $3.0M: This project will increase the capacity for detection, prevention and response to security threats by developing a strategic implementation plan and purchasing recommendations for equipment enhancements to improve surveillance and alarm monitoring. This will also fund the improvements of infrastructure and purchase and installation of equipment as needed and suggested per the plan, to increase capacity to monitor alarms and CCTV systems currently deployed in the facilities.
- Department of Homeland Security (DHS) 2010 Infrastructure Protection - $5.0M: This project supports the measures to prevent terrorist attacks against infrastructure and mitigate potential risk to rail passengers and assets. The 2010 grant funds will be applied to measures aimed at facility hardening, Chemical, Biological, Radiological, Nuclear, Explosives detection, HVAC improvements including the detection of airborne particulates and to follow up on Full Spectrum Integrated Vulnerability Assessment recommendations and blast mitigation studies funded by DHS and ARRA grants.

Planning & Assessments Program: $3.3M

- Security Systems – Future Designs - $0.5M: This project will support the development of a geospatial tool for situational awareness response planning and command and control purposes.
- Station Action Team (SAT) Toolkit - $1.5M: This project is a continuation of the implementation of the SAT toolkit components used for security assessment and analysis at various stations. The toolkit includes vulnerability assessments, digital mapping of rail assets, pedestrian flow modeling studies, and creation of site specific station action plans. SAT toolkit components assist in identifying, mitigating and managing terrorism risks to employees, passengers and critical infrastructure.
- Department of Homeland Security (DHS) 2010 Planning and Assessments - $1.3M: This project supports the planning and assessments activities required to develop and implement efforts aligned with security strategies. Activities under this project include contracting a vendor to conduct a system-wide risk and vulnerability assessment of the national passenger rail infrastructure.

Public Awareness: $0.6M

- Public Security Awareness Program - $0.6M: The goal of this program is to improve public safety through knowledge and wider participation in security measures. Amtrak will educate the travelers on trains and at stations on personal preparedness measures, terrorism awareness, warning alert systems, and state and local emergency plans via various communication channels. The public awareness campaign is critical to achieving improvements in risk communications to passengers regarding appropriate responses to suspicious packages, persons and ambient terrorist risks.

Exercises Program: $1.8M

- Station Action Plan Testing and Implementation - $1.8M: Amtrak is required to conduct exercises to test, analyze and understand strengths and weaknesses in its security systems and protocols and to adjust them accordingly. This program will focus on recovery and resilience exercises throughout the rail network and provide recommendation to enhance station action plans.

Training Program: $3.8M

- Security Canine Procurement and Training - $0.7M: As part of their National Explosive Detection Canine Team Program, the Transportation Security Administration (TSA) will provide free explosives detection trained canines and $40K per team per year, for five years to offset equipment and operating expenses. TSA also provides $500 per year towards refresher training and certifications.
- Security Training - $1.5M: This project involves ongoing counter-terrorism and security training for Amtrak Police Department and Amtrak Mobile Teams and security training to Amtrak employees through targeted computer based and classroom training.
- Department of Homeland Security (DHS) Training and Public Awareness - $1.6M: This program supports the planning and implementation of security awareness programs to inform and enlist the public support for security efforts. It will also provide security awareness training to employees by giving them opportunities to learn to detect a variety of threat scenarios and take appropriate actions to protect themselves and passengers.

Department of Homeland Security (DHS) 2011 Transit Security Grant Program: $5.0M

- This project covers the implementation of a range of security and counter-terrorism projects to be developed through a cooperative agreement with the Department of Homeland Security that will help deter, detect and respond to potential acts of terrorism and related incidents. Funds will be used for Amtrak's infrastructure protection program, communication and situational awareness

programs, planning and assessments, security operations and equipment purchases and training, exercise and public awareness efforts.

ARRA Law Enforcement Grant: $2.1M

- 2009 ARRA TSGP Operations Package - $2.1M: Amtrak will use these grant funds to pay for personnel costs such as salary, overtime and benefits for 16 officers for a 36 month period plus the costs to outfit them with standard equipment such as uniforms and radios as well as specialized equipment to carry out their appointed duties such as explosive detection equipment and consumables for screening teams and vehicles and kennels for canine teams.

Engineering

Overview of the Department

Amtrak's Engineering department can be described as an engineering firm and operating/construction company responsible for keeping infrastructure in a state of good repair. That includes maintenance, testing, and inspection of Amtrak's physical infrastructure, including track, signals, electric traction, tunnels, and bridges on Amtrak owned right of way and stations and facilities along the right of way. The group is responsible for the maintenance and overhaul of roadway machines and equipment used in the operation. In addition to the core maintenance activities, the group is also responsible for developing and executing the plan to bring the infrastructure into a state of good repair, and support reimbursable project activity in conjunction with state and local agencies on and along our right of way.

Base Activity:

Engineering's FY12 base budget is $289.9M, with Initiatives of $0.4M and target budget reductions of ($14.5M) for a total budget request of $275.8M.

A summary of the FY12 changes includes the following:

- Inflation of Prior Year expenses including labor agreements $7.3M
- Increase in costs for Reimbursable Services offset by Increase in Reimbursable revenue $10.3M
- Decrease in Wages ($12.8M)
- Decrease in Overtime and employee related expenses due to unexpected additional work for weather conditions in FY11 and anticipated less activity in FY12 ($6.4M)
- Decrease in benefit expenses due to decrease in Wages and change in benefit rates ($8.2M)
- Decrease in Material expense due to less expected activity in FY12 for core operation ($1.3M)
- Increase in Building Maintenance due to new facilities in Los Angeles, Seattle, Hialeah, and upgrades in Oakland $6.2M
- Increase in FELA allocated cost due to change in methodology in FY11 $1.3M
- Increase in Professional Fees due to ventilation fans maintenance $6.4M
- Decrease in Outsourced Services due to maintenance cost transferred to IT Department ($1.4M)
- Increase in Maintenance of Way services due to additional cost of tree trimming $2.7M
- Decrease in transfer credits to capital projects due to reduced capital activity in FY12 $15.4M
- Other ($0.9M)

New Activity:

New activity in the department totals $0.4M and is primarily driven by continuing safety operation improvements.

Operating Expense Summary FY10 –FY12:
Engineering

$ millions	FY10 Actual	FY11 Actual	FY12 Budget	FY12 Incr/(Decr) vs FY11 $	FY12 Incr/(Decr) vs FY11 %
Salaries	$24.8	$27.2	$28.3	$1.0	3.8%
Wages & Overtime	$134.3	$149.4	$139.7	($9.8)	-6.5%
Employee Benefits	$71.4	$85.5	$79.9	($5.6)	-6.6%
Employee Related	$5.7	$7.2	$6.0	($1.3)	-17.7%
Salaries, Wages and Benefits	$236.2	$269.4	$253.8	($15.7)	-5.8%
Train Operations	$0.2	$0.4	$0.0	($0.4)	-91.9%
Fuel, Power, & Utilities	$8.2	$9.3	$9.0	($0.3)	-3.3%
Materials	$20.0	$21.9	$22.1	$0.2	0.8%
Facility, Communication, & Office	$29.2	$17.3	$24.2	$6.9	40.1%
Casualty and Other Claims Total	$4.5	$2.7	$4.0	$1.3	47.0%
Professional Fees	$6.1	$7.2	$11.1	$4.0	55.8%
Data Processing Services and Supplies	$2.8	$3.0	$1.6	($1.4)	-45.2%
Environmental and Safety	$3.8	$4.1	$4.5	$0.4	10.9%
M of W Services	$24.1	$30.1	$31.0	$0.9	2.9%
Financial	$2.3	$1.6	$2.4	$0.8	53.5%
Pcard Transactions	$0.2	$0.2	$0.0	($0.1)	-79.1%
Expense Transfers	($1.0)	($1.2)	($0.8)	$0.4	-30.5%
Indirect Costs Capitalized To P&E	($94.2)	($94.6)	($87.2)	$7.4	-7.8%
Total Operating Expenses	**$242.5**	**$271.3**	**$275.8**	**$4.5**	**1.7%**

Summary of Changes from FY11 to FY12

	$ Millions
FY11 Total Actual	**$271.3**
Changes to Base Activity	
Inflation of Prior Year expenses including labor	$7.3
Increase in costs for Reimbursable Services offset by Increase in Reimbursable revenue	$10.3
Decrease in Wages	($12.8)
Decrease in Overtime and employee related expenses due to unexpected additional work for weather conditions in FY11 and anticipated less activity in FY12	($6.4)
Decrease in benefit expenses due to change in rate	($8.2)
Decrease in Material expense due to less expected activity in FY12 for core operation	($1.3)
Increase in Building Maintence due to new facilities in LA, Seattle, Hileah, and upgrades in Oakland	$6.2
Increase in FELA allocated cost due to change in methodology in FY11	$1.3
Increase in Professional Fees due to ventilation fans maintenance	$6.4
Decrease in Outsourced Services due to maintenace cost transferred to IT Deaprtment	($1.4)
Increase in Maintenance of Way services due to additional cost of tree trimming	$2.7
Decrease in transfer credits to capital projects due to reduced capital activity in FY12	$15.4
Other	($0.9)
Base Activity Increase/(Decrease) from Prior Year	**$18.6**
Total FY12 Base Activity	**$289.9**
New Activity	
Salaries and benefits related to Safety Operations improvements	$0.4
Total FY12 New Activity	**$0.4**
FY12 Budget before Reductions	**$290.3**
FY12 Reduction	($14.5)
FY12 Final Budget	**$275.8**

Capital Projects:
Engineering

$ Millions

Program Title	GCAP	State, Local & Other	Total
Bridges, Culverts and Tunnels	$62.2	$6.0	$68.1
Facility, Station, and Other	$37.1	$12.9	$50.0
Signal Systems	$35.7	$5.8	$41.5
Communication Systems	$0.5	$0.0	$0.5
Overhead Catenary and Transmission Systems	$14.1	$1.5	$15.6
Substations Frequency Converters	$9.3	$4.7	$14.0
Track Replacement	$102.6	$64.2	$166.7
Interlocking Renewal	$9.0	$6.9	$15.9
Equipment Purchase, Replacement	$13.9	($0.0)	$13.9
Seattle King St. Coach Yard	$7.0	$0.0	$7.0
Fire & Life Safety	$8.7	$14.5	$23.2
ADA Compliance	$50.0	$0.0	$50.0
High Speed Inter-city Passenger Rail Program	$0.0	$7.3	$7.3
V-ETMS Interoperability on the NEC	$0.0	$9.6	$9.6
Total Engineering	**$350.0**	**$133.3**	**$483.3**

Bridges, Culverts and Tunnels $68.1M

- Fixed bridges upgrade ($20.9M) – The scope of this program is to address under grade bridges and to convert open deck under grade bridges to ballast deck for improved train performance.
- Major Bridge Special Projects ($35.0M) – The scope of this program is to address major bridges currently not in a state of good repair for improved train performance, eliminating slow orders that would occur when bridge components fail and disrupt the train traffic and continuous maintenance costs due to temporary repairs.
- Other programs ($12.2M)
  - $2.6M for movable bridges
  - $2.0M for replacement of timber bridge ties
  - $1.0M for replacement of culverts
  - $1.6M for fences
  - $2.4M for tunnels
  - $2.3M for retaining wall masonry and concrete work
  - $0.4M for interlocking

Facility, Station and Other $50.0M

- Maintenance of Equipment Facilities ($11.9M) – Upgrades to engineering equipment maintenance facilities such as HVAC replacement, roof replacement, electrical upgrades, and lighting improvements.
- Maintenance of Way Base ($6.3M) – Upgrades to maintenance of way facilities such as HVAC replacement, roof replacement, electrical upgrades, and lighting improvements.
- Station Upgrades ($26.5M) – Upgrades to stations to include elevators, escalators, HVAC, roofing, lighting, bathroom, and other interior improvements.
- Transportation Department Facilities ($1.4M) – The scope of this program is the renewal of interlocking towers such as the "K" tower and Dock interlocking tower.

- Sunnyside Yard New Mechanical Facility ($4.0M) – The scope of this program is to build a new consolidated Mechanical, Engineering, and Transportation maintenance facility and warehouse at Sunnyside Yard outside of New York Penn Station. This program is 100% funded by external agencies (MTA).

Signal Systems $41.5M

- Automatic Block Signal (ABS) ($6.0M) – The scope of the program is to bring ABS assets to a state of good repair. ABS component failures have been identified as a major contributor to train delay. Upgrading of outdated components will result in increased reliability, improved on-time performance and railroad safety.
- Advanced Civil Speed Enforcement System (ACSES) ($12.5M) – This program involves the relocation of the system database to the on-board locomotive computer from its wayside location. Positive Train Control (PTC) is required by the FRA to operate speeds in excess of 125 mph; operations beyond 125 mph are only possible with ACSES. This program will enhance safety by ensuring positive stops at all stop signals and ensuring speed enforcement at curve restrictions, therefore eliminating exposure to human error train collisions.
- Interlocking – Communications & Signals ($8.8M) **–** This program will upgrade signal systems at inter-locking(s) to eliminate equipment failures and reduce maintenance costs. This program involves conversion of air switch machines to electric machines, automation of manual towers and replacement of obsolete interlocking signal system components.
- Crossings ($2.8M) – The scope of this program is to upgrade highway crossing detection devices for more reliable operation of warning systems. It will enhance grade crossing system safety and reduce maintenance costs.
- Centralized Traffic Control (CETC) ($11.5M) **–** The scope of this program is to replace centralized traffic control equipment in CETC locations with modern server-based systems. The three existing locations do not have back-up capability. Server-based systems will allow for easy back up in case of a disaster.

Communications Systems $0.5M

- Radios ($0.5M) – The objective of this program is the renewal and replacement of radio assets to bring Amtrak in compliance with the Federal Communications Commission. Work performed under this program includes the renewal of battery back-up systems at radio locations and the replacement of analog radio equipment with digital narrowband equipment.

Overhead Catenary and Transmission Systems $15.6M

- Constant Tension Catenary ($9.3M) – The scope of this program involves the replacement of the constant tension catenary system which is utilized for providing power from the transmission system to the electric train sets. Failure of the catenary system would prohibit movement of the electric train sets and lead to excessive train delays and decrease on-time performance.
- Catenary Pole ($5.3M) – Many of the catenary poles are over 90 years old and are beyond their designed service life. Replacement of the poles will provide physical support to the power transmission and catenary systems.
- Transmission ($1.0M) – The scope of this program is the replacement of traction power transmission cable and associated hardware. Much of the existing cable has been in service for over 70 years and has far exceeded its useful life.

Substations Frequency Converters $14.0M

The scope of this program is to make improvements of the electric traction and substations along the Northeast Corridor. Some examples of work performed under this program are: replacement of rotary traction power frequency converters; replacement or renewal of existing power machines; and renewal of substation components such as power transformers, circuit breakers and control cables. The reliable operation of these assets is critical to on-time performance.

Track Replacement $166.7M

- Track Ballast ($4.4M) – The scope of this program is to perform work that will bring the ballast assets to a state of good repair. Examples of work performed under the program are replacement through spot undercutting and shoulder cleaning where total replacements are not needed.
- Track Drainage ($2.1M) – The scope of this program is to renew and replace track drainage assets currently not in a state of good repair. If not corrected, poor drainage will result in slow orders and higher maintenance costs associated with the accelerated degradation of track geometry.
- Track Rail Replacement ($16.5M) – The goal of this program is the replacement of rail that is currently not in a state of good repair. There is roughly 1,600 miles of main line track that is 40 to 50 years old. Amtrak must replace an average of 35 miles of rail per year. Useful service life of rail has been exceeded once horizontal or vertical wear limits, internal defect rates, or surface conditions are approaching safety limits. This program will help to reduce maintenance costs and slow orders.
- Crosstie / Timber ($22.3M) – This program will replace crosstie and track timber along the Northeast Corridor which will reduce train delays, track geometry degradation, FRA track defects, and switch failures.
- Track Renewal ($56.4M) – The scope of this program includes renewal of the entire track structure at specific location. Rather than component replacement (e.g.: rail, ties, fasteners, ballast) the entire track will be rebuilt from the ballast level up to the top of the rail.
- Track Laying System (TLS) ($30.0M) – This program is the utilization of TLS for the complete replacement of wood tie track with concrete cross ties including replacement of concrete ties that have been found to be defective. This replacement program will reduce maintenance costs, potential slow orders, and provide for an increase in on-time performance.
- Track Turnouts ($7.8M) – This program involves the replacement of standard wood turnouts and associated components not currently in state of good repair. Associated components include frogs, switch points, and wood and concrete switch timbers and other track turnout material.
- Track Crossing Road ($1.5M) – The scope of this program includes the reconstruction or removal of at grade rail crossings. Examples of work included under this program includes the renewal of ties, rail, and crossing material at road crossing as well as concrete tie installation at grade crossing.
- Track Geometry ($15.6M) – Surfacing, realignment and re-profiling of track surface as required to meet FRA Track Safety Standards, maintain ride quality standards, and extend the life of track components.
- Construction Applications ($10.2M) – The scope of this program includes the development of the Maximo Work Management System (MWMS) for the Engineering Department, development of an infrastructure asset library, development of the Engineering Personnel System (EPS), and the development of an Enterprise Project Management System (EPM). It also builds on earlier investments in Timberline estimating and Primavera scheduling and document management.

Interlocking Renewal $15.9M

The scope of this program is the total renewal of the existing track structure within interlocking limits with new advanced technology, turnouts including concrete switch ties, moveable point frogs, and switches. These interlocking renewal projects will move the railroad towards a state of good repair by eliminating failures and reducing maintenance costs.

Equipment Purchase/Replacement $13.9M

The program involves the replacement of existing equipment at the end of its useful service life. The replacement program will increase efficiency, utility and production capacity of the equipment by taking advantage of technological advances within the industry.

Seattle King St. Coach Yard $7.0M

This program involves upgrades to the Seattle maintenance of equipment facility to meet contractual obligations for Sound Transit and to provide increased capacity to maintain Talgo & Amtrak fleets.

ADA Compliance $50.0M

This investment will provide necessary improvements for multiple stations to improve access for disabled patrons and comply with ADA regulations for numerous stations across the United States. This is the next stage in Amtrak's ADA compliance plan to achieve access for disabled passengers at Amtrak's stations.

Fire & Life Safety $23.2M

- First Avenue Construction ($19.5M) – The project consists of the reconfiguration of two shafts, north and south structures connecting to the East River Tunnels at First Avenue in New York. The inadequate ventilation system is being replaced with high capacity bi-directional fans that will be computer controlled by computer at a remote location. This will require the relocation of all utilities. A new structure will be constructed at the top of the shafts to house the new fans, new utility systems and to provide access to the new stairwells.
- North River Tunnels Ventilation Construction ($2.0M) – This project is located in Weehawken, NJ and consists of the replacement of high capacity bi-directional fans that will be computer controlled at a remote location.
- Standpipe Installation ($1.1M) – This project consists of the installation of approximately 16 miles of a remote computer-controlled fire standpipe system along the North and East River tunnel systems. In addition, includes the installation of an air monitoring system to the existing standpipe system which incorporates the addition of Air-Vacuum Isolation valves with fail safe actuators in the tunnels and the installation of Standpipe Deluge Valves and Air compressors and associated piping, electrical power and controls to provide a fully operable fire standpipe system. This also includes bonding and grounding installation for the standpipe system.
- Miscellaneous Design & Construction ($0.6M) – Two construction projects are planned to improve communications: one will provide radio coverage in all tunnels for local Fire Department personnel, and the other one will provide redundant communication capability

High Speed Inter-city Passenger Rail Program $7.3M

The general objective of the program, funded by a multi-year grant for a total of $450 million, is to upgrade and improve the catenary, power, track and signal systems on the NEC primarily between New Brunswick, NJ and Trenton, NJ, and to improve the western approach tracks in Penn Station New York in order to facilitate increased speeds and improved reliability for all users and eventual higher levels of

service. The upgrades described, along with equipment acquisition are currently in the planning stages. This will allow Amtrak to achieve up to 160 mph operating speeds between New Brunswick and Trenton, and substantially improve the reliability of intercity and commuter services in one of the most heavily used sections of the Corridor.

V-ETMS Interoperability on the NEC $9.6M

The purpose of this program is to design, develop and install Advanced Civil Speed Enforcement System (ACSES) with interoperable electronic train management system. This system will be designed to interface Amtrak's current PTC system with foreign railroad's PTC system.

Environmental Health and Safety

Overview of the Department
The Amtrak Environmental Health and Safety (EHS) Department performs in five functional areas: System Safety (including Industrial Hygiene), Public Health, Environmental Management, , Health Services (including Employee Assistance Programs and Operation Redblock) and Medical Services.

The ***Safety*** group is responsible for the System Safety program, chemical product evaluation and selection, OSHA compliance, Federal Railroad Administration (FRA) safety compliance, management of Operation Lifesaver program, facility safety audits, employee exposure surveys and controls, safety training program development, and expert OSHA testimony for Claims. In addition, the Safety group includes the Central Reporting Office, responsible for compliance with FRA injury/illness reporting, input and tracking of passenger safety incident reports and Claims support.

The ***Public Health*** group oversees Food and Drug Administration (FDA) food service and sanitation compliance, Environmental Protection Agency (EPA) drinking water compliance, passenger and employee food-borne illness investigations, Sanitation Task Force facility audits, pest control service contract management, Pandemic Flu preparation and FDA food car design requirements.

The ***Environmental*** group supports Amtrak facilities and functions by providing both companywide and facility specific compliance guidance. Compliance activities include development and delivery of training programs, permit applications, routine inspections and monitoring, and submittal of required agency reports. The environmental audit and assessment program is a part of the Environmental Management System and is used to identify non-compliance issues and develop corrective actions to prevent these non-compliance issues from re-occurring which could lead to enforcement actions. Amtrak's Environmental Management System (EMS) is coordinated and led by the Environmental group. EMS helps Amtrak departments address environmental activities through awareness, training and outreach. Monthly interdepartmental meetings are held to discuss environmental issues and set goals for environmental improvements. Performance against goals is also tracked through the EMS. The EMS is also used to support marketing with environmental attributes of Amtrak various advertising campaigns. In addition, the Environmental group provides project management for both operating and capital projects. These projects include remediation of contamination or risk reduction projects at facilities. These projects keep Amtrak in compliance with environmental regulations and clean-up requirements and create more valuable property. Amtrak's Environmental Reserve Schedule, in compliance with GAAP, lists over $60 million in known contamination needing to be remediated over the next 5-15 years. The group has also worked with the Mechanical department to obtain $4 million in grants for more efficient locomotives.

In addition to tracking emissions from the company's carbon footprint and helping with programs to reduce greenhouse gas emissions, the Environmental group provides support to Marketing and Government Affairs regarding sustainable practices and the environmental attributes of passenger rail travel.

The ***Health Services*** group is responsible for providing programs and services for Amtrak employees (and families) that improve their well-being in order to be productive and safe in the workplace. They oversee and implement programs through the Employee Assistance Program (EAP); drug and alcohol testing; audiometric testing under the Hearing Conservation program; accommodations through the Americans with Disability Act; and wellness programs. The EAP assist employees to restore and maintain their full capabilities and emotional well being when trying to cope with grief, trauma, marital/relationship/family problems, depression, and other stressors; to help maximize safety in all aspects of Amtrak operations; to assist in retaining valued employees; to reduce overall incidence of substance abuse in the workplace, toward the ultimate goal of maintaining a drug-and-alcohol-free work environment. The EAP oversees the Critical Assistance and Response for Employees (CARE) program. They work collaboratively with Operation RedBlock teams to assist employees with drug and alcohol problems. The drug and alcohol testing program provides the services of a Designated Employer Representative (DER) and oversees the following testing programs – random, rule G follow-up, pre-employment, return-to-duty from 30 day leave, fitness-for-duty, periodic, for cause, FRA/FMCSA Federal Post accident. The wellness program promotes program to establish a healthy life style such as walking, weight-reduction, smoking cessation, health assessments and biometric screens.

The ***Medical Services*** group is responsible for the review and processing of all medical examinations, including pre-employment, periodic, Commercial Drivers License (CDL), respirator clearance, and return to work, assuring compliance with both regulatory and corporate standards. Additional responsibilities include extensive case management of Medical Leave of Absence occurrences, providing Fitness for Duty determinations and regular collaboration with other departments on medical issues. Oversight of the Work with Medications (Form 3133) process involves the careful review of records, medical conditions and job descriptions by the Medical Services professional staff in making approvals or non-approvals. The Medical Services group also manages and oversees the network of 200 provider clinics to make certain that quality services are provided to our employees and identified standards are maintained.

The total FY12 Budget request is $14.3M which represents a reduction of $2.3M compared to FY11 actual(s).

Base Activity:

The Environmental Health and Safety Department's FY12 base budget is $15.5M. However this budget is reduced by $2.3M due to target budget reductions across the company. The FY12 budget is mainly driven by labor costs with a total of $10.6M.

A summary of FY12 changes includes the following:

- Inflation of Prior Year expenses including labor agreements $0.3M
- Decrease in Medical expenses due to duplicate posting in FY11 reversed in FY12 ($0.9M)
- Decrease in Professional Fees due to inclusion of Asbestos plan expenses in FY11, reported as Initiative in FY12 ($0.7M)
- Other $0.2M

New Activity:

A summary of FY12 new activity includes the following:

- Development of Asbestos building plan $0.9M
- Contract with Liberty Mutual for cross functional teams to improve work place safety processes $0.1M
- Injury Analysis $0.1M
- Climate registry verification and verification of Greenhouse Gas Emissions $0.1M
- Wellness programs such as smoking cessation and weight reduction $0.1M

Operating Expense Summary FY10 –FY12: Environmental

$ millions	FY10 Actual	FY11 Actual	FY12 Budget	FY12 Incr/(Decr) vs FY11 $	FY12 Incr/(Decr) vs FY11 %
Salaries	$5.0	$5.1	$5.3	$0.2	3.7%
Wages & Overtime	$0.4	$0.3	$0.4	$0.1	31.3%
Employee Benefits	$2.8	$3.0	$2.9	($0.1)	-3.6%
Employee Related	$2.0	$2.8	$1.9	($0.9)	-31.3%
Salaries, Wages and Benefits	$10.2	$11.2	$10.6	($0.7)	-6.0%
Facility, Communication, & Office	$0.6	$0.5	$0.6	$0.2	33.2%
Advertising and Sales	$0.0	$0.0	$0.0	$0.0	41.8%
Casualty and Other Claims Total	$0.0	$0.0	$0.0	$0.0	111.1%
Professional Fees	$0.9	$1.4	$1.0	($0.4)	-25.8%
Data Processing Services and Supplies	$0.0	$0.1	$0.0	($0.1)	-88.4%
Environmental and Safety	$2.6	$3.4	$2.0	($1.4)	-41.4%
Expense Transfers	$0.1	$0.0	$0.0	$0.0	0.0%
Total Operating Expenses	**$14.5**	**$16.6**	**$14.3**	**($2.3)**	**-14.1%**

Summary of Changes from FY11 to FY12

	$ Millions
FY11 Total Actual	**$16.6**
Changes to Base Activity	
Inflation of Prior Year expenses including labor agreements	$0.3
Decrease in Medical expenses due to duplicate posting in FY11 reversed in FY12	($0.9)
Decrease in Professional Fees due to inclusion of Asbestos plan expenses in FY11, reported as Initiative in FY12	($0.7)
Other	$0.2
Base Activity Increase/(Decrease) from Prior Year	**($1.1)**
Total FY12 Base Activity	**$15.5**
New Activity	
Development of asbestos building plan	$0.9
Contract with Liberty Mutual for cross functional teams to improve work place safety processes	$0.1
Injury Analysis	$0.1
Climate registry verification and verification of Greenhouse Gas emissions	$0.1
Wellness programs such as smoking cessation and weight reduction	$0.1
Total FY12 New Activity	**$1.1**
FY12 Budget before Reductions	**$16.6**
FY12 Reduction	($2.3)
FY12 Final Budget	**$14.3**

Capital Projects: Environmental, Health and Safety

$ Millions

Program Title	Project	GCAP	State, Local & Other	Total
Environmental Risk	Beech Grove Facility - Waste Water Treatment System Remediation	$0.0	$0.5	$0.5
Environmental Remediation Program	Asbestos, Lead Paint and Mold Abatements	$0.0	$0.5	$0.5
	Sunnyside Yard Oil/PCB Remediation	$0.0	$1.5	$1.5
	Cedar Hill Remediation	$0.0	$0.1	$0.1
	Wilmington Maintenance of Equipment Facility-PCB/Other	$0.0	$1.2	$1.2
	Environmental Remediation Program	**$0.0**	**$3.3**	**$3.3**

Environmental Risk Reduction: $0.5M

The goal of the Environmental Risk Reduction program is to use preventive measures to mitigate potential environmental issues.

- Beech Grove Facility – Wastewater Treatment System Upgrades - $0.5M: This project includes the replacement of the existing wastewater treatment system that is 60 years old and built below ground which has the potential to leak to the groundwater. Amtrak will also replace or reroute the sewers that are discharging storm water to the industrial wastewater system. The system is outdated and requires major repairs. This is mandatory from the City of Beech Grove to reduce the discharge of storm water into the city sanitary sewer.

Environmental Remediation Program: $3.3M

Environmental remediation involves cleanup at work sites due to a Court or an Agency Administrative Order. In FY12, Amtrak plans to spend $3.3M on environmental remediation to meet ordered clean ups. The various projects being undertaken as part of this program include:

- Asbestos, Lead Paint and Mold Abatements - $0.5M: As part of multi year initiative, asbestos, mold and lead paint will be removed or remediated during construction projects, as they are encountered. Many of the facilities inherited by Amtrak have asbestos containing materials (ACM) and lead based paint. As part of Federal, state and local regulations, ACM must be abated prior to construction or demolition activities. Mold findings have occurred in facilities occupied by Amtrak employees or at Stations with water leak issues.
- Sunnyside Yard Oil/PCB Remediation - $1.5M: Train operations continuing until the1970's caused polychlorinated biphenyl (PCB) and diesel fuel releases at Sunnyside Yard which contaminated the subsoil. Amtrak and New Jersey Transit (NJT) signed a consent order with the New York State Department of Environmental Conservation (NYSDEC) to clean up the soil in order to reduce potential PCB exposure to employees. The project involves the continuation of ongoing remediation of contaminated subsoil and groundwater as per NYSDEC orders.
- Cedar Hill Remediation - $0.1M: This project involves removal and capping of PCB contaminated soil in some track areas at this facility. During FY12, Amtrak will begin preparation of a Remedial Action Plan and negotiate a potential Consent Order with the Connecticut Department of Environmental Protection. The remediation work will be carried out in FY14.

- Wilmington Facility Remediation - $1.2M: This project encompasses remediation of PCB and other contaminants and initiating erosion control measures at the Wilmington maintenance facility. The soil at the facility is contaminated with PCBs and petroleum. PCBs can be potentially transported offsite via erosion to surrounding surface water bodies, impacting the aquatic life. Amtrak signed a Voluntary Cleanup Agreement (VCA) with Delaware Department of Natural Resources and Environmental Control (DNREC) and is legally obligated to perform this work.

Finance

Overview of the Department:

The Finance Department is comprised of the CFO Staff, Treasury, Controller (Corporate Accounting, Payroll, Capital Accounting, Accounts Receivable, and Accounts Payable), Financial Analysis, Financial Planning, and Internal Audit functions. The NEC Advisory Commission has also been added to the finance department. The costs for the commission are reimbursable but the revenue for the reimbursement is recorded in another center. In addition to the operating costs of these departments, the Finance operating expense budget contains significant costs for the company as a whole that are not directly attributable to any single department. Of the FY12 Finance operating budget of $225.3M, only $40.6M (19.8%) is for departmental costs; the remaining $184.7M (80.2%) is for general Amtrak expenses, most

notably the cost of electric power for propulsion of the electric locomotive fleet in the NEC, expenses incurred for ticket sales using credit cards, property and liability insurance, financing related costs, and bank and armored car fees.

Base Activity:

The FY12 base budget request is $228.0M an increase of $16.5M over the FY11 actual.

- $2.1M is inflation primarily related to salaries, wages and propulsion.
- NEC Advisory Commission $4.2M (cost will be offset by reimbursable revenue)
- $4.6M increase is for propulsion
- $3.0M for salaries (includes employees returning from SAM implementation)
- $1.1M for Benefits
- Reduction to Professional fees ($1.5M)

New Activity:

FY12 budget contains $3.7M of financing costs for locomotive acquisition and Strategic Asset Management implementation savings of ($0.9M).

Finance - Operating Expenses Summary FY10-FY12

$ millions	FY10 Actual	FY11 Actual	FY12 Budget	FY12 Incr/(Decr) vs FY11 $	FY12 Incr/(Decr) vs FY11 %
Salaries	$14.2	$15.3	$17.9	$2.6	16.7%
Wages & Overtime	$4.7	$4.9	$4.3	($0.6)	-12.0%
Employee Benefits	$10.2	$11.0	$11.3	$0.3	2.7%
Employee Related	$0.3	$0.5	$0.6	$0.1	22.9%
Salaries, Wages and Benefits	$29.4	$31.6	$34.0	$2.4	7.5%
Fuel, Power, & Utilities	$103.2	$90.7	$93.5	$2.8	3.1%
Facility, Communication, & Office	$2.9	$2.4	$2.7	$0.2	9.6%
Advertising and Sales	$36.7	$41.2	$43.8	$2.6	6.4%
Casualty and Other Claims Total	$0.2	$0.1	$0.2	$0.1	71.5%
Professional Fees	$6.9	$5.7	$7.0	$1.3	22.0%
Data Processing Services and Supplies	$0.7	$1.2	$0.9	($0.3)	-21.5%
Financial	$44.6	$38.9	$43.2	$4.3	11.0%
Indirect Costs Capitalized To P&E	$0.0	($0.4)	$0.0	$0.4	-100.0%
Total Operating Expenses	**$224.5**	**$211.5**	**$225.3**	**$13.8**	**6.5%**

Summary of Changes from FY11 to FY12

	$ Millions
FY11 Total Actual	**$211.5**
Changes to Base Activity	
Inflation of Prior Year expenses including labor	$2.1
Cost for NEC Advisory Commission (Costs are offset by reimbursable revenue)	$4.2
Salary (vacant positions and returning employees from SAM project)	$3.0
Benefits	$1.1
Fuel, Power and Utilities	$4.6
Credit Card Commissions (based on revenue)	$2.6
Professional Fees (portion of reduction offsets employees returning from SAM project)	($1.5)
Other	$0.4
Base Activity Increase/(Decrease) from Prior Year	**$16.5**
Total FY12 Base Activity	**$228.0**
New Activity	
Financing Related Expense	$3.7
Stategic Asset Management implentation savings	($0.9)
Total FY12 New Activity	**$2.8**
FY12 Budget before Reductions	**$230.7**
FY12 Reduction	($5.5)
FY12 Final Budget	**$225.3**

Capital Projects: Finance

$ Millions

Program Title	Project	GCAP	State, Local & Other	Total
Amtrak Performance Tracking	BPC/APT Conversion to SAP Code block	$0.0	$0.4	$0.4
	Chief Financial Officer	**$0.0**	**$0.4**	**$0.4**

BPC/APT Conversion to SAP Code Block ($0.4M) – The Strategic Asset Management (SAM) system currently being implemented at Amtrak will replace the existing General Ledger Accounting System with SAP's GL module and will include a new budgeting system: SAP's PBF module (Public Budget Formulation). Amtrak has two existing SAP BPC appsets, APT and FINGATE, each containing multiple applications that have established reports and input templates, dimensions, logic, Data Manager packages, SSIS packages, SQL stored procedures, etc. This project is to make modifications to applications in both appsets as required by implementing the new GL and PBF modules.

Government Affairs and Corporate Communications

Overview of the Department

The Government Affairs Department is divided into three functional areas: Government Affairs, Corporate Communications, and Great American Stations. During FY12 the Government Affairs department will be assuming the staff and responsibilities for off-corridor state partnerships from the recently dissolved Policy & Development department.

Government Affairs: Federal grants account for almost half of Amtrak's overall budget. The Department provides Congress and the Administration with funding requests and documentation required to support the requests, prepares for related hearings before House and Senate Appropriations Committees, and responds to follow-up questions from the Committees. The Department makes annual legislative requests and follows through with appropriate Congressional staff at each stop of the way. When multi-year

reauthorization bills are in play, the Department provides Congress and the Administration with information relating to reauthorization proposals, prepares for related hearings before the House Transportation and Infrastructure and Senate Commerce Committees, and responds to follow-up questions from the Committees. The department has omnipresence on Capitol Hill, educating the Members of Congress and staff about Amtrak and passenger rail.

Government Affairs field staff provide education and intelligence to support other departments in advancing the company's needs and business interests. The field staff is active in all States with Amtrak service but mainly focuses on those with State-Supported services. Field staffs are required to visit the Mayor or other leaders of every community served by Amtrak at least once a year.

The Department educates Congressional staff and advocacy groups who wish to advance Amtrak's legislative agenda and convenes regular related meetings. It also represents Amtrak at meetings and hearings at all levels of government and regularly meets with local officials in Amtrak communities. The Department responds to external and internal inquiries, provides written responses for the signature of the CEO and Board Members, prepares speeches and presentations, and assists with public officials' travel arrangements.

Corporate Communications: Employee and Customer Communications prepares and issues the Annual Report, produces the monthly Amtrak Ink employee newspaper, produces the annual Amtrak wall calendar, provides content for the on-board Arrive magazine, and issues weekly employee advisories and service-related customer advisories for posting in stations and on trains. Media Relations responds to media inquiries, prepares news releases and statements, organizes public events, and assists with journalists' travel arrangements.

Great American Stations*:* This group creates new content for and maintains the Great American Stations website, an Amtrak project that educates local officials and the public about the benefits of station improvements and the importance of ADA compliance projects at stations and how Amtrak can help advance such projects. It also performs outreach to station communities, including through two annual "Civic Conversations," regional conferences of local officials and Amtrak officials to discuss station projects.

Government Affairs with major assistance from the Marketing and Product Management department has been conducting an Amtrak 40th Anniversary effort during FY11, but which will be concluded during FY12.

As of the date of this document and following the company's realignment of functions under the FY 2011-2015 Strategic Plan, the Policy and Development department was dissolved and in large part integrated with the Government Affairs and Corporate Communications department. There will be more changes occurring during fiscal year 2012 following this realignment.

Base Activity:

Government Affairs' FY12 base budget is $11.0M, with Initiatives of $0.2M and a target budget reduction of $3.6M for a total budget request of $7.6M. Salaries and benefits typically make up more than 90% of the budget. A summary of FY12 changes includes the following:

- Inflation of Prior Year expenses including labor agreement $0.3M
- Increase in Salaries and Benefits Allocation due to more vacant positions in FY11 than expected $1.3M
- Decrease in Employee Related expenses due to relocation expenses paid in FY11 not expected in FY12 ($0.1M)
- Increase in Diesel Fuel due to Anniversary display train fuel budgeted in Government Affairs in FY11 but actual(s) recorded in Transportation $0.2M

- Decrease in Professional Fees due to anticipated less activity in connection with 40th Anniversary display train ($0.6M)
- Increase in Data Processing Services and Supplies due to intranet upgrades and anticipated increased activity $0.1M

Operating Expense Summary FY10 –FY12: Government Affairs

$ millions	FY10 Actual	FY11 Actual	FY12 Budget	FY12 Incr/(Decr) vs FY11 $	FY12 Incr/(Decr) vs FY11 %
Salaries	$4.5	$5.1	$4.5	($0.6)	-11.5%
Wages & Overtime	$0.1	$0.1	$0.0	($0.1)	-79.8%
Employee Benefits	$2.5	$2.8	$2.2	($0.6)	-20.5%
Employee Related	$0.4	$0.4	$0.2	($0.3)	-57.8%
Salaries, Wages and Benefits	$7.4	$8.4	$6.9	($1.5)	-17.7%
Fuel, Power, & Utilities	$0.0	$0.0	$0.0	$0.0	0.0%
Facility, Communication, & Office	$0.4	$0.4	$0.3	($0.1)	-17.0%
Advertising and Sales	$0.0	$0.1	$0.1	($0.1)	-51.6%
Professional Fees	$0.3	$0.9	$0.1	($0.8)	-86.3%
Data Processing Services and Supplies	$0.0	$0.0	$0.1	$0.0	0.0%
Total Operating Expenses	**$8.2**	**$9.8**	**$7.6**	**($2.3)**	**-23.3%**

Summary of Changes from FY11 to FY12

	$ Millions
FY11 Total Actual	**$9.8**
Changes to Base Activity	
Inflation of Prior Year expenses including labor	$0.3
Increase in Salaries and Benefit expenses due to more vacant positions in FY11 than expected	$1.3
Decrease in Employee Related expenses due to relocation expenses paid in FY11 not expected in FY12	($0.1)
Increase in Diesel Fuel due to anniversary display train fuel budgeted in Government Affairs in FY11 but actuals recorded in Transportation	$0.2
Decrease in Professional Fees and Services due to anticipated less activity in connection with 40th Anniversary display train	($0.6)
Increase in Data Processing Services and Supplies due to intranet upgrades and anticipated increased activity	$0.1
Base Activity Increase/(Decrease) from Prior Year	**$1.2**
Total FY12 Base Activity	**$11.0**
New Activity	
State Corridors related activity being removed as part of the reduction listed below	$0.1
High Speed Rail Development Plan related activity being removed as part of the reduction listed below	$0.1
Total FY12 New Activity	**$0.2**
FY12 Budget before Reductions	**$11.1**
FY12 Reduction	($3.6)
FY12 Final Budget	**$7.6**

Capital Projects: Government Affairs

$ Millions

Program Title	Project	GCAP	State, Local & Other	Total
Passenger Train Performance	Improved Passenger Train Performance on Host Rail Road	$0.0	$2.7	$2.7
	Government Affairs	**$0.0**	**$2.7**	**$2.7**

Improved Passenger Train Performance on Host Rail Road ($2.7M):
This project is Amtrak's contribution to the service tunnel (under the tracks) portion of the track relocation project at Sacramento Valley Station.

NEC Infrastructure and Investment Development

Overview of the Department

The new NEC business line is focused on coordinating, managing and developing Amtrak-owned infrastructure in the Northeast to maximize the financial performance of the NEC and to support the current and future operations on the Corridor, including Amtrak, commuter and freight railroad service. It is charged with leading high-speed rail projects, advancing a State Of Good repair, managing capacity allocation and creating new capacity for existing and new rail services on the Corridor.

The High Speed Rail (HSR) is now part of NECIID and will continue to work on a NEC high-speed rail business and financial plan that will address a variety of project financing issues and will identify strategies for financing, including opportunities to maximize private investment(s) in the future development of the NEC.

Base & New Activity:

The base activity includes work done in the predecessor departments. The baseline expenses of $12.1M and new activities of $9.9M are significantly reduced by targeted reductions of $10.8M leaving a net FY12 Budget of $11.2M.

Base activity details are as follows:
- Inflation from Prior year - $0.3M
- Salaries - $0.4M
- Travel - $0.3M
- Facilities - $0.3M
- Professional Fees -($1.2M)
- Data Processing – ($0.3)
- Other – ($0.1)

New activities include specific HSR projects and strategic NEC projects. A number of the projects will be scaled back due to the targeted budget reductions. The breakdown is as follows:
- HSR Business Plan Funding Study - $2.5M
- 2012 HSR Congress - $1.0M
- HSR Marketing & Communications - $1.0M
- HSR Next Generation Implementation Studies - $2.5M
- NEC Related projects including planning & support -$2.9M

Operating Expense Summary FY10 – FY12: NEC Infrastructure and Investment Development

$ millions	FY10 Actual	FY11 Actual	FY12 Budget	FY12 Incr/(Decr) vs FY11 $	FY12 Incr/(Decr) vs FY11 %
Salaries	$2.9	$5.4	$4.0	($1.5)	-27.0%
Employee Benefits	$1.6	$3.0	$2.0	($1.0)	-34.1%
Employee Related	$0.3	$0.4	$0.3	($0.1)	-32.7%
Salaries, Wages and Benefits	$4.8	$8.8	$6.2	($2.6)	-29.7%
Facility, Communication, & Office	$0.3	$0.5	$0.5	($0.1)	-10.3%
Professional Fees	$1.9	$2.4	$4.4	$2.0	81.6%
Data Processing Services and Supplies	$0.1	$0.6	$0.1	($0.5)	-79.2%
Total Operating Expenses	**$7.1**	**$12.4**	**$11.2**	**($1.1)**	**-9.2%**

Summary of Changes from FY11 to FY12

	$ Millions
FY11 Total Actual	**$12.4**
Changes to Base Activity	
Inflation of Prior Year expenses including labor	$0.3
Salaries	$0.4
Travel	$0.3
Facility Expenses	$0.3
Professional Fees	($1.2)
Data Processing Services and Supplies	($0.3)
Other	($0.1)
Base Activity Increase/(Decrease) from Prior Year	**($0.3)**
Total FY12 Base Activity	**$12.1**
New Activity	
Business Plan Funding Study	$2.5
HSR Congress	$1.0
HSR Marketing & Communications	$1.0
HSR Next Gen Implementation Studies	$2.5
Strategic Planning	$0.6
Organizational Transformation	$0.7
Commuter Contracts	$0.4
HSR Development	$0.5
NEC Commission Support	$0.4
Analytical Capability	$0.3
Total FY12 New Activity	**$9.9**
FY12 Budget before Reductions	**$22.0**
FY12 Reduction	($10.8)
FY12 Final Budget	**$11.2**

Capital Projects: NEC Infrastructure and Investment Development

$ in millions

PROGRAM TITLE	GCAP	STATE & LOCAL / OTHER	TOTAL
Host Railroad	$ 6.5	$ -	$ 6.5
Reimbursable Commuter Projects	-	8.2	8.2
TOTAL	**$ 6.5**	**$ 8.2**	**$ 14.7**

Host Railroad $6.5M

- Double Tracking in Carlsbad, California - $6.5M: This project is an extension of present main line track used by the Amtrak and Caltrans *Pacific Surfliner* service resulting in an additional 2 miles of double track and a universal crossover at CP Farr. This will eliminate most of the

congestion delays for this segment of railroad, improve schedule reliability and on-time performance, and increase capacity and operational flexibility on Amtrak's second-busiest route. Additionally, it will increase passenger train speeds to 90MPH.

Joint Benefit Program $8.2M

Amtrak will spend contractually obligated funds developed through the joint benefit capital program process for commuter railroads in FY12 as follows:

- Maryland Area Regional Commuter (MARC) – $7.5M
- Virginia Railway Express (VRE) – $0.7M

Human Capital Department

Overview of the Department

The role of the Human Capital Department is to partner with managers in developing, implementing and administering strategies that maximize business performance while sustaining an organizational climate that supports workforce inclusion, employee satisfaction and productivity. In order to achieve this objective the Department is organized by the following key functions:

- Recruitment and staffing including employment testing and evaluation
- Employee Relations
- Employee Shared Services
- Compensation Management, Retirement Administration, and HR Technology
- Employee Development including new hire training, supervisory and leadership training and learning management
- Career Management and Employee Recognition Services
- Diversity Outreach Initiatives
- Strategic Workforce Planning including human capital management, workforce analytics and succession planning
- Labor Administration negotiates labor contracts with the fourteen unions and two councils representing Amtrak employees and serves as the authority in labor contract interpretations, appeals and arbitrations of discipline and grievance cases. It provides research, planning support, training and advice on all matters bearing on management and employee rights under twenty-four labor contracts, and serves as liaison between Amtrak management and system level union leaders in the development, communication, and implementation of company-wide initiatives to improve the business and the satisfaction level of employees.

The FY12 total budget request is $25.6M representing a decrease of $1.5M compared to FY11 actual(s).

Base Activity:

The Human Capital Department's FY12 base budget is $28.2M, with Initiatives of $0.1M and a target budget reduction of $2.7M for a total budget request of $25.6M. A summary of FY12 changes includes the following:

- Inflation of Prior Year expenses including labor agreements $0.7M
- Increase in Special Awards due to inclusion of agreement employees in the program $0.3M
- Increase in Office expenses due to office rent and other anticipated higher activity $0.3M
- Other ($0.1M)

New Activity:

- Expand Amtrak Leadership Academy to support Human Capital Initiative $0.1M. The leadership program is designed to address identified competency gaps and provide critical tools required to increase overall operational performance of entry-level managers, intermediate level managers and senior or advanced levels of management. The program will also include managerial coaching to improve performance.

Operating Expense Summary FY10 –FY12: Human Capital Department

				FY12 Incr/(Decr) vs FY11	
$ millions	**FY10 Actual**	**FY11 Actual**	**FY12 Budget**	**$**	**%**
Salaries	$13.5	$14.4	$13.2	($1.2)	-8.6%
Wages & Overtime	$0.1	$0.1	$0.1	$0.0	14.2%
Employee Benefits	$7.3	$7.9	$6.6	($1.3)	-16.6%
Employee Related	$1.9	$1.6	$2.1	$0.4	26.4%
Salaries, Wages and Benefits	$22.8	$24.1	$22.0	($2.1)	-8.7%
Fuel, Power, & Utilities	$0.0	$0.0	$0.1	$0.0	30.6%
Materials	$0.0	$0.0	$0.0	$0.0	8.8%
Facility, Communication, & Office	$2.1	$1.9	$2.3	$0.4	22.2%
Advertising and Sales	$0.1	$0.1	$0.1	$0.1	68.3%
Professional Fees	$0.7	$0.5	$0.9	$0.4	81.7%
Data Processing Services and Supplies	$0.4	$0.3	$0.1	($0.2)	-77.5%
M of W Services	$0.1	$0.1	$0.1	$0.0	24.0%
Total Operating Expenses	**$26.2**	**$27.0**	**$25.6**	**($1.5)**	**-5.4%**

Summary of Changes from FY11 to FY12

	$ Millions
FY11 Total Actual	**$27.0**
Changes to Base Activity	
Inflation of Prior Year expenses including labor	$0.7
Increase in Special Awards due to inclusion of agreement employees in the program	$0.3
Increase in Office Expense due to office rent and other anticipated higher activity	$0.3
Other	($0.1)
Base Activity Increase/(Decrease) from Prior Year	**$1.2**
Total FY12 Base Activity	**$28.2**
New Activity	
Amtrak Leadership Program	$0.1
Total FY12 New Activity	**$0.1**
FY12 Budget before Reductions	**$28.3**
FY12 Reduction	($2.7)
FY12 Final Budget	**$25.6**

Information Technology

Overview of the Department:

The Information Technology Department (IT) provides the information and technology tools required by the enterprise to safely and reliably provide rail passenger services and meet Amtrak's business partners' needs. The department's mission is to be a collaborative and excellence-driven component of Amtrak's business ecosystem that delivers innovative and world-class business technology solutions which enable the continued transformation of passenger rail and reliably meet the evolving needs and expectations of customers and business partners. In FY12 IT is focused on improving operational stability, improving organizational excellence and transparency, increasing customer and business partner focus and delivery of key projects. The department is organized with three Group Information Officers aligned to support the following areas: Enterprise Resource Planning, Marketing & Product Management, and Operations. There are also Information Technology Officers aligned to the business and supporting teams for Architecture, Technology Operations, Information Security, and Program Management/Business Services.

Operating Budget:

The FY12 base budget request is $187.4M with initiatives of $15.9M and targeted reductions of $12.4M for a net budget request of $190.9M. The FY12 request is a decrease of $3.5M compared to FY11 Actual(s). The budget request is mainly driven by expenses related to IT Infrastructure, labor and contracted services.

Base Activity:

The base budget includes the entire infrastructure, labor, and contracted services cost required to maintain and operate the organization's systems and equipment. The base budget decrease is $7.1M in FY12. A summary of FY12 base changes includes the following:

- Inflation of Prior Year Core expenses - $2.3M
- Salaries for new application support and conversion of contractors to employees (partially offset by employees who left under the Voluntary Separation Incentive Plan or VSIP) - $3.1M
- Change in Base Employee Benefits & FELA - $0.8M
- Data Communication – (4.8M)
- Long Distance – ($1.5M)
- Office & Facilities – ($0.2M)
- Professional Fees and Program Services – ($2.6M)
- IBM Data Center Operations – ($5.7M)
- Software Maintenance and License Agreements - $1.6M
- Other – ($0.1M)

New Activity:

There are additional costs to Amtrak with the implementation of the SAP Strategic Asset Management (SAM) project including the creation of "Center of Excellence" (COE) to support Strategic Asset Management (SAM). IT also anticipates costs for Amtrak corporate ADA initiatives to support the new Passenger Information Display Systems (PIDS). There is an initiative to increase support for various Operating Department applications that are being deployed. There are operational savings related to the conversion of existing contractor position to Amtrak employee status. The SAM project is anticipated to reduce cost by $1.2M due to operational efficiencies related to material handling. Total initiatives in FY12 are $15.9M which is distributed as follows:

- Increased cost for SAP COE /SAM operations - $7.3M
- ADA system support cost for new Passenger Information Displays - $0.5M
- Replace contractors/outsourced services with employees – ($1.2M)
- Cost to support new Amtrak departmental and corporate applications - $9.6M
- SAM related operational efficiencies – ($0.3M)

Operating Expenses Summary FY10 - FY12: Information Technology

$ millions	FY10 Actual	FY11 Actual	FY12 Budget	FY12 Incr/(Decr) vs FY11 $	FY12 Incr/(Decr) vs FY11 %
Salaries	$23.5	$24.0	$26.0	$2.0	8.5%
Wages & Overtime	$0.3	$0.3	$0.2	($0.0)	-15.2%
Employee Benefits	$12.7	$13.3	$13.0	($0.2)	-1.7%
Employee Related	$1.6	$1.2	$0.8	($0.4)	-34.9%
Salaries, Wages and Benefits	$38.2	$38.8	$40.1	$1.3	3.5%
Train Operations	$0.0	$0.1	$0.0	($0.1)	-100.0%
Facility, Communication, & Office	$37.2	$43.4	$39.6	($3.8)	-8.8%
Professional Fees	$0.7	$2.0	$0.2	($1.9)	-92.3%
Data Processing Services and Supplies	$86.4	$110.1	$111.0	$0.9	0.9%
Total Operating Expenses	**$162.5**	**$194.4**	**$190.9**	**($3.5)**	**-1.8%**

Summary of Changes from FY11 to FY12

	$ Millions
FY11 Total Actual	**$194.4**
Changes to Base Activity	
Inflation of Prior Year expenses including labor	$2.3
Salaries (Primarily conversion of Contractors to Employees)	$3.1
Employee Benefits	$0.8
Data Communication	($4.8)
Long Distance	($1.5)
Other Office, Facility & Communication	($0.2)
Professional Fees & Services and Program Services	($2.6)
IBM Data Center Operations	($5.7)
Software Maintenance and License Agreements	$1.6
Other	($0.1)
Base Activity Increase/(Decrease) from Prior Year	**($7.1)**
Total FY12 Base Activity	**$187.4**
New Activity	
IT Cost of SAP Center of Excellence (IT09)	$7.3
IT Cost related to ADA / PIDS implementation (IT12)	$0.5
Replace Outsourced Service with Employees (IT13)	($1.2)
New Support for Marketing Applications (IT14)	$6.0
New Support for Finance, HR, & Corporate Applications (IT15)	$0.1
New Support for Operating Department Applications (IT16)	$0.5
New Support for IT Dept Applications (IT17)	$3.1
Strategic Asset Management project related savings	($0.3)
Total FY12 New Activity	**$15.9**
FY12 Budget before Reductions	**$203.3**
FY12 Reduction	($12.4)
FY12 Final Budget	**$190.9**

Capital Projects – Information Technology

$ in millions

PROGRAM TITLE	GCAP	STATE & LOCAL / OTHER	TOTAL
Enterprise Resource Planning	$ 6.0	$ -	$ 6.0
Reservation Next Generation	17.0	-	17.0
IT Infrastructure	11.8	-	11.8
Rail Operations	1.0	-	1.0
TOTAL	**$ 35.8**	**$ -**	**$ 35.8**

Enterprise Resource Planning $6.0M

- Strategic Asset Management Enterprise (SAM) - $5.5M - This is the completion of the current phase of a multi-year strategic project designed to integrate key operational, financial, and human resources business processes and replace core outdated financial, work management, and other systems. It includes implementing a new Public Budget Formulation tool (PBF). In FY2011, the first phase of this effort replaced the majority of Amtrak's key financial, procurement, and materials management systems.
- Strategic Asset Management – Enterprise $0.5M - This next phase will focus on management and maintenance of rolling stock assets as well as management and maintenance of infrastructure assets. It will provide improved planning and management tools for materials inventory, continue development of materials inventory planning and management, and migration of the current end-of-life rolling stock Work Management System (WMS) into Maximo, our enterprise standard Enterprise Asset Management System. The scope of the FY12 efforts is to complete the planning and definition work that began in FY11. This is in preparation of re-scoping and resizing the project to focus on the critical needs of the Enterprise.

Reservations Next Generation $17.0M

- Reservations Ecosystem Next Generation - $17.0M the purpose of this program is to modernize, streamline and significantly reduce business and technical risks from Amtrak's Sales, Reservation and Ticketing system in support of Amtrak's current and future business needs and opportunities. This involves updating the underlying system, "Arrow" that is over 30 years old and is based on significantly outdated technology which is the backbone foundation for Amtrak's sales, ticketing and operational processes, including customer service and train operations. Potential failure of this system is a critical business risk that must be addressed as soon as possible. In FY12, RES-NG project will deliver key milestones that include software and platform upgrades, archaic hardware de-commissioning, enhanced ability to share data and information, reduced system outage windows and other sales, reservation, ticketing and operational upgrades to mitigate risk and deploy a "next generation" platform that can flexibly lead and respond to emerging travel industry standards and needs of state sponsored services.

IT Infrastructure $11.8M

- This is an ongoing program to refresh and expand the IT core infrastructure to ensure reliability standards are met, including network, servers, and workstations. The scope for FY12 includes: refresh network, servers, and storage infrastructure not covered by the new outsource contract; refresh workstations on a three year cycle; begin the upgrade to the new Desktop Operating system and Office Automation software; acquire hardware to stage in field to improve response time to failures; and replace key IT equipment used in field system and Quik-Trak kiosks. Projects included on this program are: PC and field systems state of good repair $6.8M, Network Expansion – Infrastructure Engineering for $1.5 M, and network redesign and expansion $3.5M.

Other Programs $1.0M

- Migration or Replacement of Labor Management System Application - $1.0M – Modernizes and replaces an obsolete scheduling and pay calculation system used for On Board Services and Train and Engine crew management. The replacement will provide an integrated, flexible, rules driven and maintainable capability. By implementing a modern solution that integrates with SAP and other transportation systems, this project will reduce the risk of dependence upon obsolete technology and loss of institutional knowledge.

Marketing and Product Development

Overview of the Department

Marketing and Product Development (M&PD) drives Amtrak ridership, ticket revenue, and market share through integrated marketing and sales capabilities and a constant focus on increasing customer satisfaction through targeted product and service improvements. Major departmental functions include sales distribution, customer service, marketing and sales promotion, food and beverage service delivery, market research/analysis, pricing/revenue management, and route-level product management.

M&PD budgeted operating expenses for FY12 are $255.5M. Major operating expense drivers of the department include advertising and promotional costs, contract management and provisioning costs for food and beverage service, wages and benefits for the reservation/sales call centers, and departmental salaries.

Meeting the new customer satisfaction and route performance targets mandated by PRIIA in Section 207 and route performance improvement plans in Section 210 is the responsibility of M&PD's groups in collaboration with the Operations, and Government Affairs departments.

Targeted metrics as defined under PRIIA Section 207 for financial/operating, on-time performance, train delays, and customer satisfaction will be the focus of management actions to improve and expand passenger rail services. To that end, M&PD will continue to deliver the in-depth customer research program begun in FY10 to evaluate the customer experience and assess customer expectations and help Amtrak prioritize its operating and capital programs.

Continued investments to leverage, build and mature marketing capabilities will be critical to meeting top-line objectives. These will focus on the following:

- Building brand loyalty (by increasing repeat ridership) from the existing customer base
- Stimulating trial to attract new riders from competing travel modes
- Maintaining Amtrak's air/rail market share in the NEC above 60% in the Washington-New York market and above 50% in the New York-Boston market
- Building market share of total trips in high frequency corridors outside of the NEC

Key M&PD advances from capital programs towards these goals will include greater sophistication in the use of electronic direct-to-customer communications, through targeted online interactions, and the development of integrated brand marketing campaigns that communicate the benefits of rail travel across digital, print, broadcast, and entertainment/events/sports marketing venues. Decision support capabilities in Pricing/Revenue Management and Market Research/Analysis will continue to play a critical role in improving revenue performance and guiding the application of marketing resources.

Base Activity:

Marketing's FY12 base budget is $305.5M. However, target budget reductions of $47.5M, primarily advertising, significantly reduces the overall FY12 budget. A summary of FY12 base changes includes the following:

- Inflation of prior year including labor contract requirements - $5.3M
- Salaries - $1.1M
- Increase in Wages and Overtime - $2.9M
- Increase in Employee Benefits and FELA - $0.9M
- Increase in Food & Beverage cost (offset by increase in Food & Beverage revenue) - $2.1M
- Increase in Food & Beverage Outsourced Commissary Contract - $0.5M
- Office Facility and Communications - $0.5M
- Increase in Advertising and Sales Promotion base increase - $7.1M
- Decrease in Professional Fees – ($2.9M)
- Decrease Data Processing -– (0.4M)
- Decrease in Passenger Inconvenience expense – ($0.7M)
- Other - $0.1M

New Activity:

- The FY12 new activity a reduction in expense of $2.5M relatesd to the part year deployment of a booking fee charges to customers for utilizing the contact center for ticket purchases.

Operating Expense Summary FY10 –FY12: Marketing & Product Development

				FY12 Incr/(Decr) vs FY11	
$ millions	FY10 Actual	FY11 Actual	FY12 Budget	$	%
Salaries	$19.5	$21.7	$22.2	$0.5	2.1%
Wages & Overtime	$37.8	$38.8	$41.2	$2.4	6.3%
Employee Benefits	$27.8	$32.2	$31.0	($1.1)	-3.5%
Employee Related	$1.1	$1.1	$0.8	($0.3)	-27.6%
Salaries, Wages and Benefits	$86.2	$93.7	$95.2	$1.5	1.6%
Train Operations	$82.9	$87.9	$91.9	$3.9	4.5%
Fuel, Power, & Utilities	$0.6	$0.6	$0.6	$0.0	1.5%
Materials	$0.0	$0.1	$0.0	($0.1)	-87.3%
Facility, Communication, & Office	$10.2	$10.8	$11.3	$0.5	4.7%
Advertising and Sales	$76.0	$71.6	$36.2	($35.3)	-49.4%
Casualty and Other Claims Total	$1.4	$0.8	$1.2	$0.4	52.3%
Professional Fees	$13.9	$15.4	$12.1	($3.3)	-21.6%
Data Processing Services and Supplies	$0.4	$2.6	$2.2	($0.4)	-15.3%
Environmental and Safety	$0.1	$0.0	$0.0	($0.0)	-39.3%
M of W Services	$0.5	$0.4	$0.5	$0.1	18.7%
Passenger Inconvenience	$4.5	$4.8	$4.3	($0.6)	-11.5%
Total Operating Expenses	**$276.7**	**$288.8**	**$255.5**	**($33.3)**	**-11.5%**

Summary of Changes from FY11 to FY12

	$ Millions
FY11 Total Actual	**$288.8**
Changes to Base Activity	
Inflation of Prior Year expenses including labor	$5.3
Salaries (primarily lower than expected vacancy rates and increased market rate for new hires)	$1.1
Wages & OT (primarily driven by increases in Amtrak Guest Rewards, increase in average talk time, faster average speed of answer to improve customer service)	$2.9
Employee Benefits and FELA	$0.9
Food & Beverage Onboard	$2.1
Food & Beverage Commissary Outsourced Contract	$0.5
Office, Facilities and Communication Expenses	$0.5
Advertising and Sales Promotion Base Increase	$7.1
Professional Fees (reduction in ad-hoc market surveys and brand guidelines for current and new logos)	($2.9)
Data Processing	($0.4)
Passenger Inconvenience	($0.7)
Other	$0.1
Base Activity Increase/(Decrease) from Prior Year	**$16.7**
Total FY12 Base Activity	**$305.5**
New Activity	
Wage & OT (primarily due distribution booking channel shift and implementation of contact center booking fee)	($1.6)
Employee Benefits and FELA on Wage & OT on decrease above	($0.9)
Total FY12 New Activity	**($2.5)**
FY12 Budget before Reductions	**$302.9**
FY12 Reduction	($47.5)
FY12 Final Budget	**$255.5**

Capital Projects: Marketing & Product Development

$ in millions

PROGRAM TITLE	GCAP	STATE & LOCAL / OTHER	TOTAL
e-Ticketing	$ 7.9	$ -	$ 7.9
E-Commerce / Customer Experience	3.2	-	3.2
On-Board	8.6	-	8.6
Pricing	0.5	-	0.5
Customer Service	3.0	-	3.0
TOTAL	**$ 23.2**	**$ -**	**$ 23.2**

E-Ticketing Program - $7.9M

- E-Ticketing - $7.9M: The focus of the E-Ticketing program is to reduce manual intervention in the ticketing process, improve safety and security, and improve productivity and efficiency leading to cost savings. This project will transform ticket validation and revenue accounting from a paper based system to an electronic one. The core reservation system changes completed in FY10 resulted in electronic ticket reservations being generated for 95% of sales, enabling automated ticket exchanges in the event of service disruptions. It also enabled Amtrak.com customers to modify their reservations online for the first time, reducing the need for agent assistance to handle customer initiated changes in travel plans. These changes yielded savings of 30 full time equivalent (FTE) positions in the Call Centers. Paper tickets will continue to be issued until completion of the next phase which introduces Conductor Mobile Devices.

In FY11, E-Ticketing was introduced on the Auto Train allowing for electronic check-in and lift of Auto Train tickets. In addition, in FY11 the Conductor Mobile Device was introduced in a pilot phase on the Downeaster route where Conductors scanned paper tickets to validate the connectivity and revenue collection processes associated with the solution.

In FY12, E-Ticketing will continue the pilot on the Downeaster route by introducing *Print Anywhere* allowing customers to print or display their travel documents using the print/display method of their choice. The pilot of the Conductor Mobile Device and the Print Anywhere functionality will be extended to the Capitol Corridor and City of New Orleans routes in 2Q12 with national rollout planned for July 2012. Planning continues for the resources to deliver a full-day training course to 2,000 conductors/assistant conductors throughout Amtrak's system. This training will be scheduled so as not to impact daily train operations and will take 4 to 6 months to complete. Implementation of software changes to support eVouchers, modifications to partially traveled itineraries and revised refund policies will also take place in FY12.

Once complete, this program will reduce costs associated with ticket pouch processing in El Paso, increase revenue through improved release of no-show space for down line sale, reduce fare evasion, improve the customer experience, and improve passenger manifest accuracy, further addressing NTSB recommendations.

E-Commerce / Customer Experience Programs $3.2M

- Build In-Path Push Notification Platform - $1.0M: This project will build a platform to allow customers to subscribe to receive timely notification about the status of their trip
- Fix Train Cancellation - $1.0M: This project will allow for the accurate capture of train status information so that it can be pushed to mobile customers and displayed accurately on all our distribution channels
- Build Android App - $0.3M: This project will develop the Android version of the mobile rider application to allow more of Amtrak's customers the ability to take advantage of E-Ticketing mobile technology
- Create e-Coupon Technology - $0.5M: Phase 1 of e-Coupon functionality will allow Amtrak to offer targeted, single use promotions. The project will further develop requirements for additional e-Coupon functionality including the ability to upgrade electronically
- Enhanced Mapping Functionality - $0.4M: This project will expand map functionality to use localized content to provide additional information about local transit; areas of interest; local restaurants and attractions to customers

On-Board Programs Technology - $8.6M

- Point of Sale System (POS) - $8.6M: The POS project will result in an integrated end-to-end system to automate and streamline food and beverage operations through deployment of an on-board POS system in cafes and dinners. This system will be linked to commissary and warehouse systems, thereby allowing real-time food and beverage management and tracking. The new technology will drive financial performance improvements by aligning business practices with hospitality industry best practices, improving access to and reliability of data, increasing employee productivity and job satisfaction, enhancing inventory controls, enabling pricing flexibility and product differentiation and increasing cost recovery based on sales data analysis. Expected annual steady-state benefits of the project range from $5.0M-9.0M per year. These benefits will be derived from costs savings resulting from:
    - Reduction in labor cost associated with Lead Service Attendant and El Paso F&B support staff;
    - Lower inventory cost due to reduction in shrinkage and increased inventory;
    - Reduction in ARAMARK costs due to elimination on manual data entry and more streamlined receiving and picking process.

The full deployment of back office Food & Beverage and Warehouse Inventory Management System occurred in June 2011. This deployment replaced EATEC, an outdated and unsupported system, as the system of record for Food & Beverage data and provided significantly enhanced controls and reporting. Deployment of a base POS solution in Acela Express bistro cars began in September 2011 and concluded in November 2011. Development of full POS functionality for café and dining cars, begun in FY11, will conclude in FY12. This will allow for POS deployment in all food service cars across the system in FY12.

Pricing - $0.5M

- Service Fees - $0.5M: The goal of the Service Fee project is to build the ability to apply a "ticket fee" based on the channel utilized to perform a specified transaction. This is intended to influence customer behavior, specifically to encourage customers to use self-service distribution channels when that option is available to them. It is envisioned that such fees will be applied on a per-reservation or per-passenger basis.

  Authorized users will be able to establish and manage a service fee structure that will be assessed when a customer books and pays for travel based on the channel selected for the transaction.

Customer Service- $3.0M

- Human Emulation Technology - $3.0M: The goal of the Human Emulation Technology (HET) project is to procure and install an application that will enable Amtrak staff serving multiple service channels to answer customer questions and or/provide issue resolution. The HET software will help improve customer self service online by querying an automated system that recognizes natural language dialog and searching through an intuitive knowledge base. A key component of the HET software solution will include a state of the art user interface (often referred to as a virtual agent). Amtrak expects to derive many benefits from deploying a Human Emulation Software application, including:

  - Delivering enhanced customer experience: By providing fast and accurate answers to questions without interrupting their online service this will improve customer satisfaction and customer experience across multiple service delivery channels (Amtrak.com, Contact Center, Station Agents, etc)
  - Lowering customer service costs: Reduce the number of questions submitted to live agents via phone or email. This application will be used across all customer service channels to minimize human interaction and the associated costs
  - Increasing Sales Opportunities: By providing personalized product suggestions in an interactive manner this will help customers find the right products and services and also lead to potential up-sell/marketing opportunities
  - Improving understanding of our customers: Through these interactive self service engagements with customers we will gather valuable “voice of the customer” and competitive market intelligence data from customers based on analyzing conversation flows between the virtual agent and customer

Mechanical

Overview of the Department

The Mechanical Department is responsible for the maintenance, repair and upgrade of all of Amtrak’s rolling stock (cars and locomotives). With a total labor force of approximately 4,900 employees who are located at eleven (11) major terminals and three (3) back shops throughout the Amtrak system, this department cleans, maintains, repairs, modifies and overhauls the fleet of cars and locomotives to provide

daily service to our passengers. Our staff of engineers also provides process expertise as well as technical assistance with the design and procurement of new equipment and the upgrading of existing rolling stock.

Base Activity:

The FY12 base budget request is $548.9 for existing operations and savings of $1.2M for new initiatives and $2.0M in targeted expense reductions for a total budget request of $545.7M. The major driving force of the increased operating budgets for FY12 and beyond, are the costs for the maintenance and inspections for rolling stock passenger cars that were returned from storage to revenue service in FY10 and FY11 as part of the ARRA grant. The budget provides funding for:

- Core operations of equipment turnaround servicing and inspection
- Operation and maintenance of our Mechanical facilities across the Amtrak system
- Preventive maintenance and mandatory FRA required inspections on the cars and locomotives

A summary of FY12 base changes includes the following:

- Inflation of prior year Salary, Wages and labor contracts - $10.2M
- Salary increases - $0.8M
- Wages (Net of Inflation and Initiatives) - $4.4M
- OT savings – ($14.6M)
- Change in Base Employee Benefits & FELA - $3.4M
- Reduction in Labor Transfer for Component Work-In-Process – ($9.7M)
- Employee Related & Employee Travel - ($0.4M)
- Change in Fuel, Power and Utilities - $1.6M
- Materials (includes Component transfer related to labor transfer above) – $16.2M
- Change in Facility, Communication and Office – ($1.2M)
- Professional Fees & Data Processing – $1.5M
- Indirect Cost Capitalized to Plant & Equipment – ($0.7M)
- Other – ($0.2M)

New Activity:

The implementation of the Strategic Asset Management (SAM) project is anticipated to reduce cost by $1.2M due to operational efficiencies related to material handling.

Operating Expense Summary FY10 –FY12: Mechanical

$ millions	FY10 Actual	FY11 Actual	FY12 Budget	FY12 Incr/(Decr) vs FY11 $	FY12 Incr/(Decr) vs FY11 %
Salaries	$31.3	$33.1	$34.9	$1.8	5.3%
Wages & Overtime	$189.0	$210.2	$194.5	($15.7)	-7.5%
Employee Benefits	$110.8	$127.7	$127.5	($0.2)	-0.2%
Employee Related	$2.5	$2.6	$2.1	($0.5)	-19.0%
Salaries, Wages and Benefits	$333.5	$373.5	$358.9	($14.6)	-3.9%
Train Operations	$0.1	$0.2	$0.1	($0.1)	-62.3%
Fuel, Power, & Utilities	$23.3	$19.5	$22.3	$2.8	14.1%
Materials	$145.2	$139.6	$157.3	$17.7	12.7%
Facility, Communication, & Office	$18.6	$19.4	$18.4	($1.0)	-5.1%
Casualty and Other Claims Total	$8.4	$5.1	$8.2	$3.2	62.5%
Professional Fees	$3.6	$4.3	$6.4	$2.1	49.0%
Data Processing Services and Supplies	$0.2	$1.9	$0.7	($1.3)	-65.5%
Environmental and Safety	$5.0	$4.7	$5.5	$0.8	17.2%
M of W Services	$0.8	$0.7	$0.8	$0.0	6.0%
Financial	$0.2	$0.2	$0.1	($0.1)	-61.7%
Pcard Transactions	$0.0	$0.0	$0.0	($0.0)	0.0%
Expense Transfers	($0.0)	$0.6	$0.0	($0.6)	-100.0%
Indirect Costs Capitalized To P&E	($33.8)	($32.3)	($33.0)	($0.7)	2.1%
Total Operating Expenses	**$505.1**	**$537.6**	**$545.7**	**$8.1**	**1.5%**

Summary of Changes from FY11 to FY12

	$ Millions
FY11 Total Actual	**$537.6**
Changes to Base Activity	
Inflation of Prior Year expenses including labor	$10.2
Salaries	$0.8
Increase In Straight Time Wages	$4.4
Reduction in OT	($14.6)
Reduction in Labor Transfer for Component Work-In-Process	($9.7)
Employee Benefits & FELA	$3.4
Employee Related & Employee Travel	($0.4)
Fuel Power & Utilities	$1.6
Materials (includes Component transfer related to labor transfer above)	$16.2
Facility, Communication, & Office	($1.2)
Professional Fees & Data Processing	$1.5
Indirect Costs Capitalized To P&E	($0.7)
Other	($0.2)
Base Activity Increase/(Decrease) from Prior Year	**$11.3**
Total FY12 Base Activity	**$548.9**
New Activity	
OT Wages (Strategic Asset Management project related savings)	($0.9)
Benefits (Strategic Asset Management project related savings)	($0.3)
Total FY12 New Activity	**($1.2)**
FY12 Budget before Reductions	**$547.7**
FY12 Reduction	($2.0)
FY12 Final Budget	**$545.7**

Capital Programs: Mechanical

$ in millions

PROGRAM TITLE	GCAP	STATE & LOCAL / OTHER	TOTAL
PASSENGER CAR	$ 152.9	$ -	$ 152.9
LOCOMOTIVE	46.4	-	46.4
ACELA PROGRAM	35.0	-	35.0
FLEET ACQUISITIONS	-	194.2	194.2
NON-PASSENGER EQUIPMENT	7.7	-	7.7
FACILITY IMPROVEMENTS	2.5	0.7	3.2
MECHANICAL IT PROJECTS	2.3	-	2.3
GENERAL SAFETY AND RELIABILITY	5.8	-	5.8
TOTAL MECHANICAL	**$ 252.5**	**$ 194.9**	**$ 447.4**

PASSENGER CAR PROGRAMS $152.9M

- The FY12 passenger car program will fund the various levels of overhauls that range from mandatory maintenance to complete equipment overhauls, reconfigurations and conversions of equipment, and modifications required by statutes including the Americans with Disabilities Act (ADA) and the Federal Railroad Administration (FRA). The equipment to be overhauled includes

- These passenger car programs will enable Amtrak to maintain equipment in a state of good repair, to return the assets to current Amtrak standards, improve reliability and availability of equipment, enhance overall customer experience, comply with applicable federal regulations and mitigate equipment failures which result in customer discomfort and inconvenience.

LOCOMOTIVE PROGRAMS $46.4M

- In FY12 Amtrak locomotive programs will involve the various levels of overhaul for electric locomotives (AEM-7 DC, AEM-7 AC, and HHP-8) and Life Cycle Progressive Maintenance (LCPM) for diesel locomotives and modifications required by federal agencies including Transportation Safety Administration (TSA), Environmental Protection Agency (EPA) and Federal Railroad Administration (FRA).
- This program will enable Amtrak to bring the locomotive fleet to a state of good repair, increase locomotive reliability and availability, extend the useful life of the locomotives, comply with applicable federal rules and regulations, and mitigate future expenses associated with an aging fleet.

ACELA PROGRAM $35.0M

- Funding is included to continue the Acela Overhaul Program. This activity is the second year of a multi-year program addressing the system overhaul needs of the Acela train sets. Overhaul requirements were identified by major system condition assessments, fatigue life calculations, and reliability data trends.

FLEET ACQUISITION PROGRAMS $194.2M

- In FY12, Amtrak will continue its investment in its fleet acquisition programs for the purchase of 130 single level cars, 40 Acela coaches, 70 electric locomotives, 2 low-emission switcher locomotives and funding for the end of lease purchases of P32-8 locomotives. This program will help the company meet its operating requirements, state of good repair requirements, and capacity needs for its rolling stock equipment fleet.

NON-PASSENGER EQUIPMENT $7.7M

- Funding is included to continue the overhaul or modification of various non-passenger equipment types such as baggage cars and auto carriers.

FACILITY IMPROVEMENTS $3.2M

- In FY12 Amtrak plans to continue to invest in facility improvements for modernization and upgrades for various Service and Inspection (S&I) division facilities and heavy overhaul shops. The work to be performed ranges from improvements such as electrical power systems, upgrades to existing facilities, improvements to employee areas, updating tooling, machinery and shop vehicles. The project will enable Amtrak to comply with the Code of Federal Regulations (CFR49) Parts 229 and 238, to bring the facilities to a state of good repair, increase operations safety, reduce employee injuries, increase efficiency, and improve assets safeguarding initiatives. This program also includes an externally funded (State of Maryland) project.

MECHANICAL TECHNOLOGY PROJECTS $2.3M

- The Mechanical Department will continue its support of three applications: Work Management System, Mobile Data Management System and Locomotive Health Monitoring & Analysis System. These investments are expected to improve the ability to schedule and monitor

mandatory rolling stock maintenance, eliminate cumbersome manual processes and improve reliability and performance.

GENERAL SAFETY AND RELIABILITY PROGRAMS $5.8M

- General Safety and Reliability programs consist of various projects geared towards locomotive and passenger car reliability and safety measures that are associated with the equipment. The projects are expected to improve customer service, mitigate operating costs, improve operational efficiencies, ensure compliance with the Rail Safety Improvements Act of 2008 (RSIA) and improve the safety of Amtrak's rolling stock equipment.
    - Locomotive Video Cameras/Train Communications: involves the purchase and installation of a digital video recording system on every passenger locomotive in the fleet and 23 work locomotives. This project supports Amtrak's Train Communication Data (TCD) strategy to improve customer service and operational efficiency.
    - Engineering Modification Project: involves funding for modification work on rolling stock equipment that is not scheduled for capital overhaul and will be performed at divisional facilities.
    - Cracked Wheel Detector Project: funds the purchase and installation of two machines for Wilmington Shop and Beech Grove Shop to continue this program to eventually equip all major Mechanical wheel facilities with this technology.

Office of the General Counsel

Overview of the Department

The Amtrak Law department is responsible for supporting virtually every aspect of Amtrak's business. Every member of the department works to achieve four goals: 1) To ensure the company's compliance with all applicable laws; 2) To minimize risks to the company; 3) To protect corporate assets; and 4) To assist the company to achieve its business and financial objectives.

The Amtrak Law department consists of three organizational or budget entities and seven functional or operational groups. The three budget organizations are the General Counsel, the Office of the Corporate Secretary, and Corporate & Litigation Support; the seven functional/operational groups include: two corporate practice groups (one for real estate, procurement and some engineering matters, and a second for the company's host railroad relations, state-supported contracting and commuter services and environmental matters); a general litigation, employment and labor practice group; a claims management and litigation group; Corporate and Litigation Support (the company's document management, including FOIA, program and all legal assistants); the Corporate Secretary's office; and the General Counsel's office (overall management).

The **General Counsel** Budget entity includes the two corporate practice groups, the litigation, employment and labor practice group and claims litigation and adjustment practice group. The groups in this entity advise management on all corporate, commercial, contractual, real estate, financial, statutory and regulatory matters and transactions. Responsibilities include review, negotiation and interpretation of contracts, management and protection of Amtrak's intellectual property portfolio, and compliance with statutory and regulatory requirements. In addition, the litigation, employment and labor group manages all non-tort claims (i.e., injuries to Amtrak employees or passengers), litigation and outside counsel engaged to represent the company, all employment complaints against the company, provides labor law advice and manages the company's internal disciplinary proceedings for agreement employees. Finally, within this entity is the Claims group which manages all personal injury and wrongful death claims against the company and employee claims filed under the Federal Employers' Liability Act (FELA). Primary responsibilities include investigation of accidents, preservation of evidence, litigation management and support, evaluation of claims, settlement negotiations, trial support, management of

outside counsel, review and approval of outside counsel and expert fees, and advice matters ranging from risk management to health and safety issues.

Corporate Secretary: The Corporate Secretary's office supports the Amtrak Board of Directors and serves as liaison between management and the Board of Directors. The Corporate Secretary works with the CEO and the Board to schedule and prepare for Board of Directors meetings, supports the scheduling and related travel of Board members for Amtrak-related activities, and manages the coming-on-board and orientation of new Board members. The Corporate Secretary also advises the Board of Directors on matters of corporate governance under the company's articles of incorporation, bylaws and Board resolutions.

Corporate & Litigation Support: This group administers the company's document management (retention and destruction) program including the Law department's litigation and advice files and the company's FOIA responsibilities. In addition, this group is responsible for supporting the General Counsel in developing and monitoring the department's budget.

The FY12 total budget request is $51.3M representing a decrease of $3.1M compared to FY11 actual(s).

Base Activity:

Legal department's FY12 base budget is $62.6M however this budget is reduced by $11.3M due to a target budget reduction across the company for a final budget request of $51.3M. A summary of FY12 changes includes the following:

- Inflation of Prior Year expenses including labor agreements $1.4M
- Increase in Professional Fees due to increased activity (this increase is eliminated via the target budget reductions) $2.8M
- Increase in Investigative/Surveillance Claims due to less activity than expected in FY11 (this increase is also eliminated via the target budget reductions) $4.1M

Operating Expense Summary FY10 –FY12: Office of the General Counsel

				FY12 Incr/(Decr) vs FY11	
$ millions	**FY10 Actual**	**FY11 Actual**	**FY12 Budget**	**$**	**%**
Salaries	$11.2	$12.4	$12.1	($0.3)	-2.5%
Employee Benefits	$6.0	$6.8	$6.0	($0.8)	-11.3%
Employee Related	$0.5	$0.5	$0.4	($0.1)	-17.6%
Salaries, Wages and Benefits	$17.6	$19.7	$18.5	($1.2)	-5.9%
Facility, Communication, & Office	$1.4	$1.4	$1.8	$0.4	26.9%
Casualty and Other Claims Total	$7.2	$6.3	$7.4	$1.0	16.3%
Professional Fees	$25.5	$26.8	$23.5	($3.2)	-12.1%
Data Processing Services and Supplies	$0.0	$0.1	$0.0	($0.1)	-97.0%
Environmental and Safety	$0.1	$0.0	($0.0)	($0.0)	0.0%
Total Operating Expenses	**$51.8**	**$54.4**	**$51.3**	**($3.1)**	**-5.6%**

Summary of Changes from FY11 to FY12

	$ Millions
FY11 Total Actual	**$54.4**
Changes to Base Activity	
Inflation of Prior Year expenses including labor agreements	$1.4
Increase in Professional Fees due to increased activity (this increase is eliminated via the target budget reductions)	$2.8
Increase in Investigative/Surveillance Claims due to less activity than expected in FY11 (this increase is also eliminated via the target budgetreductions)	$4.1
Base Activity Increase/(Decrease) from Prior Year	**$8.3**
FY12 Budget before Reductions	**$62.6**
FY12 Reduction	($11.3)
FY12 Final Budget	**$51.3**

Operations Management / Reliability Centered Maintenance

Overview of the Department

Reliability-Centered Maintenance is an analytical methodology for developing or reviewing a scheduled maintenance program that will realize inherent reliability levels of complex systems and equipment while taking into account safety, operational and economic failure consequences. Reliability-Centered Maintenance is designed to increase equipment availability and reliability, and to improve the effectiveness of the Corporation's maintenance investment. Amtrak began the RCM Program with analysis of maintenance requirements for the High Speed Acela in June of 2006 and has since expanded the program to all rolling stock. The program was further expanded to include a variety of maintenance process improvements including the use of standardized maintenance procedures and more disciplined shop supervision.

Amtrak previously engaged a consultant, The McHenry Management Group, to assist in RCM analysis and program design. The McHenry Group contract was terminated with services to be provided through December 1, 2011. The contract will not be restarted at this time and the activities of this department will not continue past December 2011.

Base Activity:

The FY12 budget request is $0.8M compared to the FY11 actual of $7.4M. The reduction is due to the termination of the McHenry Group contract.

Operating Expense Summary FY10 – FY12: Operations Management

				FY12 Incr/(Decr) vs FY11	
$ millions	**FY10 Actual**	**FY11 Actual**	**FY12 Budget**	**$**	**%**
Employee Related	$0.0	$0.0	$0.1	$0.1	0.0%
Salaries, Wages and Benefits	$0.0	$0.0	$0.1	$0.1	0.0%
Professional Fees	$7.2	$7.4	$0.7	($6.7)	-90.0%
Total Operating Expenses	**$7.2**	**$7.4**	**$0.8**	**($6.6)**	**-89.2%**

Summary of Changes from FY11 to FY12

	$ Millions
FY11 Total Actual	**$7.4**
Changes to Base Activity	
Inflation of Prior Year expenses including labor	$0.2
Professional Fees & Services	($0.1)
Other	$0.0
Base Activity Increase/(Decrease) from Prior Year	**$0.1**
FY12 Budget before Reductions	**$7.5**
FY12 Reduction	($6.7)
FY12 Final Budget	**$0.8**

Procurement & Materials Management

Overview of the Department:

The department consists of three distinct functional areas: Procurement, Materials Management and Corporate Administration. Procurement is tasked with developing and managing optimal purchasing processes for all capital and operating parts, components and end items for rolling stock, maintenance of way and equipment consumption as well as bidding and contracting for all other outside services and commodities. The Materials Management group operates supply chain activity such as warehousing, transportation and logistics, and inventory planning, management, and control. In addition, this department manages all corporate administrative functions at the corporate offices including mail communications, reprographics center, facility management, construction and space planning.

The FY12 total budget request is $38.5M compared to $42.1M for FY11 actual.

Base Activity:

The FY12 base budget request is $39.1M and it is mainly driven by labor cost, facility expenses and a credit for capitalized overhead expenses. The FY12 base core operating request, as compared to FY11 actual has decreased by $3.0 M. This decrease is primarily due to:

- Additional capitalization of materials, ($6.2M). The additional credit is offset by inflation and higher wages totaling $2.7M.

New Activity:

The implementation of Strategic Asset Management system is expected to show savings in salary, wages and related benefits of ($0.2M). This is offset by additional Maintenance of Way costs of $0.1M due to the MW Inventory Security Initiative implemented during FY11.

Procurement & Materials Management: Operating Expenses Summary FY10-FY12

$ millions	FY10 Actual	FY11 Actual	FY12 Budget	FY12 Incr/(Decr) vs FY11 $	FY12 Incr/(Decr) vs FY11 %
Salaries	$10.9	$11.6	$11.9	$0.3	2.8%
Wages & Overtime	$15.6	$16.8	$18.9	$2.1	12.5%
Employee Benefits	$13.4	$15.3	$16.0	$0.7	4.8%
Employee Related	$0.7	$0.6	$0.8	$0.1	21.5%
Salaries, Wages and Benefits	$40.5	$44.3	$47.6	$3.3	7.5%
Fuel, Power, & Utilities	$0.3	$0.3	$0.3	$0.0	16.9%
Materials	$0.1	$0.1	$0.2	$0.1	98.9%
Facility, Communication, & Office	$4.5	$5.6	$5.0	($0.5)	-9.3%
Advertising and Sales	$0.1	$0.1	$0.1	($0.0)	-5.1%
Casualty and Other Claims Total	$0.7	$0.4	$0.7	$0.3	83.1%
Professional Fees	$2.4	$2.3	$1.6	($0.7)	-30.1%
Data Processing Services and Supplies	$0.5	$1.9	$0.8	($1.0)	-54.7%
Environmental and Safety	$0.1	$0.0	$0.1	$0.0	0.0%
M of W Services	$0.7	($0.9)	$0.5	$1.3	-154.9%
Pcard Transactions	$0.0	$0.3	$0.0	($0.3)	-100.0%
Indirect Costs Capitalized To P&E	($18.7)	($12.3)	($18.5)	($6.2)	50.7%
Total Operating Expenses	**$31.2**	**$42.1**	**$38.5**	**($3.6)**	**-8.6%**

Summary of Changes from FY11 to FY12

	$ Millions
FY11 Total Actual	**$42.1**
Changes to Base Activity	
Inflation of Prior Year expenses including labor	$1.1
Salaries	$0.3
Wages and Overtime	$1.7
Benefits	$1.0
Facilities expense	($0.6)
Professional Fees	($0.7)
Data Processing	($1.0)
Maintenance of Way Services	$1.3
Allocation of Material Stores	($6.2)
Other	$0.2
Base Activity Increase/(Decrease) from Prior Year	**($3.0)**
Total FY12 Base Activity	**$39.1**
New Activity	
Salary, Wages and Benefits	($0.2)
Facility Expense	$0.1
Total FY12 New Activity	**($0.1)**
FY12 Budget before Reductions	**$39.0**
FY12 Reduction	($0.6)
FY12 Final Budget	**$38.5**

Real Estate Development

Department Overview

The Real Estate Development Department (RED) has national responsibility for leveraging and maximizing the revenue opportunities for all Amtrak owned, leased and licensed real estate used for

railroad, corporate and commercial purposes and providing support to the Operating Departments. The Department consists of 26 real estate professionals and their support staff.

RED is comprised of several major components as follows:

Revenue Production

Property development through the long term leasing of Amtrak owned real estate; leasing excess fiber optic capacity in stations and along the right-of-way to telecommunications companies; revenue generation through advertising in stations, along the right-of-way and on-board trains; management of parking facilities through operating agreements; retail leases in stations; special events in stations and filming; pipe and wire occupations; automated teller machines, vending machines and payphones in stations; the sale/lease/easement of excess property and the purchase/lease of property required for Amtrak operations.

Operations Support

Real estate property management including current property maps and title information; enforcement of all terms and conditions of revenue generating leases for Amtrak-owned property; acquisition of, negotiation of, and management of lease documents for properties (station, office, warehouse) occupied by Amtrak to secure cost efficient operations; working with commuter agencies in the joint development and use of stations; working with Federal, state and local agencies in development projects; and providing general real estate services to Amtrak's Engineering, Operations and Law Departments.

The goals of this Department are:

- Meeting the needs of Amtrak internal and external customers for efficient operation of the Railroad
- Revenue production focused on long term revenue generation
- Achieve highest returns and best use of Amtrak owned real estate
- Agreement compliance and enforcement of real estate documents
- Maintenance of real estate records

The Department manages approximately:

- 1,100 real estate leases, licenses, easements and management agreements
- 190 retail leases
- 160 telecommunication agreements
- 2,300 pipe & wire agreements
- 500 requests for property maps/plans/descriptions per year.

The FY12 total budget request is $9.8M representing an increase of $0.6M compared to the total FY11 actual of $9.2M.

Base Activity:

The FY12 base budget request is $10.1M and it is mainly driven by labor cost and the 30th Street Station (Philadelphia, PA) and Chicago West Loop (Chicago, IL) parking garage operating expenses. The FY12 base operating request, as compared to FY11 actual has increased by $0.8M. This increase is primarily due to inflation and professional fees.

Real Estate - Operating Expenses Summary FY10-FY12

$ millions	FY10 Actual	FY11 Actual	FY12 Budget	FY12 Incr/(Decr) vs FY11 $	FY12 Incr/(Decr) vs FY11 %
Salaries	$2.2	$2.4	$2.5	$0.1	3.9%
Wages & Overtime	$0.1	$0.1	$0.1	($0.0)	-10.3%
Employee Benefits	$1.3	$1.4	$1.3	($0.1)	-5.8%
Employee Related	$0.1	$0.1	$0.1	$0.0	0.1%
Salaries, Wages and Benefits	$3.8	$3.9	$3.9	$0.0	0.0%
Fuel, Power, & Utilities	$0.2	$0.5	$0.4	($0.1)	-23.0%
Facility, Communication, & Office	$3.1	$3.1	$3.2	$0.1	1.7%
Professional Fees	$1.5	$1.4	$2.0	$0.7	48.5%
Financial	$0.3	$0.3	$0.3	$0.0	0.0%
Total Operating Expenses	**$9.0**	**$9.2**	**$9.8**	**$0.6**	**6.5%**

Summary of Changes from FY11 to FY12

	$ Millions
FY11 Total Actual	**$9.2**
Changes to Base Activity	
Inflation of Prior Year expenses including labor	$0.2
Professional Fees	$0.8
Water & Sewer	($0.1)
Other	($0.1)
Base Activity Increase/(Decrease) from Prior Year	**$0.8**
FY12 Budget before Reductions	**$10.1**
FY12 Reduction	($0.2)
FY12 Final Budget	**$9.8**

Capital Projects: Real Estate Development

Program Title	Project	GCAP	State, Local & Other	Total
Philadelphia-30th St. Station	30th Street Station - Understreet Garage Reconstruction	$17.0	$0.0	$17.0
	Philadelphia-30th St. Station	**$17.0**	**$0.0**	**$17.0**
	Real Estate	**$17.0**	**$0.0**	**$17.0**

Philadelphia – 30th Street Station Garage Reconstruction $17.0M

- This is a continuing project and involves the permanent replacement of deteriorated structural columns, beams and surface decking of the under- street parking facility below 30th Street Station, Philadelphia, PA. The work also includes remedying the water infiltration problems throughout the facility. Additional scope will include sandblasting, inspecting, replacing and painting the structural steel below the North Parking Deck (NPD) that has not already been improved or replaced.

Transportation

Overview of the Department

The Transportation Department consists of six operating divisions, one customer service division and six support areas including: System Operations (CNOC), Risk and Emergency Preparedness Management, Host Railroads, Safety and Operating Rules Compliance, Service Delivery and Operations Management groups. The department has 9,215 authorized headcount comprised of 735 management and 8,480 agreement employees. Transportation is responsible for providing a safe, comfortable and on-time national rail passenger service as well as developing train schedules and dispatching of trains for Amtrak and five Commuter agencies. It has the responsibility for all operations, maintenance and staffing for Amtrak and non-Amtrak owned Stations. Crew Management and Scheduling (CNOC) create cost efficient crew couplets to support train operations.

Transportation's funding request is largely based on the number of train miles in the timetable, train schedules and the equipment consist book. Salaries, labor and benefits comprise 64% of our FY12 Operating expenses; other major cost categories are train fuel, host railroad payments, connecting transportation services, utilities, and station/facilities costs.

Base Activity:

Transportation's FY12 base budget is $1,458.2M with new initiatives of $0.9M and targeted expense reductions of $10.8M for a total budget of $1.448.3M. Labor, benefits and FELA and Host railroad costs are the driving factors in the base increase from FY11 to FY12. A summary of FY12 changes includes the following:

- Inflation of Prior Year base including labor agreement - $38.5M
- Salary Increases - Lower Vacancy and Increase work scope - $1.0M
- Wages & OT (Net of Inflation and Initiatives) - $5.3M
- Change in Base Employee Benefits & FELA - $16.1M
- Employee Related and Travel – ($1.6M)
- Other Train Operations – ($1.7M)
- On Board Services – ($0.9M)
- Host Railroad Expenses - $19.7M
- Utilities, Electricity Water & Sewer – ($3.5M)
- Train Fuel and Power - $15.3M
- Materials – ($3.2M)
- Facility, Communications & Office – ($4.1M)
- Professional Fees (Safe-to-Safer training transitioning to Amtrak employees) – ($6.4M)
- Passenger Inconvenience – ($5.4M)
- Loss of commuter contract for 6 months in FY12 (offset by loss of revenue) – ($36.1M)
- Other - $0.8M

New Activity:

Transportation has a number of initiatives in the FY12 Plan that will add $0.9M to FY12 operating expenses. Initiatives include staffing adjustments on board certain routes as well as Route Performance Initiatives (RPIs). A summary of FY12 changes includes the following:

- On Board Services (OBS) increase Lake Shore Limited - $0.7M
- Fuel Conservation program ($4.3M)
- RPI on Capitol Limited - $0.9M
- Additional ticket agents Cary/Raleigh , NC - $0.3
- Fuel Pricing Adjustment - $1.0M

- RPI City of New Orleans - $0.6M
- RPI Crescent - $0.8M
- Closing Jacksonville crew base - $0.2M
- China Service on Capitol Limited - $0.9M

Operating Expense Summary FY10 –FY12: Transportation

$ millions	FY10 Actual	FY11 Actual	FY12 Budget	FY12 Incr/(Decr) vs FY11 $	FY12 Incr/(Decr) vs FY11 %
Salaries	$66.5	$73.2	$72.1	($1.1)	-1.5%
Wages & Overtime	$532.7	$558.0	$564.2	$6.2	1.1%
Employee Benefits	$249.2	$280.2	$279.1	($1.1)	-0.4%
Employee Related	$9.3	$11.3	$9.2	($2.1)	-18.7%
Salaries, Wages and Benefits	$857.7	$922.8	$924.6	$1.8	0.2%
Train Operations	$178.6	$165.8	$179.7	$14.0	8.4%
Fuel, Power, & Utilities	$161.8	$216.2	$240.9	$24.7	11.4%
Materials	$28.2	$26.5	$20.1	($6.4)	-24.0%
Facility, Communication, & Office	$52.5	$56.2	$50.0	($6.2)	-11.1%
Advertising and Sales	$0.1	$0.1	$0.1	($0.0)	-34.0%
Casualty and Other Claims Total	$23.3	$13.2	$22.3	$9.1	69.3%
Professional Fees	$8.1	$10.6	$3.8	($6.9)	-64.4%
Data Processing Services and Supplies	$0.1	$0.7	$0.5	($0.2)	-23.7%
Environmental and Safety	$1.5	$1.8	$2.0	$0.2	12.6%
M of W Services	$4.5	$3.4	$2.3	($1.1)	-31.8%
Passenger Inconvenience	$6.1	$11.6	$6.4	($5.2)	-44.8%
Financial	$0.5	$0.3	$0.3	$0.0	13.3%
Indirect Costs Capitalized To P&E	($4.1)	($4.9)	($4.9)	($0.0)	0.7%
Total Operating Expenses	**$1,318.9**	**$1,424.4**	**$1,448.3**	**$23.9**	**1.7%**

Summary of Changes from FY11 to FY12

	$ Millions
FY11 Total Actual	**$1,424.4**
Changes to Base Activity	
Inflation of Prior Year expenses including labor	$38.5
Salaries	$1.0
Wages & OT	$5.3
Employee Benefits & FELA	$16.1
Employee Related Expenses	($0.2)
Travel	($1.4)
Other Training Operations	($1.7)
On Board Services	($0.9)
Host Railroad	$19.7
Utilities, Electricity, Water/Sewer	($3.5)
Train Fuel & Power	$15.3
Materials	($3.2)
Facility, Communication, & Office	($4.1)
Professional Fees	($6.4)
Passenger Inconvenience	($5.4)
Loss of Caltrain Contract	($36.1)
Other	$0.8
Base Activity Increase/(Decrease) from Prior Year	**$33.8**
Total FY12 Base Activity	**$1,458.2**
New Activity	
OBS increase - Lake Shore Ltd	$0.7
Fuel Conservation Program	($4.3)
Route Performance Initiative China Service - Capitol Ltd	$0.9
Ticket Agents Cary/Raleigh NC	$0.3
Fuel Pricing Adjustment	$1.0
Route Performance Initiative Food Service Trains 58/59 City of NO	$0.6
Route Performance Initiative Staffing Crescent	$0.8
Closing Jacksonville OBS Crewbase	$0.2
China Service on Train 29/30	$0.9
Total FY12 New Activity	**$0.9**
FY12 Budget before Reductions	**$1,459.1**
FY12 Reduction	($10.8)
FY12 Final Budget	**$1,448.3**

Capital Projects: Transportation

$ in millions

PROGRAM TITLE	GCAP	STATE & LOCAL / OTHER	TOTAL
System/Business Application Improvement	$ 0.7	$ -	$ 0.7
Station and Facility Improvements	12.0	-	12.0
TOTAL	**$ 12.7**	**$ -**	**$ 12.7**

System/Business Application Improvement Program $0.7M

- On-Time Performance and Delay Reporting System - $0.7M: This project will fund software upgrades, including development of user managed definition tables, for the On-Time Performance (OTP) and Delay Reporting System. The OTP and Delay Reporting System is the system of record, which includes OTP business rules and serves as both an analysis and reporting tool.

Station and Facility Improvements Program: $12.0M

- Chicago Union Station Improvements - $12.0M: This is a multi-year project. Project will relocate CUS Metropolitan Lounge to historical building, renovate the coach boarding lounge, convert lounge G to public restrooms, install 72 sets of historical building entry doors, install induction lighting, restore historical building façade, install a new HVAC system for the great hall and the 2nd and 3rd floors of the station, replace 12 escalators, replace tactile edging along the platforms, renovate pedestrian way, install historical building sprinkler system, replace both exterior and interior windows throughout the historical building, modernize elevators (4 passenger, 2 freight), and perform environmental remediation work, which will include lead based paint and asbestos removal on upper floors.

Corporate Common

Overview of the Department

The Corporate Common responsibility center is for accounting for transactions that are not directly attributable to a specific department, such as depreciation and accounting transactions that relate to the subsidiaries. The major types of expenses included in Corporate Common are:

- Employee Benefits
- Claims Insurance including FELA
- Depreciation & Amortization
- Subsidiary Accounting transactions

Employee Benefits are expected to cost $657.3M in FY12, although $63.8M of that total is for post-retirement benefits that do not use current year funding. The benefit costs are allocated to the functional departments. Claims Insurance is expected to be $47.8M. Depreciation and amortization is expected to cost $660.0M, although the vast majority is a non-cash expense that does not impact current year operating funding.

Base Activity:

The FY12 base budget is $665.0M and is mainly driven by Amtrak, depreciation, and insurance claims that are not allocated to the departments. The FY12 base operating request, as compared to FY11 actual, has increased by $62.3M. This increase is primarily due to:

- Inflation of prior year expenses $23.0M
- Net reduction of ($6.5M) stemming from increase in benefit rates and usage costs offset by reduced management headcount, reduction in employees due to loss of commuter contract, and savings stemming from favorable contracts with new medical program administrators.
- Increase in depreciation expenses $68.6M
- Increase Claims expense allocation - FELA ($16.3M)
- Reduction in credits for transfer of Materials to capital projects $11.7M.
- Reduced equity in Subsidiaries ($5.5M)
- Decrease in Benefits due to loss of Cal Train contract ($13.5M)

New Activity:

- Reduction in Claims Insurance and Legal Claims are expected due to implementation of Safe to Safer (2.3M).
- Completion of installing high efficiency lighting is estimated to save ($0.9M).

Corporate Common: Operating Expenses Summary FY10-FY12

				FY12 Incr/(Decr) vs FY11	
$ millions	**FY10 Actual**	**FY11 Actual**	**FY12 Budget**	**$**	**%**
Corporate Benefits - Cash	$561.1	$616.5	$593.5	($23.0)	-3.7%
Post Retirement Benefits - Non Cash	$52.7	$62.1	$63.8	$1.7	2.7%
Benefits Allocated to Departments	($612.9)	($681.6)	($657.3)	$24.3	-3.6%
Net Benefit Cost to Corp Common	$0.9	($3.0)	($0.0)	$3.0	-100.0%
Total Cost of Claims Insurance	$49.7	$49.7	$47.8	($1.8)	-3.7%
Depreciation & Amortization	$585.7	$591.4	$660.0	$68.6	7.7%
Total Other - Decrease in transfer of Materials to capital projects a change in methodology	($6.0)	($15.5)	($6.3)	$9.2	-59.5%
Total Operating Expenses	**$590.4**	**$599.6**	**$661.9**	**$62.3**	**10.4%**

Summary of Changes from FY11 to FY12

	$ Millions
FY11 Total Actual	**$599.6**
Changes to Base Activity	
Inflation of Prior Year expenses	$23.5
Reduced allocation of Wages to Chicago Union Station	$1.9
Reduction in Employee Benefits primarily Medical and Payroll taxes	($6.5)
Equity in Subsidiaries	($5.5)
Decrease in transfers of Materials to capital projects due to change in methodology	$11.7
Depreciation - net	$68.6
Increase in allocation of Casualty Claims due to change in methodology	($16.3)
Reduction in Medical and Taxes for loss of Cal Train contract	($13.7)
Other	$1.8
Base Activity Increase/(Decrease) from Prior Year	**$65.4**
Total FY12 Base Activity	**$665.0**
New Activity	
Claims Insurance - FELA (Safe to Safer)	($2.3)
Utilities - Electricity (High Efficiency Lighting)	($0.9)
Total FY12 New Activity	**($3.1)**
FY12 Budget before Reductions	**$661.9**
FY12 Reduction	($0.0)
FY12 Final Budget	**$661.9**

National Railroad Passenger Corporation

AMTRAK

Fiscal Year 2012 Comprehensive Business Plan

Operating, Capital Programs, and Debt Service Expense Budget

Appendix Reports

Summary Income Statement by Major Account
Summary Income Statement by Department and Major Account
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Summary Capital Programs
FY2012 Capital Budget Ranking
Summary Metrics FY2009-FY2012
Route Level Metrics

National Railroad Passenger Corporation (Amtrak)

Summary Income Statement by Major Accounts [1]

FY12 Operating Budget

$ millions	FY10 Actual	FY11 Actual	FY12 Budget	FY12 Fav/(Unfav) to FY11 $	FY12 Fav/(Unfav) to FY11 %
REVENUES:					
Passenger Related:					
Ticket Revenue	1,702.1	1,851.5	1,967.9	116.4	6.3%
Food and Beverage	97.5	109.4	109.3	(0.1)	-0.1%
State Supported Train Revenue	174.3	191.1	192.9	1.8	0.9%
Subotal Passenger Related Revenue	**1,973.9**	**2,152.0**	**2,270.1**	**118.0**	**5.5%**
Commuter	152.5	173.4	140.0	(33.4)	-19.3%
Reimbursable	100.7	84.1	103.0	18.9	22.4%
Commercial Development	74.8	76.2	71.8	(4.4)	-5.8%
Other Transportation	135.6	139.5	143.3	3.8	2.7%
Freight Access Fees and Other	47.0	50.6	59.0	8.3	16.5%
Subtotal Other Revenue	**510.5**	**523.8**	**517.0**	**(6.8)**	**-1.3%**
Total Operating Revenue	**2,484.4**	**2,675.9**	**2,787.1**	**111.2**	**4.2%**
Salaries, Wages and Benefits:					
Salaries	239.1	258.3	263.5	(5.2)	-2.0%
Wages & Overtime	941.8	1,008.5	998.1	10.4	1.0%
Employee Benefits	534.9	609.9	600.1	9.8	1.6%
Employee Related	26.1	33.3	27.6	5.6	16.9%
Salaries, Wages and Benefits	**1,741.9**	**1,909.9**	**1,889.3**	**20.6**	**1.1%**
Train Operations	262.4	253.6	271.8	(18.2)	-7.2%
Fuel, Power, & Utilities	299.7	337.9	369.5	(31.6)	-9.4%
Materials	184.2	191.7	200.6	(8.9)	-4.6%
Facility, Communication, & Office	178.0	172.5	176.6	(4.0)	-2.3%
Advertising and Sales	113.7	112.9	80.4	32.5	28.8%
Depreciation	602.5	602.6	671.4	(68.8)	-11.4%
Other Non-labor Fees and Services	177.1	210.6	208.0	2.5	1.2%
Total Expenses	**3,559.6**	**3,791.7**	**3,867.6**	**(75.9)**	**-2.0%**
Operating Loss	**(1,075.2)**	**(1,115.9)**	**(1,080.5)**	**35.4**	**3.2%**
Adj for Non-Cash Depreciation/OPEBs/Impairment	655.2	664.4	735.2	70.8	10.7%
Net Operating Loss	**(419.9)**	**(451.5)**	**(345.3)**	**106.2**	**23.5%**
Federal Appropriation/PRIIA Authorized	**563.0**	**562.0**	**466.0**	**(96.0)**	**-17.1%**
Over/(Under) Federal Support	**(143.1)**	**(110.5)**	**(120.7)**		

[1] This income statement represents the total federal support required for Amtrak operations. This is not a GAAP financial statement. As compared to a GAAP financial statement, this income statement excludes costs for Amtrak's Office of the Inspector General (funded independently), non-capitalizable costs and state contributions associated with capital projects (funded by capital appropriation), and net interest expense (funded by debt service appropriation).

National Railroad Passenger Corporation (Amtrak)
Summary Income Statement by Department and Major Account (1)
FY11 Operating Budget

$ millions	Revenue	Transportation	Mechanical	Engineering
REVENUES:				
Passenger Related:				
Ticket Revenue	1,967.9			
Food and Beverage	0.0			
State Supported Train Revenue	192.9			
Total Passenger Related Revenue	2,160.8	0.0	0.0	0.0
Commuter		140.0		
Reimbursable		0.5	9.0	89.3
Commercial Development				
Other Transportation	133.6			
Freight Access Fees and Other	26.9			
Total Other Revenue	160.5	140.4	9.0	89.3
Total Operating Revenue	**2,321.3**	**140.4**	**9.0**	**89.3**
EXPENSES:				
Salaries, Wages and Benefits:				
Salaries		72.1	34.9	28.3
Wages & Overtime		564.2	194.5	139.7
Employee Benefits		279.1	127.5	79.9
Employee Related		9.2	2.1	6.0
Salaries, Wages and Benefits		924.6	358.9	253.8
Train Operations		179.7	0.1	0.0
Fuel, Power, & Utilities		240.9	22.3	9.0
Materials		20.1	157.3	22.1
Facility, Communication, & Office		50.0	18.4	24.2
Advertising and Sales		0.1	0.0	0.0
Casualty and Other Claims Total		22.3	8.2	4.0
Depreciation		0.0	0.0	0.0
Amort of Gain On Sale/Leaseback		0.0	0.0	0.0
Professional Fees		3.8	6.4	11.1
Data Processing Services and Supplies		0.5	0.7	1.6
Environmental and Safety		2.0	5.5	4.5
Maintenance of Way Services		2.3	0.8	31.0
Passenger Inconvenience		6.4	0.0	0.0
Financial		0.3	0.1	2.4
Other Expenses		0.0	0.0	(0.8)
Indirect Costs Capitalized To P&E		(4.9)	(33.0)	(87.2)
Total Expenses		1,448.3	545.7	275.8
Operating Income (Loss)	**2,321.3**	**(1,307.9)**	**(536.7)**	**(186.5)**
Other (Income) and Expense:				
Interest Income				
Interest Expense				
Other Expense - Net				
Project Expenses				0.2
Net Income or (Loss)	**2,321.3**	**(1,307.9)**	**(536.7)**	**(186.7)**
Adj for Depreciation, OPEBs, PRJ & Interest				0.2
Adjusted Income or (Loss)	**2,321.3**	**(1,307.9)**	**(536.7)**	**(186.5)**

(1) Not a GAAP financial statement. Costs for Amtrak's OIG and state contributions to capital projects are excluded.

National Railroad Passenger Corporation (Amtrak)
Summary Income Statement by Department and Major Account (1)
FY11 Operating Budget

$ millions	EHS	RCM	Operations Staff	Total Operations Departments
REVENUES:				
Passenger Related:				
Ticket Revenue				
Food and Beverage				
State Supported Train Revenue				
Total Passenger Related Revenue	0.0	0.0	0.0	0.0
Commuter				140.0
Reimbursable				98.7
Commercial Development				
Other Transportation				
Freight Access Fees and Other				
Total Other Revenue	0.0	0.0	0.0	238.7
Total Operating Revenue	**0.0**	**0.0**	**0.0**	**238.7**
EXPENSES:				
Salaries, Wages and Benefits:				
Salaries	5.3	0.0	1.1	141.6
Wages & Overtime	0.4	0.0	0.0	898.8
Employee Benefits	2.9	0.0	0.5	489.8
Employee Related	1.9	0.1	0.0	19.3
Salaries, Wages and Benefits	10.6	0.1	1.6	1,549.5
Train Operations	0.0	0.0	0.0	179.9
Fuel, Power, & Utilities	0.0	0.0	0.0	272.2
Materials	0.0	0.0	0.0	199.5
Facility, Communication, & Office	0.6	0.0	0.1	93.4
Advertising and Sales	0.0	0.0	0.0	0.1
Casualty and Other Claims Total	0.0	0.0	0.0	34.6
Depreciation	0.0	0.0	0.0	0.0
Amort of Gain On Sale/Leaseback	0.0	0.0	0.0	0.0
Professional Fees	1.0	0.7	0.1	23.2
Data Processing Services and Supplies	0.0	0.0	0.0	2.9
Environmental and Safety	2.0	0.0	0.0	14.0
Maintenance of Way Services	0.0	0.0	0.0	34.1
Passenger Inconvenience	0.0	0.0	0.0	6.4
Financial	0.0	0.0	0.0	2.8
Other Expenses	0.0	0.0	0.0	(0.8)
Indirect Costs Capitalized To P&E	0.0	0.0	0.0	(125.1)
Total Expenses	14.3	0.8	1.8	2,286.7
Operating Income (Loss)	**(14.3)**	**(0.8)**	**(1.8)**	**(2,048.0)**
Other (Income) and Expense:				
Interest Income				
Interest Expense				
Other Expense - Net				
Project Expenses				0.2
Net Income or (Loss)	**(14.3)**	**(0.8)**	**(1.8)**	**(2,048.2)**
Adj for Depreciation, OPEBs, PRJ & Interest				0.2
Adjusted Income or (Loss)	**(14.3)**	**(0.8)**	**(1.8)**	**(2,048.0)**

(1) Not a GAAP financial statement. Costs for Amtrak's OIG and state contributions to capital projects are excluded.

National Railroad Passenger Corporation (Amtrak)
Summary Income Statement by Department and Major Account (1)
FY11 Operating Budget

$ millions	Finance	Real Estate	Procurement and Matl Mgmt	Corporate Common	Chief Financial Officer	Police & Security Division
REVENUES:						
Passenger Related:						
Ticket Revenue						
Food and Beverage						
State Supported Train Revenue						
Total Passenger Related Revenue	0.0	0.0	0.0	0.0	0.0	0.0
Commuter						
Reimbursable	4.2				4.2	0.1
Commercial Development		66.1			66.1	
Other Transportation						
Freight Access Fees and Other						
Total Other Revenue	4.2	66.1	0.0	0.0	70.3	0.1
Total Operating Revenue	**4.2**	**66.1**	**0.0**	**0.0**	**70.3**	**0.1**
EXPENSES:						
Salaries, Wages and Benefits:						
Salaries	17.9	2.5	11.9	0.0	32.2	6.8
Wages & Overtime	4.3	0.1	18.9	(10.8)	12.6	34.4
Employee Benefits	11.3	1.3	16.0	(0.0)	28.6	20.4
Employee Related	0.6	0.1	0.8	0.0	1.4	2.3
Salaries, Wages and Benefits	34.0	3.9	47.6	(10.8)	74.8	64.0
Train Operations	0.0	0.0	0.0	0.0	0.0	0.1
Fuel, Power, & Utilities	93.5	0.4	0.3	(0.8)	93.4	0.0
Materials	0.0	0.0	0.2	(0.2)	(0.0)	0.0
Facility, Communication, & Office	2.7	3.2	5.0	8.4	19.3	5.6
Advertising and Sales	43.8	0.0	0.1	0.0	43.9	0.0
Casualty and Other Claims Total	0.2	0.0	0.7	8.1	9.0	1.3
Depreciation	0.0	0.0	0.0	664.1	664.1	0.0
Amort of Gain On Sale/Leaseback	0.0	0.0	0.0	(4.1)	(4.1)	0.0
Professional Fees	7.0	2.0	1.6	0.9	11.6	1.2
Data Processing Services and Supplies	0.9	0.0	0.8	0.0	1.8	0.0
Environmental and Safety	0.0	0.0	0.1	(2.0)	(1.9)	0.1
Maintenance of Way Services	0.0	0.0	0.5	0.0	0.5	1.5
Passenger Inconvenience	0.0	0.0	0.0	0.0	0.0	0.0
Financial	43.2	0.3	0.0	0.0	43.5	0.0
Other Expenses	0.0	0.0	0.0	(1.8)	(1.8)	0.0
Indirect Costs Capitalized To P&E	0.0	0.0	(18.5)	(0.0)	(18.5)	0.0
Total Expenses	225.3	9.8	38.5	661.9	935.4	73.9
Operating Income (Loss)	**(221.1)**	**56.2**	**(38.5)**	**(661.9)**	**(865.2)**	**(73.8)**
Other (Income) and Expense:						
Interest Income	(9.7)				(9.7)	
Interest Expense	96.7				96.7	
Other Expense - Net	87.0				87.0	
Project Expenses						
Net Income or (Loss)	**(308.1)**	**56.2**	**(38.5)**	**(661.9)**	**(952.2)**	**(73.8)**
Adj for Depreciation, OPEBs, PRJ & Interest	87.0			727.9	814.9	
Adjusted Income or (Loss)	**(221.1)**	**56.2**	**(38.5)**	**66.0**	**(137.3)**	**(73.8)**

(1) Not a GAAP financial statement. Costs for Amtrak's OIG and state contributions to capital projects are excluded.

National Railroad Passenger Corporation (Amtrak)
Summary Income Statement by Department and Major Account (1)
FY11 Operating Budget

$ millions	CEO	Marketing	IT	HR
REVENUES:				
Passenger Related:				
Ticket Revenue				
Food and Beverage		109.3		
State Supported Train Revenue				
Total Passenger Related Revenue	0.0	109.3	0.0	0.0
Commuter				
Reimbursable				
Commercial Development				
Other Transportation				
Freight Access Fees and Other		27.1		
Total Other Revenue	0.0	27.1	0.0	0.0
Total Operating Revenue	**0.0**	**136.4**	**0.0**	**0.0**
EXPENSES:				
Salaries, Wages and Benefits:				
Salaries	0.8	22.2	26.0	13.2
Wages & Overtime	0.0	41.2	0.2	0.1
Employee Benefits	0.4	31.0	13.0	6.6
Employee Related	0.0	0.8	0.8	2.1
Salaries, Wages and Benefits	1.3	95.2	40.1	22.0
Train Operations	0.0	91.9	0.0	0.0
Fuel, Power, & Utilities	0.0	0.6	0.0	0.1
Materials	0.0	0.0	0.0	0.0
Facility, Communication, & Office	0.1	11.3	39.6	2.3
Advertising and Sales	0.0	36.2	0.0	0.1
Casualty and Other Claims Total	0.0	1.2	0.0	0.0
Depreciation	0.0	0.0	0.0	0.0
Amort of Gain On Sale/Leaseback	0.0	0.0	0.0	0.0
Professional Fees	0.0	12.1	0.2	0.9
Data Processing Services and Supplies	0.0	2.2	111.0	0.1
Environmental and Safety	0.0	0.0	0.0	0.0
Maintenance of Way Services	0.0	0.5	0.0	0.1
Passenger Inconvenience	0.0	4.3	0.0	0.0
Financial	0.0	0.0	0.0	0.0
Other Expenses	0.0	0.0	0.0	0.0
Indirect Costs Capitalized To P&E	0.0	0.0	0.0	0.0
Total Expenses	1.4	255.5	190.9	25.6
Operating Income (Loss)	**(1.4)**	**(119.1)**	**(190.9)**	**(25.6)**
Other (Income) and Expense:				
Interest Income				
Interest Expense				
Other Expense - Net				
Project Expenses				
Net Income or (Loss)	**(1.4)**	**(119.1)**	**(190.9)**	**(25.6)**
Adj for Depreciation, OPEBs, PRJ & Interest				
Adjusted Income or (Loss)	**(1.4)**	**(119.1)**	**(190.9)**	**(25.6)**

(1) Not a GAAP financial statement. Costs for Amtrak's OIG and state contributions to capital projects are excluded.

National Railroad Passenger Corporation (Amtrak)
Summary Income Statement by Department and Major Account (1)
FY11 Operating Budget

$ millions	Policy & Development	General Counsel	High Speed Rail	Government Affairs	Total Corporate
REVENUES:					
Passenger Related:					
Ticket Revenue					
Food and Beverage					109.3
State Supported Train Revenue					
Total Passenger Related Revenue	0.0	0.0	0.0	0.0	109.3
Commuter					
Reimbursable					4.3
Commercial Development					66.1
Other Transportation					
Freight Access Fees and Other					27.1
Total Other Revenue	0.0	0.0	0.0	0.0	97.4
Total Operating Revenue	**0.0**	**0.0**	**0.0**	**0.0**	**206.7**
EXPENSES:					
Salaries, Wages and Benefits:					
Salaries	2.9	12.1	1.1	4.5	121.8
Wages & Overtime	(0.0)	0.0	0.0	0.0	88.5
Employee Benefits	1.4	6.0	0.5	2.2	110.3
Employee Related	0.1	0.4	0.2	0.2	8.4
Salaries, Wages and Benefits	4.4	18.5	1.8	6.9	329.0
Train Operations	0.0	0.0	0.0	0.0	91.9
Fuel, Power, & Utilities	0.0	0.0	0.0	0.0	94.1
Materials	0.0	0.0	0.0	0.0	0.1
Facility, Communication, & Office	0.3	1.8	0.2	0.3	80.9
Advertising and Sales	0.0	0.0	0.0	0.1	80.3
Casualty and Other Claims Total	0.0	7.4	0.0	0.0	18.9
Depreciation	0.0	0.0	0.0	0.0	664.1
Amort of Gain On Sale/Leaseback	0.0	0.0	0.0	0.0	(4.1)
Professional Fees	0.3	23.5	4.1	0.1	54.0
Data Processing Services and Supplies	(0.0)	0.0	0.1	0.1	115.3
Environmental and Safety	0.0	(0.0)	0.0	0.0	(1.8)
Maintenance of Way Services	0.0	0.0	0.0	0.0	2.5
Passenger Inconvenience	0.0	0.0	0.0	0.0	4.3
Financial	0.0	0.0	0.0	0.0	43.5
Other Expenses	0.0	0.0	0.0	0.0	(1.8)
Indirect Costs Capitalized To P&E	0.0	0.0	0.0	0.0	(18.5)
Total Expenses	5.0	51.3	6.2	7.6	1,552.7
Operating Income (Loss)	**(5.0)**	**(51.3)**	**(6.2)**	**(7.6)**	**(1,346.0)**
Other (Income) and Expense:					
Interest Income					(9.7)
Interest Expense					96.7
Other Expense - Net					87.0
Project Expenses		0.4			0.4
Net Income or (Loss)	**(5.0)**	**(51.7)**	**(6.2)**	**(7.6)**	**(1,433.3)**
Adj for Depreciation, OPEBs, PRJ & Interest		0.4			815.3
Adjusted Income or (Loss)	**(5.0)**	**(51.3)**	**(6.2)**	**(7.6)**	**(618.1)**

(1) Not a GAAP financial statement. Costs for Amtrak's OIG and state contributions to capital projects are excluded.

National Railroad Passenger Corporation (Amtrak)
Summary Income Statement by Department and Major Account (1)
FY11 Operating Budget

$ millions	Corporate Entries	Subsidiaries & Elimination	Total Amtrak
REVENUES:			
Passenger Related:			
Ticket Revenue			1,967.9
Food and Beverage			109.3
State Supported Train Revenue			192.9
Total Passenger Related Revenue	0.0	0.0	2,270.1
Commuter			140.0
Reimbursable			103.0
Commercial Development		5.8	71.8
Other Transportation		9.7	143.3
Freight Access Fees and Other		4.9	59.0
Total Other Revenue	0.0	20.4	517.0
Total Operating Revenue	**0.0**	**20.4**	**2,787.1**
EXPENSES:			
Salaries, Wages and Benefits:			
Salaries	0.0	0.0	263.5
Wages & Overtime	0.0	10.8	998.1
Employee Benefits	0.0	0.0	600.1
Employee Related	0.0	0.0	27.6
Salaries, Wages and Benefits	0.0	10.8	1,889.3
Train Operations	0.0	0.0	271.8
Fuel, Power, & Utilities	0.0	3.2	369.5
Materials	0.0	1.0	200.6
Facility, Communication, & Office	0.0	2.3	176.6
Advertising and Sales	0.0	0.0	80.4
Casualty and Other Claims Total	0.0	0.4	53.9
Depreciation	0.0	7.3	671.4
Amort of Gain On Sale/Leaseback	0.0	0.0	(4.1)
Professional Fees	0.0	0.9	78.1
Data Processing Services and Supplies	0.0	0.0	118.1
Environmental and Safety	0.0	0.0	12.2
Maintenance of Way Services	0.0	0.0	36.6
Passenger Inconvenience	0.0	0.0	10.7
Financial	0.0	0.5	46.8
Other Expenses	0.0	1.8	(0.8)
Indirect Costs Capitalized To P&E	0.0	0.0	(143.6)
Total Expenses	0.0	28.2	3,867.6
Operating Income (Loss)	**0.0**	**(7.8)**	**(1,080.5)**
Other (Income) and Expense:			
Interest Income		(0.1)	(9.7)
Interest Expense			96.7
Other Expense - Net		(0.1)	86.9
Project Expenses			0.5
Net Income or (Loss)		**(7.8)**	**(1,167.9)**
Adj for Depreciation, OPEBs, PRJ & Interest		7.2	822.6
Adjusted Income or (Loss)		**(0.6)**	**(345.3)**

(1) Not a GAAP financial statement. Costs for Amtrak's OIG and state contributions to capital projects are excluded.

National Railroad Passenger Corporation (Amtrak)

Revenue and Expenses by Department [1]

FY12 Operating Budget

	Revenue			Expenses			Profit/(Loss)		
	Base Activity	New Activity	Total Activity	Base Activity	New Activity	Total Activity	Base Activity	New Activity	Total Activity
Passenger Revenue - No Specific Dept	2,302.3	19.0	2,321.3				2,302.3	19.0	2,321.3
Transportation	140.4		140.4	1,447.4	0.9	1,448.3	(1,306.9)	(0.9)	(1,307.9)
Mechanical	9.0		9.0	546.9	(1.2)	545.7	(537.9)	1.2	(536.7)
Engineering	89.3		89.3	275.4	0.4	275.8	(186.1)	(0.4)	(186.5)
Environmental, Health, and Safety				13.2	1.1	14.3	(13.2)	(1.1)	(14.3)
Reliability Centered Maintenance				0.8		0.8	(0.8)		(0.8)
Operations Staff				1.8		1.8	(1.8)		(1.8)
Total Operations Departments	**238.7**		**238.7**	**2,285.4**	**1.3**	**2,286.7**	**(2,046.7)**	**(1.3)**	**(2,048.0)**
Finance	4.2		4.2	222.5	2.8	225.3	(218.3)	(2.8)	(221.1)
Real Estate	66.1		66.1	9.8		9.8	56.2		56.2
Procurement and Materials Management				38.5	(0.1)	38.5	(38.5)	0.1	(38.5)
Corporate Common				(62.9)	(3.1)	(66.0)	62.9	3.1	66.0
Chief Financial Officer	70.3		70.3	207.9	(0.4)	207.6	(137.7)	0.4	(137.3)
Police & Security Division	0.1		0.1	64.8	9.0	73.9	(64.8)	(9.0)	(73.8)
CEO				1.4		1.4	(1.4)		(1.4)
Marketing	130.5	5.9	136.4	258.0	(2.5)	255.5	(127.5)	8.4	(119.1)
IT				175.0	15.9	190.9	(175.0)	(15.9)	(190.9)
HR				25.5	0.1	25.6	(25.5)	(0.1)	(25.6)
Policy & Development				2.1	2.9	5.0	(2.1)	(2.9)	(5.0)
General Counsel				51.3		51.3	(51.3)		(51.3)
High Speed Rail Department				(0.8)	7.0	6.2	0.8	(7.0)	(6.2)
Government Affairs				7.4	0.2	7.6	(7.4)	(0.2)	(7.6)
Total Corporate	**200.8**	**5.9**	**206.7**	**792.6**	**32.1**	**824.8**	**(591.8)**	**(26.3)**	**(618.1)**
Corporate Entries									
Subsidiaries & Elimination	20.4		20.4	20.9		20.9	(0.6)		(0.6)
Total Amtrak Excluding OIG	459.9	5.9	465.8	3,099.0	33.4	3,132.4	(2,639.1)	(27.5)	(2,666.6)
Operating Subsidy Requirement	**2,762.2**	**24.9**	**2,787.1**	**3,099.0**	**33.4**	**3,132.4**	**(336.8)**	**(8.5)**	**(345.3)**
Depreciation				671.4		671.4	(671.4)		(671.4)
OPEB's				63.8		63.8	(63.8)		(63.8)
Non-Cash Expenses				735.2		735.2	(735.2)		(735.2)
Project Expenses				0.5		0.5	(0.5)		(0.5)
Interest Expense, net of Interest Income				87.3	(0.4)	86.9	(87.3)	0.4	(86.9)
Net Loss Including Non-Cash and Project	**2,762.2**	**24.9**	**2,787.1**	**3,922.0**	**33.1**	**3,955.1**	**(1,159.8)**	**(8.1)**	**(1,167.9)**

[1] This is not a GAAP financial statement. As compared to a GAAP financial statement, this income statement excludes costs for Amtrak's Office of the Inspector General (funded independently) and state contributions associated with capital projects.

National Railroad Passenger Corporation (Amtrak)
Commuter Income Statement by Major Accounts [1]
FY12 Operating Budget

$ millions	FY12 Budget
REVENUES:	
Commuter	140.0
Total Operating Revenue	**140.0**
EXPENSES:	
Salaries, Wages and Benefits:	
Salaries	6.9
Wages & Overtime	45.1
Employee Benefits	21.4
Employee Related	0.6
Salaries, Wages and Benefits	74.1
Train Operations	0.8
Fuel, Power, & Utilities	12.6
Materials	6.8
Facility, Communication, & Office	2.6
Casualty and Other Claims Total	1.7
Professional Fees	0.5
Environmental and Safety	0.4
Maintenance of Way Services	1.0
Passenger Inconvenience	0.0
Financial	0.1
Other Expenses	0.0
Indirect Costs Capitalized To P&E	1.6
Total Expenses	102.2
Operating Income (Loss)	**37.8**

[1] This income statement represents the total federal support required for Amtrak operations. This is not a GAAP financial statement. As compared to a GAAP financial statement, this income statement excludes costs for Amtrak's Office of the Inspector General (funded independently), non-capitalizable costs and state contributions associated with capital projects (funded by capital appropriation), and net interest expense (funded by debt service appropriation).

National Railroad Passenger Corporation (Amtrak)

Commercial Development Income Statement by Major Accounts [1]

FY12 Operating Budget

$ millions	FY12 Budget
REVENUES:	
Passenger Related:	
Commercial Development	71.8
Total Operating Revenue	**71.8**
EXPENSES:	
Salaries, Wages and Benefits:	
Salaries	2.5
Wages & Overtime	0.4
Employee Benefits	1.4
Employee Related	0.1
Salaries, Wages and Benefits	4.4
Fuel, Power, & Utilities	0.4
Facility, Communication, & Office	3.2
Professional Fees	2.0
Financial	0.4
Indirect Costs Capitalized To P&E	0.2
Total Expenses	10.7
Operating Income (Loss)	**61.2**

[1] This income statement represents the total federal support required for Amtrak operations. This is not a GAAP financial statement. As compared to a GAAP financial statement, this income statement excludes costs for Amtrak's Office of the Inspector General (funded independently), non-capitalizable costs and state contributions associated with capital projects (funded by capital appropriation), and net interest expense (funded by debt service appropriation).

National Railroad Passenger Corporation (Amtrak)

Summary Income Statement by Major Account and Activity [1]

FY12 Operating Budget

$ millions	Base Activity	New Activity	FY12 Budget
REVENUES:			
Passenger Related:			
Ticket Revenue	1,948.8	19.0	1,967.9
Food and Beverage	109.3	0.0	109.3
State Supported Train Revenue	192.9	0.0	192.9
Total Passenger Related Revenue	2,251.0	19.0	2,270.1
Commuter	140.0	0.0	140.0
Reimbursable	103.0	0.0	103.0
Commercial Development	71.8	0.0	71.8
Other Transportation	143.3	0.0	143.3
Freight Access Fees and Other	53.1	5.9	59.0
Total Other Revenue	511.2	5.9	517.0
Total Operating Revenue	**2,762.2**	**24.9**	**2,787.1**
EXPENSES:			
Salaries, Wages and Benefits:			
Salaries	259.0	4.4	263.5
Wages & Overtime	995.6	2.5	998.1
Employee Benefits	596.4	3.7	600.1
Employee Related	27.1	0.6	27.6
Salaries, Wages and Benefits	1,878.1	11.1	1,889.3
Train Operations	270.7	1.1	271.8
Fuel, Power, & Utilities	374.6	(5.1)	369.5
Materials	200.8	(0.2)	200.6
Facility, Communication, & Office	169.1	7.4	176.6
Advertising and Sales	80.4	0.0	80.4
Casualty and Other Claims Total	56.1	(2.1)	53.9
Depreciation	671.4	0.0	671.4
Amort of Gain On Sale/Leaseback	(4.1)	0.0	(4.1)
Professional Fees	65.7	12.4	78.1
Data Processing Services and Supplies	112.8	5.3	118.1
Environmental and Safety	12.2	0.0	12.2
Maintenance of Way Services	36.6	0.0	36.6
Passenger Inconvenience	10.7	0.0	10.7
Financial	43.4	3.5	46.8
Other Expenses	(0.8)	0.0	(0.8)
Indirect Costs Capitalized To P&E	(143.6)	0.0	(143.6)
Total Expenses	3,834.2	33.4	3,867.6
Operating Income (Loss)	**(1,072.0)**	**(8.5)**	**(1,080.5)**
Other (Income) and Expense:			
Interest Income	(9.7)	0.0	(9.7)
Interest Expense	97.0	(0.4)	96.7
Other Expense - Net	87.3	(0.4)	86.9
Project Expenses	0.5	0.0	0.5
Net Income or (Loss)	**(1,159.8)**	**(8.1)**	**(1,167.9)**
Adj for Depreciation, OPEBs, PRJ & Interest	823.0	(0.4)	822.6
Adjusted Income or (Loss)	**(336.8)**	**(8.5)**	**(345.3)**

[1] This income statement represents the total federal support required for Amtrak operations. This is not a GAAP financial statement. As compared to a GAAP financial statement, this income statement excludes costs for Amtrak's Office of the Inspector General (funded independently) and state contributions associated with capital projects (funded by capital appropriation).

Reconcilation of FY12 Operating Budget to FY11 Results [1]

($ Millions)

		Revenue	Expenses	Net Income/(Loss)
FY11 Total Actual		**$2,675.9**	**$3,127.3**	**($451.5)**
Changes to Base Activity				
	Impact of changes in demographics and the economy	$53.0		$53.0
	Inflation including ticket price increases, labor agreements, fuel prices, and other	$39.8	$112.1	($72.4)
	Normalization of Reimbursable revenue expectations as compared to reduced activity in FY11	$18.9		$18.9
	Additional day of ticket revenue in FY12 due to leap year	$5.0		$5.0
	Increased capacity on Northeast Regional and Empire trains	$3.2		$3.2
	Commercial revenue decrease due to one-time revenues in FY11 not recurring in FY12	($4.4)		($4.4)
	Decrease in Commuter revenue and expenses primarily due to loss of Caltrains contract	($33.4)	($43.3)	$9.9
	Decrease in overhead transfer credits to capital projects due to reduced capital program in FY12		$20.6	($20.6)
	Increase in Train Operations due to expected higher payments for schedule adherence (see subsequent reduction in Management Actions below)		$19.8	($19.8)
	Increase in fleet maintenance materials primarily due to growth in active fleet from ARRA restorations		$8.4	($8.4)
	Increase in Commission Credit Cards due to higher revenue		$2.7	($2.7)
	Decrease in labor cost primarily due to expected reduced overtime wages in FY12		($9.4)	$9.4
	Decrease in Payroll Taxes due to lower headcount		($4.8)	$4.8
	All Other	($2.2)	($2.9)	$0.6
	Base Activity Increase/(Decrease) from Prior Year	**$79.8**	**$103.2**	**($23.4)**
Total FY12 Base Activity Budget		**$2,755.7**	**$3,230.5**	**($474.9)**
New Activity				
New Revenue Initiatives	Launch of Wi-Fi Systemwide	$13.7		$13.7
	Contact Center Booking Fee	$5.9	($2.5)	$8.4
	Marketing, Advertising & Social Media activities	$4.5		$4.5
	Launch of enhanced next generation eTicketing channel	$0.9		$0.9
	Total FY12 New Revenue Initiatives	***$24.9***	***($2.5)***	***$27.4***
Mobility & Connectivity	HSR Business Plan Funding Study		$2.5	($2.5)
	HSR Next Generation Implementation Studies		$2.5	($2.5)
	Other HSR planning, marketing, and development support efforts		$2.6	($2.6)
	Additional resources for NEC Infrastructure planning, analysis, and support		$2.0	($2.0)
	Additional resources for Commuter contracting		$0.4	($0.4)
	Subtotal Mobility & Connectivity Initiatives		***$10.0***	***($10.0)***
Customer Service	Additional Ticket Agents Cary/Raleigh NC		$0.3	($0.3)
	Service/staffing increases on targeted long distance routes (route performance improvement program)		$3.8	($3.8)
	Subtotal Customer Service Initiatives		***$4.1***	***($4.1)***
Safety	Claims reductions from Safe-2-Safer program education		($2.3)	$2.3
	Abestos Management Plan		$0.9	($0.9)
	Other		$0.2	($0.2)
	Subtotal Safety Initiatives		***($1.2)***	***$1.2***
Security	Back-up security network operational cost		$1.5	($1.5)
	Amtrak's headquarter front desk – Contracted security officers		$0.3	($0.3)
	Maintenance and Way Inventory Security Initiative		$0.1	($0.1)
	Ivy City building – Contracted security officers		$0.3	($0.3)
	Operational fees for monitoring cameras at Penn Station NY		$0.3	($0.3)
	Safety Engineering		$0.5	($0.5)
	CCTV Maintenance		$0.5	($0.5)
	Issuance of Smart ID Cards for contractors access to Amtrak's property		$0.5	($0.5)
	Virtual Fence Monitoring Cost		$0.9	($0.9)
	Police Department Expansion - add 50 officers		$2.4	($2.4)
	Other		$1.9	($1.9)
	Subtotal Security Initiatives		***$9.1***	***($9.1)***
Environmental	Fuel Conservation Program		($3.3)	$3.3
	Utility conservation - installation of high efficiency lighting		($0.9)	$0.9
	Climate Registry Verification		$0.1	($0.1)
	Subtotal Environmental Initiatives		***($4.1)***	***$4.1***
Organizational Excellence	SAM Savings		($2.8)	$2.8
	Wellness Programs		$0.1	($0.1)
	Close Jacksonville Crewbase		$0.2	($0.2)
	Amtrak Leadership Program		$0.2	($0.2)
	Police Fitness Program		$0.5	($0.5)
	Fleet Other		$3.7	($3.7)
	Subtotal Organizational Excellence Initiatives		***$1.8***	***($1.8)***
Organizational Excellence IT	Replace Outsourced Service with Employees		($1.2)	$1.2
	IT cost to support new Software and Applications		$10.1	($10.1)
	IT cost of SAP Center of Excellence		$7.3	($7.3)
	Subtotal Organizational Excellence Initiatives-IT		***$16.3***	***($16.3)***
	Total FY12 New Activity	**$24.9**	**$33.4**	**($8.5)**
FY12 Budget before Management Actions		**$2,780.6**	**$3,264.0**	**($483.3)**
Management Cost Reduction Actions				
Revenue Increase	***Incremental revenue from Amtrak.com related partners***	***$6.5***		***$6.5***
Workforce Related Actions	Reduction of Management workforce including associated benefits		($25.7)	$25.7
	Reduced FELA liability due to decrease in management workforce		($3.4)	$3.4
	Reduction of Agreement overtime including benefits		($3.8)	$3.8
	Reductions to employee travel and other employee related expenses		($2.8)	$2.8
	Subtotal Workforce-related Management Actions		***($35.7)***	***$35.7***
Other Actions	Reduce Advertising and Promotional expenditures		($43.6)	$43.6
	Reduce usage of outside professional, legal, and consultant services		($27.3)	$27.3
	Increase in transfer credits due to funding additional capital projects with ticket revenue		($8.0)	$8.0
	Adjustment to host railroad expense assumptions (see increases to base activity)		($4.2)	$4.2
	Further reduction to electric locomotive propulsion power due to negotiation of favorable rates		($2.8)	$2.8
	Reductions to telephone, long distance, and cellular phone usage		($2.5)	$2.5
	Reduction to motor coach connecting services		($1.6)	$1.6
	Decrease in fleet and track maintenance materials due to funding additional capital projects with ticket revenue		($1.5)	$1.5
	Reductions to facility maintenance activities		($0.8)	$0.8
	Reduction to on-board crew costs, primarily reduced layover costs		($0.8)	$0.8
	Reductions to office supplies and express mail services		($0.3)	$0.3
	All other actions		($2.4)	$2.4
	Subtotal Other Management Actions		***($95.8)***	***$95.8***
	Total Management Cost Reduction Actions	**$6.5**	**($131.5)**	**$138.0**
FY12 Final Budget		**$2,787.1**	**$3,132.4**	**($345.3)**

[1] This reconciliation represents the revenues and expenses that form the total federal support required for Amtrak operations. This is not a GAAP financial statement. As compared to a GAAP financial statement, this statement excludes costs fo Amtrak's Office of the Inspector General (funded independently), non-capitalizable costs and state contributions associated with capital projects (funded by capital appropriation), and net interest expense (funded by debt service appropriation).

National Railroad Passenger Corporation (Amtrak)
Monthly Average and End of Year Headcount by Department
FY12 Operating Budget

	FY11 End of Year Headcount						FY12 End of Year Headcount Budget					
	Exempt					Total	Exempt					Total
	Mgmt	ARASA	Total	Non-Exempt	Interns	Headcount	Mgmt	ARASA	Total	Non-Exempt	Interns	Headcount
Transportation	678	188	866	7,965	-	8,831	615	188	803	7,614	-	8,417
Mechanical	391	-	391	4,030	10	4,431	389	-	389	4,059	10	4,458
Engineering	402	-	402	3,160	9	3,571	402	-	402	3,160	9	3,571
Operations Staff	8	-	8	-	-	8	8	-	8	-	-	8
Operating Departments	1,479	188	1,667	15,155	19	16,841	1,415	188	1,603	14,833	19	16,455
Finance	175	-	175	94	2	271	158	-	158	94	2	254
Real Estate	24	-	24	2	-	26	24	-	24	2	-	26
Procurement and Matl Mgmt	150	-	150	332	-	482	145	-	145	332	-	477
Corporate Common	-	-	-	-	-	-	-	-	-	-	-	-
Chief Financial Officer	349	-	349	428	2	779	327	-	327	428	2	757
Police & Security Division	63	-	63	406	-	469	62	-	62	472	-	534
EHS	40	1	41	3	-	44	60	1	61	5	-	66
CEO	5	-	5	-	-	5	3	-	3	-	-	3
Marketing	258	4	262	931	-	1,193	238	4	242	931	-	1,173
IT	309	-	309	4	2	315	229	-	229	4	2	235
HR	199	-	199	3	-	202	155	-	155	1	-	156
Policy & Development	53	-	53	-	-	53	18	-	18	-	-	18
General Counsel	132	-	132	-	-	132	125	-	125	-	-	125
High Speed Rail Dept	4	-	4	-	-	4	(5)	-	(5)	-	-	(5)
Government Affairs	37	-	37	1	1	39	33	-	33	1	1	35
Total Corporate	1,449	5	1,454	1,776	5	3,235	1,246	5	1,251	1,842	5	3,098
Total Amtrak	2,928	193	3,121	16,931	24	20,076	2,660	193	2,853	16,675	24	19,552
Inspector General	80	-	80	-	-	80	80	-	80	-	-	80
Total Amtrak	3,008	193	3,201	16,931	24	20,156	2,740	193	2,933	16,675	24	19,632

National Railroad Passenger Corporation (Amtrak)
Summary Capital Programs

$ millions	FY2011 Capital Programs							FY2012 Capital Programs					Change from FY11 Over (Under)						
	DOT Federal	Internal	RRIF	State Local and Other	Total Excluding Economic Stimulus	Economic Stimulus Funding	Total FY11 Capital	DOT Federal	Internal	RRIF	State Local and Other	Total FY12 Capital	DOT Federal	Internal	RRIF	State Local and Other	Total Excluding Economic Stimulus	Economic Stimulus Funding	Total
Bridges/Culverts/Tunnels	18.30	(0.32)	-	5.93	23.91		23.91	62.16	-	-	5.96	68.12	43.86	0.32	-	0.03	44.21		44.21
Facility/Station/Other	17.31	(0.75)	-	15.49	32.05		32.05	37.10	-	-	12.91	50.01	19.79	0.75	-	(2.58)	17.96		17.96
Signal Systems	15.10	(0.06)	-	3.01	18.06		18.06	35.73	-	-	5.81	41.53	20.63	0.06	-	2.79	23.48		23.48
Communication Systems	0.36	(0.00)	-	0.03	0.39		0.39	0.47	1.93	-	7.71	10.11	0.11	1.93	-	7.68	9.72		9.72
Overhead Catenary and Transmission system	17.66	0.65	-	0.99	19.31		19.31	14.13	0.10	-	1.37	15.60	(3.53)	(0.55)	-	0.38	(3.71)		(3.71)
Substations/Frequency Converters	6.03	0.95	-	4.20	11.18		11.18	9.30	-	-	4.66	13.96	3.27	(0.95)	-	0.46	2.78		2.78
Track Replacement	139.65	0.23	-	34.64	174.52		174.52	102.57	-	-	64.16	166.72	(37.08)	(0.23)	-	29.51	(7.80)		(7.80)
Interlocking Renewal	18.23	0.32	-	6.60	25.15		25.15	8.97	-	-	6.88	15.85	(9.26)	(0.32)	-	0.28	(9.30)		(9.30)
Equipment Purchase/Replacement	16.47	(0.01)	-	2.53	18.98		18.98	13.93	-	-	(0.00)	13.93	(2.54)	0.01	-	(2.53)	(5.06)		(5.06)
Seattle King St. Coach Yd	32.84	(0.00)	-	-	32.84		32.84	7.00	-	-	0.00	7.00	(25.84)	0.00	-	0.00	(25.84)		(25.84)
Freight Railroad Improvements	2.41	0.00	-	0.00	2.41		2.41	-	-	-	-	-	(2.41)	(0.00)	-	(0.00)	(2.41)		(2.41)
ADA Compliance	-	(0.01)	-	94.62	94.61		94.61	50.00	-	-	-	50.00	50.00	0.01	-	(94.62)	(44.61)		(44.61)
Fire & Life Safety	1.53	2.58	-	26.03	30.14		30.14	8.65	2.00	-	12.55	23.20	7.12	(0.58)	-	(13.48)	(6.94)		(6.94)
ARRA (Economic Stimulus)	33.25	50.71		-	83.96	454.72	538.68		-	-	7.25	7.25	(33.25)	(50.71)	-	7.25	(76.71)	(454.72)	(531.43)
Engineering	***319.13***	***54.29***	***-***	***194.08***	***567.51***	***454.72***	***1,022.23***	***350.00***	***4.03***	***-***	***129.26***	***483.28***	***30.87***	***(50.26)***	***-***	***(64.83)***	***(84.22)***	***(454.72)***	***(538.94)***
																			-
Mechanical	130.56	55.57	97.92	13.79	297.84	44.10	341.95	249.96	72.84	119.57	5.02	447.39	119.40	17.27	21.66	(8.77)	149.55	(44.10)	105.45
Transportation	19.32	18.90	-	0.59	38.82	0.92	39.74	12.65	-	-	-	12.65	(6.67)	(18.90)	-	(0.59)	(26.17)	(0.92)	(27.09)
Chief Operating Officer	(0.03)	0.00	-	-	(0.03)		(0.03)	-	-	-	-	-	0.03	(0.00)	-	-	0.03	-	0.03
Subtotal Operations	***468.98***	***128.77***	***97.92***	***208.46***	***904.14***	***499.75***	***1,403.88***	***612.61***	***76.87***	***119.57***	***134.28***	***943.33***	***143.62***	***(51.90)***	***21.66***	***(74.19)***	***39.19***	***(499.75)***	***(460.56)***
																			-
Police & Security	9.49	1.45	-	0.00	10.94	52.83	63.77	(0.00)	2.41	-	2.11	4.53	(9.49)	0.97	-	2.11	(6.41)	(52.83)	(59.24)
Police & Security (DHS)				12.30	12.30		12.30			-	41.07	41.07	-	-	-	28.77	28.77	-	28.77
Subtotal Police & Security	***9.49***	***1.45***	***-***	***12.30***	***23.24***	***52.83***	***76.07***	***(0.00)***	***2.41***	***-***	***43.18***	***45.60***	***(9.49)***	***0.97***	***-***	***30.88***	***22.36***	***(52.83)***	***(30.47)***
																			-
Chief Financial Officer	4.96	(0.00)	-	10.19	15.15	6.05	21.20	-	0.39	-	-	0.39	(4.96)	0.39	-	(10.19)	(14.76)	(6.05)	(20.81)
Environmental, Health, & Safety	5.97	(0.46)	-	0.12	5.63		5.63	-	3.77	-	-	3.77	(5.97)	4.23	-	(0.12)	(1.86)	-	(1.86)
Real Estate	0.01	(0.00)	-	0.00	0.01		0.01	17.00	-	-	-	17.00	16.99	0.00	-	(0.00)	16.99	-	16.99
Information Technology	115.14	3.26	-	5.45	123.86	7.98	131.84	30.30	5.50	-	-	35.80	(84.84)	2.24	-	(5.45)	(88.06)	(7.98)	(96.04)
Marketing and Product Management	30.04	0.86	-	4.19	35.09	1.58	36.67	20.18	3.00	-	(0.00)	23.18	(9.86)	2.14	-	(4.19)	(11.91)	(1.58)	(13.49)
Procurement	3.70	0.00	-	0.64	4.34	0.29	4.63	-	-	-	-	-	(3.70)	(0.00)	-	(0.64)	(4.34)	(0.29)	(4.63)
Policy and Development	10.59	0.08	-	2.66	13.34		13.34	6.50	2.67	-	8.20	17.37	(4.09)	2.59	-	5.54	4.03	-	4.03
Subtotal Corporate	***170.41***	***3.75***	***-***	***23.26***	***197.42***	***15.91***	***213.32***	***73.98***	***15.33***	***-***	***8.20***	***97.51***	***(96.43)***	***11.58***	***-***	***(15.06)***	***(99.91)***	***(15.91)***	***(115.81)***
Total	**648.88**	**133.97**	**97.92**	**244.02**	**1,124.79**	**568.48**	**1,693.27**	**686.59**	**94.61**	**119.57**	**185.66**	**1,086.43**	**37.70**	**(39.36)**	**21.66**	**(58.36)**	**(38.36)**	**(568.48)**	**(606.84)**

Amtrak FY12 Capital Project Ranked List

$ Millions

Rank	Project #	Project Title	Department	FY12 Federal Funds	FY12 Ticket Revenue	Homeland Security	RRIF	State, Local & Other	Total	Cumulative GCAP
1	C.EN.VARIOUS	NEC Infrastructure Maintenance & Improvement	Engineering	300.00	2.10	-	-	114.30	416.40	300.00
2	C.ME.100785	Acela Overhaul	Mechanical	35.00	-	-	-	-	35.00	335.00
3	C.ME.100237	AEM-7 AC Locomotive Overhauls	Mechanical	6.00	-	-	-	-	6.00	341.00
4	C.ME.100097	AEM-7 DC Locomotive Overhaul	Mechanical	4.38	-	-	-	-	4.38	345.37
5	C.ME.100174	HHP-8 Locomotive Overhaul	Mechanical	2.25	-	-	-	-	2.25	347.62
6	C.ME.100653	Diesel Locomotive LCPM	Mechanical	30.00	-	-	-	-	30.00	377.62
7	C.ME.201291	Amfleet Coach Overhaul Level 2	Mechanical	15.73	-	-	-	-	15.73	393.35
8	C.ME.100413	AMFLEET I COACH OVERHAUL LEVEL 1	Mechanical	12.90	-	-	-	-	12.90	406.25
9	C.ME.100377	Amfleet I Café/Club Overhaul	Mechanical	11.48	-	-	-	-	11.48	417.73
10	C.ME.100101	Amfleet II Coach Overhaul Level 1	Mechanical	9.00	-	-	-	-	9.00	426.73
11	C.ME.100869	Amfleet II Diner Overhaul Level 1	Mechanical	2.25	-	-	-	-	2.25	428.98
12	C.ME.100649	CAB CAR OVERHAUL - LEVEL 1	Mechanical	0.33	-	-	-	-	0.33	429.30
13	C.ME.100022	Amfleet Food Service to Coach	Mechanical	17.88	-	-	-	-	17.88	447.19
14	C.ME.100239	Viewliner Sleeper - Overhaul	Mechanical	7.67	-	-	-	-	7.67	454.86
15	C.ME.100177	Superliner 1 Coach Overhaul	Mechanical	21.83	-	-	-	-	21.83	476.69
16	C.ME.100039	Superliner I Sleeper Overhaul - Level 3	Mechanical	15.03	-	-	-	-	15.03	491.72
17	C.ME.100042	Superliner II Coach Overhaul	Mechanical	4.25	-	-	-	-	4.25	495.97
18	C.ME.100040	Superliner II Sleeper Overhaul	Mechanical	6.00	-	-	-	-	6.00	501.97
19	C.ME.100044	Superliner II Trans Sleeper Dorm Overhaul	Mechanical	3.60	-	-	-	-	3.60	505.57
20	C.ME.100041	Superliner II Lounge Overhaul	Mechanical	2.24	-	-	-	-	2.24	507.81
21	C.ME.100043	Superliner II Diner Overhaul	Mechanical	1.96	-	-	-	-	1.96	509.77
22	C.ME.100386	Superliner Diner Lounge Overhaul	Mechanical	3.83	-	-	-	-	3.83	513.60
23	C.ME.100384	Superliner I Sleeper Overhaul	Mechanical	0.52	-	-	-	-	0.52	514.12
24	C.ME.100641	HORIZON COACH OVERHAUL - LEVEL 2	Mechanical	7.81	-	-	-	-	7.81	521.93
25	C.ME.100643	Horizon Café Overhaul	Mechanical	0.82	-	-	-	-	0.82	522.75
26	C.ME.100241	Heritage Diner Overhauls	Mechanical	2.80	-	-	-	-	2.80	525.55
27	C.ME.100038	Baggage Car Overhaul	Mechanical	5.70	-	-	-	-	5.70	531.25
28	C.ME.100405	Auto Carrier Modifications	Mechanical	2.00	-	-	-	-	2.00	533.25
29	C.ME.100640	Surfliner Coach Overhaul	Mechanical	1.40	-	-	-	-	1.40	534.65
30	C.ME.100644	Surfliner Cab Car Overhaul	Mechanical	0.43	-	-	-	-	0.43	535.08
31	C.ME.100647	Surfliner Café Overhaul	Mechanical	0.93	-	-	-	-	0.93	536.01
32	C.ME.100646	Surfliner Custom Coach Overhaul	Mechanical	0.60	-	-	-	-	0.60	536.61
33	C.ME.100236	Talgo Equipment Modifications	Mechanical	0.60	-	-	-	-	0.60	537.21
34	C.ME.100090	LOCOMOTIVE MANDATORY PROGRAMS	Mechanical	1.25	-	-	-	-	1.25	538.46
35	C.ME.100089	Car Mandatory Programs	Mechanical	1.00	-	-	-	-	1.00	539.46
36	C.ME.100655	Engineering Modification Project	Mechanical	3.00	-	-	-	-	3.00	542.46
37	C.ME.100376	High Speed Facility	Mechanical	0.25	-	-	-	-	0.25	542.71
38	C.ME.100092	S&I/Running Repair - NY	Mechanical	0.25	-	-	-	-	0.25	542.96
39	C.ME.100093	SI Running Repair-South	Mechanical	0.25	-	-	-	-	0.25	543.21
40	C.ME.100094	SI Running Repair-WAS	Mechanical	0.25	-	-	-	-	0.25	543.46
41	C.ME.100095	SI Running Repair-Central	Mechanical	0.25	-	-	-	-	0.25	543.71
42	C.ME.100096	SI Running Repair-West	Mechanical	0.25	-	-	-	-	0.25	543.96
43	C.ME.100098	Wilmington Facility Improvements	Mechanical	0.25	-	-	-	-	0.25	544.21
44	C.ME.100100	Beech Grove Shops Facility Improvement	Mechanical	0.25	-	-	-	-	0.25	544.46
45	C.ME.100102	Bear Facility Improvements	Mechanical	0.25	-	-	-	-	0.25	544.71
46	C.ME.100648	RELIABILITY CENTER IMPROVEMENTS	Mechanical	0.25	-	-	-	-	0.25	544.96
47	C.ME.100378	Locomotive Video Cameras/Train Communications	Mechanical	0.75	-	-	-	-	0.75	545.71
48	C.ME.100415	Locomotive Health Monitoring & Analysis System	Mechanical	0.50	-	-	-	-	0.50	546.21
49	C.ME.100021	Work Management System	Mechanical	1.50	-	-	-	-	1.50	547.71
50	C.ME.100404	Cracked Wheel Detector	Mechanical	2.00	-	-	-	-	2.00	549.71
51	C.ME.100403	Mobile Data Management	Mechanical	0.25	-	-	-	-	0.25	549.96
52	C.EN.100694	ADA Compliance	Engineering	50.00	-	-	-	-	50.00	599.96
53	C.ME.100654	Long Dist. Single Level Replacement	Mechanical	-	62.61	-	-	-	62.61	599.96
54	C.IT.100391	Migration/Replacement LMS Application	Information Technology	1.00	-	-	-	-	1.00	600.96
55	C.IT.100686	Reservation Ecosystem Next Generation Program	Information Technology	17.00	-	-	-	-	17.00	617.96
56	C.RE.100390	30th Street Station - Understreet Garage Reconstru	Real Estate	17.00	-	-	-	-	17.00	634.96
57	C.TR.100776	CUS Improvements	Transportation	12.00	-	-	-	-	12.00	646.96
58	C.MK.100247	Amtrak E-Ticketing Initiative	Marketing	7.90	-	-	-	-	7.90	654.86

Rank	Project #	Project Title	Department	FY12 Federal Funds	FY12 Ticket Revenue	Homeland Security	RRIF	State, Local & Other	Total	Cumulative GCAP
59	C.IT.100397	Network Redesign and Expansion	Information Technology	-	3.50	-	-	-	3.50	654.86
60	C.IT.100000	Network Expansion-Facility Infra. Eng.	Information Technology	-	1.50	-	-	-	1.50	654.86
61	C.MK.100382	POS/Eatec Upgrade	Marketing	8.58	-	-	-	(0.00)	8.58	663.44
62	C.EV.100033	SUNNYSIDE YARD OIL/PCB REMED	Environmental	-	1.50	-	-	-	1.50	663.44
63	C.EV.100031	Asbestos, Lead Paint and Mold Abatements	Environmental	-	0.50	-	-	-	0.50	663.44
64	C.EV.100633	WILMINGTON MOFE FACILITY-PCB/OTHER CONTAMINANTS RE	Environmental	-	1.20	-	-	-	1.20	663.44
65	C.EV.100374	Cedar Hill Remedation	Environmental	-	0.07	-	-	-	0.07	663.44
66	C.MK.201089	Service Fees - Phase 2	Marketing	0.50	-	-	-	-	0.50	663.94
67	C.PO.100658	CCTV and Communications	Police & Security	-	0.84	2.51	-	-	3.34	663.94
68	C.PO.201095	CCTV Maintenance and Monitoring	Police & Security	-	0.30	-	-	-	0.30	663.94
69	C.PO.100662	BRIDGE AND TUNNEL - SECURITY IMPROVEMENTS	Police & Security	(0.00)	0.67	2.01	-	0.00	2.68	663.94
70	C.PO.100657	ACCESS CONTROL SYSTEM EXPANSION	Police & Security	-	0.30	0.90	-	-	1.21	663.94
71	C.PO.100663	SUBSTATION - SECURITY IMPROVEMENTS	Police & Security	-	0.20	0.59	-	(0.00)	0.79	663.94
72	C.PO.100664	AMTRAK POLICE DEPARTMENT PERSONAL PROTECTION EQUIP	Police & Security	-	0.11	0.33	-	0.00	0.45	663.94
73	C.SP.100697	Surfliner Route - Carlsbad Double Track	Policy & Development	6.50	-	-	-	-	6.50	670.44
74	C.IT.100398	PC and Field Sys State of Good Repair	Information Technology	6.80	-	-	-	-	6.80	677.24
75	C.IT.100416	Strategic Asset Mgmt Enterprise (SAM) - 1A	Information Technology	5.50	-	-	-	-	5.50	682.74
76	C.IT.100789	Strategic Asset Mgmt Enterprise (SAM 2.0)	Information Technology	-	0.50	-	-	-	0.50	682.74
77	C.EV.100635	BEECH GROVE FACILITY - WASTEWATER TREATMENT SYS RE	Environmental	-	0.50	-	-	-	0.50	682.74
78	C.ME.201077	End of Lease Buyouts	Mechanical	-	-	-	-	-	-	682.74
79	C.MK.100100	Human Emulation Technology	Marketing	-	3.00	-	-	-	3.00	682.74
80	C.PO.100797	DHS2010 Infrastructure Protection	Police & Security	-	-	5.00	-	-	5.00	682.74
81	C.PO.201246	2011 DHS TSGP	Police & Security	-	-	5.00	-	-	5.00	682.74
82	C.PO.100796	DHS2010 Communications Control Center	Police & Security	-	-	3.00	-	-	3.00	682.74
83	C.PO.100703	Station Hardening	Police & Security	-	-	2.68	-	-	2.68	682.74
84	C.PO.100700	CCTV and Communications	Police & Security	-	-	2.40	-	-	2.40	682.74
85	C.PO.100701	Security and Protection Interoperability (SPI)	Police & Security	-	-	2.00	-	-	2.00	682.74
86	C.PO.100699	Bridge and Tunnel - Security Improvements	Police & Security	-	-	1.80	-	-	1.80	682.74
87	C.PO.100702	Police K9 Expansion	Police & Security	-	-	1.79	-	-	1.79	682.74
88	C.PO.100666	STATION ACTION PLAN TESTING AND IMPLEMENTATION	Police & Security	-	-	1.77	-	-	1.77	682.74
89	C.PO.201101	DHS2010 Training and Public Awareness	Police & Security	-	-	1.55	-	-	1.55	682.74
90	C.PO.100668	STATION ACTION TEAM (SAT) TOOL KIT	Police & Security	-	-	1.52	-	-	1.52	682.74
91	C.PO.100667	Security Training	Police & Security	-	-	1.50	-	-	1.50	682.74
92	C.PO.201100	DHS2010 Planning and Assessments	Police & Security	-	-	1.25	-	-	1.25	682.74
93	C.PO.100418	SECURITY CANINE PROCUREMENT AND TRAINING	Police & Security	-	-	0.68	-	-	0.68	682.74
94	C.PO.100665	PUBLIC SECURITY AWARENESS PROGRAM	Police & Security	-	-	0.63	-	-	0.63	682.74
95	C.PO.201097	DHS2010 Operational Packages	Police & Security	-	-	0.60	-	-	0.60	682.74
96	C.PO.100795	Intelligence Support Phase II	Police & Security	-	-	0.57	-	-	0.57	682.74
97	C.PO.100698	Special Operations Division Equipment	Police & Security	-	-	0.50	-	-	0.50	682.74
98	C.PO.100660	Security Systems - Future Designs	Police & Security	-	-	0.50	-	-	0.50	682.74
99	C.SP.100251	MARC Jt Benefit Projects	Policy & Development	-	-	-	-	7.50	7.50	682.74
100	C.SP.100253	VRE Jt Benefit Projects	Policy & Development	-	-	-	-	0.70	0.70	682.74
101	C.ME.100394	Electric Locomotives Acquisition	Mechanical	-	-	-	-	-	-	682.74
102	C.ME.100000	Acela Additional Car Acquisition	Mechanical	-	-	-	36.77	-	36.77	682.74
103	C.ME.100645	Purchase 4 Low Emission Switcher Locos	Mechanical	-	0.60	-	-	2.40	3.00	682.74
104	C.CF.100002	Proceeds from Sales of Assets	Finance	-	0.02	-	-	-	0.02	682.74
105	C.ME.100002	Repower Switchers - Ivy City	Mechanical	-	0.63	-	-	1.90	2.53	682.74
106	C.CF.100898	BPC/APT Conversion to SAP Code-block	Finance	-	0.37	-	-	-	0.37	682.74
106.1	C.ME.100001	Electric Locomotives	Mechanical	-	-	-	82.80	-	82.80	682.74
106.2	C.ME.201077	End of Lease Equipment Purchase	Mechanical	-	9.00	-	-	-	9.00	682.74
106.3	C.MK.201090	Multi-Media Content Mgmt System	Marketing	3.20	-	-	-	-	3.20	685.94
106.4	C.EN.VARIOUS	Trenton-NYC	Engineering	-	-	-	-	7.25	7.25	685.94
106.5	C.ME.100871	Amtrak/MARC Joint Program-WAS	Policy & Development	-	-	-	-	0.72	0.72	685.94
106.6	C.TR.201112	On Time Performance and Delay Reporting System	Transportation	0.65	-	-	-	-	0.65	686.59
106.7	C.SP.201105	Sacramento Station Service Tunnel	Policy & Development	-	2.67	-	-	-	2.67	686.59
107	C.EN.201301	PTC AMTRAK SYSTEM - PTC INSTALLATION WAYSIDE (FED)	Engineering	-	1.93	-	-	7.71	9.64	686.59
108	C.PO.101115	2009 ARRA TSGP Operations Package FY11	Police & Security	-	-	-	-	2.11	2.11	686.59
	GRAND TOTAL			**686.59**	**94.61**	**41.07**	**119.57**	**144.59**	**1,086.43**	

Summary Metrics

FY09 - FY12 Summary Metrics

	FY09 Actual	FY10 Actual	FY11 Actual	FY12 Budget/Goal
KPIs				
RASM - Core Revenue per Seat Mile (a)	$0.151	$0.160	$0.173	$0.182
CASM - Core Expenses per Seat Mile (b)	$0.204	$0.207	$0.219	$0.219
Core (NTS) Cost Recovery Ratio (c)	74.2%	77.5%	79.0%	83.1%
Ridership (000's)	27,167	28,717	30,187	31,385
Passenger Miles per total core employee (000's) (d)	29	31	32	34
On-Time Performance (Endpoint)	80.4%	79.4%	78.1%	85.0%
Customer Satisfaction Index	82	82	81	84
Host Railroad Performance (e)	1,044	934	1,092	900
Other Indicators				
Seat Miles (000's)	12,060,661	12,386,295	12,530,314	12,586,232
Passenger Miles (000's)	5,897,509	6,332,074	6,532,250	6,860,574
Train Miles (000's)	37,150	37,439	37,046	37,580
Average Load Factor	48.9%	51.1%	52.1%	54.5%
Core diesel gallons per train mile (f)	2.2	2.3	2.3	2.3
Seat Miles per total core employee (000's) (g)	60	62	61	63
Customer Injuries	1,966	1,814	1,936	n/a
Equipment - % of Units in Service:				
Locomotive Fleet	82.8%	83.0%	84.0%	85.9%
Passenger Fleet	86.8%	88.3%	87.7%	89.0%
Unadjusted Ticket Revenue ($000's)	$1,599,468	$1,742,991	$1,891,680	$2,009,133
Average Ticket Yield	$0.2712	$0.2753	$0.2896	$0.2929
Average Ticket Price	$58.88	$60.70	$62.67	$64.02
Core Revenue per Train Mile (h)	$53.86	$57.60	$64.63	$65.79
Core Expenses per Train Mile (i)	$69.63	$72.14	$78.51	$77.64
Total Operating Ratio (j)	1.51	1.50	1.48	1.40
Total Cost Recovery Ratio (k)	66.3%	66.8%	67.7%	71.7%
Average cost per gallon of diesel (l)	$1.85	$2.24	$2.76	$3.11

Notes:

(a) This is calculated as NTS Total Core Revenue divided by Available Seat Miles to be consistent with the KPI's. This number is Preliminary.

(b) This is calculated as NTS Total Core Expense less Depreciation and non-cash OPEB's divided by Available Seat Miles. This number is Preliminary.

(c) This is calculated as RASM divided by CASM. This number is Preliminary.

(d) Average monthly Passenger Miles divided by year-end headcount.

(e) Average monthly minutes of delay per ten thousand Train Miles.

(f) This is calculated as Total Diesel Gallons excluding those used for commuter services.

(g) Average monthly Seat Miles divided by year-end headcount.

(h) This is calculated as Total Core Revenue divided by Total Train Miles.

(i) This is calculated as Total Core Expense less Depreciation and non-cash OPEB's divided by Total Train Miles.

(j) This is calculated as Total Operating Expenses by Total Operating Revenue.

(k) This is calculated as Total Operating Revenue divided by Total Operating Expenses.

(l) This includes net Fuel Hedge.

National Railroad Passenger Corporation (Amtrak)

Budgeted FY12 Data [1]

Dollars in Millions except Contr./(Loss) per Rider statistics

		Ridership	Revenue	Expense	Allocation of Federally Funded Capital Projects [2]	Contr./(Loss) per Rider	Avg. PM per Core employee (000's) [3]	Avg. SM per Core employee (000's) [3]
RT01	Acela	3,515,095	$532.3	$332.7	$108.8	$56.78	27	42
RT05	Regional	7,693,814	$530.0	$501.0	$160.1	$3.76	32	67
RT99	NEC Special Trains	7,400	$1.1	$1.3	$1.2	($17.46)	15	66
	NEC Spine	**11,216,309**	**$1,063.4**	**$835.0**	**$270.1**	**$20.36**	**30**	**57**
RT03	Ethan Allen Express	49,105	$4.1	$5.2	$0.6	($22.10)	25	62
RT04	Vermonter	96,585	$8.9	$10.1	$3.5	($11.85)	38	76
RT07	Maple Leaf	442,586	$26.3	$30.4	$5.8	($9.40)	60	103
RT09	The Downeaster	555,089	$12.8	$13.3	$2.7	($0.90)	47	118
RT12	New Haven - Springfield	387,776	$11.8	$22.6	$2.4	($27.76)	21	42
RT14	Keystone Service	1,397,172	$41.8	$62.8	$15.1	($15.01)	27	64
RT15	Empire Service	1,092,547	$42.9	$65.2	$9.7	($20.48)	28	79
RT20	Chicago-St.Louis	640,039	$28.3	$40.0	$4.9	($18.38)	39	79
RT21	Hiawathas	859,460	$23.4	$34.7	$3.3	($13.13)	27	70
RT22	Wolverines	544,487	$22.1	$38.0	$5.5	($29.21)	43	80
RT23	Illini	311,681	$14.6	$19.9	$3.6	($16.86)	41	109
RT24	Illinois Zephyr	233,796	$13.3	$19.7	$2.9	($27.37)	27	72
RT29	Heartland Flyer	90,591	$6.3	$8.2	$1.5	($20.47)	27	54
RT35	Pacific Surfliner	2,883,636	$91.5	$114.6	$13.0	($8.00)	28	83
RT36	Cascades	854,792	$52.7	$60.1	$10.1	($8.61)	31	56
RT37	Capitols	1,783,560	$59.6	$70.8	$6.0	($6.32)	22	71
RT39	San Joaquins	1,069,467	$72.5	$78.2	$7.8	($5.27)	28	64
RT40	Adirondack	129,194	$12.4	$12.9	$1.6	($4.31)	43	52
RT41	Blue Water	203,235	$12.0	$13.2	$1.8	($5.79)	43	92
RT46	Washington-Lynchburg	158,067	$8.9	$5.7	$1.1	$19.87	88	141
RT47	New York-Newport News	549,060	$32.9	$27.4	$4.2	$10.00	55	100
RT54	Hoosier State	37,208	$0.9	$5.9	$1.0	($134.91)	13	28
RT56	Kansas City-St.Louis	197,392	$14.2	$14.0	$2.6	$0.95	37	80
RT57	Pennsylvanian	207,604	$9.8	$15.5	$9.5	($27.64)	43	65
RT65	Pere Marquette	110,865	$6.4	$7.0	$1.4	($5.08)	34	62
RT66	Carolinian	340,264	$22.9	$21.8	$8.8	$3.22	64	76
RT67	Piedmont	148,511	$4.6	$4.8	$1.1	($1.69)	47	110
RT96	Non NEC Special Trains	43,602	$1.5	$1.8	$0.4	($8.50)	96	35
	State Supported Routes	**15,417,371**	**$659.3**	**$823.8**	**$131.9**	**($10.67)**	**34**	**75**
RT16	Silver Star	433,277	$36.7	$84.2	$30.3	($109.74)	36	54
RT18	Cardinal	117,664	$8.4	$23.8	$3.4	($131.23)	27	47
RT19	Silver Meteor	379,580	$42.3	$82.6	$29.1	($106.03)	39	56
RT25	Empire Builder	534,593	$71.5	$127.3	$22.2	($104.39)	42	70
RT26	Capitol Limited	237,120	$22.8	$44.0	$8.0	($89.48)	37	51
RT27	California Zephyr	393,425	$56.9	$108.4	$18.5	($130.91)	40	64
RT28	Southwest Chief	375,631	$51.0	$110.6	$16.9	($158.72)	43	59
RT30	City of New Orleans	255,247	$21.6	$43.1	$7.2	($84.08)	38	55
RT32	Texas Eagle	311,308	$28.6	$55.4	$9.6	($86.00)	45	60
RT33	Sunset Limited	103,796	$13.7	$52.4	$8.1	($373.34)	23	43
RT34	Coast Starlight	420,432	$48.8	$95.1	$15.8	($110.11)	32	52
RT45	Lake Shore Limited	404,134	$35.2	$69.3	$9.5	($84.45)	43	63
RT48	Palmetto	205,714	$18.6	$32.4	$14.6	($67.14)	38	75
RT52	Crescent	325,182	$34.8	$76.4	$8.7	($127.94)	32	53
RT63	Auto Train	254,554	$71.1	$86.5	$9.5	($60.72)	35	51
	Long Distance Routes	**4,751,657**	**$561.9**	**$1,091.6**	**$211.2**	**($111.47)**	**38**	**58**
	National Train Service	**31,385,337**	**$2,284.6**	**$2,750.4**	**$613.2**	**($14.84)**	**34**	**63**
	Non-Allocated Capital [4]				**$73.4**			
	Total Capital				**$686.6**			

[1] Budget route results are projected based on APT historical ratios. Expenses exclude net Depreciation, OPEB's, PRJ and Interest.

[2] This represents the allocation of Federally Funded Capital Projects to Routes.

[3] Employee data is not aggregated by route in Amtrak's Financial Systems. The data presented here is based on an allocation of Core employees based on total costs of each route. PM equals Passenger Miles and SM equals Seat Miles.

[4] Non-Allocated Capital category includes environmental remediation and commercial projects related to stations.

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EXHIBIT 86

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NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM

Guidebook for Implementing Passenger Rail Service on Shared Passenger and Freight Corridors

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TRANSPORTATION RESEARCH BOARD

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NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM

Systematic, well-designed research provides the most effective approach to the solution of many problems facing highway administrators and engineers. Often, highway problems are of local interest and can best be studied by highway departments individually or in cooperation with their state universities and others. However, the accelerating growth of highway transportation develops increasingly complex problems of wide interest to highway authorities. These problems are best studied through a coordinated program of cooperative research.

In recognition of these needs, the highway administrators of the American Association of State Highway and Transportation Officials initiated in 1962 an objective national highway research program employing modern scientific techniques. This program is supported on a continuing basis by funds from participating member states of the Association and it receives the full cooperation and support of the Federal Highway Administration, United States Department of Transportation.

The Transportation Research Board of the National Academies was requested by the Association to administer the research program because of the Board's recognized objectivity and understanding of modern research practices. The Board is uniquely suited for this purpose as it maintains an extensive committee structure from which authorities on any highway transportation subject may be drawn; it possesses avenues of communications and cooperation with federal, state and local governmental agencies, universities, and industry; its relationship to the National Research Council is an insurance of objectivity; it maintains a full-time research correlation staff of specialists in highway transportation matters to bring the findings of research directly to those who are in a position to use them.

The program is developed on the basis of research needs identified by chief administrators of the highway and transportation departments and by committees of AASHTO. Each year, specific areas of research needs to be included in the program are proposed to the National Research Council and the Board by the American Association of State Highway and Transportation Officials. Research projects to fulfill these needs are defined by the Board, and qualified research agencies are selected from those that have submitted proposals. Administration and surveillance of research contracts are the responsibilities of the National Research Council and the Transportation Research Board.

The needs for highway research are many, and the National Cooperative Highway Research Program can make significant contributions to the solution of highway transportation problems of mutual concern to many responsible groups. The program, however, is intended to complement rather than to substitute for or duplicate other highway research programs.

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FOREWORD

By Lori L. Sundstrom
Staff Officer
Transportation Research Board

This Guidebook will aid states in developing public–private partnerships with private freight railroads to permit operation of passenger services over shared-use rail corridors. The Guidebook should encourage the broad acceptance of improved principles, processes, and methods to support agreements on access, allocation of operation and maintenance costs, capacity allocation, operational issues, future responsibilities for infrastructure improvements, and other fundamental issues that will affect the ultimate success of shared-use passenger and freight agreements between public and private railroad stakeholders.

The United States is experiencing increasing congestion on the nation's highways, as well as capacity constraints on the national rail system. Higher gasoline prices and concerns about greenhouse gas emissions are increasing public demand for energy-efficient transportation alternatives. Faced with these challenges and increased emphasis on multi-modal planning under federal transportation statutes (i.e., ISTEA, TEA-21, and SAFETEA-LU), state interest in intercity passenger and commuter rail development has grown significantly in recent years.

Thirteen states support Amtrak service and thirty-eight states have developed or participated in developing plans for enhanced intercity passenger rail service. A growing number of commuter rail systems operate on lines of various ownership configurations (e.g., freight railroad, county, city, state, and transit authorities). AASHTO's report *Intercity Passenger Rail Transportation* (January 2003) documents $17 billion in state-defined infrastructure and equipment needs over 6 years and another $43 billion in needs over the next 2 decades. Eighty percent of these needs involve investments in privately owned freight corridors. Several states have well-established rail passenger programs through which capital and operating funds are provided to ensure intercity, commuter, and transit services. Other states are beginning to implement rail passenger service plans and projects. Most of these rail services will operate on freight corridors. The concept of passenger and freight operations co-existing in shared-use corridors is central to further development of state-supported passenger rail service in the United States. All current Amtrak service is on shared-use corridors. Virtually all plans for enhanced passenger rail service, both intercity and commuter rail, developed by states are based on the shared-use corridor concept.

Recent federal legislation—including the American Recovery and Investment Act of 2009, the Capital Assistance to States–Intercity Passenger Rail Service provided for in the 2008 Department of Transportation Appropriations Act, and the Passenger Rail Investment and Improvement Act of 2008—is providing significant new federal funding for passenger rail service, prompting a number of states to expand or initiate service. This new funding is coming at a time when there is no broadly accepted methodology for conducting the long,

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costly, and often mutually frustrating negotiating process with freight railroads in an equitable manner that ensures (1) that the public interest is served and (2) that private freight railroads have a reasonable incentive for entering into such agreements. The lack of such a methodology can increase the likelihood of significant delay or can even jeopardize project implementation.

Under NCHRP Project 08-64, "A Guidebook on Improved Principles, Processes, and Methods for Shared-Use Passenger and Freight Rail Corridors," ICF International was asked to develop a guidebook that would assist states in understanding the variables, challenges, and opportunities associated with starting or expanding passenger rail service on track owned by a freight railroad in a shared-use corridor. To meet the project objectives, the research team examined extant literature; reviewed current negotiation practices used by public and private rail entities; described factors that contribute to successful agreements; and prepared case studies that demonstrate the application of effective principles, processes, and methods. This Guidebook should be of immediate use to state rail programs as they determine how best to approach this highly complex situation.

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CHAPTER 1

Introduction, Background, and Purpose

1.1 Introduction

The past decade has seen substantial growth in the U.S. passenger rail usage. Over the 10 years from 1999 to 2008, trips on commuter rail systems increased by 29 percent and Amtrak intercity trips grew by 33 percent. New and expanded commuter and corridor-type intercity services have been introduced in several regions. At the same time, rail freight revenue ton-miles grew by 25 percent. Both passenger and freight growth have been driven by increasing fuel prices, highway and airport congestion, environmental concerns, and an increasing emphasis on multimodal planning in recent transportation legislation. Although the recession in 2008 and 2009 sharply reduced freight traffic and flattened passenger travel, this growth is likely to continue and accelerate as the economy recovers. Continuing substantial growth in rail passenger service is expected as a result of legislation in late 2008 and early 2009. The Passenger Rail Investment and Improvement Act (PRIIA) of 2008 and the American Recovery and Reinvestment Act (ARRA) of 2009 established new programs and procedures for funding and grant awards for intercity passenger rail investments, supported by substantial funding for intercity passenger rail projects. ARRA also provided substantial additional funds for the Federal Transit Administration (FTA) New Starts program, which supports many commuter rail developments, and mode-flexible transportation funds to state departments of transportation (DOTs).

Almost all passenger rail initiatives envision implementing new or expanded service on existing freight and passenger rail corridors and track. However, the steady growth of rail traffic, especially freight traffic, has led to localized railroad capacity problems and the potential for more severe capacity constraints in the future. Growth in passenger ridership has resulted in similar capacity constraints on some commuter networks. Many rail freight corridors proposed for new passenger service have not seen passenger service for decades and have been optimized for freight operation. Even proposals for true high-speed rail, such as that developed by the California High Speed Rail Authority, plan to share existing rail corridors for portions of the route.

The combination of ongoing growth of existing freight and passenger services and rising demand for new service has created a difficult negotiating environment for passenger rail interests seeking access to existing rail lines, especially those owned by freight railroads. Freight railroads are often reluctant to commit capacity to a new passenger service that may be needed for their own services in the future and are finding it difficult to meet the passenger service performance requirements, such as short journey times and acceptable on-time performance (OTP).

A further result of the expansion of passenger rail initiatives is that many more local, state, and regional transportation agencies, their staffs and consultants, and other stakeholders are becoming involved in passenger rail matters. Many of these organizations and individuals are unfamiliar with the railroad industry and the issues that confront officials implementing and operating successful passenger rail services. This Guidebook had been developed to help these officials and

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2 Guidebook for Implementing Passenger Rail Service on Shared Passenger and Freight Corridors

stakeholders, whether experienced or not, to overcome the barriers and successfully implement new or expanded passenger rail service on shared passenger and freight corridors.

In summary, a Guidebook is needed because of:

- Continuing and growing interest in implementing new passenger rail services (both commuter and intercity) on existing rail corridors, most of which are currently in use for freight service.
- Frequent delays and difficult negotiations with host railroads encountered by agencies seeking to implement service and maintain service quality and performance.
- A lack of readily available information for agencies and staff who are unfamiliar with the railroad industry.

This Guidebook will assist these officials and other stakeholders in navigating the complex processes involved in implementing new or expanded passenger rail services on shared corridors. Note that this Guidebook is not a complete guide to implementing and operating a commuter or intercity passenger rail service, but rather concentrates on establishing mutually acceptable contracts and working relationships where the passenger service shares the corridor with other rail service providers. This Guidebook has been developed under the auspices of NCHRP Project 8-64, "A Guidebook on Improved Principles, Processes, and Methods for Shared-Use Passenger and Freight-Rail Corridors."

As many users will be aware, this Guidebook is being published in a period of rapid change in laws, regulations, and procedures applicable to passenger rail initiatives. PRIIA and ARRA tasked the United States Department of Transportation (U.S.DOT), Federal Railroad Administration (FRA), Surface Transportation Board (STB), and Amtrak with taking a variety of actions relating to passenger rail service—many of which will have a bearing on material presented in this Guidebook, but are yet to be completed. In addition, the Railroad Safety Improvement Act (RSIA), passed in a legislative package with PRIIA, mandated changes in safety regulations that will impact passenger rail developments. Implementation of RSIA requirements is also in progress. In spite of this fluid situation, NCHRP has determined that the interests of stakeholders, many of whom are actively involved in ongoing passenger rail projects, are best served by early publication of this Guidebook, indicating where content is likely to be affected by ongoing activities by federal agencies and Amtrak. Consideration is being given to preparation of an additional guidebook volume or supplementary report at a later date, which will update this Guidebook and provide more detail in selected areas.

1.2 Background and Present Situation

1.2.1 Historical Background

The present day structure of the U.S. passenger and freight railroad industry and accompanying legal and institutional arrangements have evolved over the past 50 years. Existing intercity and commuter rail agencies were established in their present form at different points in time over this period, in response to local and national circumstances in the rail industry. An understanding of the history and how it has led to the current situation will help passenger authorities develop realistic plans for new services and conduct effective track-sharing negotiations with other railroad operators whose actions and attitudes have been influenced by this history. A summary is provided in the following paragraphs. More comprehensive descriptions are provided in the appendices.

Prior to 1960, the major railroads directly provided freight and all types of passenger services and were required by Interstate Commerce Commission (ICC) regulation to maintain these

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services for the public. By the start of the 1960s, growing competition from air and highway modes and regulatory and institutional rigidity led to the rapidly worsening financial condition of the rail industry. This financial condition led to deteriorating service, service abandonments, and bankruptcies. Out of necessity, state and federal agencies were drawn into supporting passenger rail services. Initially, public agencies became active in supporting essential commuter rail services in major metropolitan areas, aided by limited funding from the newly established Urban Mass Transit Administration (UMTA, later FTA) after 1965.

The trigger for more far-reaching change came in 1970, when the Penn Central Railroad, which dominated rail service in the northeast United States, declared bankruptcy. Penn Central's dire financial condition, compounded by badly deteriorated physical condition and chaotic operations threatened passenger and freight service over a large area of the United States. All other significant northeastern railroads also fell into bankruptcy at around the same time. Over the next decade, Congress responded with a series of major legislative actions and funding initiatives designed to preserve rail freight service in the Northeast and, ultimately, place it on a self-supporting basis in the private sector. At the same time, this legislation shifted responsibility for passenger service, both intercity and commuter, to the public sector, including transfer of ownership of the principal commuter rail networks and the Northeast Corridor (NEC) to publicly funded entities. The purpose of shifting passenger service away from the freight carriers was twofold: (1) to take the financial burden of money-losing passenger carriage off the freight railroads and (2) to preserve passenger service. Although the crisis originated in the Northeast, the resulting legislation changed the railroad industry nationwide.

In 1970, the Rail Passenger Service Act created Amtrak to operate intercity passenger service. In return for relief from the burden of passenger service, the participating railroads were required to give Amtrak rights of access to their networks and agreed to an avoidable-cost formula for track-use charges. During the restructuring of the bankrupt northeast railroads into Consolidated Rail Corporation (Conrail), Amtrak also acquired ownership of most of the NEC between Boston, Massachusetts, and Washington, D.C.

In 1976, Conrail was founded as a government-owned freight railroad to take over the assets and services of the bankrupt northeastern freight carriers. Substantial funds were also provided to offset continued operating losses and to overcome deferred maintenance.

The Staggers Rail Act of 1980 finally relieved all freight carriers from most, though not all, federal regulation of rail rates and services and simplified the regulatory process associated with railroad mergers, line sales, and abandonments.

Finally the Northeast Rail Service Act (NERSA) of 1981 separated passenger and freight services in the northeast, allowing Conrail to develop as a purely freight railroad and return to the private sector. State and local agencies in the Northeast became fully responsible for commuter rail services, in most cases by establishing their own commuter rail operations.

These measures were successful. After massive downsizing, Conrail prospered and was privatized in 1987, and the entire rail freight industry entered a new era of sound financial performance. The commuter agencies also prospered with new equipment, some new routes, and ridership growth.

Outside the Northeast, responsibility for commuter rail services in Chicago and San Francisco were transferred in stages to regional public transportation agencies, which either set up their own operations or contracted for operations and maintenance (O&M) with Amtrak or the freight railroad that formerly operated the service.

The commuter rail agreements were purely local in nature and did not include any nationwide rights of access to rail freight networks for commuter rail services or generally applicable

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4 Guidebook for Implementing Passenger Rail Service on Shared Passenger and Freight Corridors

formulas for cost sharing. The focus of the participants was to preserve existing commuter services, not to lay the groundwork for future expansion of commuter rail service.

After the Staggers Act, NERSA, and the privatization of Conrail, there was no major legislation affecting the railroad industry until late 2008. Now clearly separated into intercity, commuter, and freight railroads, each industry segment was able to focus activities on its own markets.

In the years following the Staggers Act, the freight railroads aggressively downsized, merged with each other, closed or sold underutilized lines, dramatically cut costs, and greatly improved their productivity and financial performance. From 1980 to the mid-1990s, there was some growth in rail traffic, mostly because of the growth of massive low-sulfur coal mines in the Powder River Basin in Wyoming. Otherwise, railroads focused on squeezing more profit from a roughly static volume of traffic. From the mid-1990s, freight railroads began seeing real traffic growth driven by further increases in coal traffic from the Powder River Basin; rapid growth in intermodal traffic, especially international container traffic entering rail networks at West Coast ports; and a robust economy.

Commuter rail services also entered a period of expansion. The long-established systems experienced traffic growth, and several cities and regions were able to implement entirely new commuter services, aided by New Starts funding from the FTA. Most notably, the Southern California Regional Rail Authority (SCRRA) was established in the Los Angeles area and now operates seven commuter rail routes over 388 route miles. New commuter services were also introduced in the Virginia suburbs of Washington, D.C; Miami/Fort Lauderdale, Florida; Seattle, Washington; Albuquerque, New Mexico; San Diego and San Jose, California; Nashville, Tennessee; and Dallas, Texas. Several other services are in the planning stages.

Development of Amtrak intercity services between the early 1990s and 2008 was uneven. In the Northeast, a major project to extend electrification from New Haven, Connecticut, to Boston, Massachusetts, was completed in 1999, followed by the introduction of Acela high-speed train sets in 2000. California has made substantial investments in corridor services, which with the provision of operating support to Amtrak, has resulted in large gains in ridership. Smaller-scale initiatives by state agencies in the Midwest, Pacific Northwest, Maine, and elsewhere have allowed additional trips and service improvements on a smaller scale than that in California. However, outside the state-supported corridors and the NEC, the lack of funding has meant that there has been little service development.

More detail about these developments are provided in the appendices, including the legal and institutional structures applicable to the railroad industry and specific case studies of passenger rail developments and development processes.

1.2.2 The Present Situation

Multiple commuter and intercity passenger rail initiatives are under development, almost all of which anticipate using existing freight rail corridors and/or tracks. Even proposals for a true high-speed rail network in California envision using existing rail corridors for portions of the route and track-sharing with an existing commuter rail line between San Jose and San Francisco. Beyond the incremental expansion of conventional intercity passenger rail services, many states have banded together to propose improved regional rail passenger service over existing railroad rights-of-way, in many cases including higher-speed operation up to 110 mph. The most extensive plans have been developed by a consortium of Midwestern states, and similar efforts are under way in Virginia and the Carolinas, Florida, and California.

Concurrent with this passenger rail activity, improved freight rail service quality, expanded international trade, increased costs and congestion in competing modes, and robust demand for

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low-sulfur coal for electricity generation, among other factors, have led to significant and continuing growth in rail freight traffic. The privately owned freight railroads have been investing heavily to meet this demand, but at least before the traffic downturn of 2008–2009, local capacity and other operating problems were emerging, especially around major terminal and interchange areas.

Although advocated by some, building new rights-of-way for passenger rail service is not a realistic option in most cases. With few exceptions, anticipated patronage and revenue and available capital funds simply cannot support the investment required. This situation leaves shared use on mixed passenger and freight corridors as the only practical option for most new or expanded passenger rail services, in spite of the challenges of growing passenger service on corridors shared with heavy North American–style freight operations.

Past and anticipated future freight traffic growth means that passenger-rail interests face increasingly difficult negotiations and higher costs for access to freight lines for new and expanded service. In addition, the quality of existing services can deteriorate due to rail traffic congestion, and old agreements may have to be renegotiated to ensure adequate service. Even for Amtrak-operated intercity services where Amtrak has a statutory right of access and dispatching priority, good service requires the cooperation of the owning freight railroad and sometimes funding to overcome operating bottlenecks.

1.3 Scope, Purpose, and Content

1.3.1 Scope

This Guidebook addresses principles, processes, and methods for the implementation and operation of rail passenger services on rail corridors that are shared by passenger and freight services and that are part of the **General Railroad System of Transportation in the United States.** The owner of the corridor is normally known as the **host railroad,** and other rail services operating over the corridor are known as **tenant railroads.** Normally the host railroad is also responsible for day-to-day operation of the corridor (e.g., dispatching and track maintenance), but, in a number of cases, host railroads have contracted or delegated operating responsibilities to another party. Most railroad corridors in the United States are private facilities, and tenant rail services must negotiate an access agreement with the host railroad that specifies access terms and payments. Multiple sharing scenarios exist; the passenger operation may be either the host or the tenant, and sharing configurations can vary—they may be between a passenger and a freight railroad, two passenger services, or three services as where freight, Amtrak intercity, and a commuter service operate over the same corridor. Some examples of sharing scenarios include:

- Where a freight railroad is host to commuter or Amtrak intercity passenger service, or both, on the same corridor. This arrangement is one of the most common and is the principal focus of this Guidebook. Most of Amtrak corridor and long-distance services outside the Northeast are operated on host freight railroads.
- Where a passenger rail agency acquires a corridor for passenger rail service and gives track rights to a freight railroad to allow continuing (usually local) freight service. Arrangements of this type exist on almost all corridors purchased by a public authority for (primarily commuter) rail passenger service.
- Shared intercity and commuter rail operations on infrastructure owned and/or operated by Amtrak or the commuter rail agency. The NEC and connecting lines include examples of both Amtrak and commuter-owned or -operated infrastructure, and situations where Amtrak is responsible for operating infrastructure owned by a commuter rail agency. For example, Amtrak operates the portion of the NEC owned by the Massachusetts Bay Transportation Authority (MBTA) and hosts contractor-operated MBTA commuter services.

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- Time-separated shared-track freight and diesel light rail services (i.e., using non-FRA-compliant vehicles), as on New Jersey Transit's River Line between Trenton and Camden.
- Three-way sharing of intercity, commuter, and freight operations on freight railroad tracks, such as on BNSF Railway Company lines around Seattle and on Chicago commuter routes.

All the previous examples are of shared corridors that are part of the General Railroad System of Transportation. This term has a specific meaning, referring to the interconnected network of railroads in the United States. Urban rail transit lines that are not connected to the general railroad network are not included, nor are rail lines within a private facility, such as a manufacturing plant. This definition is significant because it is used in the definition of applicability for most FRA safety regulations and for various other statutes, regulations, and government programs applicable to railroads and railroad employees.

This Guidebook addresses passenger and freight services on the General Railroad System rather than dedicated high-speed corridors. A **shared-use railroad corridor,** as defined by the FRA, is a broad term that includes three different sharing arrangements, specifically:

- **Shared track,** where the trains of two or more rail service providers operate over the same tracks.
- **Shared right-of-way,** where two rail services are operated on separate parallel tracks having a track centerline separation less than 30 feet. Separation of 30 feet or less triggers the application of certain FRA safety regulations. Separation also may be referenced in shared-corridor agreements between railroads, for example, as limiting the kinds of permitted operation or requiring specific safety precautions.
- **Shared corridors,** where track centerline separation is between 30 and 200 feet. Two hundred feet is considered the outer limit of separation where an accident on one line could interfere with operations on the other.

Although shared-corridor arrangements are considerably diverse, common and very challenging situations occur when a new or expanded passenger service seeks to operate on the tracks of a busy corridor owned and operated by a major freight railroad, where the freight railroad will be the host for the new service. This Guidebook will focus on this scenario without, however, neglecting other ownership/operation/service mix scenarios.

In almost all cases, state, regional, and local governments establish specialist agencies to manage the funding, development and operation of passenger rail services. These agencies go under a variety of titles, depending on local laws and practices, and in this report are referred to generically as either passenger rail agencies, which could be responsible for any type of passenger rail service, or commuter rail agencies, which are only concerned with commuter service. Specific agencies are referred to by name in this report.

1.3.2 Purpose

The purpose of this Guidebook is to provide comprehensive support and guidance for passenger rail authorities seeking to initiate, expand, and operate passenger rail services on shared passenger and freight corridors. The primary desired types of guidance identified by the project team and expressed by passenger rail agencies can be categorized in the following areas:

- Guidance on how to manage negotiations with the freight railroad to reach mutually acceptable agreement and on how analytical methods play a role in reaching that agreement. This area includes the planning and preparations needed before in-depth negotiations, an understanding of the legal rights and responsibilities of each party (including the difference between Amtrak intercity service and commuter service), an understanding of the business needs of

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the freight railroad partner, and information on how to keep all stakeholders informed without betraying confidential information.
- Methods to determine requirements for increased capacity and upgrades to track and signaling systems, accommodating both the planned passenger service and expected freight traffic, estimating the specific investments required, and determining how such investment could be shared between public and private sources. Related matters are technical regulatory requirements for track quality and signal system capabilities for passenger service, models used for capacity analysis, and how to allow for future growth of passenger and freight traffic.
- Methods to arrive at equitable sharing of ongoing operations, maintenance, and replacement expenditures to ensure that the corridor will provide the required level of service for all users. This area includes cost modeling methods; how to adjust for infrastructure investments made by the passenger agency; and the effects of train speed, axle load, grade, and curvature on costs.
- Methods and processes to address further corridor development related to operating experience and increased passenger and freight traffic, including both capital improvements and sharing ongoing O&M costs. Almost all shared rail corridors are works in progress rather than one-time developments. Both parties expect traffic volumes and service quality expectations to change over time, and provisions must be made for agreements to be updated to reflect these changing business conditions.
- Principles, methods, and processes for reaching agreement on the ongoing management of passenger rail service quality, including performance criteria, dispatching priorities, OTP, and track quality.

1.3.3 Content

This Guidebook identifies what principles, processes, and methods contribute to the successful development and operation of passenger rail services on shared-use corridors. It also provides suggestions for improvements that would address deficiencies in present practices and further enhance the success of passenger rail services.

The information is provided by subject area, roughly following the sequence of actions needed to implement and sustain a successful passenger rail service. A discussion of relevant legal and institutional factors that will underlie passenger rail service through the implementation process—including those factors regarding access rights, liability, and cost sharing—is available in Appendix B.

This Guidebook is laid out in the following chapters:

- **Chapter 2: Getting Started and Negotiations.** This chapter covers the initial steps of defining what kind of service is planned and on what kind of railroad route(s), essential homework that must be done before contacting the railroad and Amtrak (where applicable), and integration with other activities (such as state planning, freight railroad initiatives, funding and grant applications, environmental analyses, etc., where applicable).
- **Chapter 3: Analysis and Modeling.** This chapter describes the key types of analysis needed to support shared-use planning, feasibility studies, and negotiations. The subjects discussed include rail line capacity analysis, estimating capital costs needed to provide sufficient capacity and service quality for passenger service, and analysis of ongoing operations and infrastructure costs. Descriptions of the tools and analysis methods available in each of these analysis areas are provided.
- **Chapter 4: Content of Shared-Use Access and Operating Agreements.** This chapter includes types of agreement between all interested parties, including the passenger rail service sponsor, the freight railroad, Amtrak (for intercity and long-distance service), O&M contractors (where applicable), other passenger rail operators using the same corridor, and any other involved

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parties. There is also a discussion of terms of agreements (re-negotiation intervals), agreements for infrastructure investments, service quality guarantees and incentives, and similar material.

- **Chapter 5: Ongoing Management of Shared-Use Operations.** This chapter provides guidance on service quality monitoring, management and incentive schemes, approaches to periodic updating of shared-track contract details within the framework of an operating agreement, approaches to addressing service quality problems (such as poor OTP), and managing ongoing relationships with all stakeholders having a bearing on service quality.

Appendices cover the following subjects:

- **Appendix A: The U.S. Railroad Industry.** This appendix provides a summary of the evolution of the railroad industry, which led to the current industry structure. This is followed by descriptions of the types of passenger and freight railroads, federal agencies concerned with railroads, and the roles of principal railroad industry and professional associations.
- **Appendix B: U.S. Railroad Legal and Institutional Arrangements.** This appendix describes statutes, regulations, and standards applicable to the general railroad system of the United States. These include the rights and duties of Amtrak regarding access to the railroad network, the cost of that access, the criteria that determine whether a rail passenger service is considered intercity or commuter, labor relations, FRA safety regulations, functions of the STB, and related matters.
- **Appendix C: Railroad Safety Regulations.** This appendix provides a detailed description of railroad safety regulations and standards as developed and administered by the FRA and how they may impact passenger rail plant, equipment, and operations.
- **Appendix D: Case Studies of Passenger Rail Service Developments and Processes.** This appendix provides examples of passenger rail developments including descriptions of how existing arrangements evolved, how the present situation differs from that in earlier times, recent examples of successful services, and applications of key processes.

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CHAPTER 2

Getting Started and Negotiations

2.1 Introduction

2.1.1 Content of Section

This chapter addresses the process of negotiating with an existing owner and operator (or operators) of a railroad corridor over which new or expanded passenger rail service is under consideration. Processes for both Amtrak intercity services and commuter operations are included. The following sections provide step-by-step guidance for getting started on this process, working through all stages to reach a successful conclusion. The specific areas addressed are:

- **Section 2.2, Planning and Preparation,** covers the essential homework that an agency planning a new or expanded passenger rail service needs to complete before approaching a prospective host railroad.
- **Section 2.3, Initial Discussions with the Host Railroad,** covers consideration of when to contact the prospective host, the nature of initial meetings, carrying out a credible feasibility study for the proposed service, and what is needed to be able to enter substantive negotiations.
- **Section 2.4, Substantive Negotiations,** provides general guidance of how best to conduct the negotiations to maximize the chance of a successful outcome and the typical factors that must be addressed. After the general guidance, specific key issues such as rail line capacity and performance requirements are discussed.
- **Section 2.5, The Liability Issue,** discusses the issue that is often the most challenging for agencies seeking to implement passenger rail service, the issue of host railroad requirements for protection against the liabilities associated with passenger operations, and how these requirements can be met.

Negotiating for access to a rail corridor for a proposed service is only one part of the effort that a state or local agency must make to establish the proposed service. The agency must also build public support for the project, develop ridership and revenue estimates, estimate costs and obtain capital and operating funds, complete permitting as required by the National Environmental Policy Act (NEPA) and other applicable state and federal legislation, secure necessary legislative actions at all levels of government, and attend to other related issues. Access negotiations must be coordinated with these activities, as indicated in the following subsections.

One factor that pervades all passenger rail planning and negotiations for shared corridor operations is the distinction between Amtrak intercity and commuter service. Amtrak's right of access to the railroad system at incremental cost and its existing operating agreements with major railroads mean that Amtrak must be involved in any intercity passenger rail development. The issues to be addressed in intercity passenger service negotiations differ substantially from those for a commuter rail initiative. The practical effect of these differences on negotiations at each stage in the process is summarized in Section 2.2 and addressed in each subsequent section as required.

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2.1.2 Passenger Rail Development Timeline

Agencies embarking on development of a passenger rail service often want an estimate of the timeline for working through all the steps of planning and implementing a new passenger rail service. Unfortunately there is no single answer to this question. Almost every recent development has followed a different path, depending on the extent of prior studies and planning, how the project is funded, the complexity of negotiations with the host railroads, the extent of physical improvement needed, whether the agency has to purchase rolling stock, etc. The following list provides a few examples of recent developments with some comments on specific factors that affected timelines:

- **Los Angeles Metrolink Commuter Service on the Antelope Valley Line.** The record for the rapid implementation of rail service came immediately after the Northridge earthquake in southern California on January 1, 1994. Over a period of *6 days* commuter service was extended from Santa Clarita to Lancaster, California, with a new intermediate station at Palmdale, a distance of about 50 miles. In the following few months, 10 miles of second track were added and other improvements completed to reduce trip time from an initial 2 hours 25 minutes to 1 hour 35 minutes for the 78-mile trip to downtown Los Angeles. This emergency service was discontinued when highway repairs were completed, but later reinstated permanently. Obviously, numerous shortcuts were taken to achieve the rapid implementation, but it is an interesting example of what is physically possible.
- **The New Mexico RailRunner Commuter Service through Albuquerque to Santa Fe.** This project was initiated in August 2003 after planning studies had concluded that commuter rail was a desirable approach to alleviating some of the present and expected highway congestion in the service region. The following month, the state legislature approved a transportation funding package that included the proposed commuter service. The service was to be initiated in two phases: Phase I, a route through Albuquerque from Belen in the south to Bernalillo in the north, and Phase II, an extension from Bernalillo to Santa Fe to the north. State and local agencies immediately started working on all aspects of implementing Phase I in parallel: negotiations with the host railroad (BNSF), locating and building stations, acquisition of passenger cars and locomotives, etc. BNSF agreed to sell the line, which was already in good condition for passenger service, to the state. Cars and locomotives were obtained quickly through add-ons to existing orders by other agencies, and local communities were very supportive of the rail developments. The first phase opened for service in July 2006, under 3 years from initiation. The extension to Santa Fe, which required construction of a new alignment for part of the route and a detailed alternatives study, opened in December 2008. This project does not appear to have encountered any significant barriers, and probably was accomplished in near minimum time. The host railroad was cooperative; the rail line was in good condition; there was strong community support; and only state and local funding was used.
- **The Downeaster Corridor from Boston, Massachusetts, to Portland, Maine.** A full description and timeline for this project is provided in Appendix D. In contrast to the New Mexico RailRunner, this project is an illustration of a lengthy implementation process. It took 13 years from an initial concept proposal to initiation of service and another 3 years to resolve lingering issues with the host railroad. The Downeaster is unusual because there was no significant interest in passenger rail on the route before advocates took up the cause in 1989. Most other intercity rail corridors have a history of proposals and studies prior to the successful implementation effort and often have limited existing Amtrak service. The 13-year timeline includes 2 years that were needed for passenger rail advocates to gain a commitment from the Maine state legislature. Almost all other passenger rail developments start with required political commitments in place. Another major factor in the lengthy implementation effort was opposition from the host railroad, which resulted in 2 to 3 years of negotiations and a relatively slow construction process.

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In summary, the examples suggest that a passenger rail service can be implemented in 3 to 5 years, from starting a feasibility study to operation, *provided* there are no significant problems. Of this 3 to 5 years, the feasibility study should take 9 to 18 months, depending on the complexity of the project, the level of information available from prior studies, and the extent to which a feasibility study becomes integrated with other implementation activities. If there are problems in any important area, such as resolving community objections, NEPA issues, difficulties in negotiating acceptable agreements with host railroads, or purchasing custom rather than off-the-shelf trains, then the implementation process can take much longer.

2.2 Planning and Preparation

2.2.1 Introduction

This section covers agency activities that normally precede the initial approach to a prospective host railroad. The discussion assumes that the Guidebook user is not familiar with the railroad industry and is starting from a point where little substantive planning and analysis has been carried out. Guidebook users who are more familiar with railroads or are further along in the process may disregard this material as appropriate. Also, it is important to remember that developing a passenger rail service rarely follows a neat sequential plan. Rather, it is a messy process in which different activities move at different rates, sometimes experiencing delays because a slow-moving process fails to yield timely information to enable another process to move forward. Whatever the sequence of individual activities, the planning and preparation stage precedes initial contacts with a prospective host railroad and typically will include the following activities:

- Become informed about the railroad industry, both in the proposed service region and nationally.
- Define the vision and purpose of the proposed service and how it fits with long-term state or regional transportation plans.
- Determine whether the proposed service will be a commuter or Amtrak intercity operation.
- Educate public officials and legislators regarding the passenger rail service plans and the railroad industry in general.

2.2.2 Understanding the Railroad Industry

The railroad industry can be very confusing for state and local officials unfamiliar with railroads. It is governed by its own administration within the U.S.DOT—the FRA—and a unique body of laws, regulations, practices, and institutional arrangements. The process of implementing a passenger rail project will encounter many of the requirements contained in these laws, regulations, and practices and will involve the responsible government offices and industry associations. A basic understanding of the railroad industry is essential for officials to plan and implement a passenger rail project. Absent this understanding, time and effort can be wasted pursuing unrealistic plans, making relationships with host railroads more difficult than necessary and causing failure to recognize and take advantage of opportunities. The principal areas where understanding is helpful are:

- **The rail freight business.** Freight railroads are private businesses that compete for their share of the national freight market and are important elements in the supply chains of U.S. industries (including power generation, agriculture, automobile manufacturing, etc.). Railroads also link U.S. ports with American shippers and recipients of internationally traded goods. Passenger rail is not a primary interest of freight railroad managers, who are mainly concerned that legal and contractual obligations to accommodate passenger service do not interfere with their freight business.

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- **The various government agencies and industry associations** that support and regulate the U.S. railroad system. Almost all of these organizations—and the regulations, standards, and practices they are responsible for—may affect passenger service.
- **The differences between Amtrak intercity and commuter services** and Amtrak's right of access to the rail network at incremental cost. All intercity passenger rail services over existing rail corridors are operated by Amtrak; thus understanding what Amtrak does and can do is essential to planning and implementing new intercity service.

Appendices A, B, and C comprise a primer on the railroad industry and its institutions, and the Bibliography provides further sources for deeper investigation.

2.2.3 Vision for the Service and Long-Term Planning

Any state or local agency considering new or expanded passenger rail service has to manage multiple interlocking processes, of which negotiation with the freight railroad is only one. In all cases, the starting point is a vision for the service—what kind of service is desired, what communities will be served, and what kinds of benefit (improved mobility, congestion relief, etc.) are expected.

A common starting point is the recognition that additional transportation capacity is needed in a travel corridor, leading to a planning effort to consider alternatives. Another starting point can be the efforts of an individual legislator or group of legislators to build public support and initiate a study of a proposed service. Some long-range transportation plans for a state or region may propose intercity or commuter rail as a desirable solution to mobility needs (although most State Transportation Improvement Programs focus primarily on highway projects and are a requirement to access federal highway funding). Yet another source of the vision can be a citizen initiative or a passenger rail advocacy organization (as with the Downeaster service in New England). Many passenger rail initiatives now receiving serious attention have been the subject of past studies that failed to develop further, usually because of funding barriers, a change in state government policy, or a lack of consistent support at responsible government agencies. Once the vision is defined, the next stage is to build public and political support for implementing a new service. Once support is established, the process can begin.

Developing a **State Rail Plan** for freight and passenger rail services that includes the proposed service can be a key factor in the success of a passenger rail initiative. For this reason, PRIIA has made completing an approved state rail plan a requirement for approval of federal grants for intercity passenger rail service. This requirement is waived for ARRA funding in the interests of timeliness. However, this does not detract from the usefulness of planning for both passenger and freight rail requirements, intermodal connections, and interstate and international connections. The next section discusses rail plans and provides a case study of where good planning supported successful passenger rail development.

2.2.4 Role of Long-Term Planning

Some states have found that having a well-thought-out long-term rail plan helps sustain a passenger rail program, while reassuring freight railroads that their interests are receiving full consideration. The primary rationale for developing such a plan is that building a high-quality network of passenger rail services in a state or region is rarely a one-time effort and is far more likely to be accomplished through a series of incremental steps over time. A plan helps ensure that each increment constitutes not only a viable project on its own but also moves toward completing the planned network. Because almost all passenger rail developments involve sharing track and rail corridors with freight rail services, a comprehensive plan must include freight rail developments as well as passenger rail. An excellent example of a long-term plan is the plan prepared

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and maintained by Washington State DOT (WSDOT), summarized in the case study below and discussed further in Appendix D.

CASE STUDIES 1

Washington State Long-Term Rail Planning

In 1993, following completion of a detailed feasibility report, the Washington state legislature directed WSDOT to develop a plan for incremental development of high-speed ground transportation in the state. The primary motivation was to relieve growing congestion on the Interstate 5 north–south corridor between Portland (Oregon) and Seattle. Shortly afterwards, an agreement was reached with BNSF to work cooperatively on railroad improvements to benefit both passenger and freight services. Although the main focus of the WSDOT plan was for passenger rail, complementary work elements were incorporated that add up to a comprehensive process for developing the railroad network in western Washington State. These include:

- Cooperative modeling and analysis of railroad capacity to establish requirements for each increment of passenger and freight service. One of the key conclusions from this modeling is that a dedicated third track will be needed south of Tacoma for passenger service if the long-term goals for trip time and ridership are to be attained.
- Development of the FAST freight rail assistance program to improve freight flows in the Puget Sound region, including to and from ports and the main lines through the Cascades to the east.
- Development of the Sounder north–south commuter rail service between Tacoma, Seattle, and Everett.

Note that the plan does not commit WSDOT to specific expenditures in each plan year. Instead, it lays out a sequence of projects to be implemented as funding and travel demand permit.

Development of a long-term rail plan begins by collecting and building on all pertinent prior surface transportation studies, including rail, highways, ports, and border crossings. The plan should articulate a long-term vision for the roles of passenger and freight rail in the state and then describe practical incremental steps to realize the vision. Given the typical time frames involved in implementing transportation projects, the plan should look forward 25 years or more. It is important to secure the cooperation of the private freight railroads in the planning effort, to make sure their interests are represented and that the completed plan meets both passenger and freight service needs. Plans should be regularly updated to reflect changing conditions and projects completed since the previous update.

2.2.5 Is the Proposed Service Amtrak Intercity or Commuter?

Negotiations over access to a freight railroad corridor and access fees for an Amtrak intercity (corridor) service are very different from those for commuter service. If it is an intercity passenger service, then Amtrak must be involved and will have a major role in the negotiations. At the same time, the state or local agency planning passenger service must negotiate with Amtrak on its costs, equipment availability, and related matters.

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Commuter rail agencies are in a very different negotiating position. Amtrak is not involved, and its access rights cannot be exercised for a commuter rail agency. The state or local agency has to negotiate access and fees on its own, with little assistance from other parties. The FTA will provide capital grants for new starts or service expansions under the FTA's New Starts program to qualified applicants but provides no support during negotiations. The FRA has no role in commuter rail developments other than ensuring compliance with applicable safety regulations. However, the STB can now assist with non-binding mediation should the parties fail to agree on terms of access, thanks to a provision in Section 401 of PRIIA. Further discussion of the STB's assistance is provided in the following paragraphs and in Section B.8 of Appendix B. However, the STB is still developing procedures for commuter rail mediation, and the practical impact of this assistance has yet to be determined.

The following subsections provide an overview of the differences between Amtrak intercity and commuter rail regarding access to the railroad network and access pricing. Separate sections are provided elsewhere in this Guidebook where these differences affect the relationships between railroad operations sharing the same corridor. Note that here and elsewhere in this Guidebook, **commuter service** refers to short-haul passenger service that does not qualify for Amtrak access rights under the applicable statutes. This definition is different from that applied by the FTA and other federal agencies in determining eligibility for grants under various programs. Shorter-distance Amtrak intercity services have received grants from the FTA, such as the Downeaster service between Boston, Massachusetts, and Portland, Maine, and the service between Philadelphia and Harrisburg, Pennsylvania. These services are sometimes described as commuter services but do not fit the definition of commuter service in the Amtrak statutes and related STB and court decisions.

Amtrak Intercity Service

Any passenger service intending to secure access to the railroad network under Amtrak's rights must involve Amtrak in planning from an early stage. Amtrak must be the operator and the formal requester to the freight railroad for access under its rights. Amtrak officials responsible for state-sponsored services are available to discuss proposals and provide help in carrying out feasibility studies. Such feasibility studies should involve purely Amtrak issues, such as realistic ridership and revenue estimates, the provision and maintenance of passenger cars and locomotives, provision of train crews and choice of on-board services, and the costs associated with these functions. Issues that are of interest to the host railroad as well as Amtrak include capacity estimates, infrastructure upgrades to increase speeds and capacity, and infrastructure-related capital and operating costs.

Amtrak staff members are available to guide the state agency through this process and will usually have existing relationships with host railroad officials. They will be familiar with the railroad's likely concerns over added passenger service. However, their time is limited, and the state is likely to need additional support from consultants.

Amtrak's right of access and dispatching priority, although essential for securing access to the railroad network at favorable cost, does not guarantee high-quality service. Recent experience on Amtrak's core routes (those lacking state support) shows that maintaining adequate service quality on a busy freight corridor can be difficult. As freight traffic has increased, Amtrak has experienced declining service quality and increasing costs on some of these services. Amtrak's preferred approach to addressing these problems is to first identify the route segments where traffic congestion and slow orders are disrupting service and then work with the railroad to develop a program of improvements to address the causes of delay. The FRA has also assisted Amtrak with investigating delay causes on some routes. Often, the difficulties that disrupt passenger operations also disrupt freight operations, so there is a mutual interest in taking corrective action. Improved management focus and a structured program of problem identification and correction have generally yielded measurable improvement.

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Recent developments have provided Amtrak with more capabilities to address service quality issues:

- PRIIA gave the STB the explicit task of investigating poor OTP, defined as below 80 percent on time, and making recommendations for reasonable actions to improve OTP. If the investigation finds the host carrier at fault, the STB may impose damages or other relief on the part of Amtrak. Prior to this legislation, Amtrak was limited to the performance incentives and penalties in its contracts with host railroads. Poorly performing railroads often "maxed out" penalties for train delays under Amtrak operating agreements and incurred no additional penalty for a further service degradation. Amtrak may also ask the Department of Justice to bring a lawsuit to enforce Amtrak's dispatching priority over freight trains, although this power has been rarely, if ever used.
- Starting with the modest program in Fiscal Year 2008, and with ongoing authorization in PRIIA and funding from ARRA, funds are becoming available for intercity passenger rail developments, a portion of which are explicitly designated for relieving congestion problems. For the first time, Amtrak and state agencies have capital funds with which to address congestion and delay problems that cannot be corrected by a focus on operations and maintenance issues.

Commuter Rail Service

Until recently, commuter rail service operators (defined in this Guidebook as services that do not qualify for Amtrak's access rights) had to negotiate with the freight railroads alone. They had no support from Amtrak, and there was no institutional support for them elsewhere. Before its demise in 1995, the ICC did have passenger rail responsibilities and could provide technical assistance and limited help with obtaining a fair agreement. These responsibilities were eliminated when the STB replaced the ICC, and the relevant federal agencies (i.e., the FRA, the FTA, and the STB) had, until recently, no role in negotiations for commuter rail access. This situation placed the prospective host railroad in a strong position to either refuse to negotiate or to demand a high price for accommodating passenger service.

However, PRIIA gave the STB new powers to assist agencies seeking to implement commuter rail service on freight railroad track. If the parties are unable to reach a mutually acceptable agreement on their own, the STB can conduct non-binding mediation to help resolve the situation. In spite of the non-binding nature of this mediation, it would likely be difficult for a freight railroad to reject a reasonable agreement that meets both parties' stated requirements.

Another potential barrier is that many commuter projects depend on funding from the FTA's New Starts program. Not only is the grant application process costly and time consuming, but the program also requires an agency to have a railroad access agreement in place before a grant can be approved, which places a commuter rail agency in a difficult position. The freight railroad may be reluctant to negotiate without the funding, but the passenger operator cannot assure funding before negotiations. This situation is especially difficult for new agencies lacking a record of successful grant applications. Agencies seeking to grow an existing service are in a better position to provide credible assurances that their project is eligible for FTA funding. In spite of this situation, however, passenger agencies have been able to navigate the process with flexibility from all parties. Further details of the FTA New Starts process and possible constraints on the access negotiations are provided in Appendix B, Section B.10.

Although the process of starting a commuter rail service may be frustrating and time consuming, the hurdles can and have been overcome. Several new commuter rail services operating in part over busy freight railroad–owned corridors have been initiated over the last 20 years—the Metrolink system in Los Angeles, the Sounder (Seattle to Tacoma area) services in Washington State, and the Virginia Railway Express services in the northern Virginia suburbs of Washington, D.C. Others—such as the West Side Express in Portland, Oregon; the Music City Star in Nashville,

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Tennessee; and the North County Transit District service between San Diego and Oceanside, California—operate over short-line or publicly owned tracks. When funding is available, a way can be found.

2.2.6 Educating Public Officials

Uninformed comments by state and local government officials and legislators concerning access to a railroad corridor can damage relations with the freight railroad even before discussions begin. The railroad's response can be similar to that of a family learning through the press that the highway department intends to take its front yard to widen a highway. It is therefore important that public officials have a basic understanding of the freight rail business, the challenges railroads face in their operations, and problems in their current business environment that have special bearing on passenger service. Early in the process, the passenger rail agency should establish an educational outreach effort to interested agencies, legislative committees, individual legislators, and other interested parties. The focus should be on general issues of establishing a shared-corridor passenger service rather than the specifics of the proposed service. Some particular issues that should be addressed include:

- Understanding that active railroad property cannot normally be taken by eminent domain, so an agreement acceptable to both parties is essential. Amtrak does have a limited right of eminent domain, but this has only been invoked once, where a host railroad allowed severe track degradation and persistently refused to take steps to correct the problem.
- A realistic understanding of likely railroad expectations for liability protection and the approaches other passenger agencies have taken to reach agreement on this issue.
- The need for confidential negotiations and careful public communications planning during the negotiation process.
- Understanding the differences between implementing Amtrak intercity and commuter service on a freight railroad ROW.
- A realistic understanding of likely capital and operating costs. Under present U.S.DOT grant policies, grants can be applied to only capital expenses. Operating funds for both intercity and commuter services must be provided from local and state sources.

Beyond these points, however, the officials or staff directly responsible for moving the process forward must acquire more in-depth knowledge. The education process needs to start early; agency staff members new to passenger service are unlikely to be fully aware of what they need to know. Education should include review of both written materials (as referenced in this Guidebook) and one or more briefings from knowledgeable people. Amtrak, a state DOT, or another passenger rail agency can be the source of the necessary expertise. The education process will not only prepare officials for negotiation but also help them develop realistic service proposals, which can lead to mutually acceptable agreements with railroads.

Passenger rail agency staff needs a clear understanding of not only the basics of the railroad business, but also the current issues that affect railroads' attitudes towards passenger service. Clearly the negotiating environment has become more challenging in recent years, and this trend could continue. Access to freight railroad track and rights-of-way for passenger service is becoming harder and more costly to secure. The sources of this increasing difficulty include:

- The freight railroads have increased concern over their exposure to passenger-related liability. This concern is not directly caused by a specific passenger train accident or related court ruling, but rather the general increase in liability costs related to railroad accidents. Recent examples are the Graniteville, South Carolina, hazardous materials accident on the Norfolk Southern Railway system, and the passenger accidents at Glendale and Chatsworth, California, on the Metrolink commuter system around the Los Angeles area. This concern leads to demands for very high indemnification levels, as discussed later in this section.

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- Rail freight traffic is continuing to increase and investment in freight capacity is needed to handle this traffic. The surge in freight traffic since the mid-1990s took some railroads by surprise, leading to congestion problems and costly investments to increase capacity. This situation makes railroads either very reluctant to commit capacity for passenger service on any line that might be required in the foreseeable future or likely to demand a high price for that capacity. The most common position taken by the railroads is that the passenger rail agency should provide capacity investments to replace capacity consumed by the proposed passenger operation. The railroad may make the argument that failing to provide adequate freight capacity may displace freight onto the highways.
- The prosperity of the railroad industry is increasing the return on rail investment and, at the same time, attracting investors that place pressure on railroad management to maximize return on their assets. This situation is likely to increase railroad reluctance to commit capacity to passenger service.
- Railroads have a generalized concern that allowing public investment in their infrastructure may compromise their future ability to respond to business opportunities and earn good profits. This fear has been heightened by public statements and publication of reports calling for extensive passenger-related investment in the existing freight network, more extensive public funding in the railroad network in general, and possible re-regulation of freight rates.

However, freight railroad attitudes and concerns are likely to evolve over time. The sharp freight traffic reductions during the economic downturn of 2008–2009, the availability of real federal government funding for intercity passenger rail, and continuing debate on both rail freight regulations and the shape of future surface transportation legislation all have the potential to change these attitudes.

Although not strictly related to shared railroad operations, research for this Guidebook has shown that relationships with intercity bus service operations and transit services in larger metropolitan areas can be important elements in developing a well-patronized passenger rail service and should receive serious consideration in planning passenger rail services. These relationships can take several forms: dedicated bus services extending the reach of the rail service to communities where direct rail service would be impractical, joint scheduling and ticketing arrangements with parallel and connecting commercial bus operators, and joint ticketing and connecting arrangements with regional commuter and transit agencies. Some examples are given in Case Studies 2, primarily taken from California, which has been a leader in this area.

CASE STUDIES 2

Bus Service Connections and Cooperation

Caltrans has set up connecting bus services from several points on state-sponsored Amtrak corridor services, most notably for the San Joaquin and Capitol corridors. The Amtrak-branded buses provide connections to communities off the rail line and are only available to rail passengers. In the case of the San Joaquin corridor, the bus service also provides a connection between Bakersfield and Los Angeles, where direct rail service would be very slow. Another bus service on this route runs between Stockton and Sacramento, supplementing a limited direct rail service. The bus services have been very successful in increasing ridership and the general usefulness of passenger rail service.

The Northern New England Passenger Rail Authority (NNEPRA), which oversees the Downeaster service, has agreements with two commercial bus operators. Both operate services generally parallel to the Downeaster route, and one has a route network that goes beyond Portland, Maine, to communities farther north and

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east. Both operators were initially hostile to the passenger rail service, viewing it as unfair subsidized competition. But they were persuaded to enter into these cooperative agreements that provide for selective interchangeability of tickets and showing each others' services in their schedules. Experience has shown that the availability of more travel options has increased ridership for all parties.

2.3 Initial Discussions with the Host Railroad

2.3.1 Introduction

There are two major stages in the freight railroad discussions. First, initial discussions in the planning stage seek railroad inputs to planning and feasibility studies, and, second, the passenger rail interests come to the table with a substantive proposal. Throughout, it is essential to have a knowledgeable railroad person involved on the passenger side to counter unreasonable objections and to enable the freight railroad to feel that its concerns are understood. Indeed, the early stages of negotiations are as much a confidence-building process as it is a discussion of the specific service details. Both parties need to understand the other sides' goals for their services and develop a shared commitment to reaching those goals. The next step is to agree that technical issues affecting shared operations—such as rail line capacity, track quality and signal system requirements, capital and maintenance costs, and similar matters—should be resolved by suitable, objective, mutually acceptable analyses.

The first contacts with the freight railroad are vital. It is easy to start off on the wrong foot and then have to spend time and effort to get back on track. In addition, different freight railroads have very different preferences on when they want to become involved in a passenger rail initiative on one of their corridors. Some prefer to be involved from the earliest stages, and others do not want to devote resources to discussions before a detailed proposal is on the table. To add confusion, preferences may change over time, from region to region, or be situational, depending on the characteristics of the corridor under consideration. The key parameters for decisions about this initial approach are:

- Is the service Amtrak intercity or commuter, as discussed previously?
- Does the host railroad prefer or require early engagement, when plans are being formed, or later engagement, after a more detailed plan has been developed?
- Does the passenger agency or other state agency have an existing relationship with the prospective host railroad?

The sequence of communication activities with the railroad are illustrated in Figure 2-1.

The question of when to first approach the host railroad has the potential to cause difficulty for passenger rail agencies. A majority of passenger rail agencies state that they prefer early engagement on the grounds that the railroad will learn plan details directly from the agency rather than from press reports and railroad concerns and possible deal breakers will be identified early in the planning process. Proponents of later engagement feel that early engagement puts the railroad in a strong negotiating position against an unprepared agency team, and they advise waiting until a thorough feasibility plan is available and funding has been secured. However, late engagement also has risks and disadvantages; in particular, the feasibility study may not fully take into account railroad concerns and objections in the absence of railroad inputs.

This Guidebook strongly advises early contact with the host railroad, in cooperation with Amtrak if the service is Amtrak intercity. The passenger agency should emphasize that this is an informational contact to acquaint the host railroad with the agency's initial plans, request cooperation with a feasibility study, and identify major concerns. The agency should resist any attempt to

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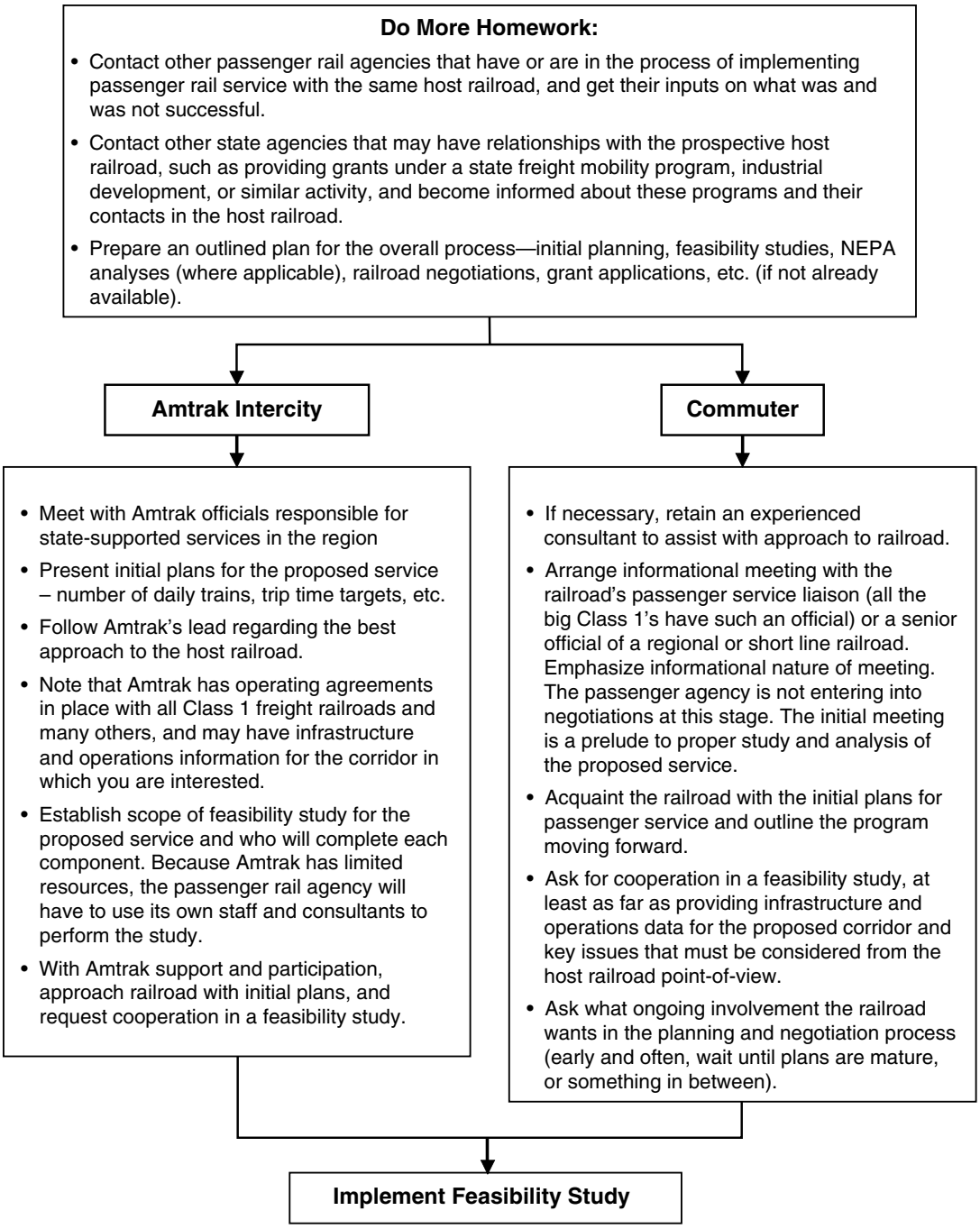


Figure 2-1. Sequence for communicating with the freight railroads.

be drawn into negotiations or agree to specific conditions for the proposed service at this stage. The response should be that specific needs for the service will be analyzed in the feasibility study and the railroad will be invited to participate in the analysis.

If, after this initial contact, the railroad states that it prefers later engagement in this project after a detailed plan is available, then so be it. It is unlikely that a railroad will feel unable to participate even in a limited fashion, such as providing route data for the feasibility study, and the passenger agency can keep the railroad updated on progress and developments.

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Another factor in facilitating agreements may be the state's freight rail transportation programs. Many states have a freight rail program aimed at enhancing rail access for the region's industry and commerce and preserving lower-volume rail service where it is important to the local economy. In addition, state and local government agencies interact with freight railroads in many areas other than direct support for rail facilities and may have a number of discussions in progress at any one time. In some cases, it may be possible to incorporate both passenger and freight elements into a combined transportation initiative involving the freight railroad. In other areas, it may be possible to leverage a positive relationship with a freight railroad to enhance the chance of reaching agreement on a passenger rail project.

2.3.2 The Feasibility Study

After the initial contacts with the railroad, the next step in developing a new passenger rail service is to perform a feasibility study or build on existing studies to include detailed analysis of the proposed route, service, and operations. The feasibility study is a vital step in moving from planning and informational contacts with the host railroad to substantive negotiations. This discussion concentrates on aspects of a feasibility study relevant to negotiations with the host railroad and Amtrak.

The inputs for the feasibility study include any prior studies for passenger rail in the region served by the proposed service, the State Rail Plan (where available), the vision for the proposed service, any other previous studies, and railroad inputs. The scope and objectives for the study would have been discussed between the passenger rail agency, the host railroad, and Amtrak where applicable, at initial meetings. They are likely to include the following elements:

- **A staged plan for the introduction and growth of the proposed service.** This plan includes target journey times, planned station locations, daily trips with target departure times in each direction, and anticipated freight service on the corridor at each stage. It is assumed that passenger ridership and revenue estimates are available, indicating that the planned level of service at each would be adequately patronized, but this is not specifically part of an operational feasibility study. There does not have to be a schedule for implementing each stage, only a logical progression toward a final goal.
- **Plans for infrastructure investments** that would enable each stage of service growth to be implemented while providing adequate facilities to meet the host railroad's goals for freight service. The investments will include track quality upgrades, signal system upgrades, grade crossing warning system improvements, crossing consolidations and grade separations, the addition of passing sidings and/or a second track where required, and similar matters. Signal system requirements for positive train control (PTC) and for speeds over 79 mph must be included.
- **Plans for station locations and facilities.** These plans will include what buildings and facilities (such as parking lots) are planned, access to the station for vehicles or pedestrians (especially where access routes cross active tracks), safety of passengers while at the station and boarding trains, and whether the passenger rail agency plans to acquire railroad property for station buildings and facilities.
- **An initial capital cost estimate** for the first stage in developing the proposed service and an outline of cost estimates for later stages. The capital cost estimates should include costs to be borne by the passenger agency and the host railroad, where applicable.
- **Initial estimates for operations and maintenance costs at each level of service.** As for capital costs, estimates should be detailed for the first stage and may be preliminary for later stages.
- **Plans for funding capital and operating expenses,** including from federal grant programs, where applicable, as well as from state and local sources.

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- **Requirements for passenger cars and locomotives** or self-propelled passenger cars to support the proposed services, including number of vehicles, performance requirements (e.g., top speed, power/weight ratios), whether or not electrification is planned at some stage, and whether the passenger rail agency or Amtrak will provide equipment.

The approach for a typical feasibility study is illustrated in Figure 2-2.

Some observations about the feasibility study follow:

- If at all possible, the host railroad should be closely involved in the feasibility study to facilitate buy-in with the results. This involvement will help speed up the substantive negotiations and

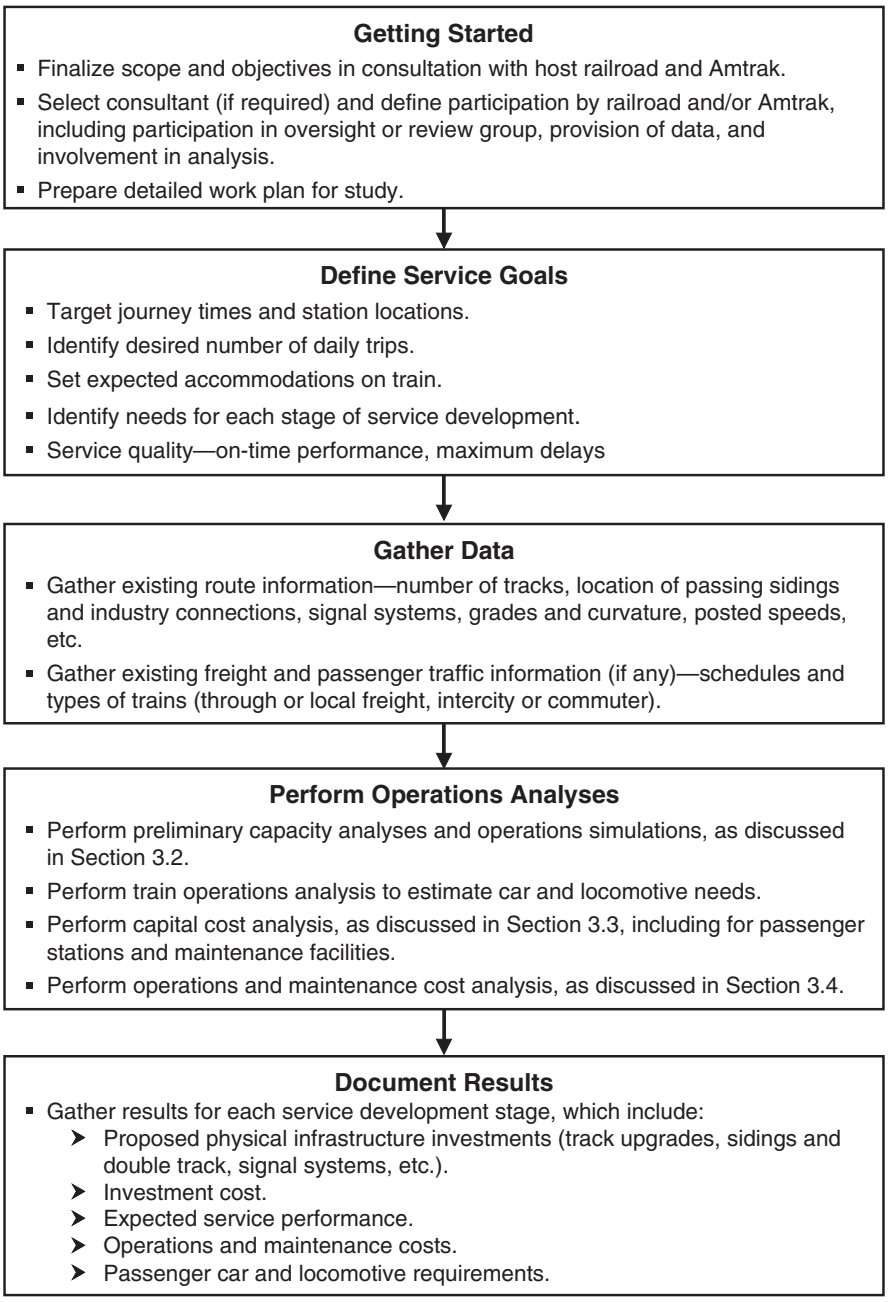


Figure 2-2. Steps for completing a passenger rail service feasibility study.

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reduce the chance that further analyses will be required to address points raised by the railroad that were not fully covered in the feasibility study.

- The operations analysis is likely to be the critical step in the analysis, as it will define what is and is not possible on the corridor and the capital cost of achieving service goals. Capacity and operations analyses generally use models that simulate train operations (see Section 3.2) to determine what infrastructure improvements are needed to accommodate defined passenger and freight service. The process usually starts with a professional estimate of what is needed for the initial service, then progressively adds investments to increase speeds in slow areas and eliminate bottlenecks. The process ends when desired journey times are achieved and total delays are at acceptable levels for both passenger and freight operations. The analysis is repeated for each stage in proposed service development. Although capacity analysis can be costly and time consuming on a busy and complex corridor, this need not be the case on simpler corridors. For example, the analyses for the Downeaster service were accomplished with simple train performance calculations (for journey time and scheduling) and manual string chart analysis (for capacity). The string charts were used to determine the placement of additional passing sidings.
- It is essential to consider rolling stock needs in the feasibility study. The host railroad will want to know what is proposed in case there are operations and safety issues, and train power-to-weight ratio and traction characteristics affect performance. If an operation exceeding 79 mph or the use of non-FRA-compliant equipment is under consideration, both the FRA Office of Safety and the host railroad will need to agree to the proposed operation, including the required PTC capabilities. Also, unless Amtrak can confirm the availability of equipment for when initial service starts, the passenger agency may have to acquire new or second-hand equipment, which can be a lengthy process.
- Under RSIA of 2008, and currently proposed FRA regulations for its implementation, most intercity and commuter passenger corridors must be equipped with PTC or its equivalent. If the corridor is not already in the host railroad's PTC program, it will have to be added in most cases, and the railroad's installation plans modified accordingly. These plans and presumably any subsequent modifications must be approved by the FRA. The FRA is still finalizing PTC requirements and procedures, and those involved with a passenger rail initiative must track developments and be ready to incorporate the requirements into investment plans, cost estimates, and implementation schedules. The FRA may impose additional train control, operations, and safety requirements (for example, at grade crossings) if the use of non-compliant equipment is proposed or speeds are in excess of 79 mph.

2.4 Substantive Negotiations

Substantive negotiations regarding shared corridor access, operations, and costs can begin when the feasibility study is complete, preferably with buy-in from the host railroad, or at least an indication that proposed infrastructure upgrades will be sufficient to allow the planned initial service as well as to meet legitimate freight railroad service requirements.

As always, negotiations for intercity service that makes use of Amtrak's access rights must involve Amtrak. Because several of the issues that have to be negotiated are likely to be already covered by existing Amtrak–host railroad agreements, and others can follow established Amtrak practice, negotiations for a new intercity service are usually much simpler than for commuter service. With commuter service, the passenger rail agency, with its professional advisors, must conduct negotiations directly with the host railroad.

Before individual technical issues that are likely to be factors in the negotiations are discussed, the following general points about the approach to negotiations should be considered:

- Keep negotiations focused on thorough analyses of capacity, operations, and costs to find practical solutions that meet all parties' needs. As far as possible, avoid being drawn into arguments

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based on anecdote and preconceived attitudes; rather, insist on addressing issues using mutually acceptable analysis methods to resolve questions and problems. A listing of specific, technically described benchmarks for acceptable standards of service and infrastructure should be developed and endorsed by each of the stakeholders in advance of the technical analysis.

- It is important to keep the discussions with the railroad confidential and mutually respectful until an agreement is reached. Many interviewees reported that confidentiality is critical to successful negotiations. Neither party will want disagreements exposed and debated in the press, nor will they want to expose confidential information concerning the railroad's business that may be discussed during negotiations. This confidentiality may be counter to the instincts of public officials who are used to working in the public eye and need to keep parent government departments, legislators, and the public adequately informed. In some states, "sunshine" laws may require disclosure but will allow exceptions where they can be justified. The best plan is for the negotiating parties to agree at the outset on how and when information will be communicated to the public and to address any "sunshine law" requirements up front.

The specific technical issues that are typically addressed in negotiations are:

- Passenger service parameters—such as number of trips, journey time, and reliability—and the planned service evolution.
- Specific services to be provided by host railroad and other entities.
- Access agreements and cost of access, separate from infrastructure improvements. This issue primarily affects commuter service. Amtrak intercity access is usually covered by existing agreements.
- Infrastructure investments needed to provide adequate capacity to meet capacity and journey time requirements.
- Station requirements—locations, facilities required, interface with shared railroad tracks and operations.
- Contracting arrangements for executing infrastructure projects as associated costs.
- O&M costs (primarily for commuter service).
- Liability.

The following section addresses the technical issues and suggests approaches the passenger agency can follow to secure a satisfactory agreement. It does not detail typical provisions of the final agreement between the passenger agency and host railroad—those are provided in Chapter 4—but rather discusses the process of getting from service plans detailed in the feasibility study to an agreement to operate the planned service on the host railroad.

2.4.1 Defining What the Passenger Agency Needs

The passenger agency needs the following items going into the substantive negotiations with the railroad:

- A reasonably long-term plan—20 to 25 years into the future—for the proposed service, preferably based on a state or regional long-term rail plan for both passenger and freight service. For example, if the ultimate goal is eight round trips per day to be reached over several years in various stages, as funding and ridership growth permit, then this goal should be clearly stated in the plan, even if only two round trips will be operated at first. Only negotiating for the two trips and returning to develop new agreements for added trips is cumbersome, time consuming, and costly and could lead to failure.
- Ideally, a thorough feasibility study, appropriate to the scale of the proposed service, that establishes reasonable expectations for service, expected ridership and revenue, the associated track

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improvements, and capital and operating costs. The feasibility study should also include expected growth in freight traffic to ensure that freight operations will not be impacted by the passenger service.
- Regardless of the level of detail in the feasibility study, a clear description of service expectations at each stage in its development, to include the following:
  - Number of daily round trips and approximate departure times in each direction. For example, with an intercity corridor, departures may be spread throughout the day, but commuter trips would be concentrated in morning and evening rush hours.
  - Station stop locations and facilities and planned journey times.
  - Service quality parameters, such as acceptable percentages of host-responsible delayed or cancelled trains, or average host-responsible delay per train.
- For an intercity service to be operated by Amtrak using Amtrak's access, Amtrak participation in negotiations. The access agreement will be with Amtrak, which will operate the trains, usually with financial support from the state passenger rail agency. Therefore, an initial agreement with Amtrak to participate in negotiations is required. No such agreement is needed for commuter service, even if the passenger agency is considering Amtrak as a contract operator.
- Assured funding or at least a politically feasible plan to assemble capital and operating funds for the proposed service. A host railroad may be reluctant to negotiate unless it can see that funding is secured, or at least that the funding process is well advanced and the proposed service plans are credible given the funding status.
- A preliminary specification of the services desired from the host railroad. Dispatching and infrastructure inspection and maintenance are almost always provided by the host railroad. The passenger agency may be interested in other support, for example with train operations. Some railroads actively prefer to be responsible for operations, so that they do not have to work with a third-party contract operator.

Some passenger rail agencies, for their own reasons, may be interested in operating a demonstration service prior to implementing full-scale service. The service trial is intended to demonstrate feasibility to stakeholders and build support for the full service. The following services are examples where this approach was taken:

- The "Try-Rail" demonstration service on the Seattle to Tacoma route in Washington State, which preceded full implementation of the Sounder services.
- The initial service of the Altamont Commuter Express in northern California.
- The first route of the Music City Star commuter service in Nashville, Tennessee, implemented on a state-owned short line rather than a Class 1 freight railroad to reduce cost and speed up implementation.

The advantages of the demonstration service approach are that the service can be implemented quickly and at modest cost; manageable with only local funding; provide all stakeholders with evidence of success that can be leveraged to increase funding from local, state, and federal sources; demonstrate feasibility and competence in freight railroad negotiations, etc. The downside is that the demonstration could fail and damage future prospects for passenger rail in the area. Also, note that demonstration service projects are far more easily arranged on light-density or short-line properties where disruption to the normal flow of freight traffic is at a minimum. Some Class 1 carriers will categorically deny "trial" operations out of fear that downstream politics surrounding a service proposal will become ever more difficult to keep in balance with the need for freight service capacity. In this case, it is probably better to present the service as the first stage in a multi-stage development and work out an access agreement that accommodates all stages, even when timing and funding for future stages is uncertain.

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2.4.2 The Access Agreement and Infrastructure Improvements

The Access Arrangement

The first issue to negotiate with the host railroad is the basic access arrangement for the corridor of interest. There are sharp differences between access for Amtrak intercity service and access for a commuter service.

Amtrak. Amtrak intercity service has the right of access. A host railroad cannot simply refuse to accommodate a new intercity service but can seek mitigation in the event that passenger service requirements would unreasonably impair freight operations. The likely scenario would be that the freight railroad would indicate that it is unable to provide the desired service performance on a busy corridor, even with passenger train dispatching priority, leading to a negotiation on what infrastructure and operations management improvements would be required. A freight railroad corridor that does not support an existing passenger service is unlikely to have both sufficient capacity and physical capability to support a high-quality passenger operation. This means in most cases that the passenger agency must fund infrastructure improvements.

In most cases, Amtrak intercity service operate over corridors owned by freight railroads, plus a few segments owned by commuter rail agencies. The principal exceptions are the NEC, major passenger terminals, and a segment of the Chicago to Detroit corridor. New Amtrak intercity services are likely to also be operated over infrastructure owned by other parties. In a few instances, where freight traffic is low and extensive infrastructure improvements are required, it may be more attractive for the passenger rail agency to acquire the corridor or adopt one of the other alternative approaches, as discussed in the commuter rail section below.

Commuter Rail. Commuter rail has no right of access and must negotiate at arm's length with the host railroad. Access will be provided at a cost to the commuter rail agency separate from sharing operating and maintenance costs. Without Amtrak's access rights, access costs can be high, prompting passenger rail agencies to seek alternative approaches. Several access models exist, depending on local circumstances, up to and including acquisition of the rail corridor from the prospective host.

Because grants are available for capital costs, commuter agencies almost always prefer the access payment to be in the form of a one-time capital investment rather than ongoing payments for train-miles operated. Approaches for securing access include the following options:

- **Access Existing Track.** The passenger rail agency can negotiate access to existing freight tracks, which on already busy routes may require added capacity and track and signal system upgrades. This approach makes the most sense where the corridor is a key link in a freight network and the owner will not consider a sale. It is also the approach commonly taken for intercity services, because the desired routes are less likely to be realistic purchase candidates and often carry substantial freight traffic. Within this general category, there are three approaches to ensuring that passenger service requirements can be met:
  - Pay a lump sum for a perpetual easement on a freight railroad corridor to operate a specified passenger rail service. The agreement specifies the number of trips, journey time, and schedules, but the railroad takes responsibility for selecting the infrastructure improvements needed to deliver the service. The Sounder service north from Seattle to Everett, Washington, took this approach.
  - Fund agreed-upon infrastructure improvements in the corridor to meet passenger service requirements. This approach is probably the most common where purchase of the line from the host freight railroad is not a realistic option.
  - Pay for access as an ongoing usage payment, based on train-miles operated. An example of this approach is the Sounder service from Seattle southward to Tacoma, Washington. This approach means that access must be paid for as an ongoing operating expense.

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- **Expand Existing Arrangements.** If the project is for further development of an existing service, the usual approach is to expand on existing arrangements with the freight railroad and make whatever infrastructure investments necessary to provide the required capacity and facilities. However, intervening developments in both passenger and freight traffic may be such that the parties decide to negotiate a new agreement on a different basis. An example of this is the commuter rail service between Boston and Worcester, Massachusetts. When first established, this service operated over CSX Corporation (formerly Conrail) track between Framingham and Worcester. More recently, changing conditions, including service quality problems on CSX territory, the likelihood that a CSX intermodal terminal in Boston will be relocated, and a desire to increase passenger train frequencies, have led to proposals for MBTA, the operating agency, to acquire the right-of-way (ROW) with CSX continuing to provide freight service.
- **Purchase the Rail Corridor.** Provided the passenger volume is adequate (probably a minimum of eight to ten round trips per day for all services in the medium term) and it is not a key freight corridor, then it can make sense for the passenger agency to purchase the corridor. The freight railroad would continue to have access to the line for freight service. The advantage for the passenger operator is that access is guaranteed, and the advantages for the freight railroad are that it receives a substantial up-front payment for the corridor that can be invested elsewhere on its system. The availability of a corridor for purchase depends on how the freight railroad views the future use of the line. The Class 1 railroads are still active in mergers and spin-offs, purchasing regional railroads to extend their service territory and selling lines to concentrate their efforts on high-volume corridors.

  This approach has been widely used in the past, for example by Los Angeles Metrolink, and has generally been successful. An issue that has arisen is that the freight railroad may later want to operate more trains on the passenger-owned corridor than was expected at the time of the original agreement. It is important to be explicit regarding future freight access in the purchase negotiations. The agreement should spell out any limits on freight use (number of trains, time-of-day restrictions, etc.) and how a request to expand freight use beyond the agreed-upon limits should be managed and financed. A very recent example of a line purchase is a proposed agreement by Florida DOT in conjunction with the Central Florida Commuter Rail agency to purchase 61.5 miles of CSX's A-Line from De Land through Orlando to Kissimmee, Florida, for a proposed commuter service. The purchase agreement was accompanied by a related agreement to help CSX upgrade the parallel S-Line for diverted trains and establish a new intermodal terminal at Winter Haven between Orlando and Tampa.
- **Acquire Space on Existing Freight Railroad Rights-of-Way and Build Parallel Track.** Another approach is to purchase or lease space in the freight railroads ROW for an exclusive passenger track or tracks. This option is available where the ROW is wide enough and the freight railroad does not expect to need the space for additional sidings or running tracks. In the past, this option has been used most often for heavy rail transit service (such as in Atlanta, Georgia; Washington, D.C.; and more recently for commuter service in the Salt Lake City and Denver areas). Freight railroad concerns about accident liability have sometimes led to purchase conditions requiring high minimum lateral separation between passenger rail operations and active freight lines, or restrictions on the kinds of equipment that the passenger operation can use. These conditions sometimes make the parallel track option infeasible, especially if the agency is considering the use of non-FRA-compliant passenger equipment. Some corridors originally planned as a light rail transit service have been converted to conventional commuter rail using FRA-compliant vehicles to meet freight railroad purchase conditions. An example is the proposed Gold Line commuter service in Denver.

  Although the parallel track approach has mostly been applied to commuter rail or rail transit developments, it has also been proposed as a way of providing a higher-speed passenger track in a freight railroad corridor. Examples include the long-range plans for a third passenger-exclusive track over portions of the Cascade corridor in Washington State. The track would be

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built and maintained to passenger rail standards and practices, for example, FRA Track Class 6 or higher, higher maximum superelevation on curves, and an FRA-acceptable PTC system for the planned speeds. With freight use limited to emergencies and maintenance activities, overall costs are expected to be much lower than for a mixed-traffic high-speed line. A similar approach has been suggested for portions of the planned Midwest high-speed network.

Unfortunately, commuter rail agencies do not have much leverage in access negotiations. A host freight railroad may take the position that existing freight capacity must be maintained, even during passenger service peak operations periods. As well as insisting on thorough analysis of capacity issues, as described in the following paragraphs and in Chapter 3, a commuter (and intercity) passenger rail agency can identify other agencies in its state that have dealings with the railroad to leverage existing relationships or develop a joint program, where appropriate. If all else fails, the agency could make use of non-binding mediation by the STB.

Infrastructure Improvements

Except where a passenger rail agency proposes to purchase an easement from the host railroad and will not be involved in infrastructure improvement details, the passenger rail agency, host railroad, and Amtrak (if intercity service) must reach agreement on infrastructure improvements needed to support each passenger service development stage. Every effort should be made to ensure the discussions focus on practical solutions to operating problems, supported by thorough and credible analysis. Objections by the host railroad are best countered by analysis to quantify the problem and identify solutions. In the case of Amtrak intercity service where there are disputes over the necessity of specific projects, if these issues cannot be resolved in negotiation, they can be taken to the National Arbitration Panel (NAP) or the STB for resolution. Chapter 3 provides details of capacity and train performance analyses that are used to support infrastructure improvement decisions. Some other points on infrastructure improvements are:

- The staged infrastructure investment plan must be designed to accommodate expected growth for the planned passenger service development. It may also be helpful to include expected freight growth in the analysis, if any, so that the parties are aware of potential freight-related investment needs and plans that coordinate shared investments to benefit both host and tenant.
- Beyond the initial investment for the first stage in passenger service development, there must be a process for regular reevaluation of the infrastructure investment plan to adjust as external circumstances change.
- While infrastructure investments will be required on most corridors in order to obtain desired service quality for a new passenger rail service, this may not always be the case. Much depends on the current use of the corridor. If the corridor already accommodates passenger service, then it may be possible to add further trips without investments. An example is the portion of the Boston, Massachusetts, to Portland, Maine, Downeaster service operated over MBTA commuter lines in Massachusetts. The five daily round trips were added to existing commuter and limited freight operations on these lines with no investments, although with some time-of-day limitations.
- The infrastructure investments must be tied explicitly to a specific passenger service frequency (planned number of trips) and performance level (scheduled trip time, average delay minutes, etc.). A staged program, where specific projects and the associated funding are tied to each frequency increment and/or journey time reduction in the master agreement, has worked well in the past. Absent this specificity, the passenger agency may fail to realize the expected benefits from its investments. On at least one occasion, a railroad accepted infrastructure funds that the funding agency expected would be used to support a specific service frequency without making an explicit agreement. The railroad then limited frequency at a lower level than the agency expected and required further investment to meet the original passenger service goal.

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- Passenger station requirements raise a number of unique issues for infrastructure investments and train operations. The passenger agency will likely need to purchase or lease land from the host railroad for station buildings and parking areas. Stations will need vehicular and pedestrian access, which may involve crossing active tracks. For safety reasons, pedestrian crossings at grade are considered very hazardous and may not be permitted in some situations. Grade-separated pedestrian crossings are costly and raise Americans with Disabilities Act (ADA) accessibility issues. Another primary issue for shared operations is providing adequate physical clearance for freight operations, at the same time as meeting ADA requirements for boarding trains.

Some aspects of safety are likely to arise that can affect proposed passenger operations. Liability fears may cause a freight railroad host to restrict the use of non-FRA-compliant passenger equipment, even on parallel tracks and independent of FRA approvals. Operation of freight trains through passenger stations while passenger trains are loading may be restricted, depending on station layout, which can affect capacity. The FRA may impose conditions on some operations, especially those over 79 mph, relating to PTC capabilities, track-to-track separation, and roadway worker activities, etc. All these matters must be resolved and factored into operations analyses and infrastructure improvement plans.

2.4.3 Capital and Operations and Maintenance Costs

Most of the technical issues relating to estimating capital and operating costs and how they should be shared between the host railroad and the passenger service are discussed in Chapter 3. This section discusses how and where these estimates play into negotiations with the host railroad.

Capital Costs

Capital costs are for infrastructure improvements to add capacity to a rail corridor and to upgrade track and signal systems to support the desired passenger service performance. Earlier stages in the negotiation will have provided a list of projects needed for each passenger service development stage and to accommodate forecast freight traffic. Estimates of the cost of each project will likely be developed by the host railroad, because it will be the contractor for the work (see Sections 4.3.5 and 4.4.4 for Amtrak intercity and commuter service, respectively). The negotiations will center on the share of project costs, if any, to be contributed by the host railroad. Generally, the host railroad will be more willing to consider contributing a share of the investment cost if the proposed project provides tangible benefits to freight operations and is aligned with the host railroad's business and investment plans. It is harder to convince a host freight railroad to contribute if the benefits are limited and/or if the corridor is not a key link in its network. It may take the position that other investments have a higher priority.

In most cases, the passenger rail agency must contract directly with the host railroad for capital improvements to track signals and structures. Many railroads have labor agreements that restrict the use of non-railroad contractors for specific kinds of work, independent of the funding source. Also, on an active railroad, railroad managers must coordinate construction work with train operations. Even on projects for an intercity corridor, Amtrak is not normally involved with capital improvement projects unless it is the owner of the corridor.

Operations and Maintenance Costs

In the case of **Amtrak intercity service,** Amtrak has existing operating agreements with most railroads, which can be extended or adapted for a new corridor, depending on the circumstances at that time and place. The passenger rail agency is an interested party, as it will be compensating Amtrak for costs not covered by fare box receipts, but Amtrak and the host railroad are the principals in the negotiation. If Amtrak and the host railroad cannot agree, they can ask the NAP or

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the STB to resolve the dispute. The host railroad is required to accommodate Amtrak intercity service at avoidable cost.

In the case of **commuter service,** the passenger agency will be expected to contribute its share of total O&M costs. Technical aspects of estimating total O&M costs and sharing these costs between multiple rail corridor users are discussed in Chapter 3. Generally the share of total costs is higher than the incremental increase of O&M costs when passenger service is added. This share is higher because a railroad incurs a number of costs as soon as it is put into service and before any trains run. Examples are basic inspection costs and the cost of vegetation control, which are unrelated to traffic level and traffic mix. These "fixed" costs are allocated between users on the basis of a corridor-use parameter such as train-miles or ton-miles, depending on which can be most closely linked to the cost.

2.5 The Liability Issue

Liability concerns can be a major barrier to the introduction of passenger rail services and one of the most difficult issues to resolve in negotiations. It is also a highly complex subject, where the nature and cost of liability coverage depends on the operator (Amtrak or another operator), state and federal laws that cap liability in different circumstances, and the type of host railroad. A short-line or regional railroad may have very different requirements than a Class 1 freight railroad with "deep pockets." The following is an outline discussion of liability issues. For a more in-depth analysis, the reader is referred to a U.S. Government Accountability Office (GAO) report (*Commuter Rail: Many Factors Influence Liability and Indemnity Provisions and Options Exist to Facilitate Negotiations. GAO-09-282, February 2009*). Most of the discussion in the following sections and in the GAO report is related to commuter rail operations. Amtrak has long-standing liability and indemnification arrangements with its host freight railroads and is also able to appeal to the STB to resolve disputes. Amtrak intercity services, therefore, face far fewer liability problems than a commuter operation.

Note that this Guidebook cannot offer legal advice or advocate policy changes to help commuter rail agencies with the liability issue. Agencies are strongly advised to retain knowledgeable legal support on this issue and to read the GAO report, which does contain some policy suggestions.

2.5.1 The National Liability Situation and Amtrak

Liability limitations for passenger rail operators under current law were enacted as part of the Amtrak Reform and Accountability Act (ARAA) of 1997. The ARAA limits the liability for personal injury to, or death of, a passenger or damage to a passenger's property. This provision, codified at 49 United States Code (U.S.C.) §28103, applies to any passenger rail operation, including all commuter operators and Amtrak, and is independent of corridor ownership. The statute limits the aggregate allowable awards to all passengers against all defendants for all claims arising from a single accident or incident up to $200 million. It also authorizes passenger rail service providers to enter into contracts to allocate financial responsibility for claims, and it mandates that Amtrak maintain minimum liability insurance coverage of $200 million. Finally, the statute contains limitations on punitive damages (clear and convincing evidence of gross negligence is required) and provides that any such damages shall be included within the $200 million maximum.

Note that the $200 million limit only applies to passengers and their property, not to railroad employees (to whom Federal Employers Liability Act provisions apply) or to injuries to third parties and other property losses arising from the accident.

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However, this law is relatively new and has yet to be tested in the courts. Questions remain over the extent to which indemnification agreements can protect a freight railroad in a case of gross negligence and whether the $200 million limit would be upheld in such cases. For this reason, freight railroads are asking for liability insurance levels up to $500 million for some commuter rail operations.

Almost all Amtrak liability and insurance arrangements with host railroads are "no fault." In nearly all of these arrangements, Amtrak is responsible for damage to its property (such as passenger cars and locomotives) and injury or death of its employees, contractors, and passengers (including "meeters and greeters"), as well as grade crossing accidents involving its trains. The host railroad is responsible for harm to trespassers and its own employees and for any liability not expressly assumed by Amtrak. Generally, Amtrak compensates host railroads for this residual liability at a given rate per train-mile. Residual liability was one of the subjects that had to be resolved with Guilford Rail System prior to starting the Downeaster Boston, Massachusetts, to Portland, Maine, service. In the Guilford case, the STB pointed out that the rate offered by Amtrak was not deemed compensatory. However, most arrangements require the host railroad to assume this risk and accept the rate per train-mile offered by Amtrak.

2.5.2 Non-Amtrak Passenger Rail Service Operators and Agencies

Commuter rail services, whether operated under contract by Amtrak or not, have to make their own liability and insurance agreements with the host railroads, although they are covered by the 1997 ARAA liability limit. These agreements vary widely, depending on the type of host railroad, whether the operator is a state agency or contractor, and state law regarding liability limits. The GAO in *Commuter Rail* (GAO-09-282) provides a list of the basic provisions for commuter rail liability arrangements. In addition, many existing agreements were signed many years ago and may not be representative of what could be negotiated today. Given the huge variability, common themes are difficult to extract, but an overview is provided below. The overview divides the liability question into two areas: (1) the liability coverage required or typically provided and (2) how the coverage is secured and which entity takes on the financial responsibility for different types of loss.

Required Liability Coverage

The following points summarize what liability coverage is currently required or requested in negotiations for passenger service on freight railroad tracks, including variations where parties other than just a host and a single tenant are involved:

- Major freight railroads are asking for protection against any liability that would not be present "but for" the presence of passenger trains, even events where the freight railroad or its employees are shown to be grossly negligent. This means, for example, the freight railroad requires indemnification or insurance to cover all costs associated with a collision with a passenger train where the freight carrier was at fault, on the grounds that the collision would not have occurred "but for" the presence of the passenger train.
- Major freight railroads are also asking for up to $500 million in liability coverage per incident. This amount would cover the maximum $200 million for passenger injuries and losses required under ARAA, plus provide coverage for all other liabilities, such as property damage, environmental damage, service disruption, legal costs, injuries to railroad employees, contractors, and bystanders, etc. The additional coverage also protects against the possibility that the $200 million limit in ARAA is successfully challenged in court. Some passenger operators have been able to negotiate a lower liability limit with a freight railroad than the initially required $500 million per incident. However, many operators have a lower limit in current agreements and may be faced with higher demands when the agreements are renegotiated.

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- Aside from the requirements of a freight railroad hosting a passenger service, liability and insurance questions have to be resolved among all the other parties involved in providing passenger rail service on a given rail corridor. Depending on local circumstances, interested parties can include a state DOT that sponsors a service, a commuter rail agency, and a contract operator (Amtrak, a freight railroad, or a private firm). Amtrak is frequently involved where Amtrak is either the infrastructure owner (as in the NEC), or the intercity service operator in the same corridor.
- Liability arrangements are required between two passenger rail agencies operating on the same corridor, as well as between the host railroad and each passenger operator. Where Amtrak hosts a commuter rail service, it typically requires the same "but for" liability protection as a freight railroad host. Amtrak's position is that under applicable law it cannot accept any additional liability due to the presence of another operator on its tracks, as it cannot incur any expenses that are not for qualifying intercity passenger rail service.

Arrangements Made to Obtain Coverage and Who Bears the Cost

As well as the $200 million limits for passenger injuries and property loss, the ARAA also gives passenger rail operators and agencies the power to enter into contracts that assign financial responsibility for liability costs. This provision was needed because of court decisions arising out of the serious collision in Chase, Maryland, in 1987. In this case, a court held that Amtrak's indemnification of the freight railroad against passenger-related losses (which were very large) could be set aside, on the grounds that the collision was caused by gross negligence of a freight railroad employee. This decision created great concern among freight railroads that they could not rely on indemnification agreements for passenger service. The 1997 law is intended to ensure that liability-related contractual agreements are enforceable.

Liability agreements between a passenger rail agency and a host freight railroad typically contain the following elements or consider the following issues:

- The passenger rail agency self insures for lower-consequence events, with a cap between $1 million and $20 million. The most common self-insured amounts range from $5 to $10 million per event.
- Each operator is responsible for events that involve only that operator's property and employees. For example, a collision involving only freight trains on freight railroad tracks would be wholly the freight railroad's responsibility.
- In many agreements, each operator is responsible for damage to its own equipment and injuries to its employees. However, in a number of cases, the passenger rail agency agrees either to compensate the host railroad for such losses in an accident involving a passenger train or to obtain insurance to cover such losses.
- Commercial insurance is purchased in layers from the self-insured limit up to between $100 and $200 million. The maximum is usually the liability limit agreed to with the host railroad in the access contract. Some passenger rail agencies have existing agreements where the freight railroad takes responsibility for a layer of the $200 million, for example between $10 and $85 million, regardless of fault. Such arrangements are not likely to survive renegotiation.
- In agreements that call for liability coverage exceeding $200 million, such as up to $500 million, insurance has to be obtained on the international market, for example from Lloyds of London.
- It is important to avoid, as much as possible, agreements where liability depends on establishing the degree of fault to be borne by each party in individual accidents, which can lead to lengthy legal proceedings. In practice, almost all agreements are "no fault."
- The passenger rail agency must protect the passenger service contract operator from liability, whether the operator is Amtrak or a private firm.

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- It is important to ensure that insurance arrangements fully cover "passenger-on-passenger" events where two passenger operators share a corridor, whether the infrastructure is owned by a passenger operator or a freight railroad.
- Many states have provisions in their constitutions or laws that prohibit state agencies from accepting liability for punitive damages and/or accepting liability for incidents where the host railroad is grossly negligent. Such provisions can be a major barrier to successful access negotiations when the host railroad requires exactly this coverage. Even where there are no legal or constitutional barriers, state governments and legislators often feel that accepting liability is highly inappropriate in cases of gross negligence by the host railroad. The following approaches can prevent liability issues from becoming deal breakers:
  - Set up an independent authority to manage the rail service that is structured so that constitutional or legal barriers do not apply. An example of this approach is the NNEPRA, an independent agency in Maine that oversees the Downeaster service. See Case Studies 3.
  - Where there are no constitutional or legal barriers, focus on getting the deal done, even if it requires agreeing with some unappealing provisions. The railroad's insistence on "but for" protection is not unreasonable from its point of view, and a calm explanation may help defuse objections by elected and appointed officials.
  - Retain experienced legal counsel that can advise on these complex and specialized issues.

Even when all legal issues have been successfully resolved, the insurance cost can be a major barrier to implementing a new commuter rail service. This situation is especially true for a small-scale new start by a passenger rail agency that has no previous record of safe operations. The GAO report cited previously says that insurance costs can comprise more than 20 percent of operating costs for such an agency. There is no easy solution to this problem at present, and the agency is advised to retain experienced legal counsel, contact other agencies for their insurance experience, establish a robust safety program for the operation, and engage a very experienced contract operator with a good safety record.

CASE STUDIES 3

The Northern New England Passenger Rail Authority

When the development of plans for Boston, Massachusetts, to Portland, Maine, passenger rail service reached the point of starting negotiations with host railroads and Amtrak to implement the service, officials in the Maine government realized it would be difficult or impossible for Maine DOT to enter into the agreements required, most notably for liability coverage and for contracting for ROW improvements with the host railroad. NNEPRA was created as an independent agency with a separate chair, board of directors (mostly business people but with Maine DOT representation), and an executive director. It holds the contract for train operations with Amtrak, contracts with the host railroad for capital improvement projects, and contracts with other providers of goods and services (for example, on-board food service). NNEPRA is also able to apply for grants and loans to fund the service and service improvements, as well as receive appropriations from Maine DOT.

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CHAPTER 3

Analysis and Modeling

3.1 Introduction

Negotiating access to a rail corridor for a new or expanded passenger rail service often raises highly technical questions about rail line capacity, the extent and nature of capacity investments required, providing service reliability and planned journey times, estimating capital and operating costs, and determining how costs should be divided between multiple rail corridor users. In corridors with relatively simple operations, these questions can be answered by manual analysis (for example, using string charts) or exercising simple train performance models. However, in corridors with complex operations, either high-density traffic or operations with many long-distance and unscheduled freight trains, these questions cannot be answered by simple analyses or using a negotiator's personal experience. Instead, the negotiators need to rely on detailed analyses using the different kinds of models to resolve these questions. Modeling methods and model inputs must be acceptable to all parties to ensure that the results are trusted and can be used to guide the parties toward an agreement. It is generally not productive for each party in the negotiation to perform its own analysis and compare results. Experience has shown that the results from different models are rarely identical. They can differ enough to cause disputes about the validity of the models for the specific situation being analyzed—the unproductive "dueling models" situation. This situation can add to negotiating difficulties rather than guide the parties toward a mutually acceptable agreement.

The specific areas where detailed analysis and modeling may be used include:

- Operations simulation and capacity analysis.
- Capital cost estimating and cost sharing.
- Operating costs and cost sharing
  - Amtrak avoidable-cost methodology.
  - Fully allocated costs for commuter rail.

The following sections discuss analysis and modeling techniques used for passenger projects and how they have been applied.

3.2 Operations Simulation and Capacity Modeling

3.2.1 Simulation and Modeling Overview

Except for the simplest of operations, there is no easy formula that will yield the capacity of a rail corridor. There are simply too many variables involved (train characteristics, speed limits, train and siding lengths, signal system characteristics, etc.) for any simple approach to yield useful results. Because of this level of complexity, all methods of operations simulation and capacity analysis rely on detailed operations simulation methods.

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Simple Models

In its simplest form, a simulation model is a computer program that performs a stepwise calculation of the movement of a train over a rail corridor. Using information on speed limits, grades, train acceleration and braking rates, station stop dwell times, etc., the model calculates the speed and distance traveled by the train for each time step (e.g., every 10 seconds). After the model has stepped along the whole corridor, it produces a tabulation of time and distance traveled, often presented graphically as a time vs. distance string-line chart. A model that performs this calculation for a single train moving over a rail corridor is usually known as a Train Performance Calculator (TPC), because it calculates travel time without interference from other trains operating on the corridor at the same time. TPCs often have additional features, such as an ability to calculate energy used or fuel consumption. Single-train TPC calculations are used to determine what rail corridor upgrades will be required and to provide the desired travel time before the interference effects from other trains and other typical operating delays are taken into account. For initial planning, it is customary to pad the minimum trip time by around 10 percent to estimate a practical trip time. This type of calculation can be used to investigate such questions as the reduction in journey time from increasing top speed from 79 mph to 110 mph, or adding or omitting station stops.

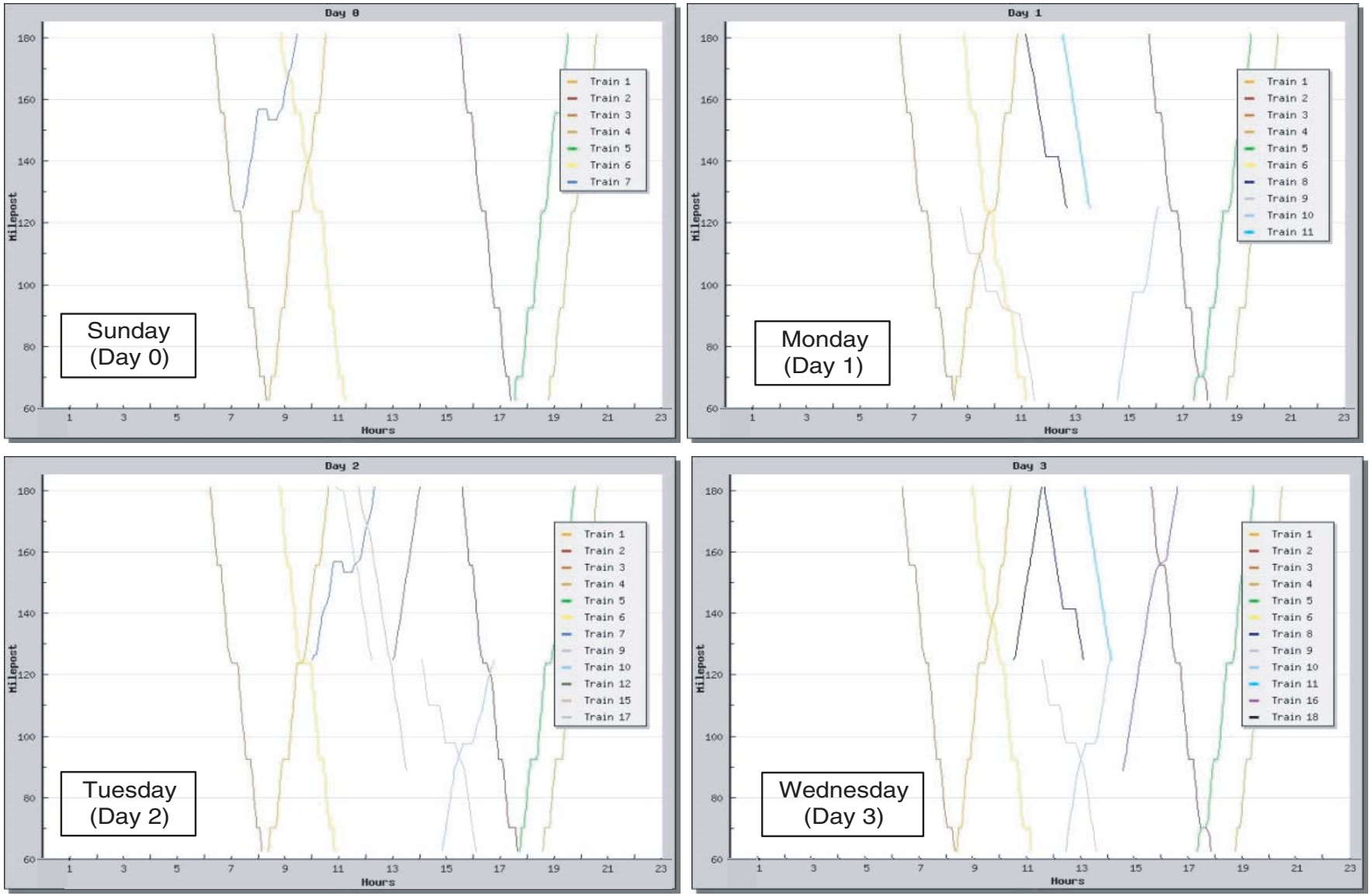
Complex Models

The more complex version of a train operations simulator performs a simultaneous calculation of all train movements on the corridor, taking into account signal system characteristics, train priorities, temporary slow orders, and typical dispatcher decisions over where trains should meet or overtake each other. At their most complex, the multi-train simulations closely reproduce how a real rail corridor would be operated, taking into account all the variations in individual train performance and other operating constraints and variations. Results are usually presented as the calculated trip time for each train compared with minimum time with no interference from other trains, slow orders, etc. The difference is reported as a delay. Operation over the corridor can also be represented on a string-line chart (see Figure 3-1) or as an on-screen animation—a speeded-up version of a dispatcher's display.

However, a single run of a corridor operations simulation will only represent operations under one set of input conditions. Railroad operations are subject to a variety of random and planned disruptions to normal operation, including planned and unplanned track maintenance, delays at stations, and delays caused by events elsewhere on the railroad. Freight train operations are not normally conducted with great precision, and even scheduled freight trains are subject to variability. In addition, many through freight trains are unscheduled "extras" that run as needed and may enter the corridor at any time. Multiple model runs are used to address these variables, with results presented as average run times and delay statistics for each train, along with string charts and animations as required.

The primary use of a multi-train simulation model is to investigate which infrastructure upgrades to an existing rail corridor are needed to enable it to accommodate additional passenger train trips while still meeting specified service performance requirements (train departure times, trip time, and on-time performance) and complying with any other specified constraints. The analyst will start with improvements identified using a single-train TPC (if available) and will make multiple model runs to test alternative track configurations and other improvements. The objective is to identify a cost-effective package of improvements that will meet the service requirements of all users. Given the trial-and-error process of using simulation models, the complexity of these models, and the potentially large number of alternative corridor configurations to be investigated, an experienced modeling analyst is essential. Modeling is something of an art, and a model cannot represent everything about a route. Interpreting results requires judgment,

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Note: Trains 1-6 are passenger and the remainder are freight.
Source: UVA IDOT Base Case report for the FRA

Figure 3-1. String charts for different days of the week on a segment of the Chicago to St. Louis corridor.

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informed by experience using the model, experience with interpreting the results, and experience observing real-life outcomes.

3.2.2 Choice and Availability of Models

This discussion focuses on appropriate models to support detailed negotiations with a host railroad to operate passenger train service over a busy rail corridor. The model used must be able to take into account all operating constraints and corridor features and must be accepted as producing valid results by all parties in the negotiation. Simpler or alternative models are often used during earlier planning stages and for corridors with less complex operations.

In many cases, these requirements limit the choice to two comprehensive rail operations simulation software packages that are widely used in the railroad industry for capacity evaluation and project and service planning. These packages have been used in almost all recent passenger rail service developments where corridor operations were sufficiently complex to warrant the use of detailed modeling.

Some agencies may be uncomfortable with the apparently restricted choice of simulation software for capacity analysis and will point out that other models exist and have been used successfully in the past. Although this is true, the firms responsible for the two leading software packages have continually refined their products, added new features, and built a broad user base among passenger and freight railroads. These efforts have given the models an industry-leading position, overtaking the competitors. In addition and most important, many passenger and freight railroads have invested considerable resources in assembling rail network infrastructure and operations data for use with their chosen package. It is costly and time consuming to re-input these data for use with another package, even if one were available and would be acceptable to all parties. The advantage of using one of the leading simulation models is that the results are highly realistic and are likely to be accepted as such by all parties. The long history of successful applications of the models to different corridors means that most potential "bugs" have been found and corrected, so the parties are very unlikely to encounter surprises when the new service starts operation. For these reasons, usually the most practical option regarding model choice will be to use the train operations software package routinely used by the host railroad to analyze operations on the corridor.

The two packages are Rail Traffic Controller (RTC) developed by Berkeley Simulation Software and RAILSIM developed by the rail consulting firm SYSTRA. RTC is specifically designed for application to North American freight railroads, with substantial unscheduled train movements and a range of signaling and train control methods. RAILSIM is most commonly applied to higher-density passenger rail and rail transit corridors and contains modules for modeling passenger car fleet utilization and other service design aids. In spite of this specialization, either package can be applied successfully to passenger-dominant or freight-dominant shared corridors.

The rail operations simulation models used by both packages are data-intensive and relatively costly to use. They require detailed information on track layout, speed limits, signal systems (including signal block lengths), and full details regarding the rail traffic operated. This detail includes data for each train or type of train operated, including locomotive or traction power and braking characteristics. The large amount of data needed, however, make these packages cumbersome and not well suited for use in earlier-stage planning studies or for the rapid screening of multiple alternatives. Simpler models have been developed for this purpose, such as the Association of American Railroads Train Energy Model (TEM), a train performance calculator particularly designed to evaluate the effects of route characteristics and operating techniques on trip time and energy consumption. Also, several commercial consulting firms, such as Parsons Brinckerhoff and Zeta-Tech, have developed screening-level models for capacity and train performance analysis.

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Rail Traffic Controller Software Package

RTC simulates train movements over a rail corridor by mimicking the behavior of a skilled dispatcher, given rail traffic volume and mix, track layout, signal system, etc. A TPC module calculates train progress over the corridor in response to signal indications and dispatcher commands. Results of each model run are presented as traffic flow animations, time-distance (string-line) charts, train delay statistics (the primary measure of whether capacity is adequate), TPC outputs, and various train operating statistics, such as average speed (velocity). The model can be used to evaluate the sensitivity of corridor performance to traffic level and mix, evaluate benefits from capital improvements, design a train schedule, and identify bottlenecks or capacity constraints and options for removing them. Almost all the U.S. Class 1 railroads have standardized on RTC and have prepared infrastructure and operations data for entry into RTC for much of their route network. The principal advantage of the RTC package for freight railroads is that it is specifically designed for North American freight operations and fully accounts for the characteristics of such operations. It has been adapted to user experience to make it the leader for U.S.-style freight operations.

RAILSIM Software Package

RAILSIM is the second widely used software package for train operations simulation. Applications of this software have mainly been to higher-density and complex commuter and rail transit operations, to plan optimum track and signal system layouts, and to minimize delay potential and energy consumption. RAILSIM was recently used to plan Caltrain commuter service developments between San Francisco and San Jose, California, a predominantly passenger corridor with limited local freight service. It is also widely used in the New York City region on predominately commuter corridors, such as the Long Island Railroad, Metro-North Commuter Railroad, and New Jersey Transit, and in the Chicago area by Chicago Metropolitan Rail (METRA) and Northern Indiana Commuter Transportation District (NICTD).

3.2.3 Using Simulation and Modeling in Rail Corridor Planning and Negotiations

The recommended approach to applying rail operations simulation, analyzing the capacity of a shared corridor, and determining the infrastructure investments needed to provide a defined freight and passenger service is discussed in the following subsections.

Step 1. Agree on What Type of Analysis is Required and What Model to Use

The first step in any operations simulation modeling is to agree on what kind of analysis is required and what simulation package will be used. The kind of analysis will depend on the complexity of operations on the corridor. A corridor with simple operations—such as four or five daily passenger round trips, a daily local freight train, and three or four through freight trains that run to a predictable schedule—should not need complex modeling. Instead, a simple train performance calculation and string-line time-distance plots should be sufficient to plan passing siding locations and where track upgrades to increase speeds are worthwhile. A corridor with more trains, trains with different priorities, and long-distance through trains with unpredictable schedules will require more advanced analysis.

As indicated earlier, it will be most cost and time effective to use the train operations software package routinely used by the host railroad to analyze operations on the corridor. The freight railroad will likely already have prepared train and infrastructure data for the model, greatly reducing the effort needed to prepare for analysis. Almost all Class 1 freight railroads have standardized on the RTC model, so it is highly likely that the best choice for capacity and infrastructure investment analysis for a new passenger rail service on a busy Class 1 rail corridor will be the

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RTC package. Stakeholders report that freight railroads consider RTC to give the most reliable capacity analysis available and are very reluctant to accept results from alternative models as a basis for estimating capacity requirements of a proposed passenger service. Passenger rail agencies that have participated in RTC-based capacity analysis report that they have been satisfied with the results and the resulting decisions regarding the need for capacity investments.

The situation will be similar on a busy commuter rail corridor (often used by an intercity passenger service for final miles into a city center), except that the software package of choice is more likely to be RAILSIM. Smaller host railroads (for example, a non-Class 1 freight rail or a smaller commuter operation) will likely not have previously conducted detailed operations simulation analyses; if detailed analysis is necessary, the parties are more free to choose among the available analysis packages.

In all cases, this Guidebook strongly recommends that a single series of capacity and infrastructure analyses are performed using the selected analysis package. Both host and tenant should collaborate on specifying analysis inputs and in reviewing and interpreting results.

Step 2. Identify Passenger Rail Agency Analysis Team and Agree on Modeling Procedures

The passenger rail agency must enter discussions with a host railroad on capacity and infrastructure investments with adequate technical support. Most important, the agency's team must include an individual with experience with the specific operations simulation software selected for capacity analysis. In many cases, the analysis will be carried out using the host railroad's software and corridor infrastructure input data. To ensure the passenger rail agency's interests are fully represented in the negotiations, model inputs and results must be subject to a knowledgeable independent review.

When implementing passenger service on a major freight railroad, the most widely recommended approach to performing evaluations of a proposed passenger service is for the railroad and passenger rail agency to agree that one party (the freight railroad, the passenger rail agency, or a mutually acceptable consultant) will perform the analysis and share inputs and results with both parties. According to reports, some railroads have insisted on doing the calculations themselves and have been reluctant to share some details of inputs and results. This reluctance may be because of concern about revealing confidential business information or caution about getting involved in a lengthy dispute about the validity of input assumptions or interpretation of results. However, as confidence has grown in cooperative analysis and with the use of confidentiality agreements, these concerns have faded. Stakeholders report that the modeling process is becoming much more open.

Step 3. Agree on Key Rail Service Inputs

Once the analysis package has been selected, the next step is to define the passenger and freight rail services that will operate over the corridor. The typical data needed are discussed in the following paragraphs.

Passenger Service. The service data needed for either intercity or commuter service or both will include:

- Target trip time, with station stops as planned. Both trip time without delays and a practical schedule time with an allowance or padding for delays should be defined. Adding excessive padding (such as exceeding 5 minutes per hour) to cover for poor operations or maintenance procedures should be avoided.
- Station locations and expected station stop dwell times.
- Train departure times and the number of daily trips in each direction.
- Service quality parameters, primarily OTP at final and intermediate stations, and fraction of trips missed due to equipment or infrastructure problems.

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If the service is to be developed in stages, this information is required for each development stage.

Freight Service. The service data needed for freight service includes the numbers and types of trains forecast to move over the corridor corresponding to each passenger service development stage. Numbers of trains will be based on the railroads' business plans and economic forecasts. Arrival times of trains approaching the corridor should be based on the freight railroad's operations plans, with a measure of the variability of arrival times. Some trains will follow predictable schedules, for example, intermodal trains and regular local freight trains, while some may be seasonal, such as grain trains that run during harvest seasons. Some trains will run completely at random. Day-of-week variations are also typical in freight service. It is advisable for the passenger rail agency to review the freight traffic forecasts independently, and raise questions if these appear to be inconsistent with state rail plans, likely local and national economic conditions, and announced plans to change freight train routing.

Step 4. Carry out the Analyses

The analyses will be tailored to each specific passenger rail situation. However, a typical set of analysis sequences might include:

- TPC-only analysis for passenger train trips to establish minimum track upgrades and speed increases to achieve the desired trip time, after allowing for reasonable schedule pad.
- Analyses of present-day freight and passenger (if any) operations on the corridor to check that the analysis adequately represents the real world and also to establish a baseline for the current performance of trains using the corridor. In particular, current delay statistics on the corridor will set a target for corridor operations with added passenger trains.
- Further sets of simulations analyses with corridor speed upgrades determined using the TPC, and various capacity investments (double track, passing sidings, train control systems) to identify improvements that meet both capacity and performance goals. Delay statistics are the primary measure of performance; the corridor must maintain at least present freight train performance levels while meeting passenger train targets. This analysis is repeated for each stage in passenger service development if a multi-stage program is planned.
- Joint review of each analysis by the passenger rail agency and the host railroad, and discussion and resolution of any questions.

Case Studies 4 provides an example of ongoing use of simulation modeling (in this case using RTC models) by the Capitol Corridor Joint Powers Authority (CCJPA) in California to manage track and service improvements on this corridor.

CASE STUDIES 4

Application of the Rail Traffic Control Model and Capital Planning

The CCJPA and its host railroad, the Union Pacific (UP), make extensive use of the RTC model for ongoing planning of capital investments. Full details of the route and passenger and freight services are coded into the model. CCJPA develops a long-term "Vision Plan" for the corridor and communicates this to UP. UP then runs the RTC model and develops plans for investments needed to accommodate each increment of passenger rail service, especially identifying bottlenecks that would constrain future freight service growth and journey time reductions. UP also develops cost estimates for the proposed improvements so that, after review and negotiations, CCJPA can issue a work order under the master agreement to execute the work as funding becomes available.

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3.3 Capital Investment Planning, Costing, and Cost Sharing

Almost all proposals for new or expanded passenger service require capital investment in infrastructure along the route, either to improve the quality of the infrastructure, to support the proposed passenger service, or to add needed capacity. The steps in this investment process are first to determine what is needed to support the proposed passenger service, then to estimate the capital cost of the required projects, and finally to determine how these costs will be shared between the freight railroad and the passenger rail agency. The details of a capital project also have significant implications for ongoing maintenance costs. Adding a passing siding means that maintenance cost will increase. Rebuilding deteriorated track structure with new rails, ties, and ballast will reduce ongoing maintenance costs for a period of time.

3.3.1 Right-of-Way Access or Acquisition

The different approaches to gaining access to a rail corridor for a new or expanded passenger rail service are discussed in Section 2.4.2. This section discusses methods to place a price on gaining access and to estimate the cost of completing corridor upgrades to support the planned passenger rail service. The factors to consider in estimating costs and prices are discussed in the following subsections.

Amtrak Intercity Service

Amtrak's right of access means that it can make use of existing available capacity on a rail corridor at no cost and is only obligated to pay incremental costs for use of a host railroad's tracks. However, in many cases, the existing infrastructure is not adequate for a planned service, either because track condition and signal system capabilities will not support planned train speeds and/or because there is insufficient capacity to accommodate planned passenger and freight operations. The need for additional capacity should be based on objective analyses as described in Section 3.2, to ensure that the corridor is able to accommodate planned and forecast passenger and freight services with planned investment. If necessary, a passenger rail agency will need to negotiate funding for track and signal system improvements and additional line capacity needed for passenger service. The host railroad would be responsible for any investment that it would have needed to accommodate forecast traffic, if the passenger service had not been implemented. The process for estimating capital costs of track and signal system improvements and additions, and shares of cost to be borne by host and tenant are discussed in separate sections.

In a few instances, it may be attractive for the passenger rail agency to purchase a rail corridor or part of a rail corridor, usually where freight traffic is very low and there is a willing seller. This approach has not been used in the past—opportunities were few and funds were lacking. However, outside the NEC, Amtrak does operate over portions of several commuter networks, owns a segment of the Chicago to Detroit corridor, and operates a corridor in North Carolina owned by the state.

Commuter Service

Commuter rail agencies do not have Amtrak's right of access to the rail network and therefore must expect to incur a cost for access to a rail corridor that is separate from capital expenses for infrastructure improvement and a share of operations and maintenance costs. The different approaches used by passenger rail agencies and their cost implications include:

Purchase the Rail Corridor. This option is commonly selected for commuter rail, where the corridor was a low-traffic freight branch line prior to introducing a new service. The value of a corridor as a freight rail business or the value of railroad materials installed in the corridor is gen-

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erally quite low, and the sale price is primarily a function of the corridor's real estate value. This value depends on many local factors and would be beyond the scope of this Guidebook to suggest methodologies to estimate a fair purchase price. In most cases, the track and signal systems (if any) have to be completely replaced. The rail freight operator usually is given permanent access to the corridor to provide ongoing service, subject to time-of-day restrictions so that freight operations do not interfere with the proposed passenger operation.

Directly Fund Infrastructure Improvements. Commuter rail agencies can directly fund infrastructure improvements sufficient to provide the capacity consumed by the passenger rail service, plus any signaling and track quality improvements required for passenger service. This approach would be used where the host railroad is willing to accommodate the passenger service but requires that existing capacity for freight operations is preserved, including maintaining spare capacity for future freight growth. A freight railroad may also require that capacity is maintained at specific times of day, depending on the type of freight traffic using the corridor. In other instances, the commuter and freight railroads have agreed on a combined package of investments, with costs shared, to serve passenger service requirement as well as anticipated freight traffic growth. Every case is different and must be worked out in negotiations. There are several examples of this approach, such as improvements on Norfolk Southern Railway and CSX in Northern Virginia for the Virginia Railway Express (VRE) commuter services into Washington, D.C. Often the improvements are not a one-time investment but are a series of projects implemented as required by passenger and freight traffic growth.

Purchase a Permanent Easement. A permanent easement can be purchased for a specified commuter rail service (number of trips, schedule, journey time, etc.). This option has two sub-options:

- Acquire an easement to construct a separate commuter rail line parallel to a freight line within the existing railroad ROW. This option is selected when it is not technically feasible or is very difficult for the commuter rail service to share track with the freight operation, and lateral space exists within the existing ROW. The commuter rail agency is responsible for constructing the commuter tracks, signal systems, stations, etc. This option has been used for the Gold commuter rail line in Denver and the Front Runner service north from Salt Lake City. As with outright purchase of a rail corridor, price will depend on local circumstances.
- Purchase a permanent easement to operate commuter rail service on the tracks of the host railroad for a lump sum. The easement seller guarantees access for a specified number of passenger rail trips to specified schedules and trip times and is responsible for making infrastructure investments to honor this agreement. This option bundles the cost of access with the cost of infrastructure improvement. Because of the bundling, and the permanence of the agreement, it may be difficult to compare the lump sum payment with alternative estimates of access and infrastructure improvement costs, and to justify the payment to funding agencies. The primary example of this approach is the Sounder commuter service northward from Seattle.

As well as these two sub-options, access and infrastructure improvement costs can be converted into a per-train-mile usage cost to be paid as incurred. This approach was used for the Sounder service between Seattle and Tacoma in Washington State. Hybrid arrangements are also possible, using some mix of public funding of infrastructure improvements, a one-time capital payment, and ongoing per-mile charges.

3.3.2 Estimating Capital Costs

The majority of corridor access arrangements, whether for Amtrak intercity or commuter service, place the responsibility for funding and implementing corridor infrastructure improvements on the passenger rail agency developing the service. It is assumed that the passenger rail

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agency and the host railroad will have performed capacity analyses as described in Section 3.2 and have determined what improvements are required to accommodate the planned passenger service as well as freight traffic growth. The improvement plans will reflect:

- Service quality and performance requirements for both passenger and freight operations.
- Improvements in track quality to meet requirements for planned passenger train speeds.
- Signal and train control system investments to comply with regulatory requirements, especially a PTC system suitable for planned speeds and able to provide the required line capacity. Some forms of PTC may not meet regulatory requirements for operations over 79 mph and also may reduce rather than increase capacity.
- Investments to increase capacity, such as adding or lengthening passing sidings, adding a second track, or changing signal block spacing.
- Any more detailed factors that affect capacity, such as a need to provide capacity for specified freight operations during passenger service peak period or to maintain total daily freight capacity while restricting freight train movements through commuter stations during peak travel hours for safety reasons.
- Investments in passenger station infrastructure, including purchasing or leasing land for the station and constructing the station. In many cases, a station will host multiple public transportation services to serve as a transportation hub. In such cases, station design and cost sharing will have to be worked out with other agencies sharing the facility.

Once physical requirements have been defined, the next step is to estimate the cost of implementing the improvements and to plan the construction work. Activities and responsibilities of this step will depend on whether the construction is on a corridor that has been purchased or leased by the passenger rail agency or is on an active host freight railroad.

On a corridor owned by the passenger rail agency, the agency can retain an engineering firm to prepare detail designs for the improvements, estimate costs, and select an experienced contractor to perform the construction work. The contractor and the agency will have to work with any tenant freight railroad to schedule construction work so that rail freight service can continue. Cost estimates must take into account the impact of accommodating ongoing freight and passenger operations, where applicable.

On a corridor owned by an active freight railroad, the host freight railroad will develop a cost estimate (taking into account the need to work around ongoing freight operations) and manage construction under a contract with the passenger rail agency. A freight railroad may retain an experienced engineering firm to do the cost estimates and design work, depending on the workload in the railroad's engineering departments and the nature of the work. Similarly, the railroad will determine whether to use contractors or its engineering department employees and equipment for the construction or upgrading work. Railroad union agreements often govern the conditions under which contractors may be used. As the source of funding for these projects, the passenger rail agency must review the railroad's cost estimates for reasonableness and properly inspect completed work before releasing payments.

3.3.3 Sharing Infrastructure Capital Costs

Many passenger rail agencies understand that a host railroad will obtain some benefits from infrastructure improvements to accommodate a proposed passenger rail service. Because there are identifiable benefits for the host railroad from these investments, passenger rail agencies believe that the freight railroad should contribute funds toward to the cost. There are two situations where cost sharing will be on the table in negotiations:

- Where investment in the corridor is already under consideration in the railroads planning. For example, a railroad may plan to replace an older automatic block signal (ABS) system with

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Centralized Traffic Control (CTC) and replace manual siding switches with powered switches controlled from the central office, but the project is not sufficiently beneficial or urgent for the railroad to implement on its own. A contribution from the passenger rail agency will reduce the total cost to the railroad, enabling the project to go ahead under a cost-sharing agreement.

- Where the proposed passenger corridor is not an investment priority for the freight railroad, but the freight railroad will receive identifiable benefits from passenger-related investments. Stakeholders in passenger rail agencies often express the view that the freight railroad should share in the cost of these improvements, because it will receive benefits in the form of higher speeds, fewer delays, quicker trip times, etc. The benefits can be estimated using the results from capacity modeling. However, it can be difficult to reach an agreement on whether these benefits have any value to the freight railroad and, if so, how to determine the value.

The difficulty derives from how a freight railroad, or indeed any private business, approaches capital planning. At the beginning of its fiscal year, a railroad will estimate the capital expenditure it can afford in the year based on estimated earnings, borrowing costs, and related factors. Some investments will be to support long-term strategies established by the railroads' top management; some will support previous commitments, such as a contract to purchase a number of new locomotives that year; and others will be selected from among candidate projects submitted by the railroad's operating, engineering, and mechanical departments. In the latter case, projects will be ranked by return on investment (ROI), and the railroad will fund those with the highest ROI, up to the total of available funds. Projects that do not make the ROI cut will not be funded. It is unlikely that a railroad will be willing to contribute to a passenger service–driven investment if that project would not otherwise qualify for an investment, given the railroad's priorities and the current ROI hurdle rate. Alternatively, a freight railroad might be willing to contribute, provided the corridor is an important link in its network and the benefits relative to the investment meet the railroad's ROI and other investment criteria.

The best approach to reaching agreement on capital cost sharing is to discuss at the beginning of the capacity analysis what the railroads investment service needs on the corridor might be and seek to structure the project to meet both freight and passenger service needs. If the corridor is part of the railroad's core network, then the freight railroad would likely be willing to contribute at a level where the benefits yield an adequate ROI. If the corridor is not a priority for the freight railroad, then the passenger agency will likely have to fully fund the improvement project.

Another cost-sharing possibility occurs where a state agency is able to contribute funds from freight rail and grade crossing safety improvement programs. This was the case in Washington State on portions of the Portland, Oregon, to Seattle, Washington, and Sounder commuter service lines. Even if the state is able to provide funds from a freight rail program, the investment in the corridor must still be of value to the rail freight business and more broadly contribute to state freight transportation and economic development objectives.

3.3.4 Rolling Stock Capital Costs

Any new service has to provide for equipment (passenger cars and locomotives) to operate the service. There is no one best or recommended approach—use whatever meets objectives for the specific corridor and service at the time the equipment is needed. A summary of the approaches to providing equipment and the implications for capital costs follows:

- **Amtrak Intercity Service**
  - ***Purchase new equipment***. In this case, a competent railroad rolling stock consultant can develop specifications for the trains and develop a cost estimate based on recent prices paid to suppliers of similar equipment.

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  - ***Lease new equipment.*** This approach converts the capital costs into a periodic payment, which becomes part of ongoing expenses. Whether leasing is attractive to a public agency depends on how accounting practices and funding arrangements treat capital leases. Discussion of the financial implications of leasing is beyond the scope of this Guidebook. In some cases, a capital lease may be bundled with equipment maintenance services.
  - ***Fund rehabilitation of existing out-of-service cars in Amtrak's fleet.*** In recent times, Amtrak owned a substantial number of out-of-service cars, which it could not afford to repair. Funding repair gives the passenger rail agency assured availability of cars for a proposed service at reduced cost. Exact terms of an agreement have to be worked out with Amtrak and would depend on the details of the rehabilitation project and the expected remaining service life of the cars.
  - ***Use Amtrak-provided cars,*** the cost of which will be included with Amtrak's charges for train operations and equipment maintenance for the proposed service. In recent years, Amtrak has lacked funds to purchase new cars or to rehabilitate more than a minimum number of out-of-service cars. This meant Amtrak was unable to provide cars for new intercity services, and passenger rail agencies had to adopt one of the previously mentioned alternatives. Since PRIIA (2008) and ARRA (2009), however, Amtrak is pressing ahead with plans to specify and acquire new cars both to replace life-expired equipment and build its fleet to support new services.
- **Commuter Service**
  - ***Purchase new equipment*** as previously described for intercity service.
  - ***Lease new equipment*** as previously described for intercity service.
  - ***Acquire existing commuter equipment suitable for the proposed service,*** by outright purchase, long-term capital lease, or short-term lease of temporarily surplus cars from another commuter rail agency. An example of a short-term lease was the temporary use of Sound Transit Bombardier cars by VRE and Los Angeles Metrolink until increases in demand and service frequency in Seattle required their return.

As well as selecting equipment for a specific service and developing a process for obtaining suitable equipment, the passenger rail agency has to determine the number of cars required. Fleet planning can be a simple manual process for smaller passenger services, usually involving calculating trip and terminal turn-around times and designing a schedule for a few train sets. For example, the New England Downeaster service is operated with only two train sets. For more complex operations, a computer simulation can help optimize fleet operations. For example, SYSTRA's RAILSIM package has a module that provides this capability. There can be substantial cost leverage in good fleet planning. For example, it was possible to add service frequencies on California's Capitol Corridor without adding train sets by reducing layover and turn-around times and rescheduling some trips. Similarly, the proposals to extend the Downeaster service to Brunswick, Maine, can be managed without adding train sets by using layover time in Portland, Maine.

3.3.5 Signaling and Train Control Capital Costs

Issues related to train control systems should be resolved in capital planning and, in the future, will inevitably be centered around meeting PTC requirements in the RSIA. New advanced technology PTC systems have been an area of research interest in the railroad industry for over 20 years. The primary function of PTC is to enforce safe speeds at all times to prevent collisions, overspeed events, travel over misaligned switches, and intrusion into work zones. More advanced versions of PTC may also provide capacity benefits from moving block train spacing, more precise speed control, and location management.

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The RSIA requires PTC installation by 2015 on most freight main lines used for passenger service and/or for conveying certain hazardous materials. The same legislation required the railroad industry, in consultation with the FRA, to develop PTC interoperability standards. Since then, both the railroad industry and the FRA have been actively making plans to implement the legislation, but many of the details are still to be determined. Further discussion of the issues relating to PTC implementation since the October 2008 legislation and FRA safety regulations are provided in Appendices B and C.

Even though the details of PTC as applied to the U.S. rail system are still to be worked out, passenger rail operators outside the NEC area will clearly be affected:

- With few exceptions, locomotives and multiple-unit driving cabs will have to be equipped with PTC equipment that conforms to national interoperability standards. Each passenger service operator will be responsible for the costs of equipping its own rolling stock.
- Passenger rail agencies may have to bear all or part of the costs of wayside PTC apparatus on routes used by their trains. The actual shares will depend on whether the PTC is needed anyway because of corridor use for specified hazardous materials, corridor ownership, and whether the passenger service is Amtrak intercity or commuter. Cost-sharing arrangements will have to be negotiated among users, and it is possible that the STB will become involved in resolving disputes in this area and establishing cost-sharing principles.

It is not clear at this point whether a "basic" PTC system installed in response to RSIA requirements for a hazardous materials corridor will also allow passenger trains to operate at speeds exceeding 79 mph, or whether additional requirements will be imposed above 79 mph or at higher speed thresholds. Passenger rail interests need to be engaged with the FRA as requirements for higher-speed operations are developed. The uncertainties include what additional requirements, if any, may be imposed on freight operations sharing track with passenger operations exceeding 79 mph.

3.4 Operations and Maintenance Costs and Cost Sharing

3.4.1 Overview

This section discusses the technical issues associated with estimating how O&M costs should be distributed among each railroad corridor user in a corridor shared by multiple users, including the differences between avoidable and fully allocated costs. The different cost categories are identified, together with the operating parameters that drive costs. This is followed by a discussion of methods used to estimate costs as a function of usage by freight and passenger trains. The discussion is primarily concerned with the costs of operating a privately owned freight railroad that hosts a passenger rail service. Costing principles are the same where the host railroad is owned by a public agency, but the public agency normally does not expect to make a profit on invested capital and may treat expenses like depreciation differently. The resulting cost estimates may be used to support contractual agreements between host and tenant as described in Chapter 4 and the process for amending and updating contracts as described in Chapter 5. Much of the material in this section is taken from a predecessor study, "Cost Allocation Methods for Commuter, Intercity and Freight Rail Operations on Shared-Use Rail Systems and Corridors" (AECOM 2006).

Allocating railroad infrastructure and overhead costs fairly among different types of rail traffic is technically difficult, and in many situations there is really no single "right" answer. Once a rail line is put in place, a significant fraction of infrastructure O&M costs are fixed and can only be changed by either changing track quality or adding or removing features of the route, such as

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a passing siding. Allocation of fixed costs will always be somewhat arbitrary. In addition, many infrastructure components subject to wear or degradation, such as rails and ties, have long lives and annual costs will vary over time as the components age. A decision has to be made between sharing costs "as incurred," recognizing that there could be considerable year-to-year variation as components age and when substantial renewals become due, or estimating long-run average costs and charging the same amount each year. A further complexity is that a passenger rail agency might fund a track renewal, as on the Downeaster route in Maine, and should enjoy the benefit of reduced annual maintenance costs in following years, instead of contributing to the next renewal cycle.

Because of the technical complexity and the presence of substantial fixed costs, there is a long (and contentious) history of methods to allocate railroad operating costs to a particular traffic. In the regulated era prior to the 1980 Staggers Act, much of the effort was directed at determining "fair" freight rates to charge freight shippers of different commodities. These allocation methods relied on historical cost data that the railroads were required to submit to the ICC. Statistical analysis of the data yielded a costing formula, which was then used to estimate the cost of a specific freight movement. Similar methods are still used by the STB to support the more limited freight rate regulation in force today. The STB's responsibilities for regulating passenger fares was eliminated with the formation of Amtrak, but it still has the responsibility to mediate disputes between Amtrak and freight railroads regarding access charges. Appendix B contains a discussion of the various costing issues brought before the STB for resolution during negotiations between Amtrak and the host railroad for the Downeaster service, and the resulting decisions. These are the most recent series of decisions by the STB on Amtrak incremental costing.

The following sections first introduce the primary cost categories that make up O&M costs, including periodic like-for-like replacements of worn-out track components such as rail. Then, the definitions and differences between avoidable and fully allocated costs are discussed, including how cost estimates may be used in calculating the share of costs allocated to freight and passenger operations using the same tracks. Finally, methods to estimate costs of a specific rail operation are discussed, including using historic actual costs and engineering analysis.

3.4.2 Railroad Operations and Maintenance Cost Categories

Table 3-1 shows the matrix of railroad O&M cost categories organized by operating function and by the nature of the expense. The shaded blocks in the table matrix highlight the functional and expense categories that may need to be apportioned among the users where a rail line is shared by multiple services. The rationale for sharing the costs among users within each of the expense categories is discussed in the following paragraphs.

Transportation Labor

Because these are not shared resources, in most cases, each operator employs its own train crews and other on-board personnel. In some cases, a freight railroad may provide passenger train crews (as on some Chicago area commuter lines and in Seattle), but this is usually the subject of a separate operating services contract. In contrast, dispatchers are always a shared resource, because one dispatch desk (workstation) has to be responsible for all trains on a rail line segment. Therefore, dispatching costs are always a line item in a shared cost analysis and would be shared between users per applicable agreements. For Amtrak intercity services to which Amtrak incremental costing applies, only incremental dispatching costs, if any, will be charged to Amtrak. Where two passenger operators share the same rail line, it may also be necessary to share certain station costs.

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Table 3-1. Operations and maintenance cost categories.

Operating Function	Labor	Materials and Supplies	Fuel and Power	Other Expenses
Transportation	Line-haul train crews, Switching and yard crews, On-board services (passenger), Passenger station staffing (passenger), Dispatchers, Supervisors	Minor items	Electric power for traction on electrified lines, Diesel fuel, etc.	
Equipment Maintenance	Inspectors, Shop and terminal maintenance employees	Spare parts and materials for car and locomotive maintenance	Power for workshops and power tools	Contracted maintenance services, e.g., rebuilding components, Depreciation
Way and Structures Maintenance	Track inspection and maintenance, Signal and telecoms, Inspection and maintenance, Structures inspection and maintenance	Rails, Ties, Ballast, Replacement parts for signal and telecoms, Other construction materials	Diesel fuel for work trains and maintenance equipment	Equipment rental, Contract services, Depreciation
General and Administrative (G&A)	Management above first-line supervisor and technical specialists, Administrative staff of all types, Accounting, Legal services	Office supplies	Power for building services	Office rentals or leases, Contract services, e.g., for buildings, Insurance, Loss and Damage payments

Transportation Fuel and Power

In most cases, each operator uses its own fleet of locomotives, and diesel fuel is purchased separately by or on behalf of each operator. On a shared electrified railroad, power costs must be shared. This calculation can be complex, because there is no easy way to directly meter the power consumed by each train.

Equipment Inspection and Maintenance

Most passenger operators provide and maintain the equipment (cars and locomotives) that is dedicated to their services. Occasionally, one agency will rent or lease cars to another agency, but any associated maintenance services provided are the subject of a separate specific agreement. Therefore, cost-sharing issues rarely arise.

Maintenance-of-Way and Structures

Maintenance-of-way functions are always under the control of the host railroad. This is the most complex area related to cost sharing, because some cost categories are largely fixed (i.e., do not vary with use) and other costs vary with traffic volume and types of use in different ways. Also to be resolved is the approach to costs for periodic replacement of wearing components, such as rail. A rail replacement project may be treated as a capital cost in accounting terms, to be depreciated over the life of the rail, but the consumption of rail life may be treated as a maintenance cost in a cost allocation calculation. Most efforts to find realistic costing and allocation methods are concentrated in the maintenance-of-way and structures area. Maintenance of signal and telecommunications systems also fall into this area and are mostly fixed costs that vary little with the level of usage once specific systems are installed.

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General and Administrative Activities

These are functions of the host (usually freight) railroad, which will devote some fraction of its effort to supporting tenant passenger operations. Some expenses can be directly attributed to the passenger operation, such as staff dedicated to managing the interfaces with the passenger operators, or specific insurances only required with passenger service. However, most administrative functions cannot be allocated in this way, and an alternative approach must be sought. Examples might be an allocation based on an overhead percentage, an allocation based on train-miles or some other measure of output, or a mix of both approaches.

3.4.3 Cost-Sharing and Allocation Approaches

Before methods to estimate costs and the appropriate distribution of costs between multiple rail corridor users can be discussed, it is helpful to define the two principal costing concepts that are used when estimating cost sharing between host and tenant. These concepts are avoidable costs and fully allocated costs.

Avoidable Costs

Avoidable costs (sometimes called incremental or marginal costs) are those short- and medium-term costs that would be directly avoided if the tenant's operations ceased. For a passenger rail tenant operating on a freight railroad, avoidable costs typically include wear and deterioration of track and structures that can be attributed to the passenger operation, a share of dispatcher costs, and the cost of management directly associated with the passenger service. Fixed costs of operating the railroad and compensation for utilizing an increment of capacity are not included. This approach is used to compensate freight railroads for accommodating Amtrak services, as required by the legislation that established Amtrak as the national intercity passenger rail operator.

Estimating avoidable cost becomes more complex if track quality or signal system improvements are required for a new passenger service. In this case, the avoidable-cost principle would require the passenger operator to be responsible for the difference between maintaining the higher quality under combined freight and passenger operations and what it would have cost the freight railroad for maintenance to freight service requirements. If the passenger agency had funded capital improvements to track and signals, then there is a further complication: maintenance costs to the freight railroad would be reduced for a number of years, until track components became due for maintenance or replacement. This issue was one of those at dispute between Amtrak and the host railroad prior to implementation of the Downeaster service, as discussed in Appendix B, Section B.2.2.

At present Amtrak is the designated operator of all intercity passenger rail services on shared corridors, using Amtrak's rights of access at avoidable costs. Amtrak already has operating agreements with all the major railroads, which include agreed-upon compensation for track use, usually expressed as a cost per train-mile. Amtrak and the host railroads will negotiate an extension of this agreement for a new service with an amended track-use fee, where appropriate, to reflect local conditions, including infrastructure investments funded by the passenger agency. Any disputes between Amtrak and the host railroad regarding the avoidable-cost fees for a specific service can be referred to the STB or the NAP for resolution. Under most Amtrak agreements with freight railroads, the NAP would resolve disputes over the application of the costing methodology in that agreement to a new service.

Fully Allocated Costs

In this approach, the host railroad's full costs are shared between the host and tenant on a logical basis. A freight railroad may also add a charge to the allocated full O&M cost to provide a

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return on the capital investment in rail corridor capacity used by a passenger service, if the passenger agency has not used one of the alternative methods of paying for the capital cost of capacity as discussed is Section 3.3.1. Essentially, the freight railroad treats the passenger agency as it would a freight customer. A railroad may also agree to a hybrid approach where a share of some, but not all, fixed and overhead costs are allocated to the passenger operation, but this scenario is likely only if the agreement is part of a broader agreement that includes some other benefit for the freight railroad.

Fully allocated costing is most commonly used for commuter service over freight railroad tracks, where Amtrak access rights do not apply. The primary issue is establishing a full cost allocation method that is logical and acceptable to both parties. Establishing such a method can be straightforward where two freight railroads share the same tracks, because the types and quality of service required by host and tenant are the same. A freight railroad–to–freight railroad trackage rights agreement will typically apportion costs in proportion to car-miles operated over the shared territory. Where the tenant is a passenger service, arriving at a fair and logical cost division is more challenging, both at the technical level in deciding how costs are influenced by the presence of passenger service and in reaching a mutually acceptable formula in access negotiations.

3.4.4 Operations and Maintenance Cost Analysis

This section addresses two interlocking areas: the technical basis for determining the share of each cost category allocated to each service and the approaches used to incorporate technical understanding into shared track agreements for intercity and commuter services. This section is not intended to cover the specific cost allocations used for Amtrak avoidable-cost agreements based on the Amtrak statute and STC decisions, but rather to describe the technical and logical factors that drive costs on a shared corridor. Relevant cost categories include:

- **Dispatching.** Dispatcher workload is driven by the number of track miles in the dispatcher's territory, train-miles operated, and the complexity of operations. Adding passenger trains on a freight corridor is likely to add to dispatching complexity, given speed differences and station stops, adding workload. A logical approach for dispatching costs might be to allocate according to train-miles with an additional weighting for passenger trains. In some cases, a passenger operator has agreed to fund an additional dispatcher position so that passenger service can receive more focused attention, potentially reducing delays. Alternatively the passenger rail agency may fund a coordinator as a liaison between the host railroad and the passenger operator and agency, to help manage passenger service performance.
- **Electric Power.** Because there are no current electrified freight operations in the United States, this is an issue that arises when two electric passenger operations share tracks, as in the NEC. Because it is not easy to meter power at the point of use on each train, the best approach may be to estimate per-mile power consumption as a function of train size (number of cars) and type of service, using the results of TPC analysis and electric power prices to establish and calibrate a per-train-mile charge.
- **Track Maintenance.** This area is the most complex for cost allocation, because track degradation under different traffic types is difficult to quantify. The most comprehensive studies on this issue have been by Zeta-Tech, who developed the TrackShare model, described in papers and presentations for the Transportation Research Board and in a report prepared for the FRA (Zeta-Tech 2004). This method had been used in a number of settings, including cost estimating for the proposed Midwest network, cost allocations between users of the NEC, and cost allocation for Amtrak service on freight railroads. Zeta-Tech takes a fundamental engineering approach, calculating the cost of wear and degradation of track and track components as a function of loads on the track. These costs are a function of axleload, speed, and track characteristics such as FRA track class, grade, and curvature. The model yields Engineering Adjustment

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Factors (EAFs) to apply to a base cost estimate as a function of traffic type and track characteristics to obtain a cost estimate for a specific traffic mix. This model is particularly useful for calculating a logical division of costs when a passenger tenant requires a higher track quality than the host freight railroad. Because the model is too complex to simply incorporate into a cost-sharing contract, the usual process is to use the analysis to estimate a per-car-mile or per-train-mile charge for the planned service and incorporate the result into the agreement.

- **Track Inspection.** Both FRA regulations and industry practice require regular track inspections for defects. The presence of passenger service may or may not trigger a change in inspection practice depending on specific traffic levels and speeds. If a change in practice is required, then the additional cost would be allocated to the passenger expense. Otherwise, costs would be shared among the services in a fully allocated approach, most logically as a function of ton-miles adjusted by EAFs.
- **Other Infrastructure Inspection and Maintenance.** This area covers bridges and structures as well as signal and train control equipment. Most of these expenses are only weakly dependent on traffic level and type, and cost allocation is somewhat arbitrary. An allocation based on adjusted ton-miles for structures and train-miles for signal and train control systems would be logical. Some passenger services may require improved signal and train control systems to permit increased speeds or to add capacity. If this is the case, all or part of the additional cost of inspecting and maintaining the improved systems over the original installation would be the responsibility of the passenger operator. For example a passenger operator and host railroad may fund a conversion of automatic block signaling to centralized traffic control and add powered switches at passing sidings. Because the improvements benefit both freight and passenger service, both host and tenant would share additional inspection and maintenance costs, if any.
- **General and Administrative Expenses.** In most cases, there is no specific cause-and-effect relationship between selected G&A expenses and the level and mix of train operations. The only exception is where staff are specifically dedicated to the passenger affairs. Otherwise, the allocation may be determined in proportion to train-miles or represented as a percentage or fee on other passenger-related expenses, or, in some cases, the parties may agree to a fixed annual fee.

3.4.5 Application to Intercity and Commuter Operations

The foregoing discussion summarizes the technical issues involved in cost sharing. The manner in which these technical issues are brought into negotiations between the passenger rail agency and a host freight railroad depends on the details of each service, as summarized in the following paragraphs.

Amtrak Intercity Service with No Service-Specific Infrastructure Investments

Amtrak compensates host freight railroads for intercity passenger operations on an avoidable-cost basis. Agreements for a new or expanded service will be based on existing Amtrak operating agreements with mutually agreed-upon variations to reflect specific local circumstances. Disputes can be resolved by the NAP or by the STB, which has the power to impose a decision on Amtrak and the host railroad.

Amtrak Intercity Service where a State Passenger Rail Agency Has Funded Added Rail Corridor Capacity or Upgraded Infrastructure

Amtrak will negotiate a track-use fee agreement with the host railroad for the specific service with the host railroad, proposing fees based on previous experience in comparable situations, and taking into account the passenger agency's investment, track class, and added signal and train control equipment. The parties are free to support their position with technical analyses, but there is no requirement for such analysis. If Amtrak and the host railroad cannot agree, then they can

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appeal to the STB, supporting their position as they see fit. The state or regional passenger rail agency must work with Amtrak and may choose to directly fund a track maintenance gang or a dedicated dispatcher to ensure service quality.

Commuter Operations Hosted by a Freight Railroad

The commuter rail agency will have to compensate the freight railroad for all or most fully allocated costs. The details of individual agreements are highly variable and will reflect local circumstances, especially track and signal system improvements funded by the commuter rail agency. Many of the sharing approaches mentioned previously regarding individual O&M expense items and technical cost analysis may be reflected in the resulting agreement. However, it is essential that the final agreement is simple to administer, such as a formula that uses easily determined operations metrics, such as car- and locomotive-miles and train-miles.

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CHAPTER 4

Content of Shared-Use Access and Operating Agreements

4.1 Introduction

This section discusses the content of typical shared-use agreements between host and tenant railroads sharing a rail corridor. In many cases, the agreements must recognize the roles of all parties involved in providing passenger rail service over a rail corridor, such as Amtrak in the case of an intercity service or a train operations contractor in the case of a commuter service. This section is written from the perspective of a passenger rail agency implementing and developing an Amtrak intercity or commuter passenger rail service, but in most cases not planning to directly manage train operations. Passenger rail agencies must enter into multiple agreements with different parties to establish a service, and those parties often must enter into agreements with each other.

Specifically this section covers shared-use agreements from the point of view of a state or regional passenger rail agency, such as the NNEPRA responsible for the Downeaster service, the California Joint Powers Authorities (JPAs) responsible for the Caltrain commuter service and the Capitol Corridor Amtrak services, or METRA commuter rail services in Chicago. Generally roles and responsibilities for an Amtrak-operated intercity service differ from those for a commuter rail service, thus separate discussions are provided. Also included are the roles of federal government agencies such as the FRA and the STB with regard to negotiations and agreements, *not including* detailed requirements for financial grant or loan applications to the FRA or the FTA.

Section 4.2 discusses the overall framework of organizations and relationships needed to implement and operate a passenger rail service and some general points regarding the roles and responsibilities of the different parties.

Section 4.3 discusses specific details for Amtrak intercity service, including the roles and responsibilities of Amtrak, the host railroad(s), and the passenger rail agency. This subsection also includes:

- Definition of what services are to be provided by each party, especially including Amtrak's responsibilities, and charges for each service.
- Agreement contents relating to capacity improvements and track upgrades on the corridor to accommodate the planned passenger rail service.
- Agreement contents relating to service-specific performance (journey times, OTP), including incentives and penalties.

Section 4.4 discusses specific details for commuter rail services, including the roles of the commuter rail agency, the host railroads, and O&M contractors. This subsection includes:

- Definitions of what services are to be provided by each party, including their relationships with each other as well as with the commuter rail agency.

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- Agreement contents relating to track improvements, additional capacity, and other capital investments to be accomplished before service startup and in subsequent years as ridership and the number of planned trips grows.
- Agreements for day-to-day operations (including performance metrics, standards, and incentives and penalties) and any time-of-day operational restrictions to be observed by host or tenant.
- Agreement on sharing of capital and O&M costs.

Section 4.5 summarizes the provisions in passenger rail agreements concerned with managing change over time as demand for passenger and freight rail service evolves, and as funding for passenger rail capital and operations expenses varies.

4.2 Types of Agreements Needed to Implement Passenger Rail Service

This section discusses the various agreements between participating parties involved in providing a passenger rail service. The discussion assumes that the proposed service is a new initiative for the passenger rail agency and host railroad and will operate over a route where there is no existing service of the same type. In many cases, this assumption will not be true—existing arrangements may be in place that can be modified or adapted for the new service. However, the completely new service on a new route is likely to be the most complex situation for an agency to process.

Figure 4-1 illustrates the different host–tenant pairings that can exist, each of which will require an agreement between the parties spelling out rights and responsibilities. Tables 4-1 and 4-2 expand on Figure 4-1 to identify all agreements that a sponsoring passenger rail agency must ensure are in place for a specific passenger rail service, including agreements with host passenger or freight railroads, Amtrak, and other providers of passenger rail O&M services. If an individual service travels over rail territory owned by more than one railroad, then a set of agreements specific to each host railroad will be required. The diversity of possible relationships, combined with large variations in passenger and freight traffic levels, means that almost every shared-use situation is unique, and agreements must be negotiated for each particular set of circumstances.

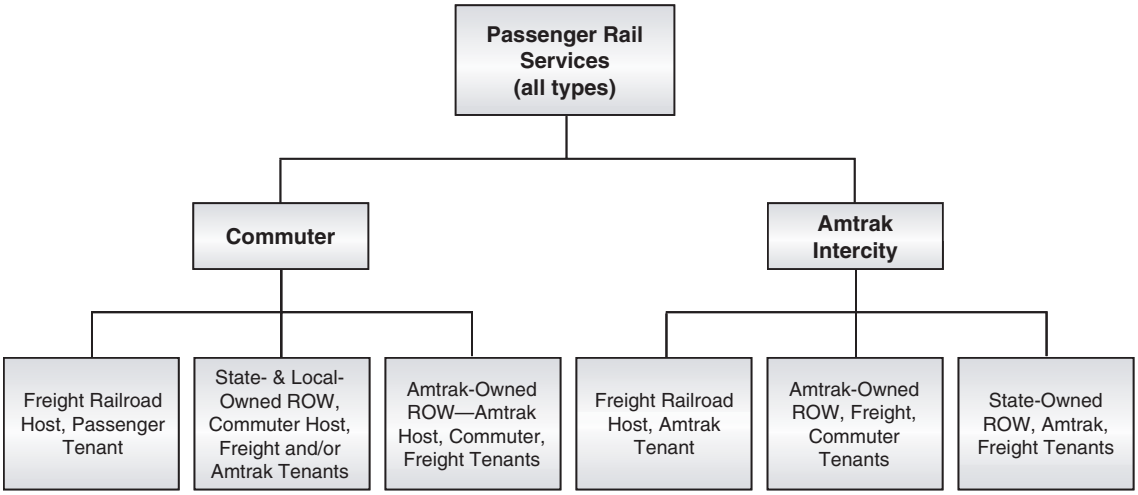


Figure 4-1. Passenger rail host–tenant relationships.

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Table 4-1. Types of Amtrak intercity rail service agreements.

Right-of-Way Owner (Host)	Agreements with Freight Railroad	Amtrak Agreements	Agreements with Other Parties
Freight Railroad	• Amtrak contracts with freight railroad for access to corridor, dispatching and infrastructure maintenance, relying on Amtrak rights and operating agreements. • PRA[1] may contract directly with freight railroad for capital improvements for capacity and performance, and added ROW maintenance contributions.	• With PRA for all O&M services for a defined service and fare structure. • With Amtrak concurrence, PRA may provide equipment or pay for rehabilitation of out-of-service cars. • Amtrak and PRA may need FRA safety approval for aspects of proposed service, e.g. to use non-FRA-compliant cars or locomotives. • The infrastructure owner (freight railroad) would apply to the FRA for approval of PTC plans and installations for passenger service.	• PRA cannot contract with other parties for passenger railroad operations over freight track using Amtrak access rights. • PRA may contract separately for equipment maintenance (rare) or "amenity" services, e.g., on-board food service, and station services.
Amtrak	• Amtrak usually has agreements with freight RR to permit access for freight service on its territory (e.g., on NEC). PRA not usually involved.	• With PRA for all O&M services, including ROW access. • With Amtrak concurrence, PRA may provide equipment or pay for rehabilitation of out-of-service cars.	• As above, except that theoretically a PRA could choose to contract for an intercity service independently, but then could not rely on Amtrak rights for freight railroad access.
State and Local Agency	• PRA have access agreement with freight railroad for freight service over state or locally owned track	• Amtrak can exercise statutory right of access for existing services. PRA will normally contract with Amtrak for O&M for state-supported services.	• As above.

[1] State, regional, or local passenger rail agency.

In almost all of these different arrangements, the passenger rail agency provides the glue that holds everything together but rarely takes direct responsibility for O&M of a rail service.

The contractual relationships needed to provide a specific passenger rail service are a function of a number of factors that together determine which of the different contract arrangements summarized in Tables 4-1 and 4-2 apply. The overriding factor is whether the service will be an Amtrak intercity service or a commuter service.

For commuter service, the factors that will help define the general contractual approach are:

- Whether the commuter rail agency intends to set up an operating entity itself, or plans to contract with a service provider to operate and maintain the service. O&M services will include track and infrastructure maintenance if operating over track owned or leased by the agency. The O&M contractor could be Amtrak, the freight railroad, or an independent commercial firm.
- Whether the commuter rail agency must invest in infrastructure upgrades to increase capacity, track quality, or signal system capabilities to support the desired passenger service frequency, journey times, schedules, and OTP.
- Whether the commuter rail agency is considering contracting with the host freight railroad for services other than access, infrastructure maintenance, and dispatching.

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Table 4-2. Types of commuter rail service agreements.

Right-of-Way Owner (Host)	Agreements with Freight Railroad	Amtrak Agreements	Agreements with Other Parties
Freight Railroad	• Contract with CRA[1] for access, dispatching, and ROW inspection and maintenance. • CRA may contract with freight railroad for train crew and other O&M services if both parties so desire.	• O&M services if CRA selects Amtrak as the contract operator. • Amtrak would not be involved in developing agreements between a CRA and a host freight railroad, even if Amtrak is the selected contract operator.	• CRA may contract for train crew, on-board services, and equipment inspection and maintenance with a single or multiple commercial firms. • CRA normally contracts with a car builder for provision of equipment (cars and locomotives) for the proposed service. In some cases, contract includes ongoing equipment maintenance services.
Amtrak	• Amtrak may have agreements with freight railroad to permit access for freight service on its territory (e.g., on NEC). CRA not usually involved, but could affect capacity.	• CRA must contract with Amtrak for access and infrastructure maintenance. • CRA may select Amtrak for train operations and/or equipment maintenance services.	• Amtrak would not be involved in agreements with other parties, unless Amtrak subcontracts selected O&M services to other parties. • CRA normally contracts with a car builder for provision of equipment (cars and locomotives) for the proposed service. In some cases, contract includes ongoing equipment maintenance services.
State and Local Agency	• Agreement between CRA and freight railroad to permit access for freight service in state- and local-owner territory. • CRA may contract with freight railroad for selected O&M services if both parties so desire.	• CRA may select Amtrak to be O&M contractor, or contractor for selected O&M services by mutual agreement.	• CRAs frequently contract for O&M services with commercial firms (i.e., other than Amtrak or a host freight railroad) for all O&M services, including track maintenance. A single "bundled" contract may be used or separate contracts with different parties for each service.

[1] State, regional, or local commuter rail agency.

- If contracting for O&M, whether to bundle all services in a single contract or to contract separately for each kind of service (e.g., train operations, equipment maintenance, and track maintenance).

For intercity service, the factors that will help define the general contractual approach are:

- Whether the passenger rail agency must invest in infrastructure upgrades to increase capacity, track quality, or signal system capabilities to support the desired passenger service frequency, journey times, schedules, and OTP.
- Whether the passenger rail agency expects or is able to rely on Amtrak to supply equipment for the service or must purchase or lease passenger cars independently.

Once the passenger rail agency has selected a general approach to the provision of the service within the constraints applicable to the type of service and host railroad, the agency can move forward with developing the specific agreements. The following paragraphs provide an introduction to the principal relationships, concentrating on those where a freight railroad will host a proposed passenger service.

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4.2.1 Introduction to Amtrak Intercity Service

Intercity service must be operated by Amtrak to benefit from Amtrak's right of access to the national railroad network; dispatching priority; and incremental cost pricing for access, infrastructure maintenance, and dispatching. After completing a thorough feasibility study in cooperation with Amtrak, as described in Chapter 2, using analysis and modeling as described in Chapter 3, the passenger rail agency must conclude an agreement with Amtrak to operate the service. Amtrak will negotiate with the host railroad to implement the proposed service under its operating agreement with that railroad. If there is no existing agreement, Amtrak will negotiate a new agreement. The passenger rail agency may agree with the host railroad (usually freight) to fund all or part of capital improvements to increase capacity and/or reduce journey time as well as to ensure adequate OTP. In addition, the passenger rail agency may agree to provide ongoing funding to the host railroad for track maintenance and dispatching resources, to assure high service quality and reliability. These expenditures supplement normal Amtrak payments for access and OTP. Although the host railroad is usually a freight railroad, similar access agreements must be established where a commuter railroad is the host.

These arrangements with Amtrak and the host railroad take care of track access and train operations. The final area in which agreement is required concerns provision of equipment (passenger cars and locomotives). Amtrak may or may not be able to provide suitable cars and locomotives for a proposed new service. The passenger rail agency must explore equipment options with Amtrak and reach agreement as to responsibility for equipment supply. If the passenger rail agency is purchasing cars and/or locomotives, Amtrak must agree that the cars are suitable for the proposed operation and that maintenance and servicing arrangements are practical.

In most cases, the parties involved in implementing and operating an intercity passenger rail service are the state, local, or regional passenger rail agency; Amtrak; and the host railroad. Other parties may be involved in minor roles, such as providing services at stations (sometimes developed and owned by the host community) and providing on-board food service.

4.2.2 Introduction to Commuter Service

Amtrak's access rights cannot be exercised for commuter service, and a commuter rail agency must negotiate at arm's length with the individual host freight railroads. The agency must also negotiate access with Amtrak if Amtrak lines are used. Amtrak owns little main-line track outside the NEC but operates and maintains several big-city passenger terminals used by commuter services (such as Washington Union Station, Los Angeles Union Station, New York City Penn Station, and Chicago Union Station).

If the commuter rail agency owns or leases the ROW, then there is no access issue for commuter service, but a former freight railroad owner may require access as a condition of the sale or lease to provide ongoing local or through freight service. The agency may also have to accommodate existing or new Amtrak service, under Amtrak's access rights. In rare cases, two commuter agencies may agree to share infrastructure. An example is where NICTD trains from Indiana locations access downtown Chicago over tracks owned by METRA and used by METRA trains.

As well as basic access, a commuter rail agency, whether host or tenant, will have to work out agreements among all users to share infrastructure inspection and maintenance costs, dispatching costs, and the cost of capital investment for capacity and service performance. In most cases, the agency will also have to arrange contracts for O&M services with qualified suppliers and for the acquisition of rolling stock. If the service is generally operated over track owned by a host freight railroad or Amtrak, then the host will likely have to approve the proposed contractor and equipment as acceptable for the proposed service.

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4.3 Amtrak Intercity Service

4.3.1 Introduction

This section describes the principal items that should be included in agreements for an intercity passenger rail service operated by Amtrak. As described elsewhere in this Guidebook, Amtrak intercity services are those for which Amtrak can exercise its right of access to the U.S. railroad network at incremental cost. Appendix B discusses the definitions of commuter and intercity service, which in essence state that intercity services operate over routes exceeding 100 miles in length and are used primarily by intercity travelers rather than regular commuters. The following factors also influence the content of agreements for Amtrak intercity service:

- Amtrak's rights to access and incremental costing are of major advantage in implementing intercity passenger service on freight railroad corridors. No passenger rail agency to date has attempted to initiate this type of service without working through Amtrak and having the service operated by Amtrak. Note that Amtrak sometimes acts as a contract operator for commuter rail agencies but in this situation cannot exercise its access rights.
- Amtrak maintains liability agreements with freight railroads (the Amtrak umbrella) that relieves the passenger authority of the need to negotiate liability issues with the freight railroad for each individual service. However, separate liability agreements may be needed for station activities.
- Either Amtrak or the passenger rail agency may supply rolling stock for the proposed service, depending on car and locomotive availability in Amtrak's fleet and service requirements. For example, California purchased bi-level passenger cars and low-emission locomotives for corridor services and North Carolina purchased rebuilt Heritage (pre-Amtrak) cars for state-supported services.
- In principal, Amtrak has broad rights of access at incremental cost to any rail corridor in the United States, including railroad owned by state agencies and commuter systems as well as freight railroads. In practice, the service requirements of new state-supported services (which usually increase service frequency and seek to reduce journey times) have involved investment in railroad infrastructure and sometimes ongoing additional expenditure to maintain passenger-level track quality and signal system performance. Passenger rail agencies implementing a new or expanded intercity service have often found such investments to be essential to achieving high-quality services.

The involvement of Amtrak means that a three-way set of consistent agreements between the passenger rail agency, the host railroad, and Amtrak are required, as illustrated in Figure 4-2.

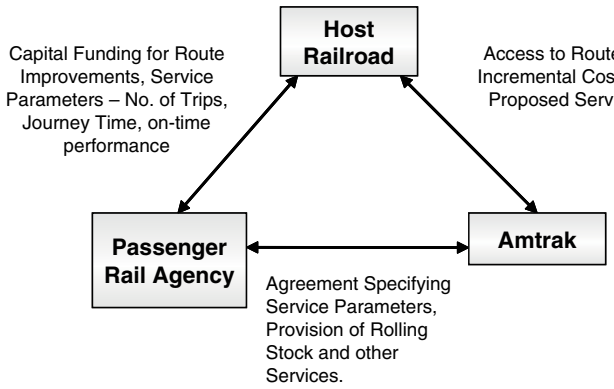


Figure 4-2. Primary contract relationships for Amtrak intercity service.

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The content of each of the three agreements shown in Figure 4-2 must be consistent with each other and in combination include all the elements needed to ensure a successful passenger rail service. The specific contents of the agreements are described in the following paragraphs.

4.3.2 Inputs to and Preparations for Finalizing the Agreements

Chapters 2 and 3 have discussed preparations for negotiations with Amtrak and the host railroads and the main points of negotiation that must be addressed. In addition, Chapter 3 describes the types of analysis of train performance, rail corridor capacity, and capital O&M costs that may be needed to support negotiations and capital investment decisions. The key points covered in previous sections are summarized in the following subsections.

Long-Term Vision Plan

The passenger rail agency should have a long-term vision plan for the development of railroad services in the state or region. Ideally the plan should include both freight and passenger rail services and have been prepared by the agency in consultation with other state agencies having an interest in transportation, as well as with providers of rail and related services of all types. With regard to passenger service, the plan should describe the long-term goal for passenger rail developments and the principal steps in developing services between the present and the goal. The PRIIA now requires state agencies to prepare such a plan as a precondition to accepting capital grants for intercity passenger rail service under the various programs administered by the FRA.

Feasibility Study

A thorough feasibility study for the proposed intercity passenger rail service should be prepared in cooperation with Amtrak and preferably the host railroad(s) on the corridor. As noted previously, some host freight railroads prefer to be deeply involved in feasibility studies to make sure that their concerns are addressed early in the process, while others prefer only limited involvement. The feasibility plan differs from the vision plan in that it focuses on one corridor and service, rather than a whole state or region, but both should be long term, covering a period that reflects the service life of infrastructure investments. Almost all passenger rail projects involve investment in railroad infrastructure, including ROW, track and signal improvements, station and terminal investments, and sometimes purchase or lease of the ROW. These investments have a service life of at least 20 years, and the long-term plan is essential to ensure that benefits from the investments are fully realized.

The feasibility study starts with the goals for the service at each stage in its development, such as:

- Target journey times, station locations, and train departure times.
- Desired number of daily trips.
- Planned accommodations on train.

The results of the study are the actions needed to accomplish the planned service at each development stage, including:

- Proposed physical infrastructure investments (track upgrades, sidings and double track, signal systems, etc.).
- Estimated cost of infrastructure investments.
- Expected service performance.
- O&M requirements and the associated costs, including where specific maintenance activities are required to ensure planned service quality.
- Passenger car and locomotive requirements, and plans for acquisition and maintenance of suitable equipment for the planned service.

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Because there will be considerable uncertainty regarding markets for passenger and freight rail services and the availability of funding for passenger rail capital and operating expenses, the plans must be flexible and structured to respond to unexpected developments. Provision for regular reviews and updates is essential.

The penalties for not planning ahead can be substantial. Focusing on just the short term—thinking "just get the service started and then worry about the long term later"—can lead to missed opportunities. When further development is needed to meet increasing patronage, agencies without a basic long-term framework agreed upon with the host and other users have found it very difficult or costly to take the next step.

Making Access Agreements and Contracts Detailed, Unambiguous, and Consistent with Long-Term Plans

As illustrated in Figure 4-2, a three-way set of agreements must be put into effect for Amtrak intercity service on a rail corridor. Each of these agreements should embody the same service specification as developed in the feasibility study and as further negotiated with Amtrak and the host railroad(s). The agreements must provide a long-term framework to give all parties assurance that their future business and service development will not be compromised and that benefits from infrastructure investments can be fully realized. Because the future is inherently unpredictable, the agreements must include a process by which service changes can be negotiated to accommodate changes in performance and traffic levels, within agreed-upon limits. For example, if the long-term plan envisions starting with four round trips per day for a given passenger service, increasing to twelve round trips as demand grows and funding becomes available, then the agreement should reflect that and agree on what investments are required to make service increases possible. If the freight operator wants to assure the availability of a given capacity at different points over the term of the agreement, then the agreement should specify what passenger service levels are consistent with meeting that goal, what investments are needed to make this possible, and how the costs will be shared.

Experience has shown it is unwise to leave some matters for future discussion or agreement or to accept verbal assurances that, for example, additional passenger trains can be accommodated at some point in the future. Negotiators who meet for a later round of discussions are unlikely to be different from those that negotiated the original agreement. Any understandings or assurances that were not explicit in the original agreement will not be enforceable, and changes in personnel, policy, or external circumstances could mean that non-binding assurances have been forgotten or will no longer be honored.

Experience also has shown that the agreements should be highly explicit and cover all aspects of operating needs of corridor users. Lower-probability scenarios should be considered and provided for in the agreements, if possible. For example, one passenger authority purchased a rail corridor from a freight railroad, which retained trackage rights for freight service on the corridor. Fifteen years later, the passenger authority is now facing difficulties because the freight railroad wants to operate more freight trains than either party envisioned when the original agreement was signed. The original agreement lacks any provision to address this situation, thus a broad renegotiation of the agreement is required.

Flexibility, Renegotiation Periods, and Dispute Resolution

All agreements should contain procedures both for periodic revision or renegotiation of contracts and a mechanism to resolve disputes. Given the inherent uncertainties in demand for freight and passenger rail service and in funding availability for passenger rail developments, many agreements provide for renegotiation on request by either party. Other agreements provide for reviews at regular, often 5-year intervals with provisions for intermediate

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adjustments where necessary. Several parties commented that shorter intervals tended to produce an inefficient and frustrating state of continuous negotiation. Some contract elements, such as access and maintenance costs, may be subject to annual adjustment based on an agreed cost index.

For Amtrak-operated services, disputes between a host and tenant railroads can be taken to the STB or the NAP for resolution. The NAP was created by Amtrak and host railroads to resolve disputes and most Amtrak operating agreements require disputes to be submitted to NAP in the first instance. Reference to the STB would be used in the absence of an agreement to use the NAP. There is a significant case history of past decisions and other legal proceedings related to Amtrak service, and the likely outcome of referring a dispute to the NAP or the STB is somewhat predictable. This predictability tends to simplify negotiations, and disputes often can be resolved relatively easily. Appendix B, Section B.2.2, describes in detail how a number of disputes between Amtrak and GuilfordGuilford Rail System that arose during implementation of the then-new Downeaster service were resolved by the STB. These disputes were resolved before implementation of PRIIA, but the process and outcomes would have been little changed by that legislation, except that the powers to require a host railroad to accommodate increased speeds and the number of trips on an existing Amtrak corridor were transferred from the U.S. Secretary of Transportation to the STB (see Appendix B, Section B.2.8).

4.3.3 Agreements between Amtrak and the Freight Railroad

The agreement between Amtrak and the host freight railroad covers the access to the host railroad's tracks for the proposed service; the required performance of the service, such as OTP; and payments by Amtrak to the host for the incremental costs incurred by the host railroad in operating the specified Amtrak service. In many cases, the specific agreement for an individual service is based on an existing Amtrak operating agreement with the same railroad, with amendments as required for the specific features of the proposed service. The specific content may include:

- **The specification for the service—number of daily trips, departure times, journey time, and OTP requirements.** These details may be defined by reference to the agreement between the host railroad and the passenger rail agency, where the railroad agrees that a specific set of investments in the track and signal system will support the required corridor capacity and train performance.
- **Payments by Amtrak to the railroad for operating the proposed service.** These payments are typically expressed as a payment per train-mile or sometimes per car and locomotive-mile for track maintenance and payments for administrative coordination costs incurred directly on behalf of the passenger service. Agreed-upon unit costs will reflect the need to maintain passenger-quality track and the costs of maintaining signal and train control investments where these are triggered by passenger service requirements, less an allowance for capital investments by the passenger rail agency.
- **An agreement for incentives and penalties for OTP.** In the past, these agreements have typically specified performance payments based on system-wide OTP for a specific railroad. Such an agreement means a single poorly performing service can result in a system-wide performance below the bonus threshold, removing any incentive for a freight railroad to maintain good OTP on other routes. More recently, Amtrak has been implementing alternative corridor-by-corridor OTP measures, such as limits on total monthly delay minutes, which provide a more effective framework for achieving adequate OTP. These enforceable metrics may be linked to infrastructure investments and financial support for track maintenance funded by the responsible passenger rail agency. This approach is discussed in more detail in Section 4.3.5.

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4.3.4 An Agreement between the Passenger Rail Agency and Amtrak

With a few exceptions, a state or regional passenger rail agency funds capital and O&M costs of a passenger rail service on an intercity corridor. The exceptions are those services that were part of Amtrak's core network and historically have been fully funded by Amtrak. However, under Section 209 of PRIIA, state support will be required for all short-haul services including those historically funded by Amtrak, except for NEC services. In addition, the passenger rail agency often provides capital funds for track and signal upgrades to accommodate additional trips and shorter journey times and to improve service quality.

The involvement of state or regional passenger rail agencies means that an agreement between the agency and Amtrak must be negotiated to set out the details of services to be provided by Amtrak, the compensation to be provided to Amtrak for these services, and commitments by the agency to take other actions (such as the provision of passenger station facilities and services and funding and contracting with the host railroad for track and signal upgrades) that will make the planned service feasible.

The agreement between Amtrak and a state passenger rail agency for a state-supported service will typically include the subject areas described in the following three subsections.

Definition of the Services to be Provided by Amtrak

Term of the Agreement and Adjustment Period. The term of the agreement depends on both the long-term goals of the service and the characteristics of funding sources. Usually a long-term (20 years or more) framework agreement should be used, with provisions for regular adjustments to funding formulas and the service specification. The rationale for a long-term agreement is to ensure that the agency can realize the benefit from long-life infrastructure investments, while the adjustment provisions allow for the agency and Amtrak to respond to traffic demand and the availability of funding for both planned infrastructure investments and for O&M expenses.

A Mutually Agreed-upon Specification for the Service. The specification for the service includes frequency and schedules, fare levels, capacity (seats), planned journey time, etc. If the service will be implemented in stages as demand and funding permit, these stages and a prospective timetable will be included.

Specific Services to be Provided by Amtrak. These services usually include access to the freight corridor; train crew; on-board services including food service; use of Amtrak's ticketing and reservation system; provision of station services (including staffing for ticketing and baggage service, if required) or provision of Amtrak's "QuickTrak" ticketing machines; and provision, maintenance, and servicing of equipment (passenger cars and locomotives). In some cases, the state agency may make independent arrangements or be involved in the selection of a food service provider, station services, and equipment acquisition in cooperation with Amtrak.

State Financial Support to Amtrak for Operating and Maintenance Costs

Amtrak states that, in the recent past, it has been reimbursed for approximately 70 percent of fully allocated O&M costs for a typical state-supported service. This reimbursement includes all direct costs and a contribution toward shared and overhead costs. Costs are estimated from an analysis of cost data from Amtrak's cost allocation system, less farebox revenue. Amtrak's position now is that state passenger rail agencies should bear the full direct cost of these services. However, state passenger rail agencies have often disputed Amtrak's cost allocation calculations and have asked for more transparency in Amtrak's accounting systems and cost allocation calculations. To address this issue, PRIIA (Section 209) includes a requirement that Amtrak develop new standardized methodology for cost allocation in cooperation with passenger rail agencies

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that support Amtrak services. If the parties cannot reach agreement, the STB may be asked to help resolve the issue.

The agreement should also cover any penalties or bonuses for service performance. In part, these will reference and be consistent with agreements between Amtrak, the host railroad, and the passenger rail agency. The agreement must set expectations for performance metrics in Amtrak's control, specifically Amtrak-caused delays and provision of the planned seating and on-board services on each trip.

There are few opportunities to obtain federal grants to cover all or part of intercity O&M costs. Amtrak's regular annual funding covers the O&M cost of core services and the difference between state support and actual total O&M costs on state-supported services. However, some services located in air quality non-attainment areas (such as the Downeaster) have been able to obtain support from Congestion Mitigation and Air Quality (CMAQ) Improvement Program funds. FRA grants are available for capital projects, as discussed in the following subsection.

Provision of Equipment (Cars and Locomotives)

Historically, Amtrak had enough spare equipment to support new services and would provide this equipment without charging for capital expenses or major overhauls. In recent years, however, all Amtrak's useable equipment was fully committed to existing services, and Amtrak lacked funds to overhaul unserviceable cars or purchase new ones. State passenger rail agencies were expected to provide new or secondhand equipment or to fund rehabilitation of unserviceable cars or locomotives. More recently, the situation has eased. Equipment rehabilitation is an eligible use of intercity passenger rail funding authorized in PRIIA and ARRA, and Amtrak has initiated a rehabilitation program for suitable out-of-service cars. Plans to purchase new cars and locomotives are also being developed, with support from PRIIA and ARRA funds, to provide a near-term boost to the available fleet and replace life-expired equipment.

Given this background, passenger rail agencies must develop an agreement with Amtrak regarding the source of equipment and arrangements for equipment maintenance. One choice is to agree to operate the planned service with equipment provided by Amtrak, out of the expanded fleet of cars and locomotives that will become available from Amtrak's developing equipment program. The alternative is to acquire equipment independently from a manufacturer. Agencies choosing this route must provide themselves with adequate technical resources to manage such a procurement, especially if the cars or locomotives are of a novel design (such as the updated Talgo trains under consideration by some agencies) or the cars or a proposed operation are not fully compliant with FRA safety regulations. The FRA will want to review the train design and proposed operation to ensure it is safe, and Amtrak will want to ensure the trains are suitable for the proposed service and are safe and reliable. Amtrak and the agency will also need to ensure that inspection and maintenance arrangements for the new cars are put in place, including any staff training, special maintenance equipment that may be required, and a spare parts supply. An alternative (used for Talgo trains operating the Cascades service in the Pacific Northwest) is to contract with the manufacturer for maintenance and servicing.

4.3.5 Agreement between the Passenger Rail Agency and the Host Railroad(s)

Agreement with the Host (Usually Freight) Railroad for Capital Improvements

Experience in recent years has shown that introduction of a new or expanded quality passenger rail service is rarely possible without capital investments in the corridor. Investments are typically needed to increase capacity and to upgrade track and signals to passenger service standards

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so that the desired service performance can be achieved. Amtrak has limited funds for capital investments outside of the NEC, so the state passenger rail agency must assemble the funding. Typical sources are state transportation bonds, a variety of state and local grant programs, and occasionally federal funds from the FTA or the Federal Highway Administration (for grade crossing improvements). Recently, substantial funding has become available through the FRA from PRIIA and ARRA. In some cases, a state will link passenger and freight funding programs in one improvement package. Note that the funding source has no influence on whether the service is classified as commuter or Amtrak intercity.

The agreement with the freight railroad for capital improvements will reiterate the service specification, including staged development, where planned. Then, the passenger rail agency and the railroad will agree on the specific improvements required to support a specified service—number of trips, journey times, and OTP. For a staged development, the agreement will define each stage by the service specification and the corresponding infrastructure improvements. It is essential to link specific improvement projects (1) to specific train frequencies, journey times, and punctuality metrics, properly supported by analysis results and accepted by the host freight railroad, Amtrak, and the passenger rail agency, and (2) with defined actions to be taken by the host railroad in the event of non-compliance. Table 4-3 shows illustrative service performance metrics that experience has shown to be successful in achieving good service quality. Absent an enforceable agreement, there is a serious risk that infrastructure investments will fail to yield the expected benefits.

The state or regional passenger rail agency should execute a master agreement with the freight railroad covering the basic linkage between improvement projects and passenger train trips, journey time, and service performance, plus a "task order" mechanism for executing individual projects. The passenger rail agency normally contracts with the freight railroad to carry out the project. The railroad will carry out the project with its own maintenance forces or using contractors at its discretion. Usually, freight railroad labor agreements contain provisions for use of contractors, and the railroad will have to abide by these agreements. Experience has shown that a fixed-price contract

Table 4-3. Illustrative service performance metrics[1] and agreement for an Amtrak intercity service.

Phase No.	Description (Upon Completion of Listed Projects)	Round Trips per Day	Scheduled Trip Time (A to B)	Delay Ceiling[2] (Maximum Host-Responsible Delay Minutes[3] per Trip)
1	*Baseline – Current Service*	*2*	*3h 30m*	*17*
2	Specified Operating Improvements	2	3h 30m	14
3	Specified Maintenance Improvements	2	3h 30m	12
4	Projects 1 and 2	3	3h 30m	11
5	Projects 3 and 4	3	3h 15m	9
6	Projects 5, 6, 7, and 8	4	3h 15m	8
7	Projects 9 and 10	4	3h 0m	7

[1] The performance metrics should be negotiated and accepted as feasible by all parties before being put into effect, supported as necessary by operations simulation analysis as described in Chapter 3.

[2] *Delay Ceiling:* Average host-responsible delay for all trips over a 1-month period (total delay minutes in 1 month divided by the number of trips operated). Temporary adjustments to the delay ceiling may be agreed upon for major track or structures maintenance projects.

[3] *Host-Responsible Delay Minutes:* Obtained from Amtrak's Conductor Delay Reports for delays due to interference from other trains (freight, commuter, other intercity passenger trains), routing delays, slow orders, signals, maintenance-of-way work, and detours from the normal route.

Note: If in any calendar month, actual average host-responsible delay minutes between points A and B exceeds the delay ceiling, the host railroad will make, at its sole expense, operational, maintenance, or capital improvements necessary to reduce average delay minutes to below the delay ceiling within 2 calendar months after the initial failure to comply with delay requirements.

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with the railroad for each project is the best approach, giving the railroad flexibility and an incentive to manage the project efficiently. Time-and-materials or other cost reimbursement approaches are less successful, resulting in extra work with limited benefits for the passenger rail agency.

Agreement with the Host Railroad for Operations and Maintenance Cost Support

As well as capital improvements, a state or regional passenger rail agency may agree to provide O&M funds to ensure high-quality service, in addition to the normal payments under Amtrak's operating agreement. A well-known example of this approach is used on the Capitol Corridor in California, where the passenger rail agency funds an additional track maintenance gang and pays a premium for night-time work so that maintenance can be performed outside passenger train service hours. This arrangement avoids much of the need to take track out of service for maintenance during passenger service hours. Track is also maintained to one FRA track class higher than that needed for current operating speeds, to reduce the chance that a track defect will result in a slow order and maintenance-related delays.

As with capital projects, it is critical that the agreement between a passenger rail agency and the host freight railroad specify in detail the obligations of each party to the agreement:

- For the passenger rail agency to pay the agreed-upon fee for the services provided.
- For the host railroad to meet service requirements for the passenger train journey time, number of daily trips, and maximum acceptable delay minutes, following the format shown in Table 4-3.

Agreements between the host railroad and Amtrak and between Amtrak and the passenger rail agency must reference the same service parameters.

On more complex corridors, operations simulations will likely be needed to demonstrate that the agreed-upon service performance is feasible with the proposed O&M practices and to give all parties confidence to enter into the agreements.

4.4 Commuter Service (Non-Amtrak Intercity)

4.4.1 Basic Structure of a Commuter Rail Service on Shared Track

The primary difference between commuter and Amtrak intercity service is that with commuter service there is no entity comparable to Amtrak with access rights and, in many cases, existing agreements with prospective host railroads. The two primary scenarios are that the commuter rail agency purchases the ROW from the freight railroad, allowing the railroad to continue to provide freight service under specified conditions, or the commuter rail agency negotiates access to an active freight corridor. A third alternative is to purchase or lease a portion of the existing ROW for an exclusive passenger track parallel to the existing freight line.

Separate from ROW acquisition and access agreements, commuter rail agencies usually contract for O&M services. The primary exceptions are a group of long-established commuter rail agencies in the NEC and in Chicago, which operate services directly. Almost all recently established commuter service has followed this practice—with one exception, all are operated by a contractor. This project focuses on access issues and is not directly concerned with commuter O&M contracts, but such contracts will be described because the commuter rail agency's contract with the operator may contain requirements that must be consistent with the agreement between the commuter rail agency and the host railroad.

Figure 4-3 illustrates the relationships between the host or tenant railroad, the commuter rail agency (which may also be the host if it owns the ROW), and a contract operator.

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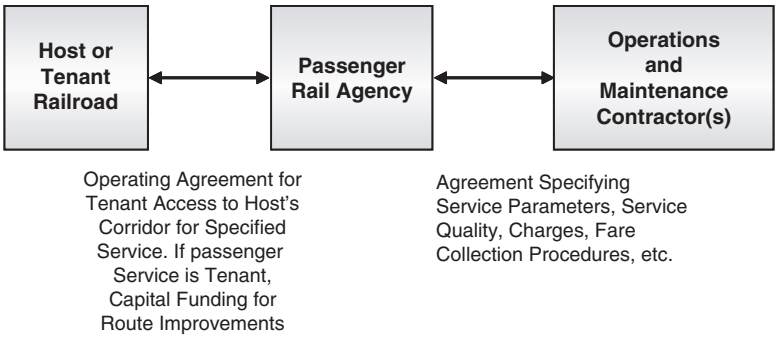


Figure 4-3. Primary contract relationships for commuter service.

The contractual relationships for commuter service differ from those required for an Amtrak-operated intercity service specifically as described:

- Commuter rail agencies often purchase the corridor from a former freight railroad owner. In this case, the former freight railroad usually negotiates an operating agreement to allow continued freight service in the corridor, often with time-of-day and other restrictions.
- If the freight railroad retains ownership of the corridor, the commuter rail agency has to negotiate an operating agreement with the freight railroad. Unlike Amtrak intercity service, the commuter rail agency lacks Amtrak's access rights and must negotiate at arm's length. However, if the parties in a commuter rail access negotiation are unable to reach agreement, they can request non-binding mediation under Section 401 of PRIIA.
- The contract operator's primary relationship is with the commuter rail agency. However, the passenger service operator must comply with any agreements with a host freight railroad concerning passenger rail operations (for example, to maintain safe operations) and for agreed-upon freight operations if the commuter rail agency owns the corridor. These contract provisions are incorporated into the contract operator's agreement with the commuter rail agency. There is no agreement between the contract operator and the host railroad, if the host is not the commuter rail agency. The contract operator simply provides services for the commuter rail agency and must comply with the terms of the agency's agreement with the host railroad.

4.4.2 Inputs to and Preparations for Finalizing Commuter Rail Operating Agreements

The inputs and preparations for finalizing commuter rail operating agreements are generally similar to those for intercity passenger rail service. The major differences are that there is no entity that plays a role similar to Amtrak and that it is much more common for the commuter rail agency to purchase the ROW before initiating service, thereby reversing the relationship between the commuter rail agency and a railroad providing freight service in the corridor.

Long-Term Vision Plan

The commuter rail agency should have a long-term vision plan for the development of railroad services in the state or region. Ideally the plan should include both freight and passenger rail services and have been prepared by the agency in consultation with other state agencies having an interest in transportation, as well as with providers of rail and related services of all types. With regard to passenger service, the plan should describe the long-term goal for passenger rail developments—commuter and intercity—and the principal steps in developing services between the present and the goal. Because all types of rail service often need to operate over shared ROWs, the vision plan will

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help ensure that interrelationships between services are considered in advancing plans for individual services and projects. Such consideration is important to minimize the chance that decisions made for one service could limit options for other services.

Feasibility or Planning Study

A detailed plan and feasibility study for the proposed commuter rail service is required, prepared in cooperation with other rail corridor users, such as Amtrak and a freight railroad. As noted previously, some host freight railroads prefer to be deeply involved in feasibility studies to make sure that their concerns are addressed, and others prefer only limited involvement. The feasibility plan differs from the vision plan in that it focuses on the one corridor and service, rather than a whole state or region, but both should be long term, covering a period that reflects the service life of infrastructure investments. Almost all commuter rail projects involve investment in railroad infrastructure, including ROW, track and signal improvements, station and terminal investments, and often purchase or lease of the ROW. These investments have a service life of at least 20 years, and the long-term plan is essential to ensure that benefits from the investments are fully realized.

The feasibility study starts with the goals for the service at each stage in its development, such as:

- Target journey times, station locations, and train departure times.
- Desired number of daily trips.
- Planned accommodations on train.

The results of the study are the actions needed to accomplish the planned service at each development stage, including:

- Approach to obtaining access to the corridor (purchase, long-term lease, permanent easement), as discussed in Section 4.4.3.
- Proposed physical infrastructure investments (track upgrades, sidings and double track, signal systems, etc.). Implementation of infrastructure investments may be staged as patronage grows.
- Estimated cost of infrastructure investments and proposed funding sources.
- Expected service performance—number of trips, station stops, trip time, OTP, and service quality.
- O&M requirements and the associated costs, including where specific maintenance activities are required to ensure planned service quality.
- Passenger car and locomotive requirements, and plans for acquisition and maintenance of suitable equipment for the planned service.

Because there will be considerable uncertainty regarding markets for passenger and freight rail services and the availability of funding for passenger rail capital and operating expenses, the plans must be flexible and structured to respond to unexpected developments. Provision for regular reviews and updates is essential.

The penalties for not planning ahead can be substantial. Focusing on just the short term—thinking "just get the service started and then worry about the long term later"—can lead to missed opportunities. When further development is needed to meet increasing patronage, agencies lacking a basic long-term framework that has been agreed to with other corridor users have found it very difficult or costly to take the next step.

Making Access Agreements and Contracts Detailed, Unambiguous, and Consistent with Long-Term Plans

The agreements between railroads sharing a rail corridor must provide a long-term framework to give all parties assurance that their future business and service development will not be

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compromised and that benefits from infrastructure investments can be fully realized. Because the future is inherently unpredictable, the agreements must include a process by which service changes can be negotiated to accommodate changes in performance and traffic levels, within agreed-upon limits. For example, if a long-term commuter rail plan envisions starting only with four peak hour trips per day, increasing frequency and adding off-peak services as demand grows and funding becomes available, then the agreement should reflect that and agree on what investments are required to make service increases possible. If the freight operator wants to assure the availability of a given capacity at different points over the term of the agreement, then the agreement should specify what passenger service levels are consistent with meeting that goal, what investments are needed to make this possible, and how the costs will be shared.

Experience has shown it is unwise to leave some matters for future discussion or agreement or to accept verbal assurances that, for example, additional freight or passenger trains can be accommodated at some point in the future. The negotiators who meet for a later round of discussions are unlikely to be different from those who negotiated the original agreement. Any understandings or assurances that were not explicit in the original agreement will not be enforceable, and changes in personnel, policy, or external circumstances could mean that non-binding assurances have been forgotten or will no longer be honored.

Experience has also shown that the agreements should be highly explicit and cover all aspects of operating needs of corridor users. Lower probability scenarios should be considered and provided for in the agreements, where possible. For example, one commuter rail agency purchased a rail corridor from a freight railroad, which retained trackage rights for freight service on the corridor. Fifteen years later, the commuter authority faced difficulties because the freight railroad wanted to operate more freight trains than either party envisioned when the original agreement was signed. The original agreement lacks any provision to address this situation, thus a broad renegotiation of the agreement is required.

Flexibility, Renegotiation Periods, and Dispute Resolution

All agreements should contain both procedures for periodic revision or renegotiation of contracts and a mechanism to resolve disputes. Given the inherent uncertainties in demand for freight and commuter rail service and in funding availability for passenger rail developments, many agreements provide for renegotiation on request by either party. Other agreements provide for reviews at regular, often 5-year, intervals with provisions for intermediate adjustments where necessary. Several parties commented that shorter intervals tended to produce an inefficient and frustrating state of continuous negotiation. Some contract elements, such as access and maintenance costs, may be subject to annual adjustment based on an agreed-upon cost index.

The STB is not able to resolve disputes over shared commuter rail and freight service. However, under Section 401 of PRIIA, the STB does offer non-binding mediation if the parties are unable to resolve differences on their own. This function of the STB is new, and there is no experience of how the process will work out in practice. Prior to PRIIA, commuter rail shared-corridor agreements usually set out a process for resolving disputes, often ending with submitting the problem to an independent arbitrator when negotiations reach an impasse.

4.4.3 Access Alternatives

Because commuter rail agencies cannot invoke Amtrak's right of access to the U.S. railroad at incremental cost, they have to negotiate access at arm's length with the owner of the rail corridor over which service is planned, essentially purchasing the rail line capacity required for the service. A variety of approaches to accessing capacity have evolved.

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Alternative 1: Commuter Rail Agency Purchases Right-of-Way from the Freight Railroad

This approach is commonly used when the commuter rail service expects to be the dominant user of the corridor, and the freight railroad is willing to sell. The commuter authority purchases the ROW and gives the freight railroad long-term or perpetual operating rights to offer defined freight service in the shared corridor. This alternative gives the commuter authority the most control and is strongly preferred where substantial capital investments in infrastructure are required. The commuter authority becomes responsible for track construction and maintenance, signals and train control systems, and dispatching and will typically contract for all these services. The agreement with the freight railroad should specify:

- The geographical limits of the corridor included in the agreement. If a freight railroad is willing to make a sale, it may insist on selling more track than the commuter operator plans to use, so that it is not left with isolated track segments that are expensive and inconvenient to operate.
- Any limits on freight service, such as maximum trains per day, times of day during which freight trains may operate (e.g., avoiding peak commute hours), and action to be taken if the freight operator wishes to increase traffic beyond agreed-upon levels (e.g., how planned and implemented and who is responsible for infrastructure investments where they are necessary, etc.).
- Any size and weight restrictions on freight equipment (e.g., will 286,000 lb or even 315,000 lb freight cars be permitted) and clearances for freight vehicles. This factor can have a significant effect on platform heights and arrangements for ADA access to passenger trains.
- Access fees for freight operations, usually expressed as payments per train- and/or car-mile. The fees should be representative of the equivalent expense a freight railroad would incur to provide comparable service on its own property.
- Liability agreement. Usually, the freight operator will want "but for" protection, as discussed in Chapter 2.
- As with all long-term agreements, provisions to review and renegotiate the agreement as circumstances change and a mechanism to resolve disputes.

Alternative 2: Negotiate Access to a Freight Railroad Corridor

This is the primary alternative for commuter rail agencies where the freight railroad is unwilling to sell, often because the corridor is an important link in that railroad's network and/or carries heavy freight traffic. Because commuter service does not enjoy a right of access comparable to that available to Amtrak intercity service, commuter rail agencies have to pay for the capacity used by the commuter service, distinct from a contribution to infrastructure maintenance, dispatching, and administrative costs. This payment can be made in a number of ways, depending on the situation of the freight railroad corridor before the introduction of commuter service and the railroad's expectations of freight traffic growth:

- An investment in capacity sufficient to fully meet the needs of the passenger service, so that freight service capacity is unaffected at all times of day. This alternative is most likely to be used where freight growth is expected and spare capacity is limited.
- A lump sum payment for long-term or perpetual access for a specified number of trips at a given performance level. Rather than being tied to specific capacity expansion projects, the freight railroad may use the payment anywhere on its system, provided the access agreement is honored. A commuter rail agency may prefer a lump sum agreement that can be funded by a capital grant or bond funding to annual access payments that would have to come from local government funds.
- A per-train-mile or per-car-mile capacity access payment. The amount of the payment can vary widely with local circumstances, including the amount of related investment in the infrastructure using commuter rail agency funds.

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- Any combination of the above, either in parallel or sequenced, in a staged project for development of a commuter rail service.

Once the basic approach to securing or paying for the capacity used by the commuter service is agreed on, then the agreement must address the remaining elements, as with Alternative 1. These elements include:

- The geographical limits of the corridor included in the agreement.
- Any limits on freight service, such as times of day during which freight trains may operate (e.g., avoiding peak commute hours).
- Any restrictions on minimum clearances that must be maintained for freight operations (e.g., at station platforms).
- Liability agreement. Usually the freight operator will want "but for" protection as discussed in Chapter 2.
- As with all long-term agreements, provisions to review and renegotiate the agreement as circumstances change and a mechanism to resolve disputes.

Alternative 3: Parallel Operations in a Shared Right-of-Way

This option is similar to Alternative 1 in that the commuter operation purchases or leases its own ROW and becomes responsible for all O&M activities. There is little or no shared operation on the passenger track and only limited interaction with the freight railroad. A substantial capital investment is required to acquire the ROW and to construct the passenger track. This alternative has been used where a high-frequency service is planned and where sufficient space is available in the existing freight railroad ROW for parallel services. This arrangement gives both the passenger and freight operators greater freedom to plan and operate their services independently, using separate dispatchers, but there will still be a number of points of contact that have to be addressed in an agreement. These issues include dealing with points where freight operations cross passenger tracks, joint management of grade crossing systems where highways cross both tracks, coordinating maintenance activities that may constrain operations on a parallel track, and developing communications links among dispatchers for both routine and emergency situations.

4.4.4 Agreement with the Host Freight Railroad

The commuter rail agency planning to access a freight rail corridor (the foregoing Alternative 2) is in a similar position to Amtrak implementing an intercity service. Assuming an approach for paying for capacity has been agreed on, the agreement must specify service parameters (e.g., number of trips, journey time, OTP) and the basis of charges from the freight railroad for infrastructure maintenance, dispatching, and management. If the commuter rail agency owns the corridor, then these matters will be covered in the O&M services agreements described in the next section, and a freight railroad access agreement will be needed as described under Alternative 1.

The specifics of the agreement between the commuter rail agency and the host freight railroad are presented in the following two subsections.

Capital Improvements

Introducing a new high-quality commuter rail service is rarely possible without capital investments in the corridor. Investments are typically needed to increase capacity and to upgrade track and signals to passenger service standards so that the desired service performance can be achieved. Investment funds will be provided by the commuter rail agency to the freight railroad to complete agreed-upon investments in capital improvements.

The agreement will reiterate the service specification, including staged development, where planned. Then, the commuter rail agency and the railroad will agree on the specific improvements

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required to support a specified service—number of trips, journey times, and OTP. For a staged development, the agreement will define each stage by the service specification and the corresponding infrastructure improvements. It is essential to link specific improvement projects (1) to specific train frequencies, journey times, and punctuality metrics, properly supported by analysis results from operations simulations and accepted by the host freight railroad and the commuter rail agency, and (2) with defined actions to be taken by the host railroad in the event of non-compliance. The approach illustrated in Table 4-3 is an example of how specific capital improvement should be linked to commuter rail service requirements, including a service specification (number of trips, journey time, station stops, and delay metrics). The agreement must be enforceable. Absent enforceability, there is a serious risk that infrastructure investments will fail to yield the expected benefits.

The commuter rail agency normally contracts with the freight railroad to carry out investment projects. Experience has shown that a fixed-price contract with the railroad for each project, with provision for adjustments for materials prices, is the best approach, giving the railroad flexibility and an incentive to manage the project efficiently. Time-and-materials or other cost reimbursement approaches are less successful, resulting in extra work with limited benefits for the commuter rail agency.

Ongoing Operations and Maintenance Services

As well as capital improvements, the commuter rail agency's agreement with the freight railroad must cover payments of O&M services, normally track and structures maintenance, signal system maintenance, and dispatching. Absent Amtrak's right to be charged for these services at incremental costs, cost-charging calculations will include a component for a share of management, overhead, and capital costs. Additional charges may be agreed upon so that, for example, maintenance can be performed overnight or during specified off-peak hours so as not to interfere with commuter operations. The parties may make use of the kinds of operating and maintenance cost analyses described in Chapter 3 to determine how costs are to be shared.

As with capital projects, it is critical that the agreement between a commuter rail agency and the host freight railroad specifies in detail the obligations of each party to the agreement:

- For the commuter rail agency to pay the agreed-upon fee for the services provided.
- For the host railroad to meet service requirements for the passenger train journey time, number of daily trips, and maximum acceptable delay minutes, following the format shown in Table 4-3.

On more complex corridors, it is likely that operations simulations will be needed to demonstrate that the agreed-upon service performance is feasible with the proposed O&M practices and to give all parties confidence to enter into the agreements.

4.4.5 Operations and Maintenance Services Agreements

Separate from access agreements and associated payments by tenants to host railroads for infrastructure maintenance and dispatching, a commuter rail agency will need to establish contracts for all other O&M services:

- Services on host freight railroad tracks, including:
  - Train operations—provision of engineers, conductors, and other on-train personnel.
  - Equipment maintenance—routine servicing, daily inspection and maintenance, scheduled and emergency equipment inspection and maintenance, and major overhauls.
  - Services at passenger stations and terminal—cleaning, maintenance, ticket sales, etc.

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- Additional services on commuter rail agency–owned corridors, including:
  - Dispatching and corridor operations management.
  - Track and structures maintenance.
  - Signal and train control system maintenance.
  - Contracting for major infrastructure projects.

To provide these services, commuter rail agencies can elect to create an operating entity to perform O&M functions or contract out to an independent service provider. In practice, all newly established commuter services have elected to go the contracting route (with one exception), selecting a service provider from among qualified organizations. The exception is the Front Runner commuter service in Salt Lake City, where the Utah Transit Authority chose to operate the service itself, to ensure close control of service and financial performance. (The Utah Transit Authority also operates a light rail system.) Otherwise, only commuter rail agencies taking over an existing service have elected to create an operating subsidiary, usually by taking over staff and management from the former provider. An example is the Northern Indiana Commuter Transportation District, which assumed operating responsibility in 1979 for the service formerly operated by the Chicago South Shore and South Bend Railroad.

The commuter rail agency normally selects a contractor using a conventional bidding process. Commercial firms, Amtrak, or the host railroad may be interested in providing contract O&M services, depending on local circumstances. Some examples of commuter rail agency contracting include:

- The Sounder commuter services in the Seattle area are operated by the host railroad, BNSF. The service operates in part over busy freight corridors, and BNSF preferred to have full control over operations in the corridor. Equipment maintenance is provided by Amtrak, which has a suitable facility in the area.
- In the Boston area, MBTA commuter rail services are operated by the Massachusetts Bay Commuter Railroad Company—a consortium that includes Veolia, a railroad operations contractor, and Bombardier, an equipment manufacturer.
- MARC commuter rail services from Washington, D.C., to Maryland suburbs are operated by the two host railroads—Amtrak for services on the NEC and CSX for services on CSX freight lines.

As is evident from these examples, a commuter rail agency can either contract for all services with one provider (the bundled approach) or let separate contracts for each service, including train operations, car and locomotive maintenance, and track and infrastructure maintenance. Advocates of the unbundled approach believe that the agency can get a lower cost, because there is more competition for each contract. Advocates of a bundled approach believe that one contract is easier to administer than multiple contracts and that better service is obtained when one provider is fully accountable and cannot blame another provider for any service shortcomings.

Typical O&M contracts have a 5-year initial term, renewable for further terms if both parties agree, after which the contract is re-bid. Payment type is typically cost reimbursement with a variety of incentives, both for good service performance (e.g., OTP, aggregate delays, provision of the agreed-upon number of cars on each train and functioning car equipment such as air conditioning and heating, and customer satisfaction) and for cost reductions.

In conclusion, there is no one best approach for obtaining contract O&M services. The path chosen depends on local circumstances, particularly which providers already have operations in the region, the interest level of a host railroad, and the size and complexity of the proposed operations. In all cases, however, the contract should include meaningful incentives both for

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high-quality service and for cost savings. The contracts must also allow for periodic cost adjustments to reflect inflation and for the commuter rail agency to adjust service where needed in response to travel demand or budget constraints.

4.5 Managing Change in Agreements

This section discusses approaches to managing the service evolution over time in response to market and financial developments. As discussed in Chapter 5, recommended practice for passenger rail agencies is to negotiate a long-term master access agreement (20 years or more) to give security that a successful service will be able to continue but to arrange for periodic agreement revisions to accommodate changes to both host and tenant services. Likewise, Amtrak maintains operating agreements with all the host railroads, with the ability to modify these agreements to accommodate a new or changed service. In particular, Amtrak can demand that the host railroad accommodate additional trips and raise speeds. However, Amtrak (or a passenger rail agency) must fund track and signal improvements, if required to accommodate the planned changes.

Typical revision procedures for access agreements used by passenger rail agencies and Amtrak for operations on a host freight railroad are presented in the following subsections.

4.5.1 Major Revision to Provide for a Substantial Increment in Capacity and/or Service Performance

This type of revision should take place at intervals of several years, 5 years being a common choice. More frequent revisions can lead to a time-consuming and confusing state of continuous negotiation. The revisions should include changes that all users expect over the period to the next revision, including increases in passenger and freight traffic, capital investments in capacity, measures to reduce journey time, and any associated changes in cost-sharing formulas and agreements. The primary constraint on changes is that they should fall within the scope of the master agreement and long-term plan, unless all parties agree to amend this agreement and plan. The actual changes agreed to in the revisions would be implemented over the period to the next major revision.

Not every service will warrant this level of revision. If services are limited in scope, or do not involve a major capital investment or expansion of service, then a formal revision is not required. In those circumstances, a less sweeping change, as described in the following subsection, is appropriate.

Major revisions are often accompanied by an update to any capacity and cost analysis for the route, especially where the estimates and assumptions concerning traffic levels, track condition, etc., may have become outdated.

4.5.2 Minor Agreement Revisions to Provide a Limited Service Addition or Performance Improvement

A minor revision could be used to implement an additional round trip or a reduction in journey time by a few minutes or to add freight facilities, such as a new industry connection. Operations after the change would still be within the parameters agreed to in the master contract and the most recent major revision. Usually, minor revisions would not trigger any change to cost-sharing formulas agreed upon by host and tenant, or involve significant capital investments. Limited investments may be involved, for projects like adding a passing siding or improving curve geometry to increase speed.

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Smaller operations, such as the Downeaster service, may require only minor revisions over time. On that service, either the host or tenant can request a change at any time, which is then negotiated to reach a mutually acceptable resolution within the scope of the long-term access agreement.

4.5.3 Day-to-Day Service Variations

This service level variation falls at the borderline between host–tenant routine contact to maintain service quality and actual planned service changes. Many situations can arise that call for service variations:

- **Planning for special trains for a one-time event.** Most passenger rail agencies prefer to avoid special trains except in the most compelling circumstances. The time and efforts needed to complete arrangements and the potential for disrupting regular service outweigh any benefit. However, the agreement should provide for a right on the part of the passenger rail agency to operate such trains, subject to a test of undue interference with the host's freight operations. There have been instances of a host railroad refusing to consider special trains because the original agreement did not reserve this right.
- **Planning for "regular" special trains,** such as for fans traveling to home games at a sports venue. Several agencies report success with this kind of service. Once the routine is established, the trains are easy to arrange, and schedules are generally known well in advance.
- **Accommodating planned maintenance.** Major maintenance efforts, such as rail, tie, or ballast replacement or a bridge replacement, will necessarily disrupt service. Some maintenance work can be done under traffic, by scheduling the work at night or by scheduling work "windows" between trains, but such scheduling can be inefficient and costly. A preferred approach increasingly used by railroads in the United States and overseas is to close a length of a route completely for several days and conduct a maintenance "blitz" to complete all work in the shortest time possible. For a passenger line, blitzes are typically scheduled at a low-traffic season to minimize service disruption and require careful planning by the agency, host railroad, and operator.

Customary practice is to add these events to the agenda of routine liaison meetings between host, tenant, and contract operators, with additional planning and monitoring meetings as required.

4.5.4 Managing Change with a Passenger Railroad Host and Freight Tenant

Many commuter rail agencies and a few intercity passenger rail agencies have acquired rights-of-way, giving the previous owner long-term or perpetual rights to operate local or through freight service over the line. The trackage rights agreement may restrict freight operations by time of day (to avoid peak commute hours) and cap the total volume of freight traffic. There have been few problems with these arrangements in the past, and only minor revisions have been necessary over time.

However, with growth in freight traffic, freight railroads may seek to expand previously agreed-upon rights and to negotiate for a higher share of capacity in new agreements. In the future, operating agreements may have to allow for the likelihood of increased freight use and set up mechanisms for agreement revisions and investment in capacity expansion. These mechanisms will likely follow the same pattern of periodic major and minor revisions as described previously in the context of a forward-looking long-term plan. State agencies responsible for rail freight matters could be involved.

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CHAPTER 5

Ongoing Management of Shared-Use Operations

5.1 Introduction

Although many of the matters related to developing a new or expanded passenger rail service on a shared corridor have to be addressed in the planning, negotiation, and initial implementation stages, the process does not finish with the first revenue trip. In the research for this guidebook, all stakeholders reported that operating a successful service requires ongoing attention to service performance and the maintenance of effective cooperative relationships between all parties responsible for delivering the service, including the host railroad, the operator of the passenger trains (Amtrak or another contractor), and any other contractors involved in delivering the service. Indeed, stakeholders reported that ensuring consistent high-quality service over time is one of the leading challenges for a passenger rail agency.

The challenges arise from a conflict between the needs of users of passenger rail services, especially commuters and riders on corridor-type intercity services, and practical problems of satisfying those needs on a railroad ROW shared with freight service.

The principal user needs relating to operating a shared rail corridor are:

- Reliable service must be provided—most important, the frequency and magnitude of train delays should be within acceptable limits. Practically, reliable service means defining service reliability metrics, monitoring performance as measured by the metrics, and exercising enforcement mechanisms so that all responsible parties can deliver on the required performance.
- Passenger service capacity (seats and other on-board accommodations) is adequate to meet demand.
- Schedules and journey times are appropriate for the kinds of trips taken by users.
- Track condition must be maintained to provide adequate ride comfort, as well as meet safety requirements.

Many other factors bear on the quality of service provided to the user, such as functioning on-board amenities (e.g., HVAC, lighting and toilet systems, cleanliness, food service quality, seating comfort, etc.). However, these factors are usually fully under the control of Amtrak, the passenger rail agency, and the contract operator (if commuter service) and are not affected by the actions of other rail service operators using the corridor.

This section discusses and provides recommendations on how best to ensure that customer needs can be met over time. Specifically, this section will discuss:

- Maintaining service quality, primarily OTP, but also some passenger comfort and amenity issues.

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- Managing service evolution over time to adjust for demand growth, faster service, route extensions, and new routes. This includes both short-term and temporary changes in response to special situations and events and longer-term evolutionary change to refine the service and accommodate traffic growth.

Separate discussions are provided for Amtrak intercity services and for commuter services. With Amtrak, the primary access agreements are between Amtrak and the host railroads, and Amtrak's operating agreements govern relationships. Amtrak usually also provides all O&M services for an intercity service, except for infrastructure maintenance and dispatching, which are provided by the host railroad. The sponsoring state or local passenger rail agency does not have hands-on, day-to-day responsibilities. In the case of commuter service, the state or local agency has to work directly with the host railroad, while at the same time managing O&M contractors.

5.2 Setting the Framework and General Points for Ongoing Service Management

Agreements between a state or local government passenger rail agency, Amtrak (if intercity service), a host railroad, and an O&M contractor (if commuter service) have been discussed in Chapter 4. In all cases, the agreements must contain clauses that cover performance monitoring; procedures for resolving service quality problems; and procedures for amending the access agreement to accommodate additional service, reduced journey times, and similar changes, often linked to specific infrastructure investments. A discussion of each of these subjects is provided in the following subsections. Note that while PRIIA gave the FRA and the STB new powers and responsibilities in these areas, these U.S.DOT agencies were still working on detailed procedures for exercising these powers as this Guidebook was being finalized. The requirements in PRIIA and the status of actions by the FRA, Amtrak, and the STB are also summarized in the following paragraphs.

5.2.1 PRIIA Requirements and FRA, STB, and Amtrak Actions on Intercity Passenger Service Quality

In response to frequent complaints and a marked deterioration in Amtrak service quality in recent years, Congress added requirements in PRIIA for setting and enforcing adequate intercity service standards:

- Section 207 of PRIIA is of primary importance; it tasks the FRA with developing performance metrics for intercity passenger rail service, in cooperation with Amtrak and the STB. The FRA published draft metrics early in 2009. In related actions, Amtrak is also advocating application of metrics based on average train delay as described in Section 4.3 as Table 4-3 where service performance as measured by delay statistics is tied to passenger rail agency investments in a rail corridor. In this approach, host railroads are made responsible for corrective action where noncompliance is attributable to the railroad.
- Section 213 states that the STB (1) may investigate service quality on any corridor where OTP is less than 80 percent or is in violation of performance standards established under Section 207 of PRIIA and (2) shall investigate service quality on complaint by Amtrak, a passenger rail agency that funds the service, the host railroad, or another operator on the same corridor. Appropriate penalties can be imposed if the host railroad is found to be responsible for all or some of the delays. The STB has held hearings on the implementation of procedures under this section of PRIIA.

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The status of STB and FRA efforts in response to these sections of PRIIA will be evolving over the coming months and years. Passenger rail interests are strongly advised to inform themselves of the current status of these efforts before entering negotiations with Amtrak and host railroads.

The above requirements apply to intercity services as operated by Amtrak. In addition, PRIIA Section 401 empowers the STB to conduct non-binding mediation if a commuter rail agency and a host railroad cannot reach agreement on access terms on their own. This power has been discussed in Section 4.4 of this Guidebook in reference to negotiating and finalizing a basic access agreement. The STB may exercise the same powers if a commuter rail agency and host are unable to reach agreement regarding service additions and other changes.

5.2.2 Performance Monitoring and Service Quality

Service performance can be maintained at a high level only if it is both monitored regularly and arrangements are in place to address cases of unsatisfactory performance. Poor OTP and poor service in other areas can have a substantial adverse effect on ridership. In addition, delays have an adverse impact on operating costs, including additional train crew working hours, provision of substitute transportation if a train has to be terminated short of its destination, and compensation to passengers for missed connections. Recommended practices in each area are discussed in Sections 5.3 and 5.4 for Amtrak intercity and commuter service, respectively. Specific areas of interest include:

- Reporting obligations—what is reported by the host railroad, Amtrak (if involved), and a contract operator (if involved) to the passenger rail agency and between each other. Usually, this includes service performance metrics such as delay minutes, analysis of delay causes and responsibilities, OTP, requirements for special reports on unusual delays and events, and arrangements for communicating information to the public, as required. Agencies responsible for shorter intercity corridors may find that regular Amtrak reporting procedures may not be adequate and will have to establish separate local mechanisms.
- Incentives, penalties, and contractually enforceable standards for OTP (host railroad) and other performance factors (for example, with a contract operator).
- Recommended practices for working with a host railroad to correct persistent poor performance.
- Lines of communication between host railroad, passenger rail agency, O&M contractor, or Amtrak, including arrangements for regular performance review meetings and establishing plans of action to address poor performance.

5.2.3 Agreement Revisions and Updates

As discussed in Chapter 4, recommended practice with respect to access agreements is to execute a long-term (20 years or more) master agreement with Amtrak (if intercity service) or directly with the host railroad (if commuter service). The long-term agreement will guarantee access and specify access terms, but will contain provisions for regular revisions of service details (e.g., number of trips up to a specified maximum, journey times, station stops) and additional infrastructure investments as needed. The agreement gives all users confidence that they can follow their long-term strategic plans for the corridor without risk that their plans will be blocked by an inability to renegotiate the agreement at some point in the future. However, because demand for both freight and passenger service and the availability of funding for service developments are unpredictable, it is also necessary to have flexibility to adjust the agreement within defined limits in response to changing conditions. The agreements should be based on long-term plans and traffic forecasts for each corridor user and should provide security of access for services up to the planned or forecast traffic levels, plus an allowance for additional growth. In almost

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all cases, infrastructure investment will be needed over time to accommodate the growth, so the agreement should also define what is needed for each growth increment for each user and responsibility for funding the investment. Within this framework, the agreement should provide for the following types of revisions:

- Major revisions to provide for significant capacity increments and service performance for each user, together with plans for making the accompanying infrastructure investments.
- A procedure for initiating, financing, implementing, and managing capital investments in infrastructure.
- Minor intermediate revisions, such as to add trips up to the threshold that would trigger a major revision or to revise schedules.
- Day-to-day variations in service, such as to accommodate planned maintenance, to accommodate extra trips for special events, or to respond to an unforeseen event.
- Revisions to the payment schedule used to calculate access and O&M charges levied by the host railroad on tenant operators. This revision would normally be used in response to cost inflation for railroad labor and materials, and annual adjustments are the norm. Additional adjustments may be appropriate when an infrastructure investment changes the condition or performance of track or signal systems. For example, an upgrade to allow higher speeds would change what has to be operated, inspected, and maintained, and thus costs.

These contract provisions will be tailored to the needs of the individual services and the concerns of each corridor user.

The following sections describe recommended practices in the area of monitoring service quality, especially OTP. There are large differences between these practices as they relate to Amtrak intercity corridors and to commuter services. Most important, Amtrak's operating agreements with the freight railroads govern service quality issues, including incentive programs, and state passenger rail agencies in the past have had only a limited role. However, the advent of substantial investments by passenger rail agencies in intercity corridors expands the roles of state passenger rail agencies. The state agencies have to negotiate with both Amtrak and the host railroad to ensure that the investments will enable the host railroad to deliver the planned service (e.g., number of trips and journey times) and maintain the specified service quality. In the case of a commuter service, a state or local government agency is the principal in the access agreement with the host railroad and needs to be closely involved in ongoing arrangements for managing service quality.

5.3 Specific Approaches to Managing Amtrak Intercity Services

With a few exceptions, Amtrak monitors service quality and OTP for all its services, whether Amtrak is the host or tenant railroad. Under applicable legal rights, Amtrak pays for access to a host railroad's tracks based on an incremental cost formula. Amtrak is also empowered to include an on-time incentive program in its host railroad agreements, by which Amtrak either imposes penalties for poor performance or provides incentive payments for good performance.

Until recently, Amtrak's operating agreements with host railroads typically contained incentives and penalties based on an "OTP with exceptions" metric, i.e. incentives were based on a route's OTP, with host railroads allowed to claim exceptions in specified circumstances. For example, the agreement may impose penalties if the OTP metric falls below 70 percent and will make incentive payments on a sliding scale if OTP exceeds 80 percent. A train is considered "on time" if it arrives at the terminal station within a specified number of minutes of schedule.

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This time allowance is a function of the duration of the train's journey from origin to final destination. This agreement had two shortcomings from the point-of-view of a state agency that sponsors a short intercity corridor:

- The OTP metric and the definition of "on time" may be too loose for the needs of a short-haul corridor that might carry business travelers or commuters, where service quality expectations are high.
- In some cases, the OTP calculation was such that a few poorly performing services or trains resulted in a host railroad maxing out penalties, making it impossible for the railroad to earn incentive payments on remaining services.

These arrangements proved inadequate as freight traffic grew. Concern over the cost of delays prompted Amtrak's move toward host-responsible delay minutes as the preferred and more effective metric, as described in Table 4-3 in Section 4.3. Poor OTP also led to the inclusion of various measures to enforce better OTP in PRIIA, as described previously in Section 5.2.1. In addition, FRA grants are now available under PRIIA and ARRA for projects to relieve railroad congestion and reduce intercity passenger train delays. An agreement to make such an investment can include contractual limits on average delay, as described in Section 4.3.5, to ensure planned benefits are realized. Amtrak is making steady progress in revising the old agreements to reflect new metrics and standards being developed by the FRA and the completion of infrastructure improvements.

Amtrak monitors service performance closely. The host railroads report train location regularly to Amtrak's operations center, although these reports can sometimes be delayed or erratic. To enhance these reports, Amtrak has equipped all locomotives with GPS receivers that report locomotive position in real time. This information is supplemented by conductor event and delay reports, so service problems can be managed in real time and station displays, station staff, and waiting passengers can be advised of train status. The operations center also maintains contacts with host railroad operations centers to resolve problems. The reports also enable Amtrak to compile statistics of train delays and associated causes to monitor host railroad performance against agreed-upon performance standards.

Thanks to PRIIA-required efforts to improve service performance, and more effective metrics and contractual approaches, Amtrak now has more leverage with host railroads to insist on better service performance. However, there are cases where a rail corridor has chronic OTP problems caused by deep-seated operations or infrastructure conditions. In such cases, incentives and penalties may be insufficient to force the host railroad to shift priorities and expend the funds and effort to correct the problems in a timely fashion. However, if the corridor is already well managed and does not have chronic problems, then the incentive can provide the impetus to "go the extra mile."

In the case of chronic problems, Amtrak's practice is to sit down with the railroad to fully diagnose root causes of delays and work out an improvement program that benefits both host and tenant. In one case of persistent excessive delays, the problems were traced to numerous slow orders and interference from track maintenance work. Amtrak agreed to a temporary extension of its schedule, in return for a firm plan from the host railroad to bring the track into a state of good repair over time. This plan allowed Amtrak to return to its original schedule in increments tied to the completion of individual projects. The plan helped the host railroad improve its freight operations as well, providing benefits for both parties.

Some state-supported passenger services have found it beneficial to supplement Amtrak's service quality monitoring and management systems and to be more proactive in diagnosing and correcting OTP problems. Examples are the Capitol Corridor between San Jose and Sacramento,

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California, and the Downeaster service between Boston, Massachusetts, and Portland, Maine. The state agencies responsible for these services have invested heavily in track quality and capacity upgrades, and they want to maximize benefit from this investment. Also, both services carry a higher fraction of commuters and business travelers than other non-NEC services and need high service reliability and OTP to meet customer expectations.

Both these sponsoring passenger rail agencies maintain an active staff to help manage the service. Functions performed by these agencies can include:

- Monitoring service performance and identifying and resolving service problems in cooperation with the host railroad and Amtrak.
- Planning and implementing service improvements, including schedule adjustments, station improvements (in cooperation with local communities), cooperative arrangements with connecting and parallel bus services, and route extensions.
- Marketing the service to the public, including a dedicated Web site, advertising, etc.
- Providing real-time service information (e.g., about train delays) via the Web site and other communications channels.
- Providing or funding add-on services, such as food service and on-train hosts.

Amtrak continues to provide the core functions of train operations, equipment maintenance, and the basic access arrangement with the host railroad.

Recommendations for passenger rail agencies that support Amtrak intercity services may be summarized as follows:

- Consistent high service quality can be maintained only by closely monitoring OTP, train delay metrics, and other quality measures and stepping in to help resolve service problems in cooperation with Amtrak and the host railroad.
- Because of its primary operating agreement with the host railroad, Amtrak must lead cooperative efforts to resolve service problems, but it is important for the passenger rail agency sponsoring the service to be at the table to make sure that its concerns are heard and to participate in the solution, where appropriate. If the service sponsor has invested in the corridor (as is often the case), it will have more standing in the discussions and may be able to fund investment to improve service quality or overcome an identified problem.
- Conventional incentive programs for OTP will help add a few percentage points to the performance of an already competently managed operation. However, they do not provide an incentive to correct major operations issues. Where possible, the passenger rail agency, in cooperation with Amtrak, should establish an enforceable service performance agreement where the host railroad is required to correct service problems if performance falls below agreed-upon criteria.

5.4 Specific Approaches to Managing Commuter Services

The general principles behind the recommendations for Amtrak intercity service also apply to commuter services operated over a host freight railroad, suitably adapted to commuter service institutional arrangements. These adaptations recognize the key differences between Amtrak intercity and commuter service:

- There is no equivalent negotiations framework for commuter operations that compares to Amtrak's negotiations framework, and the commuter rail agency must manage all aspects of the host railroad relationship on its own.

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- Many commuter services are operated over track owned or leased by the commuter rail agency, and the agency sponsoring the service or its contractor will be responsible for track maintenance and dispatching. Although there may be issues with ensuring good contractor performance, the commuter rail agency is in a position to address problems directly, without the involvement of a host railroad. However, in many cases, commuter agencies have given a freight railroad access to their commuter corridors. In these cases, the freight operator will be the tenant and is likely to have concerns analogous to an intercity passenger service operating on a host freight railroad. Mechanisms to address freight service issues may be needed, such as monitoring performance, identifying problem areas, and taking corrective action in cooperation with the freight service operator.
- Almost all recently established commuter agencies rely on contractors to perform O&M activities, including equipment maintenance and train operations. The contractor responsible for train operations will have day-to-day interaction with a host railroad, and it is essential to ensure that this relationship is constructive. If the commuter rail agency owns or leases the corridor, then infrastructure maintenance and dispatching are added to contractor responsibilities, and the contractor must interact with a tenant freight service operator.

Given this institutional framework, the recommended approaches to managing service quality of commuter operations on a host freight railroad include:

- The commuter rail agency must monitor service quality in real time and be ready to take action in case of a one-time or chronic service problem. In particular, this recommendation requires a clear definition of agency responsibilities vs. those of a train operations contractor regarding communication with the host railroad and the level at which decisions should be referred to the agency.
- The commuter rail agency is normally responsible for public communications on all matters affecting the service, whether a minor short-term emergency (like cancelling a train) or ongoing efforts to resolve a chronic service problem. In these communications, it is critical that the agency not blame problems on other parties or blindside the contractor or host railroad by releasing statements that have not been discussed in advance. Public discussion of disputes among the agency, host railroad, and contractor should be avoided.
- As with Amtrak intercity service, chronic service problems must be addressed cooperatively by the agency, host railroad, and contractor. The goal should be to identify the root causes of the problem and work out solutions that make sense for all parties. Often, it is possible to develop win-win solutions that benefit both freight and passenger operators. Some freight railroads have commented that respecting passenger schedules results in more operating discipline and reduced costs in operating the freight service.
- All commuter agencies establish an incentive program based on OTP or delay metrics. The baseline OTP is usually in the low 90 percent range, with the host railroad and/or contractor earning bonuses for performance above that level. Penalties for low performance should be avoided. As with Amtrak intercity service, these types of incentive schemes add a few percentage points to OTP where the service is already well run but do not help with chronic service problems. It is critical to avoid ambiguity in defining and measuring service performance and deciding which exceptions, if any, are allowed. Also, where contractor and host railroads are jointly responsible for service quality, the commuter rail agency must have a mechanism to resolve disputes as to who was responsible for service problems.

5.5 Case Studies in Service Management

The case studies in Appendix D yielded several good examples of approaches to maintaining high service quality in the face of the inevitable unpredictable events that can disrupt passenger rail service. One example is from the Capital Corridor in Northern California, where the CCJPA has the challenge of operating a high-frequency passenger service on a busy freight corridor. Another is an

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approach developed by the BNSF Railway, initially for the METRA commuter services it manages in the Chicago area, but now being applied to all commuter and intercity passenger rail services for which it is the host railroad. The third example is the Downeaster service, where good service quality is maintained on a limited budget by careful attention to detail and maintaining good relationships with all stakeholders. The following summaries provide examples from these case studies.

CASE STUDIES 5

Maintaining Service Quality on a Very Busy Corridor

The portion of the Capital Corridor between Oakland and Sacramento, California, carries 32 one-way passenger trips and about 20 freight trains daily, making it one of the busiest shared corridors in the United States. The CCJPA has adopted a number of strategies to maintain passenger service quality on this corridor, specifically:

- Maintaining track quality at FRA Class 5, one class above that needed for the speeds operated by FRA regulations. This maintenance greatly reduces the chance that a track defect or slow orders will slow passenger operations.
- CCJPA funds an additional year-round track maintenance crew and the additional cost of overnight maintenance activities. This funding allows maintenance to be carried out with minimum interference to daytime passenger operations, and the continuous attention reduces the likelihood of track quality falling below minimum standards.
- Generally, higher track quality and associated infrastructure investments permit higher freight train speeds, reducing differences between freight and passenger average speed and reducing operating interference.

The CCJPA approach is relatively high cost, but it more than pays for itself in additional ridership and revenue attracted by quality service.

CASE STUDIES 6

Using Structured Delay Analysis to Maintain Service Quality

The BNSF Railway is the host railroad for several commuter and intercity passenger rail services. One of these services, a commuter rail line in Chicago, is operated by BNSF under contract to METRA, the Chicago area commuter rail agency. To ensure reliable service, BNSF developed a methodology for structured delay analysis to identify and correct conditions that were preventing reliable service. The approach, an adaptation of a process used by British Rail, involves assigning each delay to 1 of 19 cause categories and researching the root causes of categories resulting in an unacceptable level of accumulated delay. BNSF staff work with the relevant railway departments to develop and implement corrective actions. Where a capital investment is the appropriate response to a delay problem, the analysis provides BNSF with detailed data to support a request for funds. After success in Chicago, BNSF has extended the approach to all passenger services on the BNSF system. The decade of accumulated experience also enables BNSF to offer detailed advice to passenger rail authorities planning new services on exactly what is required to deliver high-quality service.

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CASE STUDIES 7

Maintaining Service Quality on a Low-Budget Corridor

NNEPRA is responsible for managing the Downeaster service between Boston, Massachusetts, and Portland, Maine. This service comprises five round trips per day over a relatively short 120-mile corridor. Major capital investments and highly structured analysis processes would be overkill for this corridor. Instead, NNEPRA has evolved an approach that relies on tapping the resources of all stakeholders involved in delivering the service to identify and resolve service problems. NNEPRA staff meets regularly with host railroads, Amtrak, communities that host passenger stations, cooperating bus operators, state transportation officials, advocacy groups, and service vendors (such as on-board food service). Issues identified during these meetings are taken up with the party best placed to take corrective action. In addition, parties that are not directly involved in addressing a problem can be kept advised of what is happening and be reassured that NNEPRA is responding. This is especially important for state officials and advocacy groups. If an investment can be justified, then NNEPRA can take steps to obtain funds. NNEPRA believes it is important to meet regularly with stakeholders, even when there are no pressing matters to discuss. These regular meetings build rapport with the stakeholders so that they are more ready to help when approached with a problem.

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Bibliography

This bibliography contains references and very short descriptions of books, papers, reports and other publications that may be useful to Guidebook users. All publications included in this bibliography should be readily available from publishers, databases such as TRIS, or source organizations, either in hard copy or as downloads from the source organizations. Publications that might become rapidly outdated or become unavailable in a short time have been avoided.

This bibliography is not a complete list of references used in preparing the Guidebook, which would have included numerous unpublished or draft reports, papers and meeting presentations, as well as material taken from Web sites of passenger railroads and federal, state, and local government agencies.

This bibliography is organized by subject areas relevant to the issues addressed in the Guidebook or in some cases by the source of material. Within subject areas, items are listed in chronological or alphabetical order, depending on which is judged to be the most helpful to the reader.

Acts of Congress (reverse chronological order)

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2008: *Passenger Rail Investment and Improvement Act (PRIIA).* This legislation authorized a 5-year continuation of capital and operations support of Amtrak, added grant programs for conventional and high-speed passenger service, and enacted a number of key policy changes concerning passenger service.

2008: *Rail Safety Improvement Act (RSIA).* This legislation amended or added rail safety regulations in several areas, most notably adding a requirement for installation of PTC on certain routes used by regularly scheduled passenger rail service and specified hazardous materials.

1995: *ICC Termination Act.* This act terminated the Interstate Commerce Commission (ICC) and transferred selected functions to a newly established agency, the Surface Transportation Board (STB).

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1970: *Rail Passenger Service Act,* with later amendments. This legislation established Amtrak to manage the U.S. intercity and long-distance passenger rail network.

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Acronyms

3-R Act	The Regional Rail Reorganization Act of 1973
4-R Act	Railroad Revitalization and Regulatory Reform Act of 1976
AAR	Association of American Railroads
ABS	Automatic Block Signal System
ACE	Altamont Commuter Express
ACS	Automatic Cab Signals
ACSES	Advanced Civil Speed Enforcement System
ADA	Americans with Disabilities Act
APTA	American Public Transportation Association
ARAA	Amtrak Reform and Accountability Act of 1997
AREMA	American Railway Engineers and Maintenance-of-Way Association
ARRA	American Recovery and Reinvestment Act of 2009
ASME	American Society of Mechanical Engineers
ATC	Automatic Train Control
ATS	Automatic Train Stop
BART	Bay Area Rapid Transit
B&M	Boston and Main Railroad
BNSF	BNSF Railway Company
CCJPA	Capitol Corridor Joint Powers Authority
CFR	Code of Federal Regulations
CMAQ	Congestion Mitigation and Air Quality Improvement Program
CN	Canadian National Rail Service
C of GA	Central of Georgia Railway Co.
Conrail	Consolidated Rail Corporation
CP	Canadian Pacific Railway
CREATE	Chicago Region Environmental and Transportation Efficiency Program
CRP	Cooperative Research Program
CSX	CSX Corporation
CTC	Centralized Traffic Control
CV	Central Vermont Railroad
DMS	Document Management System
DMU	Diesel Multiple Units
DOT	Department of Transportation (states)
EAF	Engineering Adjustment Factors
EC	European Commission
EN	Euro Norms documents
FELA	Federal Employers Liability Act
FFGA	Full Funding Grant Agreement

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FHWA	Federal Highway Administration
FOX	Florida Overland eXpress
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
G&A	General and Administrative
GAO	U.S. Government Accountability Office
HOS	Hours of Service
ICC	Interstate Commerce Commission
IEEE	Institute of Electric and Electronics Engineers
JPA	Joint Powers Authorities
KCS	Kansas City Southern Railway Company
LIRR	Long Island Railroad
LRT	Light Rail Transit
MARC	Maryland Area Regional Commuter Train Service
MBTA	Massachusetts Bay Transportation Authority
METRA	Chicago Metropolitan Rail
MNCR	Metro North Commuter Railroad
MOW	Maintenance-of-Way
mph	Miles Per Hour
MTA	New York Metropolitan Transportation Authority
MU	Self-Propelled Multiple Operated Electric Motor Cars
MUTCD	Manual of Uniform Traffic Control Devices
NAP	National Arbitration Panel
NCHRP	National Cooperative Highway Research Program
NCTD	North County Transit District
NEC	Northeast Corridor
NEPA	National Environmental Policy Act
NERSA	Northeast Rail Service Act of 1981
NICTD	Northern Indiana Commuter Transportation District
NIRC	Northern Illinois Railroad Corporation
NJT	New Jersey Transit
NLRA	National Labor Relations Act
NNEPRA	Northern New England Passenger Rail Authority
NPRM	Notice of Proposed Rulemaking
NRC	National Railroad Construction and Maintenance Association
NS	Norfolk Southern Corporation
NTSB	National Transportation Safety Board
O&M	Operations and Maintenance
OSHA	Occupational Safety and Health Administration
OTP	On-Time Performance
PCJPB	Peninsula Corridor Joint Powers Board
PIH	Poison Inhalation Hazard
PRA	Passenger Rail Agency (State, Regional or Local)
PRESS	Passenger Rail Equipment Safety Standards
PRIIA	Passenger Rail Investment and Improvement Act of 2008
PTC	Positive Train Control
RCAF	Railroad Cost Adjustment Factor
RCRI	Railroad Cost Recovery Index
REMSA	Railway Engineering-Maintenance Supplier Association
RLA	Railway Labor Act of 1926
ROI	Return on Investment

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ROW	Right-of-Way
RR	Railroad
RRA	Railroad Retirement Act
RRIF	Railroad Rehabilitation and Investment Financing
RSAC	Railroad Safety Advisory Council
RSI	Railway Supply Institute
RSIA	Railroad Safety Improvement Act of 2008
RTA	Illinois Rail Transit Authority
RTC	Rail Traffic Controller
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SCRRA	Southern California Regional Rail Authority
SEPTA	Southeastern Pennsylvania Transportation Authority
SFRTA	South Florida Regional Transportation Authority
SJRRC	San Joaquin Regional Rail Committee
STB	Surface Transportation Board
TCRP	Transit Cooperative Research Program
TEM	Association of American Railroad's Train Energy Model
TGV	French Train a Grande Vitesse
TIH	Toxic Inhalation Hazard
TPC	Train Performance Calculator
TRE	Trinity Railway Express
TTC	Transportation Test Center
TTCI	Transportation Technology Center Inc.
UIC	International Union of Railways
UMTA	Urban Mass Transit Administration (later FTA)
UP	Union Pacific Railway
US	United States
U.S.C.	United States Code
USDOT	United States Department of Transportation
USRA	United States Railroad Association
UTA	Utah Transit Authority
VRE	Virginia Railway Express
WSDOT	Washington State Department of Transportation

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APPENDIX A

The U.S. Railroad Industry

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A.1 Introduction

The U.S. railroad industry is complex, a somewhat isolated and specialized world that is largely unknown to the public at large. Regular users of rail passenger services may be familiar with Amtrak and their local commuter agency, but will lack familiarity with all that lies behind the provision of those services. As passenger rail services grow, many individuals concerned with implementing and managing those services and projects will encounter the industry for the first time. This appendix has been provided for those individuals as a guide to the industry and its key players.

The specific areas covered in this appendix include:

- Recent U.S. railroad history, showing how the present industry structure has evolved in response to broader changes to transportation services and facilities
- The freight railroads
- The passenger railroads
- Federal agencies concerned with freight and/or passenger railroads
- Industry and professional associations concerned with the railroads
- The railroad supply industry

A.2 Summary of U.S. Railroad History

The present day structure of the U.S. passenger and freight railroad industry and accompanying legal and institutional arrangements are the end products of decades of change in the railroads themselves and in their competitors. Existing intercity and commuter rail services were established in their present form at different points over this period and reflect local and national circumstances in the railroad industry at those times. An understanding of this history and how it has led to the current situation will help passenger authorities develop realistic plans for new services and conduct effective track sharing negotiations with other railroad operators, whose actions and attitudes have been influenced by this history.

For several decades at the end of the 19th and the early 20th centuries, railroads were the nation's largest industry and included some of the largest individual private business in the country. Railroads had a near monopoly of surface transportation over much of the United States, with competition only from navigable waterways and canals. This situation led to a range of industry-specific laws and regulations, as lawmakers attempted to balance the interests of railroads, shippers, railroad employees, and the general public. Government agencies were created to administer these laws, most notably the Interstate Commerce Commission (ICC) established in 1887 by the Interstate Commerce Act to oversee the fairness of railroad rates and the treatment of shippers.

The ICC's powers were feeble at first, but by 1920 those powers had become very broad, controlling most aspects of railroad rates, mergers, and line purchases, sales, and abandonments. Industry associations came into being to represent the industry at these agencies and with the government generally. The engineering and administrative challenges of constructing and operating the national railroad system and providing for movement of a carload of freight over multiple rail systems led to the establishment of several professional and industry associations to improve technical knowledge and to set technical standards for track, cars and locomotives, signals, and operating rules. Finally, the railroad workforce unionized, with relations between management and labor being formalized in the Rail Labor Act of 1926.

This complex and inflexible industry structure was completed just when highway transportation and commercial air service provided the beginnings of competition. The competition became much more severe after World War II, with construction of the interstate highways and turnpikes and the introduction of commercial jet airliners. In spite of the switch from steam to

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diesel traction and some regulation of the competition, railroads were unable to adapt to meet the competition, and the industry's financial condition deteriorated. Railroads operating in the northeast United States were especially vulnerable—freight hauls were shorter, they had more loss-making passenger services to support than elsewhere, and highway construction advanced more rapidly.

Apart from a limited change in 1958, which eased the rules for discontinuing passenger services, there was no change in a railroad regulatory and institutional structure that prevented any effective response to truck, automobile, and air competition. In a last-ditch effort to find a solution to their problems, the two dominant northeastern railroads (and historic rivals), the Pennsylvania and New York Central merged into the Penn-Central Railroad (Penn-Central) on February 1, 1968. The two partners hoped that the combined system could make cost savings that would enable the combined business to survive and prosper.

The merger was a disaster. Penn-Central was unable to resolve post-merger operating problems, and ICC regulation and generous labor contracts prevented any meaningful cost savings. As a result, Penn-Central's financial condition deteriorated rapidly, leading to bankruptcy in June 1970. Its dire financial condition was compounded by badly deteriorated physical conditions, chaotic operations, and questionable financial dealings as management had attempted to hide the true state of affairs. Passenger and freight service over a large area of the United States was in danger of collapse. All other significant northeastern railroads fell into bankruptcy at around the same time, compounding the regions transportation problems.

Over the next decade, Congress responded with a series of major legislative actions and funding initiatives designed to preserve passenger and freight rail service in the Northeast and prevent railroads in other regions from following the Northeast into chaos. Legislation was also designed to shift responsibility for passenger service, both intercity and commuter, to the public sector, including transfer of ownership of the principal commuter rail networks and the Northeast Corridor (NEC) to publicly funded entities. The purpose of separating passenger service from the freight carriers was twofold: 1) to take the financial burden of money-losing passenger carriage off the freight railroads, and 2) to preserve passenger service. Although the crisis originated in the Northeast, the resulting legislation changed the railroad industry nationwide:

- The **Rail Passenger Service Act** of 1970 created Amtrak to operate intercity passenger service with (supposedly temporary) federal assistance. In return for relief from the burden of passenger service, the participating railroads were required to transfer passenger locomotives and cars to Amtrak and give Amtrak rights of access to their networks. The railroads also agreed to an avoidable-cost formula for track-use charges. Amtrak started operations nationwide on May 1, 1971. Commuter railroads were considered a state and local responsibility and were not covered by the Amtrak legislation. In any case, commuter rail operations were already receiving limited federal financial assistance through UMTA, which had been established in 1964.
- As Penn-Central struggled to operate in bankruptcy and other northeastern railroads went bankrupt it became clear that the whole northeastern network had to be restructured. The **Regional Rail Reorganization Act (3-R Act)** of 1973 created the United States Railway Association (USRA) to plan and finance the restructuring of a new railroad company, to be called the Consolidated Railroad Corporation, or Conrail. The 3-R act also provided funding to keep northeastern railroads operating and established grant and loan programs to assist railroads in other regions.
- In 1976, the **Railroad Revitalization and Regulatory Reform Act (the 4-R Act)** implemented USRA's plan to create Conrail as a government-owned corporation. Conrail took over the assets and services of Penn-Central, and the other bankrupt northeastern freight carriers were given the option of joining Conrail. Except for the Boston and Maine Railroad, all the bankrupt railroads did join Conrail. Substantial funds were provided to Conrail to offset continued operating

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losses and to overcome deferred maintenance. Physical condition and service improved, but financial losses continued because Conrail was unable to downsize the route network under prevailing ICC procedures or obtain relief from burdensome labor contracts. Conrail also continued to bear commuter rail expenses, not all of which were covered by financial support from state and local government agencies.

- The 4-R Act also transferred the NEC to Amtrak, except the sections that had previously been acquired by State agencies in New York, Connecticut, and Massachusetts. Congress provided funds for a NEC Improvement Plan, which included upgraded track and signal systems. Separately, Amtrak received funding for substantial numbers of new passenger cars and electric and diesel locomotives.
- The **Staggers Rail Act** of 1980 finally relieved freight carriers from most, though not all, federal regulation of rail rates and services and simplified the regulatory process associated with railroad mergers, line sales, and abandonments. This legislation finally allowed Conrail and other freight carriers to rationalize their networks, services, and pricing so that they could sustain freight operations on a profitable basis.
- The **Northeast Rail Service Act (NERSA)** of 1981 was the final step to separate passenger and freight services in the northeast, ensuring that Conrail would not bear any burden from the cost of commuter operations. State and local agencies in the Northeast became fully responsible for commuter rail services, in most cases by establishing their own commuter rail operations. These included the Massachusetts Bay Transportation Authority (MBTA) in Boston, Metro North Commuter Railroad in New York, New Jersey Transit (NJT) Rail Operations, and Southeastern Pennsylvania Transportation Authority (SEPTA) in Philadelphia, Pennsylvania.

These measures were successful. After massive downsizing, Conrail prospered and was privatized in 1987 by a public offering of its stock, and the entire rail-freight industry entered a new era of sound financial performance. The commuter agencies also prospered, with new equipment, new routes and ridership growth. Further descriptions of the actions taken to establish these commuter operators can be found in Appendix D.

Outside the Northeast, the only surviving commuter rail operations were in Chicago, Illinois and San Francisco, California. Over time, these were transferred in stages to regional public transportation agencies, which either set up their own operations or contracted for operations and maintenance (O&M) with Amtrak or the freight railroad that formerly operated the service. The passenger authority either assumed ownership of the infrastructure or continued to operate over freight-railroad tracks, depending on local circumstances.

The commuter rail agreements were purely local in nature, and did not include any general rights of access to rail freight networks or generally applicable formulas for cost-sharing. The focus of the participants at the time was to preserve existing commuter services, not to lay the groundwork for future expansion. Therefore, unlike intercity rail services operated by Amtrak, there is no general right of access to the rail network or statutory formula for cost sharing for commuter services.

After the Staggers Act, NERSA, and the privatization of Conrail, there was no major railroad industry legislation until late 2008. Now clearly separated into intercity, commuter, and freight railroads, each industry segment was able to focus on its own market:

- In the years following the Staggers Act, the freight railroads aggressively downsized, merged with each other, closed or sold underutilized lines, dramatically cut costs, and greatly improved their productivity and financial performance. From 1980 to the mid-1990s, there was some growth in rail traffic, mostly because of the growth of massive low-sulfur coal mines in the Powder River Basin in Wyoming. Otherwise, railroads focused on squeezing more profit from

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a roughly static volume of traffic. From the mid-1990s, freight railroads began seeing real traffic growth driven by additional increases in coal traffic from the Powder River Basin, rapid growth in intermodal traffic, especially international container traffic entering rail networks at West Coast ports, and a robust economy. The combination of a downsized network and traffic growth on the Class 1 railroads resulted in an increase in traffic density from 9.9 to 16.3 train-miles per route-mile per day (65 percent) over the 20 years from 1987 to 2006, after allowing for the sale of low-density branch lines. This sharp increase led to local congestion problems, aggravated by operating problems following major railroad mergers in the late 1990s. For the first time in decades, mainline rail capacity became scarce and, therefore, valuable. The per-mile net earnings from a freight train far exceeded track-use fees that a passenger operator would typically pay. This created the difficult negotiating environment for passenger rail interests seeking access to the freight network.

- Commuter rail services also entered a period of expansion. The long-established systems experienced traffic growth, and several cities and regions were able to implement entirely new commuter services, aided by "New Starts" funding from the Federal Transit Administration (FTA). Most notably, the Southern California Regional Rail Authority (SCRRA) was established in the Los Angeles area. The SCRRA purchased 200 miles of underutilized rail right-of-way from freight railroads for its initial services. It now operates seven commuter rail routes on 388 route-miles, including its own tracks and by agreement with area freight railroads. New commuter services were also introduced in the Virginia suburbs of Washington, D.C.; Miami/Fort Lauderdale, Florida; Seattle, Washington; Albuquerque, New Mexico; San Diego and San Jose, California; Dallas, Texas; and Nashville, Tennessee. Several other services are in planning.
- Development of Amtrak intercity services between the early 1990s and 2008 was uneven. In the Northeast, a major project to extend electrification from New Haven, Connecticut to Boston, Massachusetts was completed in 1999, followed by the introduction of Acela high-speed train sets in 2000. California has made substantial investments in corridor services, which with the provision of operating support to Amtrak has resulted in large gains in ridership. Elsewhere, smaller scale investment in infrastructure improvements and provision of operating support for corridor services by state agencies in the Midwest, Pacific Northwest, Maine, and elsewhere have allowed additional trips and service improvements on routes in their areas. However, outside the State-supported corridors and the Northeast Corridor, the lack of funding has meant that there has been little service development.

A.3 Freight Railroads

A.3.1 Introduction

Freight railroads own and operate about 97 percent of the railroad route miles in the United States, with the remainder, about 5,000 miles, owned by Amtrak and commuter rail agencies. Freight railroads also provide mostly local freight service over most routes owned by passenger agencies. Freight railroads are customarily divided by size into three categories:

- **Class 1 railroads,** designated by the Surface Transportation Board (STB) as those with freight revenues exceeding $319 million in 2005. The revenue threshold is adjusted annually using the Railroad Cost Adjustment Factor (RCAF). See the Section A.6.1 on the Association of American Railroads (AAR) for an explanation of RCAF. There are 7 Class 1 railroads operating about 96,000 route miles in the United States, and they earn approximately 92 percent of all freight railroad revenue. The number of Class 1 railroads is unlikely to change unless two Class 1 railroads merge with each other, since no smaller railroad has revenues anywhere near the Class 1 threshold.

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- **Regional railroads** operate over 350 route miles or have revenue exceeding $40 million, as defined by the AAR. Regional railroads operate approximately 15,000 route miles and earn about 3.5 percent of all freight railroad revenue.
- **Local railroads** are too small to qualify as regional railroads. Local railroads operate approximately 26,000 route miles and earn about 4 percent of all freight railroad revenue.

The following sections provide some details on these freight railroad groups.

A.3.2 Class 1 Railroads

The seven Class 1 railroads are listed in Table A-1 with some key data on their plant equipment and operations.

The four leading railroads, BNSF and UP in the west, and CSX and NS in the east, dominate the railroad industry with more than 90 percent of total U.S. traffic and revenue. All are the products of multiple mergers of predecessor railroads. Out of necessity, the majority of intercity and long-distance Amtrak services operate over track owned by these railroads, under operating agreements that Amtrak maintains with each of them. Each railroad continues to be active in line sales and acquisitions as they seek to build and maintain a network that best meets their business needs. Passenger service interests should be aware that (other than on obvious core routes) it is always a possibility that a freight route may be acquired or sold, and make sure that any passenger service obligations are transferable to a new owner. Because all four railroads host multiple passenger services, each has an official dedicated to coordinating Amtrak and commuter passenger services.

Canadian National and Canadian Pacific data in the table only identify their U.S. operations. Both host a number of passenger services and, like the "big four," are familiar with the process involved in hosting passenger operations. The final Class 1, KCS, currently has minimal involvement with passenger service.

Class 1 railroads are obliged to submit detailed reports on traffic, operations, revenue expenses, and capital expenditures to the STB. This information is in the public domain and is easily accessible from the STB or statistical reports compiled and published by AAR.

A.3.3 Regional and Short-Line Railroads

Regional railroads are intermediate sized systems as defined in Section A.3.1, usually comprising one or two main lines and a number of yards and branches. There are about 30 regional railroads in the United States. Regional railroads can be long-standing independents that were

Table A-1. Class 1 railroads operating in the United States (2005 data).

Railroad	U.S. Route Miles	Revenue Ton-Miles (billions)	Freight Revenue ($ millions)	Locomotives in Service
BNSF Railway	32,154	595	12,846	5,751
Canadian National Rail Service (CN)	6,736	54	1,422	716
Canadian Pacific Railway (CP)	3,511	24	687	372
CSX Corporation	21,357	247	7,689	3,601
Kansas City Southern Railway Company (KCS)	3,197	25	800	565
Norfolk Southern Corporation (NS)	21,184	203	8,526	3,655
Union Pacific Railway (UP)	32,426	549	13,545	8,119

Source: Railroad Facts, 2006 Edition

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never part of a larger railroad system (e.g., the Florida East Coast Railroad), or formed when one of the major railroads "spun off" an unwanted segment of their network to form an independent system (e.g., the Portland and Western Railroad, formerly owned by BNSF, which now hosts a commuter service). Such spin-offs were common in the 1980s and 1990s as the Class 1 railroads downsized their networks to focus on a core system. Several of the regional railroads formed at that time have since been purchased back by Class 1 railroads as traffic grew and service patterns changed. As a group, regional railroads are the most likely to be purchased by a Class 1 in this way, and any passenger access agreement should ensure that passenger service obligations are transferred in case of a change in ownership.

Short-line or local railroads are names given to railroads that are too small to qualify as regional railroads. There are approximately 500 short lines in the United States and may fall into different categories depending on the nature of the traffic, ownership, or geographical area served. These include:

- *Switching and terminal railroads* provide rail freight service in a compact geographical area, providing connections between the line-haul railroads serving the area as well as between line-haul railroads and shippers and receivers in the area. Switching and terminal railroads are often very busy, with numerous connections to classification yards and industries, a type of operation that is unlikely to mesh well with passenger service requirements. Examples are the Indiana Harbor Belt in the Chicago area and the New Orleans Public Belt Railroad.
- *Single industry railroads* are technically common carriers that can provide service to multiple customers, but are primarily devoted to serving the railroad owners industrial plant(s).
- *Short-line and regional railroad holding companies* own multiple railroads, combining the advantages of a larger firm, such as professional management, access to finance, and bulk purchasing with the flexibility of small local railroad operations. A substantial fraction of short lines and regional railroads belong to holding companies, examples of which are R. J. Corman and the Genesee and Wyoming groups.
- *"Classic" short lines* are independent small businesses often with fewer that 20 employees, operating a branch line. These short lines focus on providing individual service to customers on the route. To survive, they need a good relationship with the connecting line-haul railroad, which will often nurture short lines by providing access to information services for car tracking and similar functions.

Short lines are often good candidates for passenger service. Freight traffic is low, typically one or two round trips per day, and the owner will often be willing to sell the right-of-way to the passenger agency as long as it can retain access for freight service. The downside for passenger operators is that substantial expenditure is usually needed to upgrade track and install a signal and train control system suitable for passenger service.

A.4 Passenger Railroads

A.4.1 Amtrak

Section A.2 provides a brief explanation of the origins of Amtrak in 1970–1971 as a response to the Penn-Central bankruptcy and the losses incurred by freight railroads in operating passenger service. The following section expands on that account, particularly describing the subsequent evolution of Amtrak services.

Upon starting operations on May 1, 1971, Amtrak discontinued a significant portion of the non-commuter rail services that had been operated by the freight railroads, retaining only a DOT-designated route system determined to have the best chance of becoming profitable and which could be supported with the available funding. This became the core Amtrak network that

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has evolved over the past 35 years in response to funding limits, business prospects, and direction from Congress and the Administration of the day. Initially, Amtrak took ownership of passenger locomotives and equipment, but all O&M services were provided by the host freight railroads on a cost reimbursement basis. Since the early years, Amtrak gradually transferred these functions from freight to Amtrak employees, so that today only infrastructure maintenance and dispatching are provided by host railroads, with all other functions being provided by Amtrak employees.

The services operated by Amtrak in recent years fall into three distinct groups, each with different histories and characteristics.

The Long-Distance and Intercity Network, Operated by Amtrak without State or Local Support

This is the core Amtrak network that includes all long-distance multi-state routes and shorter corridors that lack state government support. Almost all these services operate over freight railroads under access agreements between Amtrak and the host railroads and most comprise only one or two trains in each direction per day. The services are well patronized, but vulnerable to quality issues stemming from host railroad operational issues, track quality problems and localized freight railroad congestion on certain routes. Amtrak's service quality incentives and penalties have limited influence in many cases, as railroads choose to forego incentives rather than improve service. Amtrak has found that the most effective actions are to nurture a cooperative relationship with the host railroads to develop mutually beneficial plans to mitigate service problems.

The Northeast Corridor between Boston, Massachusetts, and Washington, D.C.

Prior to Amtrak, intercity services on the NEC were operated by the Pennsylvania, New Haven, and then Penn-Central railroads. There was limited government investment in improved equipment for the NEC under the High Speed Ground Transportation Act of 1965, in the form of Metroliner high-speed self-propelled multiple operated electric motor (MU) cars for the south end and tilting United Aircraft Turbo trains for the north end. These initiatives were not technically successful, at least in part because there was no parallel effort to upgrade track. In the 1970s and early 1980s, the federal government and state agencies in New York, Massachusetts, and Connecticut purchased the Corridor in the wake of the Penn-Central and other railroad bankruptcies and invested over $2 billion in infrastructure improvements, concentrated on the southern New York to Washington, D.C. portion. A plan to electrify and upgrade the Northern portion from New Haven, Connecticut to Boston, Massachusetts was not completed at this time because of insufficient funding, but was revived in the 1990s and completed in 1999. Amtrak contributed to the NEC renaissance by purchasing the highly successful AEM7 electric locomotives (based on Swedish Railways RC4 design) and Amfleet cars in the late 1970s and putting the high-speed Acela train sets into service in 2000.

Usage and management of this corridor is complex. Amtrak manages corridor operations over all segments except New Rochelle, New York to New Haven, Connecticut, which is owned by the New York and Connecticut Departments of Transportation (DOT) and operated by Metro North Commuter Railroad (MNCR - a unit of the New York Metropolitan Transportation Authority [MTA]). Commuter services share much of the NEC with Amtrak, as well as generally limited freight service in most areas. Maryland DOT (MARC) and Connecticut DOT services east of New Haven (Shoreline East) commuter services on the NEC are operated by Amtrak, and the remainder by regional commuter rail agencies (SEPTA, NJT, Long Island Railroad (LIRR), MNCR, and MBTA).

The agreements between the parties governing access to the NEC and payments for O&M expenses were worked out as required by federal legislation in the 1970s and early 1980s (the 3-R,

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4-R and Northeast Rail Service Acts, as described in Section A.2). Full details governing cost of access to the NEC for commuter operators can be found in a decision of the ICC, Ex Parte No 417 of March 3, 1983. The fairness of these arrangements for the different users and the governance arrangements for the corridor continue to be a subject of debate among the users and State and federal agencies. In addition, the NEC has a growing backlog of investment needs to improve performance and add capacity. Sections 211 and 212 of the Passenger Rail Investment and Improvement Act of 2008 (PRIIA) mandated a planning process to bring the NEC into a state of good repair, and established a Northeast Corridor Infrastructure and Operations Commission to plan for ongoing capital investments to improve the capacity and performance of the corridor and to establish new cost-sharing formulas.

State-Supported Corridors

Most of Amtrak's shorter distance and predominantly intrastate corridors receive support from state DOTs, varying from operating costs for additional trains to very substantial capital expenditures on infrastructure improvements and new passenger cars and locomotives. Many of these initiatives contain useful examples for methods of developing intercity passenger rail service and are described in Appendix D. Almost all new or expanded intercity passenger rail services developed using PRIIA and the American Recovery and Reinvestment Act of 2009 (ARRA) funding will fall into this category. Applicable methods and services are discussed at length in the body of this Guidebook.

A.4.2 Commuter Railroads

Commuter railroads typically provide passenger rail service in major metropolitan areas, usually between a city center and outlying suburbs. The most extensive systems are in major U.S. cities, such as Boston, New York, Philadelphia, Washington, D.C., Chicago, and Los Angeles. There is no nationwide organization providing commuter rail services, established procedures for access to the railroad network, or cost sharing between multiple users of a commuter corridor, such as those that exist for Amtrak intercity services. Operating arrangements for each system and often for individual routes within a system have evolved in response to local circumstances.

All commuter rail authorities are state or local agencies established under state law. All are eligible to receive grants for capital expenses under various FTA public transportation grant programs. Grants are used to purchase or rebuild passenger cars and locomotives, for new and rebuilt stations, to construct or upgrade the right-of-way, and related activities. However the FTA does not provide operating funds; all support for day-to-day operations must come from state and local sources. An exception is federal funding from the Congestion Mitigation and Air Quality (CMAQ) Improvement program funds administered by the FTA and Federal Highway Administration (FHWA), which may be available to agencies in air quality non-attainment regions.

As of first quarter 2009, there were 21 commuter rail agencies in the United States, with several others under development. The agencies are listed in Table A-2 with the full title of the agency, the marketing name, and the service area. The table also gives annual passenger-miles (in millions) to give an indication of the size of the operation. Size varies enormously—a range of 1000:1 between the largest agencies (e.g., LIRR or NJT) and the smallest (Music City Star in Nashville, Tennessee). Annual patronage data was not available on three recent startups, in Utah, Oregon, and New Mexico. The service provided varies too: the largest systems provide all-day service over an extensive network, while the smallest services are limited to weekday rush hour service. Note that the list does not include light rail transit services that are operated over shared track, with near-complete separation of freight and passenger services into exclusive time-of-day windows.

Most commuter operations are over tracks owned by the commuter agency, most shared with limited freight services, and in some cases Amtrak service. The principal exceptions to this

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Table A-2. Commuter rail agencies in the United States (in service 1st quarter 2009).

Agency Title	Marketing Name	Service Area	Annual Passenger Miles (millions)	State/Parent Agency
Central Puget Sound Regional Transit Authority	Sounder Commuter Rail	Everett–Seattle–Tacoma, WA	53	Washington, Sound Transit
Connecticut DOT	Shore Line East	New Haven–New London, CT	9	Connecticut
Maryland Transit Administration	MARC	Washington, D.C. to Baltimore and western MD	228	Maryland
Massachusetts Bay Transportation Authority (MBTA)	MBTA or "The T"	Greater Boston, MA	791	Massachusetts
MTA Long Island Railroad	MTA Long Island Railroad	Long Island, NY	2,258	New York Metropolitan Transportation Authority
MTA Metro-North Railroad	MTA Metro-North Railroad	New York City, Hudson Valley, Westchester County and New Haven, CT	2,127	
New Jersey Transit Corp, Rail Operations	NJ Transit	All New Jersey	2,281	New Jersey DOT
New Mexico DOT	Rail Runner Express	Belen–Albuquerque–Santa Fe, NM	NA	New Mexico
North County Transit District (NCTD)	Coaster	San Diego–Oceanside, CA	43	California
Northern Indiana Commuter Transportation District (NICTD)	South Shore Line	Chicago, IL–South Bend, IN	119	Indiana and Illinois
Peninsular Corridor Joint Powers Board	Caltrain	San Francisco–San Jose–Gilroy, CA	280	California
Regional Transportation Authority (RTA)	METRA	Greater Chicago, IL	1,719	Illinois
Regional Transportation Authority (RTA)	RTA Music City Star	Nashville to Lebanon, TN	2.4	Tennessee
San Joaquin Regional Rail Commission	Altamont Commuter Express (ACE)	San Jose–Stockton, CA	34	California
South Florida Regional Transportation Authority (SFRTA)	Tri Rail	Miami–Ft. Lauderdale–West Palm Beach, FL	108	Florida
Southeastern Pennsylvania Transportation Authority (SEPTA)	SEPTA Regional Rail	Greater Philadelphia, PA	479	Pennsylvania
Southern California Regional Rail Authority (SCRRA)	Metrolink	Los Angeles Basin, CA	414	California
Tri-County Metropolitan Transportation District	Tri-Met WES (Westside Express Service)	Wilson–Beaverton for connection to Portland's MAX light rail line, OR	NA	Oregon
Trinity Railway Express (TRE)	Trinity Railway Express	Fort Worth and Dallas, TX region	17	Texas, Dallas and Ft. Worth transportation agencies.
Utah Transit Authority (UTA)	Front Runner	Salt Lake City to Ogden, UT	NA	Utah
Virginia Railway Express (VRE)	Virginia Railway Express	Virginia suburbs of Washington, D.C.	103	Virginia

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arrangement are lines that carry significant freight traffic or where the freight carrier was not prepared to sell to the commuter agency:

- Several METRA (Chicago area) services are operated on freight railroad tracks owned by UP, BNSF, and CP, with the host railroad operating the trains.
- Sounder Services in Washington State on BNSF-owned corridors.
- A few route segments used by the major East Coast commuter rail agencies, such as NJT, MNCR, and MBTA, and by Metrolink in the Los Angeles, California area.

The majority of commuter rail systems engage contractors to operate and maintain the service. The principal exceptions are the major systems around New York City (LIRR, MNCR, and NJT), SEPTA in Philadelphia, and the Chicago area lines that were inherited from bankrupt freight railroads or railroads that did not want to continue as a contract operator. These exceptions are usually full operating railroad subsidiaries of the parent agency, with their own operations and maintenance facilities and personnel. The remaining commuter rail systems contract for O&M with a freight railroad, Amtrak, or an independent firm, depending on local circumstances. In some cases the principal functions (train operations, car and locomotive maintenance, and infrastructure maintenance) are split between two or three contractors.

A.5 Federal Agencies

A.5.1 Federal Railroad Administration

The Federal Railroad Administration (FRA) is the principal modal agency within U.S.DOT concerned with railroads. Compared with the other modal agencies within U.S.DOT it is a small agency and, until recently, received modest funding for its activities. There are three principal offices within the FRA, excluding legal and internal administration activities such as personnel. These are as listed below, with a brief description of their activities.

Office of Policy and Communications

This is a small office that performs in-house analyses and research concerning the railroad industry as requested by the Administrator and other FRA and U.S.DOT officials. It does not make grants and only occasionally awards contracts to analyze issues of interest.

Office of Railroad Development

This office is one of the two major offices in the FRA with a variety of responsibilities, recently much expanded by PRIIA and ARRA. Before this legislation, the office had the following responsibilities:

- Act as the conduit for Amtrak's annual appropriations and oversee Amtrak's activities as directed by Congress and applicable legislation. Much of the actual work in this area concerned working with Amtrak on major NEC capital projects, and working with the administration of the day and Congress on Amtrak-related initiatives and legislation.
- Manage pre-PRIIA and ARRA grant and loan programs, such as Railroad Rehabilitation and Investment Financing (RRIF) and the Rail Line Relocation grant program (aimed at removing busy rail lines from city centers).
- Manage the FRA's responsibilities relating to National Environmental Policy Act (NEPA) compliance in railroad construction projects.
- Manage the FRA's research and development programs, the bulk of which are concerned with safety research to support the FRA Office of Safety activities.

The Office of Railroad Development now has the added and very large responsibility of administering the funds and grant programs established by PRIIA and ARRA. Tight timeframes have

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been established for each stage in implementing these programs, including a policy and vision for intercity passenger rail, grant application procedures and requirements, and award criteria.

Office of Railroad Safety

The Office of Railroad Safety is responsible for developing and enforcing railroad safety statutes, regulations, and standards, maintaining comprehensive railroad accident reporting systems and databases, and conducting safety-related analyses and investigations. The safety regulations and related FRA procedures, such as for obtaining a waiver to specific regulations, are discussed in detail in Appendix C.

A.5.2 Federal Transit Administration

The FTA is responsible for managing the federal government's funds, policies, and programs for urban and rural local mass transportation. Currently, the FTA's responsibilities are defined in the **Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users** (**SAFETEA-LU**) of 2005. The FTA manages a broad range of programs covering all modes of local and regional surface public transportation. The scope of its activities is summarized in the following list:

- Modes of transportation covered include local and regional bus services, light and heavy rail mass transit, commuter rail, commuter ferries, and para-transit systems. The FTA is not concerned with intercity rail transportation, although some shorter-distance Amtrak routes qualified for FTA funding, such as the Boston, Massachusetts to Portland, Maine Downeaster service, the Capitol Corridor in California, and the Philadelphia to Harrisburg service in Pennsylvania.
- The FTA administers a variety of grant programs for planning and capital projects and to purchase or rebuild transit vehicles of all types. However, the FTA does not provide operating support to public transportation agencies. One of these programs, the New Starts grant program, is commonly used to fund part of the cost of building a new commuter rail route or extending an existing route.
- The FTA provides many types of technical assistance to local, regional, and state public transportation agencies, such as for planning, implementing new technologies (such as fare collection systems, customer information systems, implementing intelligent transportation systems), improving safety and security, and others.
- The FTA supports a transit research and demonstration program to encourage the development and application of new technology. Developing alternative-fuel propulsion systems and improving energy efficiency are major elements in the research and demonstration program.

A.5.3 Federal Highway Administration

FHWA involvement with railroad concerns highway traffic safety at rail-highway grade crossings. FHWA provides safety standards for the design of the highway at grade crossings and for crossing warning systems. Specifications for types and placement of crossing warning devices such as gates, lights, and bells are given in the Manual of Uniform Traffic Control Devices (MUTCD). The FRA is responsible for the systems that activate crossing warning devices when a train approaches, and the railroad is responsible for the inspection, monitoring, and maintenance of crossing systems.

FHWA also manages a federal grant program for grade crossing improvements using funds authorized by SAFETEA-LU. Most practitioners know this program as "Section 130 funding," although strictly this title refers to a section in a former surface transportation act, not SAFETEA-LU. Approximately $150–200 million is disbursed to states each year to add or upgrade crossing

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warning systems and other crossing safety measures, up to and including crossing closure, consolidation, and grade separation. The FRA, together with other surface transportation modal agencies, has developed crossing risk assessment methods to guide the selection of crossings for safety improvements.

A.5.4 Surface Transportation Board

The STB was founded in 1995 by the ICC Termination Act, which eliminated the ICC and transferred some of its powers and duties to the STB. The bulk of the STB's responsibilities relate to freight railroads and interstate trucking, but it also inherited ICC responsibilities concerning Amtrak's relationship with host railroads, including resolving disputes between Amtrak and a freight carrier over access rights and payments. More generally, the STB is a federal regulatory agency with general jurisdiction over rail carrier transportation, including construction, acquisition, operation, or abandonment. This jurisdiction is exclusive and preempts that of state and local authorities, even when the service or facility is located entirely within one state.

More detail is provided in Section B.2.8 of Appendix B, including the new STB responsibilities defined by PRIIA to conduct non-binding arbitration in disputes between commuter agencies and freight railroads, and to monitor and enforce Amtrak on-time performance standards.

A.5.5 National Transportation Safety Board

The primary function of the National Transportation Safety Board (NTSB) is to investigate serious individual transportation accidents in any mode, including railroad accidents. NTSB is independent of DOT modal agencies and has the authority to investigate serious accidents, determine the probable cause, and make recommendations to prevent similar accidents in the future. To carry out its investigations, NTSB has the authority to access accident sites, to inspect and test all equipment and systems that may have a bearing on the investigation, to obtain relevant records from the railroad operator, and to compel testimony under oath from witnesses. NTSB investigates almost all passenger train accidents that result in a loss of life, as well as other serious passenger and freight train accidents. It also will conduct special studies of a class of accidents where it identifies a systemic safety problem that the industry and responsible government agencies should be aware of and address.

The end result of each investigation is a comprehensive report detailing the investigation, the probable cause of the accidents, and recommendations to the train operators and responsible government agencies that would prevent similar accidents in the future. NTSB has no safety regulatory powers, and it is the responsibility of the railroads and government regulators to implement the recommendations.

A.6 Railroad and Related Industry Associations

A.6.1 Association of American Railroads

The AAR is the industry association for the Class 1 railroads. It performs all the customary industry association functions and provides a number of services essential to the smooth running of an interconnected network industry. These are:

- Representing the interests of the industry in public forums of all kinds, including Congressional hearings, hearings by other government agencies (DOT, STB, etc.), and through public outreach.
- Maintaining and publishing industry statistics, mainly derived from mandatory reports on railroad finances and operations to the STB, and performing economic and statistical analyses

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on behalf of the industry. AAR publications are the most convenient and accessible sources of railroad financial and operations data.
- Determining industry policies and practices on matters of common interest, especially on technical issues of interoperability between railroads, such as for data communications, train control communications, freight car and equipment condition, and operating rules.
- AAR has established a subsidiary, Railinc Corporation, to provide data services to the freight railroads, including a national register of freight equipment, nationwide freight car location information, an official register of freight car rental rates, and inter-railroad billing and payment systems. The payment systems are used for sharing freight revenue in compliance with agreed contracts, making car hire and demurrage payments applicable when a freight car is not on the owning railroad's property, making freight car repair payments, and similar functions.
- AAR has established the Transportation Technology Center Inc. (TTCI) to provide a wide range of technology services to railroads worldwide, including:
  - Managing the FRA-owned Transportation Test Center (TTC) in Pueblo, Colorado.
  - Carrying out railroad research and testing for AAR itself (under an industry-financed strategic research program), for various FRA research programs, for individual railroads and railroad suppliers, and contract research and analysis for overseas clients. This includes passenger car analysis and testing, such as tests on prototype cars and locomotives, acceptance tests for car purchasers, and crashworthiness tests for the FRA and the Volpe Center.
  - Maintaining and publishing a comprehensive Manual of Recommended Standards and Practices for freight cars and locomotives. Although mostly devoted to freight equipment, a number of standards are widely used in passenger car specifications, such as for wheels, axles, bearings, and couplers.
  - Maintaining and publishing the railroad industries Interchange Rules, which contain the technical standards that must be met for a rail car to be acceptable for nationwide operation.
  - Providing a quality assurance service to manufacturers of safety-critical freight car components, such as wheels axles, bearings, truck frames, and brakes.

As a freight railroad association, AAR does not formally represent or provide services to passenger railroads, which, except for Amtrak, are not members. However, AAR activities do affect passenger railroads that operate services hosted by freight railroads, in part by setting the tone of the freight railroads' relationships with passenger operators through its policy positions, and in part through the various technical and interoperability standards that govern both passenger and freight operations.

A.6.2 American Public Transportation Association

The American Public Transportation Association (APTA) is the industry association for all modes of local and regional public transportation, including commuter rail. APTA's trade association activities are similar to those performed by AAR on behalf of Class 1 freight railroads—maintaining relationships with Congress and relevant DOT agencies, speaking out on issues of interest to its members, and participating in the formulation of public transportation policy. APTA also organizes regular conferences, publishes industry statistics (derived from transit agency reports to the FTA) and develops and maintains selected industry standards. The standards of most relevance to commuter and intercity passenger rail agencies are the Passenger Rail Equipment Safety Standards (PRESS). These standards, which have been developed over the last several years, add considerable detail to the underlying FRA passenger equipment safety standards and are commonly referenced in passenger car specifications and maintenance manuals. The purpose of the standards is not only to enhance safety but also to introduce a measure of standardization among passenger car designs and details, to simplify the car purchasing process, to reduce capital costs, and to improve the reliability and efficiency of passenger rail operations.

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A.6.3 American Association of State Highway and Transportation Officials

The American Association of State Highway and Transportation Officials (AASHTO) supports and represents U.S. state transportation agencies with a very wide range of services and other activities. These activities include both representing state transportation concerns and issues to federal agencies and Congress, advocating for transportation policies and funding responsive to state's concerns, and maintaining a wide range of industry standards for transportation facilities, especially for highways. One of AASHTO's committees, the Standing Committee on Rail Transportation (SCORT) undertakes these activities with regard to rail freight and passenger transportation. SCORT has been growing in prominence in AASHTO with recognition of rail transportation as an important contributor to freight and passenger mobility. An example of recent SCORT activity is to facilitate and provide inputs to the National Rail plan and support the development of state rail plans.

A.6.4 States for Passenger Rail Coalition

States for Passenger Rail Coalition (SPRC) is an organization of state passenger rail officials with a specific interest in implementing and expanding intercity passenger rail services in their states. SPRC's functions are to keep its members fully informed of developments in Congress and Federal agencies that affect intercity passenger rail interests and to advocate for policies and funding supportive of passenger rail developments.

A.6.5 American Railway Engineering and Maintenance-of-Way Association

The American Railway Engineering and Maintenance-of-Way Association (AREMA) is a professional association for individuals interested in all aspects of railroad infrastructure engineering, including railroad track, structures, and signal and train control systems. Membership is drawn from professionals working with railroads, rail transit systems, research and academic institutions, consultants, suppliers, and others. AREMA is the primary developer of industry standards in its areas of interest and publishes two key industry manuals of standards and recommended practices:

- Manual for Railway Engineering
- Communications and Signaling Manual

The manuals are updated annually through the work of about 30 specialist committees and are widely used and referenced in North America and throughout the world for application on freight and passenger railroads and rail transit systems. The Communications and Signals Manual was formerly maintained and published by AAR, but was transferred to AREMA when AAR narrowed its focus to the interests of the Class 1 freight railroads several years ago.

AREMA also holds an annual conference and expo and numerous training seminars, courses, and workshops throughout the year.

A.6.6 Other Trade and Professional Associations

There are a number of trade and professional organizations active in the railroad industry other than those mentioned above. Most are unlikely to be of more than passing interest to officials concerned with planning, implementing, and operating passenger rail services, but it can be useful to know of their existence and the nature of their railroad activities. In most cases,

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abundant information about the organizations and activities is available on-line and is easily accessed.

Professional Engineering Associations

Professional engineering associations that hold technical and scientific conferences publish both general interest professional journals and refereed technical papers and hold regular conferences. The associations may also develop and maintain engineering standards and recommended practices relevant to railroad plant and equipment. The principal associations with rail interests include:

- American Society of Civil Engineers
- American Society of Mechanical Engineers
- Institute of Electrical and Electronic Engineers

Railroad Supply Industry Associations

There are four associations that often work closely with each other and which provide typical industry association services for their members. These are:

- National Railroad Construction and Maintenance Association (NRC) for railroad contractors.
- Railway Engineering-Maintenance Supplier Association (REMSA) for suppliers of track maintenance equipment, materials, and services.
- Railway Supply Institute (RSI) for rail rolling stock manufacturers, repair and maintenance contractors, and lessors of rolling stock.
- Railway Systems Suppliers Inc. for suppliers of signal, train control, and communications equipment.

International and Overseas Organizations

The world divides into two camps regarding railroad technical and interoperability standards. North American practice is applied in its home region (United States, Canada, and Mexico) and elsewhere in the world to mainly heavy-haul freight operations. European practice, as originally developed by the International Union of Railways (UIC), is generally used on passenger-oriented systems, especially high-speed routes and commuter rail systems. UIC used to manage the equivalent of AAR's interchange rules, obligatory standards to be met by passenger and freight rail vehicles used in international service over multiple national rail systems. UIC also published numerous recommended practices for rail vehicles, track, and signal systems. In addition, each country and national rail system developed its own technical standards and safety oversight procedures.

In recent years, many of these functions have transferred to European Commission (EC) institutions, as the EC sought to ensure interoperability of rail systems throughout Europe and harmonize national standards into Europe-wide standards. These standards (Euro Norms [EN] documents) cover such issues as rail vehicle crashworthiness and typically cover requirements for light and heavy rail mass transit as well as for main line railways.

From a North American point of view, European standards and practices of most interest are those concerned with the strength and crashworthiness of passenger rail cars. Car buff (end load) strength specified in European standards is approximately half that required in equivalent FRA and APTA PRESS standards, and unmodified European cars would not be permitted to operate in the United States without a waiver. However, the European market for rail passenger cars is far larger that the equivalent North American market, and a number of car and train designs developed by the supply industry for European customers are attractive to U.S. passenger rail authorities. There could be substantial cost, delivery time, and reliability advantages in acquiring proven European designs, but the feasibility of using such vehicles on the U.S. rail system is unproven.

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A.7 The Railroad Supply Industry

The U.S. freight and passenger railroad industries are supported by a broad supply industry that can provide everything from complete high-speed rail system to inspection services. For the most part, working with the supply industry to obtain materials and services for a passenger rail project is the responsibility of the professional engineers, contractors, and consultants working on the project details, following customary industry standards and practices. However there are two or three areas where the structure of the industry and the products offered can have higher-level influence on the implementation of new passenger rail services. Some points to bear in mind are:

- There has been a worldwide consolidation of the manufacturers of the most complex railroad products, so that few leading firms dominate. Examples are Bombardier (Canada), Alstom (France), Siemens (Germany), and Kawasaki (Japan) for electric locomotives and self-powered train sets of all types, U.S. firms EMD and General Electric for high-power diesel-electric freight locomotives; and Alstom, Ansaldo STS, and Siemens for signal and train control systems. All these firms have operations worldwide, including in the United States, and offer a full range of products. It would be difficult for serious competitors to emerge, given the technological edge and experience accumulated by these firms.
- There are opportunities for smaller or more specialized firms in slightly less complex or specialized products, such as unpowered passenger cars. Examples include the Talgo tilting trains, and the South Korean firm Rotem that is supplying passenger cars with Crash Energy Management structures to Metrolink and other commuter rail authorities. The U.S. market for passenger rail vehicles is relatively small—typically a few hundred vehicles a year—and is dominated by demand from east coast subway and commuter rail systems, especially around New York. The additional demand for new intercity passenger service equipment plus an aggressive program to replace life-expired Amtrak cars might add 200 to 300 cars per year or about 40 percent to the existing market. Some of this expansion can be accommodated within existing facilities and would perhaps require one or two new assembly shops.
- The Railroad Safety Improvement Act of 2008 mandate for the widespread installation of positive train control (PTC) presents a serious challenge for signal and control system suppliers. Existing products have relatively little service history and will likely need further development to meet performance requirements specified by the FRA and the railroads. In addition, some of these requirements are still being worked out by the FRA. Some of the open questions regarding PTC are listed in Section C.7 of Appendix C. Once all requirements are developed, then the suppliers have to produce and install the systems in quantity. Passenger rail interests need to follow these developments and be on the lookout for events that could affect both existing and emerging passenger rail corridors.

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APPENDIX B

U.S. Railroad Legal and Institutional Arrangements

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B.1 Introduction

This appendix provides a description of legal and institutional arrangements that apply to the development and operation of intercity and commuter rail services. Many of these arrangements are regulations or statutes, not subject to negotiation and agreement between stakeholders but rather set ground rules for negotiations and for general railroad operations. Passenger rail officials need a good understanding of these issues when preparing for and conducting shared corridor negotiations to ensure plans and proposals are consistent with applicable requirements.

For several decades at the end of the 19th and beginning of the 20th century, railroads were one of the nation's largest industries and included several of the largest individual private businesses in the country. In addition, they had a near monopoly of surface transportation over much of the United States. This situation led to a range of industry-specific laws and regulations, as lawmakers attempted to balance the interests of railroads, shippers, railroad employees, and the general public. Most of the economic regulations (especially of freight rates and service obligations) were swept away in the efforts to revitalize the railroad industry in the 1970s and 1980s, as described in Appendix A, but many other industry-specific federal laws remain in effect. Likewise, some state laws, such as requiring "full crews" for trains and cabooses on freight trains, became obsolete and have been repealed. However, federal laws concerning labor and management issues remain, and differ markedly from later legislation that applies to other private industries and commerce. There are also numerous railroad safety regulations developed and enforced by the Federal Railroad Administration (FRA), which are regularly updated and enhanced to reduce risks of accidents and injury to employees, passengers, and the public at large. The railroad-specific laws and regulations apply to rail services operated on the general rail system of the United States. With a few exceptions, they do not apply to urban rail transit services operated on dedicated lines that do not connect to the general rail system.

Specific issues discussed in this appendix are:

- Amtrak's powers and duties, especially its right of access to the railroad network and its basis for compensating rail line owners for track use.
- Differences between the intercity and commuter services regarding right of access and compensation of the track owner for track use.
- Compensation for railroad employee injuries.
- Labor relations in the railroad industry.
- Railroad retirement benefits.
- Railroad safety regulations.
- Functions of the Surface Transportation Board (STB) relating to rail passenger services.
- Effects of passenger-related investment on freight railroad finances and taxes.

B.2 Amtrak Powers and Duties

During the late 1960s, intercity rail passenger service in the United States reached the lowest level of the past century. The Transportation Act of 1958 had conferred train discontinuance jurisdiction upon the Interstate Commerce Commission (ICC), and many railroads had used that statute to discontinue large numbers of passenger trains. As connections between trains became more difficult, passenger counts declined, and the Post Office Department gradually diverted profitable mail traffic to air and highway transport. When Penn Central notified the ICC of its intent to discontinue all passenger service west of Harrisburg, Pennsylvania and Buffalo, New York, Congress realized some drastic action was needed to save the remaining intercity rail system from total collapse.

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The result was enactment of the Rail Passenger Service Act (84 STAT 1327), which took effect in 1971 but has been amended in many respects since then. Today, the statutory provisions pertaining to Amtrak are codified in various parts of Title 49 of the United States Code (U.S.C.), and references herein to the "Amtrak Statute" refer to various provisions of Title 49.

The statutory language provides for the composition of Amtrak's Board of Directors and enumerates the powers of the corporation. It mandates that Amtrak be subject to numerous federal laws pertaining to railroads, such as the Railroad Retirement Act, the Railway Labor Act, and the Federal Employers' Liability Act. As summarized in the subsequent discussion, the statute confers a series of rights and powers upon Amtrak.

B.2.1 Right of Access

One of Amtrak's most important rights is the ability to use the facilities and services of other railroads on an incremental cost basis as set forth in 49 U.S.C. §24308. That right even extends to the use of commuter railroads and regional transportation authority facilities that had not entered into contracts with Amtrak in 1971. (See *Metropolitan Transportation Auth. et al., v. Interstate Commerce Commission et al.,* 792 F.2d 287, 294 [2d Cir. 1986]). It is a right conferred only upon Amtrak, and it cannot be conveyed to or used by another rail operator.

Briefly stated, Amtrak is empowered to make agreements for use of rail facilities or services; the terms of such agreements include a penalty for untimely performance. If the parties cannot agree, Amtrak may petition the STB for an order: (1) directing that the requested services and/or facilities be provided, and (2) fixing the terms of use and the compensation to be paid by Amtrak. Section 24308(a)(2)(B) requires that quality of service shall be " . . . a major factor when determining whether, and the extent to which, the amount of compensation shall be greater than the incremental costs of using the facilities and providing the services."

Accordingly, Congress has empowered Amtrak to use facilities of other railroads upon payment of the "incremental costs." This was the bargain made with the railroad industry in return for granting relief from the railways' common carrier obligations to provide passenger services. By 1971 nearly all passenger trains were run at a substantial operating deficit; the creation of Amtrak relieved the freight carrier industry of this major financial burden. Any payment above the incremental level must be based on service quality, and most agreements between Amtrak and other railroads provide for incentive and penalty payments for on-time performance (OTP).

Section 24308 specifies that intercity and commuter rail passenger transportation provided by or for Amtrak has preference over freight trains in using any rail line, junction, or crossing except in case of emergency or certain findings by the Secretary of Transportation. Amtrak also is empowered to apply to the Secretary of Transportation for an order directing a rail carrier to allow accelerated speeds on a line as well as to require the operation of additional trains on schedules based on the legally permissible speeds. In such cases, the Secretary is to consider: (1) any possible impairment of the carrier's freight service, and (2) the statutory goal of Amtrak to implement schedules that attain a system-wide average speed of at least 60 miles per hour (mph). Once the Secretary has issued an order for faster speeds or additional trains, the STB is required to fix the compensation payable by Amtrak using the "incremental costs" standard.

One matter that is not entirely clear is whether Amtrak's powers to compel the use of rail facilities on an "avoidable cost" standard could be applied to the operation of *commuter trains* under contract with a public agency. Amtrak has the general authority to operate and make contracts for the operation of intercity and commuter rail passenger transportation. Further, the provisions of Section 24308 authorizing Amtrak to obtain an STB order for use of rail facilities upon payment of incremental costs do not purport to limit the use of such facilities to intercity service.

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However, Amtrak has never attempted to exercise these rights on behalf of a commuter rail agency for which it is the contract operator, and such an attempt might be highly contentious.

B.2.2 The Surface Transportation Board View on Allocation of Costs and Liability as Decided for the Boston to Portland Downeaster Service

Amtrak's legal rights to obtain services and the use of facilities recently were tested when Amtrak and the Northern New England Passenger Rail Authority (NNEPRA) desired to reestablish rail passenger service between Boston, Massachusetts and Portland, Maine. Guilford Rail System, owners of the railroad facilities in New Hampshire and Maine, resisted, and Amtrak then applied to the STB for an order to compel the use and fix the compensation. In its decision, the STB resolved many disputes as to what should be considered "incremental costs." (*Application of the National Railroad Passenger Corp. – Springfield Terminal Railway Company, Boston & Maine Corporation and Portland Terminal Company,* STB Finance Docket No. 33381, decided May 28, 1998.) Because this is the most recent case on the subject, it is worthy of detailed analysis. The main issues and their resolution are set forth below:

Liability Costs

A. Amtrak was willing to assume responsibility for injury, death, or property damage incurred by Amtrak employees, passengers (including "meeters and greeters"), Amtrak property and equipment, and grade crossing collisions. It proposed to pay Guilford on the basis of $0.0734 per train mile for the "residual liability" (i.e., damages Guilford might incur for injury/death of trespassers, environmental damage, and injury or death of Guilford employees). The STB pointed out that this rate could not be sustained as it would result in an annual payment of only $17,000, whereas a single incident could cost Guilford far more than that. Therefore, the STB ordered Amtrak to either fully indemnify Guilford for these residual liabilities or obtain appropriate insurance to cover them.
B. Guilford also requested indemnification for punitive damages that might be based on Guilford's gross negligence, recklessness, or wanton or willful misconduct. The STB did not require such indemnification because Guilford, operating under the federal statutory scheme, is required to operate safely, and public policy disfavors requiring one party to be responsible for another's gross negligence.
C. Guilford also requested that Amtrak be required to purchase insurance or security for its obligations (on the grounds of its alleged precarious financial condition) and that any order for access be conditioned upon the enactment of legislation in the three affected states to limit liability in excess of insurance coverage. The STB declined to impose any security requirement and pointed out that Amtrak's statutory right of access cannot be denied by holding Amtrak hostage to legislative initiatives.

Maintenance-of-Way Costs

The parties had agreed that the track should be maintained to FRA Class 4 level but could not agree on the incremental costs. Amtrak proposed to pay an incremental maintenance-of-way (MOW) cost of $0.117 per locomotive and car mile based on an ICC determination in an earlier case involving Conrail. They argued that there would be little need for track maintenance for the first 6–8 years after a $39 million rehabilitation project sponsored by the State of Maine. Guilford proposed that payment based on the difference between actual costs under Amtrak operation and the costs recorded during a historic 2-year period. Concluding that neither party had presented sufficient evidence to enable an accurate estimate of the incremental MOW costs, the STB imposed the Amtrak proposal on an interim basis subject to reopening once the parties have had some experience with Amtrak operation over the line.

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Line Rehabilitation Costs

Although the parties had agreed on most of the necessary rehabilitation work, issues remained as to bridge rehabilitation and construction of a bypass track around the freight yard near Portland, Maine. With regard to the bridges, Guilford claimed $21 million worth of work was needed, while Amtrak's evidence showed the work could be performed for $2 million. The STB rejected Guilford's claim because it was founded upon the assumption of greater speeds than Amtrak proposed to operate. The STB also noted that several years earlier, Guilford had made a proposal to operate this very same service at the higher speeds without any bridge rehabilitation.

Amtrak had proposed constructing a 2-mile yard bypass, while Guilford contended that the track needed to be about ¾-mile longer. Based on the facts, the STB decided the 2-mile track would suffice and would not impair the freight operations.

Performance Incentive Payments

Although Guilford had requested some modifications, the STB imposed the normal Amtrak provision that monthly incentives begin when trains are operated 80 percent on time and that penalties become payable in any month that trains are operated less than 70 percent on time. This provision is in effect with nearly every other railroad.

Administrative Costs

The STB agreed with Guilford that Amtrak must assume responsibility for "incremental administrative costs" that the freight carrier might incur because of the passenger train operation. Examples of such costs would be dispatching, accounting, and billing. Because the record did not suggest a methodology to calculate such costs, the STB left this to future negotiations.

Future Incremental Costs

Guilford asked that provision be made for future costs, such as freight service expenses, caused by a passenger train breakdown and costs to enhance facilities that would not be needed in the absence of passenger service. The STB noted that Amtrak had agreed to pay for non-routine services, including those associated with a passenger train breakdown, and that the carrier could petition for reopening of the case to address future disagreements regarding facility capacity.

Indexing

Guilford had proposed that costs be indexed based on the Consumer Price Index for all urban consumers. The STB agreed with Amtrak's proposal to use the Railroad Cost Recovery Index (RCRI), because that is more specifically related to the cost of providing railroad service and has been used to index costs in numerous other Amtrak cases.

Jurisdictional Issues

This subsection of the opinion deals with the STB's powers as well as the need to impose certain conditions requested by the parties for future conduct. In view of the importance of these issues, some discussion of them is warranted. However, readers should note that these STB proceedings predate PRIIA. In particular, the law empowering the Secretary of Transportation to issue orders requiring a host railroad to accommodate an increased number of passenger trains and to require track rehabilitation has been transferred under PRIIA to the STB:

- **Rehabilitation, Maintenance, and Initial Operations.** Guilford argued that the STB lacked authority to require Guilford to upgrade or maintain its line to the level requested by Amtrak or to determine the number of trains Amtrak can initially operate. The basis for this position was that another section of law, 49 U.S.C. §24308(d) and (e), required that the Secretary of Transportation (now the STB) issue any order covering the number of trains to be operated or the maintenance and rehabilitation of the line. The STB rejected these contentions, pointing

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out that the cited provisions of law apply only to rehabilitation of or additional trains on a line where *Amtrak already operates service,* not where a new service is being developed. Because commencement of service is dependent upon the rehabilitation work and maintenance to allow passenger train speeds, the STB imposed both as requirements. Regarding maintenance, the STB observed, "Indeed, without a maintenance obligation, a host carrier could circumvent our prescription of access simply by allowing track to degrade."

- **Right to Convey or Lease the Line.** Because the proposal entailed a $39.6 million investment of public funds in the line's rehabilitation, Amtrak asked that Guilford be prohibited from conveying any property interest in it without the approval of Amtrak or the STB. The STB declined to impose this requirement because it already has general jurisdiction over the sale or lease of rail lines. Moreover, Amtrak could, if necessary, use its condemnation power under 49 U.S.C. §24311 (discussed below).

  Guilford also objected to a proposal that would have allowed Amtrak's "successors or assigns" to receive the access rights granted to Amtrak in the case. The STB agreed with Guilford on this point, stating:

  > "We agree that the access rights that the Act allows us to grant to Amtrak belong only to Amtrak and may not be transferred to a third party "successor or assign" unless the Act . . . specifically provides otherwise. We see nothing in the access provisions of the Act that allows us to prescribe access terms for a party other than Amtrak, and our decision may not be construed otherwise."

- **Arbitration.** Because Amtrak's agreements with other freight railroads require that disputes be submitted to arbitration, Amtrak asked that such a requirement be imposed. Guilford opposed this request, and the STB stated that it would resolve any future disputes rather than imposing arbitration.
- **Federal Transit Administration Boilerplate Restrictions.** Amtrak had asked that Guilford be required to comply with certain requirements that normally would be imposed as a condition to the voluntary receipt of grants from the Federal Transit Administration (FTA). The objections related to: (1) a statement that the parties "acknowledge" certain matters, (2) that Guilford agree that the funds it receives will not be used for lobbying, and (3) a requirement that Guilford comply with a host of statutes, U.S. Department of Transportation (U.S.DOT) regulations, and state provisions that otherwise would be inapplicable to the railroad (e.g., state laws and regulations relating to civil rights, employment practices, and environmental matters). The STB agreed with Guilford that its authority is limited to prescribing the facilities and services that host carriers must provide to Amtrak. It held that the law provides no basis for prescribing the uses to which carriers put the specific funds they receive for compensation or to require carriers to observe laws and regulations to which they otherwise would not be subject. Accordingly, any such requirements in FTA Grant Agreements cannot be forced upon the operating railroad.

Although the *Guilford* opinion is a good indication of how similar issues involving other parties would be resolved by the STB, some of the issues were decided based on the absence of proof by one or both parties. If concrete evidence had been presented on those issues, the outcome might have been different.

B.2.3 Prevention of Facility Downgrading

Amtrak also has the power to object to the proposed downgrading of any railroad facility it uses. In such case, the Secretary of Transportation is to determine the "avoidable costs," defined as " . . . those costs the rail carrier may avoid if it does not have to retain or maintain a facility in the condition Amtrak requests." Amtrak is required to pay such costs if it desires to continue maintaining the utility of the facility. See 49 U.S.C. §24309.

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B.2.4 Power of Eminent Domain

Amtrak enjoys the right to acquire property interests by eminent domain. Section 24311 empowers Amtrak, *inter alia,* to acquire interests in property necessary for intercity rail passenger transportation. Although property of a rail carrier, a state, political subdivision, or governmental authority is exempt from the general authority, Section 24311 confers specific authority to condemn property interests from rail carriers. This provision authorizes Amtrak to apply to the STB for an order establishing the need of Amtrak for the property interest and requiring conveyance of the property interest on reasonable terms, including just compensation.

The statute requires that such property interest be "necessary for intercity rail passenger transportation." It mandates that the requested conveyance be ordered no later than 120 days after filing unless the STB finds that: (1) the conveyance would impair significantly the ability of the carrier to carry out its common carrier obligations [i.e., impair its freight service], and (2) Amtrak's interests can be adequately protected by acquiring an alternative property interest. Such an interest could be one of a lesser stature, such as a lease, or the fee to some other property. Interestingly, the statute makes no provision for use of this power to acquire property to be used for commuter rail transportation.

Amtrak's eminent domain powers were upheld by the U.S. Supreme Court in another case involving Guilford (*National Railroad Passenger Corp. et al. v. Boston & Maine Corp. et al.,* 503 U.S. 407 [1992]). That case arose when segments of Guilford's line used by the *Montrealer* passenger train fell into such disrepair that some of the line was restricted to a speed of 5 mph. When requests for better maintenance were unsuccessful and Boston and Maine Railroad (B&M) spurned a purchase offer, Amtrak entered into an agreement with the Central Vermont Railroad (CV) pursuant to which Amtrak would condemn a 48.8-mile segment of Guilford trackage between Brattleboro and Windsor, Vermont. Upon acquisition, Amtrak would reconvey the segment to CV, which would maintain it to proper standards and grant Guilford trackage rights to serve its customers. Amtrak would contribute $3.1 million toward the rehabilitation costs with CV funding the balance.

The ICC authorized the condemnation, holding that Amtrak had no alternative route for the *Montrealer* trains and that Guilford would be protected by the proffered trackage rights and would receive just compensation, fixed at $2,373,286. Guilford petitioned for review in the U.S. Court of Appeals for the D.C. Circuit, which held that Amtrak is not authorized to condemn property which it intends to reconvey to another railroad. Therefore, Amtrak's needs could be satisfied by an easement or trackage rights. Shortly thereafter, Congress amended the Amtrak statute to specifically authorize the subsequent conveyance of condemned railroad property. Nevertheless, the D.C. Circuit denied rehearing. While recognizing that the new amendment applied to this case, the Court's majority panel held that Amtrak had not established that the property was "required for intercity rail passenger service."

The U.S. Supreme Court reversed, holding that the Court of Appeals' interpretation would limit Amtrak's condemnation authority to property that was necessary, in the sense of indispensable, to Amtrak's operations. Citing an early case in American jurisprudence, which interpreted the word "necessary" to mean "convenient or useful," the Court found "plausible if not preferable," the ICC's interpretation that Amtrak can find that an acquisition is required when it is a useful and appropriate way to accomplish its goals (*McCulloch v. Maryland,* 4 Wheat. 316 [1819]). Because there was no dispute that Amtrak intended to use the condemned trackage for the *Montrealer* service, the ICC had held such use to be sufficient to satisfy the statutory command that condemned property be "required for intercity rail passenger service." This was held to be a reasonable interpretation.

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B.2.5 Limitation on Tort Liability

Several years ago, Congress enacted a limitation on rail passenger transportation liability for personal injury to, or death of, a passenger or damage to a passenger's property. This provision, codified at 49 U.S.C. §28103, applies to any rail passenger operation, including commuter operators, Amtrak, or any rail carrier. The statute limits the aggregate allowable awards to all passengers against all defendants for all claims arising from a single accident or incident up to $200 million. It also authorizes rail passenger service providers to enter into contracts to allocate financial responsibility for claims, and it mandates that Amtrak maintain minimum liability insurance coverage of $200 million. Finally, the statute contains limitations on punitive damages and provides that any such damages shall be included within the $200 million maximum.

This law is relatively new and has yet to be tested in the courts. It could prove valuable in fixing the upward limit of exposure for the specified losses for all regularly scheduled passenger rail operations

B.2.6 Additional Significant Rights

The Amtrak Statute also grants special rights to Amtrak regarding exemption from federal or state regulation of rates, routes, and services, from certain state and local taxes, as well as from state laws regulating the size of train crews, pay periods, or paydays.

B.2.7 Enforcement of the Amtrak Statute

Review of the powers and duties conferred upon Amtrak gives rise to the question of whether a state, municipality, or other aggrieved party can sue: 1) Amtrak for failure to discharge its duties, or 2) a freight railroad for alleged failure to comply with the law (e.g., for giving freight trains preference over Amtrak's passenger trains). For example, who can sue if Amtrak attempts to discontinue a route without following the statutory procedures, or if a rail carrier consistently delays Amtrak's trains by running freight trains ahead of them?

The answer is found in that section of the Amtrak Statute presently codified at 49 U.S.C. §24103. This provides that except for certain employee matters, " . . . only the Attorney General may bring a civil action for equitable relief . . ." when Amtrak or a railroad refuses or neglects to discharge its duties under [the Amtrak Statute], engages in, or adheres to an action, practice or policy inconsistent with the statute or obstructs or interferes with an activity authorized by the statute. A further provision specifies that only the U.S. Attorney General can seek judicial review of any service discontinuance or reduction by Amtrak.

More than 30 years ago, the U.S. Supreme Court passed upon this provision in the case of *National Railroad Passenger Corp. et al. v. National Association of Railroad Passengers,* 414 U.S. 453 (1974). This case arose out of the discontinuance of passenger service by the Central of Georgia Railway Co. (C of GA), a subsidiary of the Southern Railway Company. Although the C of GA entered into an Amtrak agreement, its parent did not. Nevertheless, the C of GA sought to drop its passenger trains, and the National Association of Railroad Passengers commenced a lawsuit in the U.S. District Court for the District of Columbia to enjoin the discontinuance on the grounds that the Amtrak statute precluded the discontinuance, because the parent corporation had not entered into an Amtrak agreement and was continuing to operate its own trains.

The District Court dismissed the action on the grounds that the passenger organization lacked standing in view of the provision that only the Attorney General can seek to enforce the statute. An appeal was taken to the Court of Appeals, which reversed, holding that the plaintiffs had standing

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and that the law did not bar an action by a private party who allegedly was aggrieved (See 475 F.2d 325 [D.C. Cir. 1973]).

The U.S. Supreme Court reversed with six justices voting for the majority opinion, one justice concurring, one dissenting, and one not participating. After reviewing the details of the legislative history, the majority concluded that the question of private actions to enforce the law was specifically considered and rejected by the House Committee. The majority also noted that inferring a private right of action could result in a barrage of lawsuits in all judicial districts through which a particular train operates with the possibility of conflicting results and heavy monetary losses while the cases wound their way through the courts. Hence, the court held that the section in question provides for a suit by the U.S. Attorney General as the exclusive remedy.

Justice Brennan concurred in the result. He would have left open the question of whether a private suit for mandamus could be brought against the U.S. Attorney General in the event of his alleged failure to enforce the statute.

Justice Douglas dissented. His opinion pointed out that aggrieved passengers are the most obvious complainants, are in the zone of interests protected by the Amtrak Statute, and that they deserve to be heard. He cited other cases where a grant of jurisdiction to the U.S. Attorney General was not held to deprive individual citizens of standing to sue.

Thorough legal research has failed to find any other decision that would supersede this case. Therefore, this case, decided in 1974, remains the law of the land. Although the specific section of law at issue therein has been recodified, the substantive provisions are nearly identical. Accordingly, in view of what was a 7-1 decision on the issue of "standing to sue," it is abundantly clear that under present law, only the U.S. Attorney General may sue to enforce the rights and obligations imposed by the Amtrak Statute.

In response to further queries on this issue, thorough research indicates that not a single case has been decided under this statute in any federal court subsequent to the Supreme Court's 1974 decision. The research found but one lawsuit against a railroad to enforce Amtrak's priorities over freight service. That case was bought by the Department of Justice (on behalf of Amtrak) against the Southern Pacific Railroad. Because there was no reported opinion, the matter must have been decided out of court.

B.2.8 Additional Surface Transportation Board Powers

The Passenger Rail Investment and Improvement Act of 2008, enacted in October 2008, has given the STB an additional responsibility to monitor Amtrak OTP. If performance falls below the standards specified in Section 207 of the legislation, then the STB may initiate an investigation. If the investigation determines that the host carrier is at fault, then the STB may impose penalties or other relief on that carrier. Further details of this provision are discussed in Section 2.8 of the Guidebook and in Appendix C. As of March 2009, the STB was holding hearings and developing procedures to implement this responsibility.

In addition, the powers formerly exercised by the U.S. Secretary of Transportation to require a host railroad to accommodate additional trains on an existing Amtrak service, and to upgrade track to increase speed were transferred to the STB (per Section 213 of PRIIA)

B.2.9 Summary

Congress has given Amtrak broad powers to use railroad facilities and to have services provided on an "incremental cost" basis. Amtrak also enjoys numerous other powers, including the right of property acquisition by eminent domain, exemption from certain taxes, as well as from federal

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and state laws governing rates, routes and services, and numerous others. Federal law also imposes a ceiling on railroad tort liability arising out of a single accident.

Although the statute appears to permit use of Amtrak's rights for commuter rail operations, such power, if it exists, has not been exercised to any great extent. In the event of dispute, allocations of costs and responsibilities between Amtrak and a freight railroad generally would be in accordance with the *Guilford* decision regarding intercity rail passenger service between Boston, Massachusetts and Portland, Maine.

Finally, under present law, only the U.S. Attorney General may bring a lawsuit against Amtrak or a rail carrier for an alleged failure to comply with a provision of the Amtrak Statute.

Of all the rights conferred upon Amtrak, the most significant appears to be the right to have rail services provided on an incremental cost basis, a right which is exclusive to Amtrak. The liability ceiling and related insurance program and the freedom from some federal and nearly all state regulation also are of significance.

B.3 Differences between Commuter and Intercity Service

There is a sharp distinction between intercity passenger rail services operated by Amtrak and non-Amtrak services (usually commuter) in all matters pertaining to passenger rail operations on shared corridors. Amtrak's right of access as discussed in Section B.2 do not apply to non-Amtrak services, greatly affecting access terms and other aspects of the relationship between host and tenant railroads.

In many cases it is obvious whether a service is commuter or intercity, but cases arise particularly on shorter corridors where the distinction is less obvious. In these cases it is important to understand the specific factors that determine whether a given rail passenger operation should be classified as "intercity" or "commuter." Unfortunately, the quest for clear definitions of these services has proved elusive. The primary reason is that the two types of rail service overlap in many respects, especially in the rail corridors of highly populated areas. For example, such intercity services as the *Northeast Corridor, Downeaster, Pacific Surfliner,* and *Capitol Corridor* transport riders who travel regularly along short portions of the route, some of whom utilize reduced fare multiple ride tickets. Likewise, there are "commuter" trains that carry large numbers of "intercity" travelers. Examples of the latter are the Long Island Rail Road service between New York City and Montauk, New York [127 miles] and the combination of New Jersey Transit (NJT) and Southeastern Pennsylvania Transportation Authority (SEPTA) services used by many for economical travel between New York City and Philadelphia, Pennsylvania.

The Amtrak Statute contained a provision that any railroad entering into an agreement with Amtrak could discontinue all its intercity passenger train service effective May 1, 1971. In seeking to define intercity service, Congress provided that:

> "Intercity rail passenger service means all rail passenger service other than (A) commuter and other short-haul service in metropolitan and suburban areas, usually characterized by reduced fare, multiple ride and commutation tickets, and by morning and evening peak period operations; and (B) [auto-ferry service]."

Thus, rather than stating what intercity service *is,* Congress declared what it *is not.* As the May 1, 1971 date for commencement of Amtrak operations neared, the importance of properly labeling each service became critical as any "intercity" train operated by a railroad that had contracted with Amtrak would be discontinued unless Amtrak assumed its operation.

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Although the statute did not specify what tribunal should make this determination, the ICC undertook the task in the case of *Penn Central Transp. Co. Discontinuance,* 338 ICC 318 (1971). Therein the commission stated that commuter and other short-haul service would "likely" include some or all of the following criteria:

1. The passenger service is primarily being used by patrons traveling on a regular basis either within a metropolitan area or between a metropolitan area and its suburbs;
2. The service is usually characterized by operations performed at morning and evening peak periods of travel;
3. The service usually honors commutation or multiple-ride tickets at a fare reduced below the ordinary coach fare and carries the majority of its patrons on such a reduced fare basis;
4. The service makes several stops at short intervals either within a zone or along the entire route;
5. The equipment used may consist of little more than ordinary coaches; and
6. The service should not extend more than 100 miles at the most, except in rare instances; although service over shorter distances may not be commuter or short haul within the meaning of the exclusion.

Penn Central's bankruptcy judge referred disputes involving three train services to the ICC for advisory opinions. The services at issue were: (1) New York City and Chatham, New York [127 miles], (2) New York City and Philadelphia, Pennsylvania [91 miles], and (3) Philadelphia and Harrisburg, Pennsylvania [104 miles]. The Commission found the New York to Philadelphia service to be "commuter" based on the shorter distances involved and that many passengers traveled to or from the midpoint of Trenton. Likewise, the Harrisburg service was deemed "commuter" as it was said to really constitute two separate services that went "back-to-back" at Lancaster. The Chatham, New York service was held to be intercity; although its trains had many characteristics of "commuter or other short haul" operations, there was no midpoint with any volume of rider turnover and the 127 mile run was simply too long to be deemed a commuter train.

After receipt of the ICC's advisory opinion, the bankruptcy judge declined to further enjoin the discontinuance of the Chatham trains, and various parties appealed. In an opinion discussing the history of the Amtrak statute and the criteria used by the ICC, the Third Circuit Court of Appeals upheld the district judge's refusal to issue a preliminary injunction (*Matter of Penn Central Transportation Company, et al.,* 457 F.2d 381 [3d Cir., 1972]). Subsequently, the ICC's recommendations were confirmed by the district court, thereby ending the judicial inquiry into the matter (*Matter of Penn Central Transportation Company, Debtor, In re Discontinuance of Intercity Passenger Service,* 370 F. Supp 22 (E.D.PA 1974]).

Based on the confirmation by federal courts, it is reasonable to conclude that the ICC's criteria would be applied to resolve any question as to whether a given service is "intercity" or "commuter or other short haul." Those criteria also would be applied to any proposed new service, based on such matters as length of the operation, distance between stations, types of tickets sold, projected ridership characteristics, and equipment employed. As indicated, some commuter services have characteristics of intercity service and vice versa. The determination would turn on application of the criteria and consideration of the overall objective (i.e., is the operation being planned primarily to transport commuters or long-distance passengers).

It is important to note that the definitions of commuter and intercity passenger rail service used to determine whether a service would enjoy Amtrak's access rights may differ from other definitions. Most importantly, definitions used to establish eligibility for capital grants from FTA grant programs do differ in some respects. However, these definitions have no bearing on right of access to the general railroad system.

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B.4 Injured Worker Compensation

Railroad employees are covered by a unique law, Federal Employers' Liability Act (FELA), concerning compensation for on-the-job injuries and occupational health problems. This statute governs the tort liability for injury or death sustained by railroad employees while on duty. It dates from the early 1900s, an era when railroading was a very dangerous occupation and long before the enactment of no-fault workers' compensation laws. FELA is not a "no-fault" law; liability is based on the negligence of the employer railroad, its agents, and employees. Contributory negligence by the injured or deceased employee does not bar recovery but, rather, serves to reduce the damages by the proportion of negligence chargeable to the employee. However, contributory negligence is ignored when the injury results from violation of a federal safety statute or FRA safety regulation. Apart from any cost impacts, a significant disadvantage of FELA is that it sets up an adversarial process between management and the injured employee that can damage employee relations.

Some studies have shown that use of state workers' compensation schemes would be less costly than the often protracted litigation resulting from claims under FELA. In recent years, passenger rail interests such as the American Public Transportation Association (APTA), Amtrak, and others have made efforts to amend, repeal, or exempt certain entities, such as commuter railroads and Amtrak, from FELA. The freight railroads and the Association of American Railroads (AAR) have also expressed interest in replacing FELA in the past, but appear to have lost interest in this issue in recent years. Lacking united industry pressure, there has been no progress with changing FELA, and it still applies to passenger and freight railroads operating on the general railroad system of the United States.

B.5 Labor Relations in the Railroad Industry

Labor relations between trade unions representing railroad employees and management are governed by the Railway Labor Act (RLA), originally passed in 1926 (U.S.C. 1926). This statute governs labor relations between railroads and their employees, and differs in a number of ways from the National Labor Relations Act (NLRA) that governs industrial relations for private-sector employees elsewhere in the economy. Although it often is criticized as being outmoded, the law has served its purpose in maintaining stability and preventing strikes in the railroad and airline industries (Title II of RLA makes the statute also applicable to the airline industry). It guarantees the right of employees to join labor organizations and provides the methodology for recognizing bargaining representatives and the orderly settlement of disputes.

Contracts between railroads and unions do not "expire." Rather, they contain a date after which requests for changes in pay rates, work rules, or working conditions can be served by either party. These are so-called "major disputes," and the requests for change are referred to as "Section 6 notices." No changes can be implemented by either party, and the employees cannot strike until the statutory mechanism has been exhausted. Only then can the carrier impose its requested changes and the union strike if it so chooses.

The law empowers either party to a major dispute to request the services of the National Mediation Board. There follows a lengthy time period (sometimes in excess of 1 year) during which the Board meets with the parties and attempts to bring about a settlement. The Board may proffer arbitration, but either party can refuse. Once the Board is convinced that its mediatory efforts have failed, it will release the parties from mediation, and the parties can resort to self-help 30 days later, unless an emergency board is created. In order to prevent a substantial interruption of interstate commerce, the Board may suggest that the President create an

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emergency board to address the matter. If such a board is constituted, it must investigate and make its report in 30 days, and there can be no unilateral self-help until 30 days after the report has been rendered.

As indicated above, the emergency board procedure adds another 60 days to the time frame. But even more time is allowed for disputes between a union and, as the statute states, "a publicly-funded and publicly-operated carrier providing rail commuter service. . . ." In such situations, the following steps are enumerated:

(A) In the event the President does not appoint an emergency board, any party or the Governor of any state served may request the establishment of such a board, and the President is required to appoint one. No change (or strike) can take place until 120 days following the appointment.
(B) Following the 120-day period, any party or the Governor may request appointment of *a second* emergency board. In that event:
  (1) The President must establish a second emergency board;
  (2) Within 30 days after establishment, the parties shall each submit a final settlement offer;
  (3) Thirty days later, the board must report on which offer is the most reasonable;
  (4) No change (or strike) can take place until 60 days after the board has made its final report;
  (5) If the board selects the railroad's final offer as the more reasonable and if the union strikes after the 60-day period, the employees shall not be eligible to collect unemployment insurance benefits; and
  (6) If the board selects the union's offer as the more reasonable, the railroad refuses to accept it and the employees strike after expiration of the 60-day period, the railroad may not obtain any benefits from a program it may have with other carriers to obtain "work stoppage" benefits.

Disputes regarding grievances or the interpretation or application of an agreement are deemed "minor disputes" and are handled through a prescribed arbitration process. Employees cannot strike over such issues. Although the RLA's provisions are cumbersome, for the most part they have succeeded in maintaining a stable labor situation, especially for commuter railroads.

B.6 Railroad Retirement Benefits

Retirement benefits for railroad employees are governed by the Railroad Retirement Act (RRA). The RRA, originally enacted in 1934, provides a retirement benefits scheme that is in effect the railroad industry's version of Social Security plus an occupational pension (U.S.C. 1974). Although the benefits are more generous, the program is more costly both to employers and employees. As with FELA, there have been legislative attempts to modify the statute and to remove certain employees from its scope, but these have not met with success. One reason for the stalemate is that as freight railroads have become more efficient over the years, their employment has drastically declined. Passenger railroads are more labor intensive and have been expanding. Thus, the contributions of the growing number of passenger employees are being used to help pay the retirement benefits of the large number of retirees from the freight railroads.

The RRA in its current form (after major amendments in 1974) provides for two tiers of benefits. One tier provides benefits that are similar to and replace Social Security benefits, including disability and family benefits. The other tier provides benefits similar to a private occupational pension plan. The RRA applies to all employees of railroads and railroad industry associations, except " . . . any street, interurban, or suburban electric railway unless such railway is operating as a part of the general diesel railroad system of transportation. . . ." The STB is empowered to determine whether a particular operation falls within the purview of the exemption.

The Railroad Unemployment Insurance Act is a companion statute that provides a system of unemployment benefits to railroad employees.

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B.7 Railroad Safety Laws and Regulations

Over the years, Congress has enacted a series of laws intended to promote safety in all aspects of railroad operations. Examples are the Safety Appliance Act, originally passed in 1893, which required power (air) brakes on freight trains and handholds and steps on railroad cars, and the Hours of Service Act, originally passed in 1907. Both these early laws and many of the current regulations are primarily concerned with railroad employee safety, prompted by the extremely high casualty rate among railroad employees in the late 19th and early 20th centuries. Regulations explicitly concerned with the passenger safety have also been developed in recent years. These safety laws and regulations are codified in Title 49 of the U.S.C., with the detailed regulations published in 49 Code of Federal Regulations (CFR) Parts 200-299. In addition, Memoranda of Agreement between the FRA and the Occupational Safety and Health Administration (OSHA) define the boundaries between the responsibility of OSHA and the FRA regarding employee safety. In general, requirements concerning employee activities on or near moving railroad equipment are covered by FRA regulations, and those away from moving equipment (for example, in maintenance workshops or while working on structures such as bridges) are covered by OSHA regulations.

These safety-related laws and regulations, as stated in Section 20102 of Title 49 of U.S.C., apply to any form of non-highway ground transportation that runs on rails or electromagnetic guideways excepting " . . . rapid transit operations in an urban area that are not connected to the general railroad system of transportation." Thus, all commuter rail and Amtrak operations are covered. Selected regulations are also applicable to urban rail transit operations where conventional rail services and urban transit share tracks and corridors.

Individual states may not adopt or enforce laws or regulations on any subject once the appropriate federal agency (Secretary of Transportation, the FRA, or Department of Homeland Security) has adopted regulations on the subject. However, states are permitted to adopt more stringent safety laws or regulations when: (1) necessary to eliminate or reduce an essentially local hazard; (2) not incompatible with a federal law or regulation; and (3) does not unreasonably burden interstate commerce.

The provisions impose requirements and either mandate or authorize the Secretary of Transportation to promulgate detailed regulations to implement them, and individual regulations can be complex. All passenger operations on shared corridors must comply with FRA regulations regarding to track, signal systems, rolling stock, and operations. If an operator wishes to depart from those regulations, it must obtain a waiver from the FRA Office of Safety. Where appropriate, such as for a new dedicated high-speed route that does not use conventional U.S. railroad technology, the FRA will develop a "Rule of Particular Applicability" in cooperation with the operator that specifies safety requirements for infrastructure, vehicles, and operations.

Appendix C provides details of FRA safety regulations of most importance to passenger operations on shared corridors, including where new or changed regulations will be introduced in response to the Railroad Safety Improvement Act (RSIA) of October 2008.

In addition to the formal federal regulations, there are numerous technical engineering standards applicable to railroad plant and equipment to ensure safe and reliable operation, and interoperability of systems and components throughout the industry. These standards have been developed by professional engineering societies and industry associations such as AAR, APTA, the American Railway Engineering and Maintenance Association (AREMA), the Institute of Electrical and Electronic Engineers (IEEE), and the American Society of Mechanical Engineers (ASME), and are almost universally applied.

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B.8 Role of the Surface Transportation Board

The STB is a federal regulatory agency with general jurisdiction over rail carrier transportation, including construction, acquisition, operation, or abandonment. This jurisdiction is exclusive and preempts state and local authority even when the service or facility is located entirely within one state. The STB's creation and jurisdiction are founded upon the ICC Termination Act of 1995, which eliminated the ICC and transferred some of its powers and duties to the STB.

The bulk of the STB's responsibilities relate to freight railroads and interstate trucking, but it also inherited ICC responsibilities concerning Amtrak's relationship with host railroads. These include:

- Resolving disputes over calculating incremental costs for specific routes and operations, including where the STB has ordered that a railroad increase speeds for passenger service. This responsibility rested with the Secretary of Transportation before enactment of PRIIA in 2008.
- Compelling use of a route for intercity passenger trains if the host railroad refuses to cooperate.
- Resolving disputes regarding the necessity for and the cost of rail line improvements to support a given level of freight and passenger service.
- Resolving questions regarding agreements for assigning liability, insurance, and indemnification agreements for intercity passenger service.
- Reviewing and authorizing the condemnation of a rail line under Amtrak's right of eminent domain to acquire a rail line "required for intercity rail service".

Many of the STB's responsibilities were exercised during the lengthy effort to restore passenger services between Boston, Massachusetts and Portland, Maine in the late 1990s. Absent new legislation, these events provide a good indication of how similar questions will be resolved in the future. Appendix A and Section B.2 of this appendix provide a detailed discussion of the STB actions in disputes between Amtrak and Guilford Rail System (the freight railroad) in these matters.

Although the STB's powers with respect to commuter rail service are not entirely clear, this has not proven to be a problem. The statute [49 U.S.C. §10501(c)(2)] specifies that the STB does not have jurisdiction over mass transportation provided by a local governmental authority. However, a subsequent subsection provides that the STB does have jurisdiction over transportation provided by a local governmental authority if certain findings are made. The following section [49 U.S.C. §10502] is significant because it empowers the STB to exempt rail carrier transportation from its jurisdiction upon finding that its oversight is not necessary to carry out the national transportation policy and that the transaction or service is of limited scope.

Accordingly, as a practical matter, local commuter rail operators have little contact with the STB except when the agency is called upon to resolve Amtrak-related matters. The normal procedure is for the sponsors of a proposed commuter rail construction and operation project to petition the STB for exemption from its jurisdiction, and the Board generally has granted such petitions to the extent of its legal authority to do so.

Although the STB has significant responsibilities in disputes relating to Amtrak operations over freight railroads, it did not until recently have any responsibilities and powers to intervene in disputes between a freight railroad and a commuter agency. There are also no statutes relating to commuter rail access to the rail network or concerning access costs that the STB could be tasked with interpreting or enforcing. However, PRIIA of October 2008 gave the STB an important power to assist with the arbitration of disputes between a freight railroad and a commuter rail agency, and also further responsibilities concerning Amtrak cost accounting and enforcing OTP:

- The STB may conduct non-binding arbitration between a rail carrier and a commuter rail or transit authority if the parties are unable to reach agreement for the access and use of freight railroad track for commuter operations or the acquisition of an interest in the carrier's ROW.

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- The STB may (and must if requested by Amtrak, the host carrier or a public agency funding a service) investigate poor OTP of Amtrak services (below 80 percent on-time or in violation of applicable agreements), determine causes, and make recommendations of reasonable actions to improve OTP. If the host carrier is at fault, the STB may impose damages or other relief on behalf of Amtrak.
- The STB is to assist Amtrak in developing a standardized methodology for allocating capital and operating costs for state-supported services, and a new formula for allocating costs among users of the Northeast Corridor.

Although these powers and responsibilities are new, and some time will have to pass before it is clear how they will be applied in practice, they should help address some of the more difficult problems faced by agencies implementing new or expanded passenger rail service.

B.9 Effect of Passenger-Related Investment on Freight Railroad Taxes and Financial Performance Measures

This section discusses two technical financial issues that have sometimes arisen when a public authority is making an investment in a freight railroads infrastructure to accommodate passenger service. More general questions of whether a host freight railroad should contribute to the capital investment in recognition of benefits that the freight railroad will receive from the investment (such as reduced maintenance cost or quicker trip times), and ensuring that the passenger agency receives the expected benefits from the investment are discussed in the Guidebook.

In a majority of passenger rail developments, a public agency (state DOT, commuter rail agency, etc.) will make an infrastructure investment on a private railroad to ensure access, and increase line capacity to achieve the desired level of service. The public agency does not usually retain ownership of the investment, except station buildings in some cases. Instead, the investment is transferred to railroad ownership as part of the payment for access to freight railroad tracks and for the level of service (i.e., speeds, train frequency, OTP) specified in the access agreements.

In this case, the freight railroad becomes the owner of the infrastructure assets purchased with public funds and will include the value of the assets in its financial reporting. This has a number of consequences that may affect the commercial railroads' willingness to accept public investments, specifically:

- The asset would be subject to property taxes levied by state and local government entities (counties, towns, and cities). In a number of cases the passenger rail agency agrees to compensate the freight railroad for property taxes as part of its ongoing operations and maintenance payments. Different formulas are used depending on the individual state's tax structure. While state tax impacts do not seem to be a major problem, there have been instances of a railroad refusing to participate in a passenger-related investment for this reason. Clearly, tax impacts must be considered and railroad concerns addressed in negotiations. In some cases, rail passenger agencies have included payments to offset these increased taxes in annual access fees.
- The asset becomes part of the denominator used in Return on Investment (ROI) calculations in financial analysis and reporting. Generally, the railroad will not receive any return on the public investment, which is made by a public agency for a public purpose. As a result, the public investment dilutes (reduces) the railroad's apparent ROI. This could have a significant impact on the railroads' financial situation. ROI measures are typically used by the investment community in assessing the financial strength of the railroad, in valuing share prices, and in the STB assessments of revenue adequacy.

To date, the impact of passenger-related investment on ROI has not been a major issue, mainly because public investments have not been large enough to distort ROI. With the potential for

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increasing investment in the future, the issue may become more significant and may require consideration of new asset ownership, tax and financial reporting models.

B.10 Federal Transit Administration New Starts Grant Process

Commuter rail agencies may plan to use FTA New Starts grants to provide some of the funds needed for a new or expanded rail service. The process used by the FTA to review and accept applications for grants is quite complex and affects how a commuter rail agency must conduct access negotiations with a freight railroad. Some commuter agencies have commented that the FTA's program requires that an agreement with the rail carrier be in place before the funding application can move forward. Because many railroads are unwilling to seriously discuss a proposed operation until funding is demonstrated, a "chicken and egg" situation is created.

The underlying statute [49 U.S.C.§5309] requires that the Secretary of Transportation make certain findings before approving a grant application. These mandated findings include:

(1) The project is part of an approved transportation plan;
(2) The applicant has or will have:
    (a) The legal, financial, and technical capacity to carry out the project;
    (b) Satisfactory continuing control over the use of the equipment or facilities; and
    (c) The capability and willingness to maintain the equipment or facilities.

As required by the Transportation Equity Act for the 21st Century or "TEA-21," on December 7, 2000, the FTA published its Final Rule governing candidate project evaluation. The discussion of the Rule points out that the FTA intends to use the technical capacity factor as an indicator of the ability of the sponsor to successfully implement a proposed new start as well as an indicator of project "readiness." The discussion goes on to say that by "readiness" is meant that there are no outstanding issues to be resolved before a funding commitment can be considered.

The current statute, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) requires the FTA to publish "Policy Guidance" at periodic intervals. In addition, the FTA has published "Major Capital Transit Investment Fact Sheets" for guidance on various subjects. The Fact Sheet on Final Design states that, " . . . During final design, most third party agreements required for completion and/or operation of the project are negotiated and executed, **including agreements with railroads**. . . ." Once these steps have been completed, the FTA will begin negotiations toward a Full Funding Grant Agreement (FFGA).

Based on the statute and the regulations, a grant cannot be approved until the applicant has demonstrated ability to build and operate the project. Clearly, if railroad facilities are to be used or a rail carrier is to operate the project, appropriate agreement(s) would have to be in place. Conversely, based on the FTA's guidance materials, such agreements would not have to be executed until the final design phase. The pragmatic approach to this problem for a passenger rail agency is to bring both the FTA processes and railroad negotiations along in parallel, ensuring that each is kept informed of the other's situations, and in particular making sure that the railroad understands the legal constraints that apply to the FTA FFGA process.

B.11 1990 Americans with Disabilities Act and Level-Boarding Requirements

All passenger rail operations in the United States are subject to applicable requirements of the 1990 Americans with Disabilities Act (ADA). A discussion of the details of that law and numerous regulations promulgated thereunder is beyond the scope of this project. However, there is one issue

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under these regulations that could have a significant bearing on access negotiations for passenger rail service on freight railroad tracks. This concerns level-boarding requirements for disabled access to passenger railcars. Current practice, where passenger cars with a conventional floor height are used and there is no full-length high platform level with car floors, is to provide short "mini-high" platforms for disabled access. Bridge plates are used to cover the cap between the platform edge and the car for wheelchairs. This arrangement means there is disabled access to at least one car of the train, but not necessarily to all cars. If the track is used by freight trains, disparities between the width of passenger cars at floor height and the clearance required for freight equipment means there is a considerable gap between platform edge and the car floor.

Commuter rail operators have recently expressed concern over the Notice of Proposed Rule Making (NPRM) published by U.S.DOT on February 27, 2006. Among other things, this proposal would impose new requirements for level boarding and station construction, as well as for new commuter rail cars.

Regarding "level boarding," the primary objections relate to the proposal to more precisely regulate the vertical and horizontal gaps at boarding locations, to revise the requirement for bridge plates, and to require accessibility along the entire length of a train. The proposal would entail heavier and longer plates, which would have to be stored in locked boxes on the platforms and which would require two crew members to deploy.

The proposal also would mandate that "level boarding" be provided for each accessible car on the train. Currently, only one such car is required to be equipped for level boarding or a bridge plate. If adopted, this would result in: (1) a series of bridge plates along high-level platforms, which causes delays as crew members deploy them manually at various cars, and (2) a series of mini-high platforms with bridge plates at low-level platform stations, again with resulting cost and delay time.

The proposal recognizes that freight operations frequently impair the ability to construct full-length high-level platforms and suggests a series of mini-high platforms or the use of gauntlet tracks. Gauntlet tracks require a turnout at each end of the station with significant capital and maintenance cost impacts, and additional signal and train control apparatus. Commuter rail operators oppose use of gauntlets because of the great expense, possible need for land acquisition, and environmental concerns. Anticipating disagreements between commuter and freight operators, the rulemaking discussion points out that the ADA requires facility owners to provide reasonable cooperation in making facilities accessible. Construction of gauntlet tracks could be a way of providing such cooperation, albeit at great expense to the commuter agency. New York's Metropolitan Transit Authority estimates the cost of constructing gauntlets at a single commuter rail station, together with related signal and other changes, to approach $16 million.

The passenger railroads submitted numerous other legal and technical comments in response to the NPRM. Those beyond the level boarding issue are beyond the scope of this report. The fact that the matter remains open more than 2 years after issuance of the NPRM suggests the complexity of the problems. Any passenger rail authority entering access negotiations with a freight railroad must familiarize itself with the current status of ADA access requirements and address them in the negotiations.

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APPENDIX C

Railroad Safety Regulations

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C.1 Introduction to Federal Railroad Administration Safety Regulations

Federal Railroad Administration (FRA) regulations and standards pertaining to the safety of railroad plant, equipment, and operations are contained in 49 Code of Federal Register (CFR) Parts 200-299 (49 CFR 200-299, Title 49 - Transportation, Subtitle B - Other Regulations Relating to Transportation, Chapter II - Federal Railroad Administration, United States Department of Transportation [U.S.DOT]). The same body of regulations also contains regulations pertaining to non-safety matters (for example concerning Amtrak operations) that are not discussed here.

With one exception, the FRA Office of Safety is responsible for developing and enforcing railroad safety regulations. The FRA follows the normal federal process for developing new and amended safety rules, including publishing a Notice of Proposed Rulemaking (NPRM), allowing for public input and discussion, and then promulgating a Final Rule. A number of years ago the FRA also established a Railroad Safety Advisory Council (RSAC) with representatives of industry and labor which, on invitation by the FRA, will assist with regulation development. The FRA and RSAC have been very active in recent years in developing new regulations to address such issues as passenger car safety, communications-based train control systems, and new technologies such as hand-held controls for switching locomotives and electronically controlled brakes for freight trains.

A notable exception to this rulemaking process is the Hours of Service (HOS) Act (49 CFR 228, Hours of Service Act [Revised October 1, 1996]). This Act is a separate statute and the requirements therein can only be changed by Act of Congress. Prior to October 2008, these requirements, which had been amended multiple times since the original Act in 1907, were cumbersome to change and did not reflect current understanding of the effects of train crew and dispatcher fatigue on safety. The Rail Safety Improvement Act (RSIA) that passed Congress in October 2008 (H.R.2095. Rail Safety Improvement Act of 2008) updated the Hours of Service Act, and also required the FRA to develop regulations to enforce the new statute and to further HOS regulations for passenger and freight operations. Details are provided in Section C.5.

C.2 Applicability

The FRA railroad safety regulations are applicable to all rail lines connected to the "general railroad system of the United States." The FRA does not regulate fully segregated urban rail transit systems (subways, light rail, and streetcar systems), except at the few points where such systems interact with the general rail system. The applicability of FRA safety regulations where conventional rail services and urban transit services share tracks and corridors is discussed later in this section. Other points about applicability are:

- The FRA specifically has authority over any new-technology guided ground transportation system, including magnetic levitation systems and systems that use non-United States (U.S.) high speed train technology, except where these systems provide urban transit services as defined above. The FRA requires an operator proposing to use these technologies to submit a "safety case," containing full details of safety related aspects of infrastructure, vehicles, and operations showing how adequate safety will be achieved and maintained. The FRA reviews the submissions, works with the applicant to ensure all safety issues are properly addressed, and develops a "Rule of Particular Applicability" documenting the terms and conditions under which the proposed system can operate. These rules essentially make the operator's safety case (with any amendments and conditions imposed by the FRA) a regulation that must be followed. The best practical example of this process is the Rule issued for a proposed high-speed line between Miami, Orlando, and Tampa in Florida. Although the project did not go forward in the end, a Rule of Particular Applicability was completed and issued for this system, which used French TGV

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technology. In the future, this process is likely to be applied to the proposed California high-speed rail system and a private initiative for high-speed rail service between the Los Angeles, California area and Las Vegas, Nevada.

- The situation regarding a fully or largely segregated commuter rail system is somewhat ambiguous. As for intercity guided ground transportation systems, commuter rail systems appear to be subject to FRA safety regulations, whether or not they are connected to the general rail system. However, the exact boundaries between a commuter and an urban transit system are not well defined, and a longer-distance and higher-speed light rail line that provides service outside a single urban/suburban area may fall into this gray area. This is especially true if there are elements of connection with the general rail system, such as a shared corridor or limited local freight service. A recently completed light rail line in Austin, Texas and Triangle Transit proposals in the Raleigh–Durham area of North Carolina are examples of proposed operations where this ambiguity might be a factor in determining the extent of FRA jurisdiction.

C.3 Waivers

Any operator who wishes to have relief from any FRA safety regulation must seek a waiver. The operator must submit a waiver application to the FRA detailing what relief is sought, analysis to demonstrate that the safety of the proposed operation will be equivalent to a fully compliant operation, and a justification for the waiver showing that it would be in the public interest. Public interest means that the waiver would enable rail service operators to offer passengers and/or freight shippers a higher quality or lower-cost service than would be possible with a fully compliant operation. The FRA may grant a waiver if it is satisfied that the waiver is in the public interest and safety is not impaired.

The waiver process as currently applied can be a barrier to the introduction of new passenger rail technology, especially related to non-FRA-compliant rolling stock. The process is slow and uncertain and requires a lot of detail about the proposed operations and equipment, which is only available when a project is well advanced. A service developer may be put in the position of having to commit to system features before a waiver is finalized and risk delaying the project if the FRA requires significant changes. Some developers have elected to proceed with a fully compliant approach to avoid delay risks, even though a non-compliant approach would improve the service. However, efforts were under way in 2009 by Caltrain and the FRA to investigate the feasibility of using non-compliant European-style electric multiple unit (MU) trains for service between San Francisco and San Jose, California. This and similar waiver applications have prompted the FRA to initiate an effort to formalize a process and acceptability criteria for non-compliant rolling stock. If successful, this would make the waiver process more predictable and easier to incorporate into project schedules. Further discussion of the use of non-FRA-compliant rolling stock is provided in Section C.9.

C.4 Track Safety Standards (49 CFR Part 213)

These standards contain numerous requirements defining minimum acceptable track conditions and inspection regimes for each track class, as defined by the FRA (49 CFR 213, Track Safety Standards). Maximum speed by FRA track class for the classes most likely to be used for shared passenger and freight service are as shown in Table C-1.

Freight railroads typically maintain FRA Class 3 on secondary and lower traffic main lines and FRA Class 4 on primary main lines. There is also a significant amount of FRA Class 5 track on freight railroads, often on routes used by higher-speed intermodal services. FRA

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Table C-1. Maximum allowable speeds for passenger and freight trains by track class.

FRA Track Class	Maximum Allowable Speed (mph)	
	Passenger	Freight
3	60	40
4	80	60
5	90	80
6	110	110

Class 6 is almost never found on a freight railroad, but is the standard used on predominantly higher-speed passenger lines such as the Empire Corridor between New York City and Albany, New York and parts of the Northeast Corridor (NEC). FRA Class 3 track is the minimum acceptable for commuter operations, and a majority of intercity services are operated on FRA Class 4 or 5 track. The FRA also defines requirements for Classes 1 and 2 for low-speed branch line and yard track. Existing FRA Class 1 or 2 track proposed for passenger service would have to be extensively rebuilt. Finally, the FRA has defined Classes 7, 8, and 9 for true high-speed passenger operations (above 110 miles per hour [mph]), applied to date only on portions of the NEC.

The FRA standards do not include any requirements for track design, such as weight of rail, types of ties and rail-tie fasteners, etc. Provided the condition standards are met and maintained, any form of construction may be used.

C.5 Train Crew Hours of Service (49 CFR Part 228 and the Railroad Safety Improvement Act of 2008)

Prior to October 2008, train crew work schedules were governed by the historic Hours of Service (HOS) Act, first passed in 1907 and amended many times since. Prior to RSIA, the principal provisions of the Act were that the maximum time on duty of a train crew must not exceed 12 hours except in an emergency, and must be followed by a minimum of 10 hours off duty before the start of the next on-duty period. FRA regulations define time spent waiting for transportation and traveling to a sign-off point after an on-duty period as being neither on- nor off-duty time. This period is sometimes termed "limbo time." FRA regulations also prescribe record-keeping and reporting requirements to monitor compliance with the law.

These requirements will be replaced by those detailed in Section 108 of RSIA for **freight train operations only.** The principal requirements for railroad train crews are:

- A limit of 276 hours per calendar month for combined on-duty and limbo time. [This limit is entirely new. Previously limbo time did not count as either on-duty or rest time].
- Maximum 12 consecutive on-duty hours [same as before RSIA].
- Minimum 10 uninterrupted off-duty hours after a 12-hour on-duty period. [Similar to pre-RSIA, but off-duty time now **cannot** be interrupted by calls from the railroad giving notice of the start of an on-duty shift. Because freight train crews are typically called 2 hours before reporting for duty at their sign-on point, this provision effectively lengthens off-duty time by 2 hours].
- Minimum 48 uninterrupted off-duty hours after 6 consecutive days with on-duty shifts [entirely new].

These requirements went into effect on July 16, 2009, 9 months after enactment, by which time the FRA and railroads must have established record-keeping and reporting requirements for enforcement of the law.

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Passenger rail operators continue to be subject to the old HOS laws for a period up to 3 years from October 16, 2008. During this time, the FRA must develop HOS regulations for passenger service that minimize crew fatigue and improve safety, while as far as possible, serving the needs of commuter and intercity passenger operations. If passenger HOS regulations are not finalized before October 16, 2011, then the freight HOS law will apply.

C.6 Drug Testing and Engineer Certification (49 CFR Parts 219 and 240)

All railroad employees are subject to periodic drug and alcohol testing, including after an accident. The regulations specify the testing regime in detail and actions to be taken in the event of a positive test.

Before the enactment of RSIA, only locomotive engineers were required to have FRA certification, earned by successfully completing an approved training course and periodic testing and refresher courses as necessary. RSIA extended this requirement to conductors, and the FRA is required to investigate the need for formal certification for other safety-related occupations, including dispatchers and signal maintainers.

C.7 Signal and Train Control System Regulations before the Railroad Safety Improvement Act (49 CFR Parts 235 and 236)

This section describes FRA signal and train control systems regulations, before implementation of positive train control (PTC) requirements of RSIA, and will continue to apply to conventional signal systems retained after PTC installation. Early information on railroad response to the PTC mandate of RSIA is that PTC will be an overlay, and conventional signal systems will remain in service. These regulations apply on any rail line in the United States unless conventional signal systems are completely replaced by PTC or equivalent new-technology system. The PTC mandate and associated implications for shared passenger and freight operations are discussed in Section C.7.

Part 235 requires railroads to apply to the FRA to discontinue or materially change a signal and train control installation (49 CFR 235, Instructions Governing Applications for Approval of a Discontinuance or Material Modification of a Signal System or Relief From the Requirements of Part 236). The rationale for this regulation is to ensure that railroads do not change signal systems in a way or in circumstances that could increase accident risks.

Part 236 contains numerous requirements for the design, installation, maintenance, and inspection of traditional-technology signal and train control systems (49 CFR 236, Rules, Standards, and Instructions Governing the Installation, Inspection, Maintenance, and Repair of Signal and Train Control Systems, Devices, and Appliances). These details are familiar to signal engineers and apply equally to passenger and freight operations. Conventional signal regulations are rarely a significant issue in shared corridors, except the provisions of Part 236.0 defining the applicability of the requirements. Part 236.0 provisions are:

- A block system of train control that ensures that a passenger train cannot enter an occupied block and that no other train can enter a block occupied by a passenger train is required where passenger train speeds exceed 59 mph.
- Automatic cab signals (ACS), automatic train stop (ATS), or automatic train control is required where any train exceeds 79 mph. This provision is very important for any proposal for passenger train speeds exceeding 79 mph, as most freight lines are not equipped with a qualifying train control system.

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Note that requirements for over-79 mph operation may change when PTC is implemented. PTC would likely meet current requirements for operation over 79 mph, but this can only be confirmed after the FRA has developed detailed regulations for PTC implementation.

Before enactment of RSIA, practice for routes with passenger traffic, reflecting FRA requirements defined in the detailed regulations, FRA interpretations of the regulations, and industry practice generally are as follows:

- All passenger lines should have at least an automatic block system with wayside block signals linked to track circuits. Except for short, low-speed route segments near passenger terminals, there are few exceptions to this practice.
- For speeds between 80 and 110 mph, the minimum requirement is cab signals with automatic train stop. There are some routes (mostly former Santa Fe Railway routes) where passenger trains are permitted to travel at 90 mph with a simple intermittent automatic train stop system. However, the FRA has stated that it considers this system to be obsolete and would not approve a new installation.
- For speeds between 110 and 125 mph, an automatic train control (ATC) system is required to provide automatic speed control in response to signal indications. This system is applied on the NEC. The FRA further requires that all trains operating on ATC-equipped lines, including freight trains, must be equipped with a compatible system. Freight trains that operate on the NEC are so equipped, but the FRA has granted selective waivers to this requirement on other routes.
- For speeds over 125 mph, the FRA requires additional capabilities to further reduce accident risks. On the NEC, the only installation to date, this took the form of the Advanced Civil Speed Enforcement System (ACSES) overlaid on ATC. ACSES uses line side transponders for track-to-train communications, to enforce civil speed limits, and to ensure an absolute stop at interlocking signals.

Note that all these requirements and practices will change with implementation of the PTC requirements in RSIA, as described in Section C.8.

C.8 The Positive Train Control Mandate of the Railroad Safety Improvement Act

RSIA, signed into law on October 16, 2008, requires that a qualified positive train control system be installed on main lines carrying regularly scheduled passenger service and/or specified hazardous materials shipment. The requirements are found in Section 104 of RSIA, and state:

> Not later than 18 months after passage of this Act (i.e., by April 16, 2010), all Class 1 freight railroads and each entity carrying regularly scheduled passenger service must prepare and submit to the U.S.DOT a plan for implementing PTC on:
>
> - Main lines over which regularly scheduled commuter or intercity passenger services are operated.
> - Main lines over which poisonous- or toxic-by-inhalation (PIH/TIH) hazardous materials are transported.
> - Such other lines that the Secretary of the U.S.DOT may prescribe by regulation or order.
>
> The plans must show how the railroad will complete PTC implementation by December 31, 2015, provide for interoperability to facilitate the movement of trains belonging to other carriers over its tracks, and to the extent possible give priority to areas of greater risk.

Main lines are defined as those carrying over 5 million gross tons/year of railroad traffic, equivalent to about three freight trains per day. PTC is defined as a system that will prevent train-to-train collisions, over-speed derailments, incursions into established work zones, and movement of a train through a switch set in the wrong position.

RSIA requires the U.S.DOT Secretary (in practice, the FRA Office of Safety) to take a number of actions to implement PTC:

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- Provide technical assistance to the railroads for developing their PTC implementation plans. This is likely to include guidance as to the content and level of detail in the plans.
- Establish detailed regulations prescribing the functional requirements of a qualified PTC system and how individual systems and plans will be reviewed and qualified as acceptable.
- Establish regulations for PTC implementation on lines used for commuter or intercity passenger service, but which carry little or no freight.
- Complete reviews of railroad PTC implementation plans within 90 days of submittal and either approve the plan or provide a detailed notification of deficiencies, which the railroad must correct within 30 days.
- For each approved plan, conduct an annual review of progress toward implementation.
- Individual PTC systems and installations must be approved using the procedures defined in Part 236, Subpart H as described in Section C.8.

The FRA established a Working Group under the RSAC early in 2009, to assist the FRA to develop regulations and guidelines for the implementation of PTC.

The PTC mandate clearly adds uncertainty to the implementation of a new or expanded passenger service on Class 1 freight railroad tracks. Some of the questions concerning the application of PTC to shared passenger/freight rail corridors include:

- To what extent will the FRA require PTC installation on non-Class 1 freight railroad tracks used by passenger trains? Initial information suggests that the FRA will require PTC on all lines that carry regularly scheduled passenger service.
- To what extent will the FRA require PTC to be implemented on exclusive or near-exclusive passenger lines, and will upgrades or replacements of existing traditional cab signal and ATC systems be required? Initial information is that ATC plus ACSES or an equivalent will be accepted as equivalent to PTC.
- Will a qualified PTC system be accepted as meeting the requirements of Part 236.0 for operations over 79 mph for speeds over 110 mph, or will additional functional capabilities be required? (Note that the NEC ATC plus ACSES appears to meet all PTC functional requirements.)
- What principles will govern how PTC installation and maintenance costs are shared between passenger and freight users of a rail corridor? This could be a critical issue for passenger rail interests, as PTC costs are expected to be very high and could substantially increase the cost of implementing and operating passenger rail service.
- Will the PTC interoperability requirements worked out among Class 1 freight railroads pose any problems for passenger service operators?
- To what extent will the FRA allow operations on the same line with a mix of PTC-equipped and unequipped trains?

These questions will be resolved as the industry and the FRA move forward with PTC planning, approval, and implementation. Publication of a NPRM on requirements for PTC plans and installations took place in June 2009 and is the first formal step toward answering these questions.

C.9 New Technology Train Control Systems

These systems apply electronic processing and digital radio communications technologies to perform train control functions. Most PTC systems being proposed to meet the PTC mandate in RSIA apply these technologies. Because most of the regulations in Part 236 are written for traditional signaling hardware, they cannot be applied effectively to these new-technology systems. Accordingly, the FRA has developed a new regulation found in Part 236, Subpart H, Standards for Processor-Based Signal and Train Control Systems. The standards take a "safety case" approach, requiring the railroad and system vendor to demonstrate that the system and the proposed specific

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application is safe, using hazard analyses, risk analyses, defined installation and maintenance practices, and staff training as appropriate.

Obtaining approval for a new system under Subpart H requirements can be a considerable challenge. Detailed safety analyses are required for both the system itself (control center, on-board and trackside systems, and the communications systems that link system components) and for applications to specific routes and rail operations. Given the large number of PTC approval applications expected for PTC installations in response to RSIA, the FRA is understood to be looking at ways to streamline the approval process without compromising safety, especially where a single technology is being applied to multiple railroad route segments.

C.10 Passenger Car Safety Standards and the Operation of Non-FRA-Compliant Vehicles on Shared Corridors (49 CFR Part 238)

Passenger Car Safety Standards are contained in 49 CFR Part 238 (49 CFR 238, Passenger Equipment Safety Standards). The standards were issued on May 12, 1999. Part 238 standards together with selected Part 229 locomotive standards provide detailed requirements for railroad passenger cars, including structures, safety glazing, interior fittings, fire safety, emergency egress, inspection procedures, and brakes (49 CFR 229, Railroad Locomotive Safety Standards). Two separate sets of standards are provided: Tier I, for cars operating at up to 125 mph, and Tier II for speeds over 125 mph. Among other requirements, Tier II standards specify the use of crushable energy absorbing structures for occupant protection in collisions. Car builders are very familiar with the standards, and almost all vehicles purchased after the regulation became effective are fully compliant.

Rail passenger car safety technology continues to advance, and further development of passenger car safety standards can be expected, in response to research results and the findings of accident investigations. This development will likely include the conditions under which operation of non-compliant passenger cars will be permitted, as discussed below, and to reflect the changes in exposure to collision risk resulting from universal application of PTC.

C.10.1 Operation of Non-FRA-Compliant Passenger Vehicles

The issues of whether and how to permit non-FRA-compliant passenger rail vehicles to operate on the general railroad network have arisen regularly over the past two decades. This interest is driven by a desire to offer innovative rail services or to use attractive existing train designs from outside North America without incurring the cost and time delay of redesigning trains to meet U.S. standards. Examples of applications of non-compliant vehicles are:

- Implementing high-speed intercity passenger service using foreign, primarily European-design trains.
- Implementing light rail passenger services over existing lightly used local freight lines.
- Using European-design electric multiple unit commuter trains, most notably for the Caltrain service between San Francisco and San Jose, California.

The following paragraphs provide a summary of what is meant by "non-FRA-compliant" passenger rail vehicles, referring to technical reports, applicable FRA safety regulations, and the current status of efforts to introduce and use such vehicles on the general railroad network.

C.10.2 Definition of Non-FRA-Compliant Passenger Vehicles

A non-FRA-compliant passenger vehicle is one that does not fully meet all current FRA safety regulations applicable to passenger rail vehicles operating on the general rail network. The primary

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area of non-compliance has always been the regulations and standards for the strength of passenger car structures, which can have a major bearing on the safety of rail passenger cars in collisions.

There have been substantial changes to the regulatory landscape over the past 15 years. Prior to the early 1980s, the Association of American Railroads (AAR) Manual of Recommended Standards and Practices contained a volume devoted to passenger cars. The Manual required the end-load compression strength (commonly called buff strength) of a passenger car for unrestricted use in interchange service to be 800,000 lb, with other structural requirements to match. A lower buff strength of 400,000 lb was permitted for trains having an empty weight below 600,000 lb, on the logical grounds that collision impact loads are lower for lighter trains. This exception was rarely used—the only instance since 1970 has been the French-built turbo trains purchased in the early days of Amtrak, which had the European buff strength of 440,000 lb (200 metric tons). Most buyers did not want to operate a vehicle that would be restricted to lightweight trains. FRA regulations of the same era, in 49 CFR Part 229 (strictly applicable only to MU cars not expressly covered in the AAR Manual), were identical to the AAR standards. Otherwise, the FRA took the view that passenger car structural safety was effectively managed by the AAR.

In the early 1980s, the AAR stopped maintaining passenger car standards, and safety standards were left to the specification writers for individual passenger rail service operators, who continued to follow earlier practice. This regulatory vacuum became a concern as interest grew in the operation of high-speed and new-design intercity passenger trains. The FRA responded by initiating a substantial program of research into passenger car collision safety and the development of new passenger car standards applicable to both conventional and high-speed trains (Ullman and Bing 1995). The development of specifications for Amtrak's Acela trains was deeply enmeshed in the process. Safety-related specification requirements for Acela were reviewed with the FRA, and the agreements reached influenced development of the resulting FRA standards. The new regulations in 49 CFR Part 238 became effective in May 1999 (49 CFR Parts 200-299, Specifically Part 238, current FRA Safety Standards contained in Passenger Car Safety Standards (Effective May 1999), Part 236, Signal and Train Control Standards, and Part 213, Track Safety Standards). The regulations eliminated the exception to the 800,000 lb buff strength requirement for trains under 600,000 lb and added new requirements for collision safety for trains operating at over 125 mph (i.e., the Acela). There have been a number of additions to passenger car safety requirements since 1999, notably in fire safety and emergency egress, and regulatory development continues.

C.10.3 Non-compliant Intercity Trains

There were two notable exceptions to Part 238 proposed or implemented during the 1990s for intercity passenger service. These were:

- The Florida Overland eXpress (FOX) proposal for high-speed service in Florida (49 CFR 243, FOX High Speed Rail Safety Standards, Proposed Rule, Federal Register, December 12, 1997). This service reached an advanced planning stage before being cancelled, including a full review of the plans by the FRA, resulting in a Rule of Particular Applicability specifically for this project. This approach was (and presumably still is) the way that the FRA Office of Safety deals with new-technology–guided passenger transportation systems that fall within its jurisdiction, and which have limited interaction with the general rail network. This Rule covered all the same safety issues as the conventional rules in 49 CFR Parts 200-299, but adapted to this specific system. FOX proposed using French Train a Grande Vitesse (TGV) technology, and the Rule is basically an adaptation of French practice, including European passenger car body strength requirements. The proposed operation would have used a completely new alignment with virtually no physical connections to the existing rail network.

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- Talgo trains operate in Amtrak's Pacific Northwest corridor between Portland, Oregon and Seattle, Washington (U.S.DOT 1999). The Talgo is a unique articulated train design, originating is Spain, which used passive pendular tilting to increase speed in curves and thus reduce journey time. Five train sets were put into service between 1995 and 1999, and except for some structural problems (that have been corrected) have been a commercial and operational success. The Talgos are operated push–pull fashion with an Amtrak locomotive at one end and a cab-baggage car (an F40 locomotive with the power equipment removed) at the other. These Talgo trainsets are nearly identical with the European version and are built to European structural requirements, including 440,000 lb (200 metric tons) buff strength. The operation takes advantage of a "grandfathering" provision in the 49 CFR Part 238 (Passenger Car Safety Standards) permitting the operation of non-compliant equipment put into service before the effective date of the rule, subject to review and approval by the FRA.

  The FRA's initial approval was challenged (by a competing supplier) on safety grounds, after which the FRA required Amtrak and Talgo to undertake detailed risk and collision analyses to demonstrate that the operation was safe. The analyses are documented in the U.S.DOT docket for the grandfathering petition and remain the most complete example of what it takes to gain approval of a non-compliant or otherwise unconventional train on a busy passenger/freight corridor. It should be noted that part of the "safety case" was the commitment to keep the first car of the train (baggage, auxiliary power generator or otherwise) as an "unoccupied space." With compliance with 49 CFR Part 238 in full effect, including the requirement for 800,000 lb buff strength with no exceptions, any future effort to introduce non-compliant vehicles will be more challenging.

C.10.4 Use of Light Rail Vehicles on the General Rail System

The genesis of much of the research on this topic came from the series of reports by David Phraner (Phraner 2001; Phraner 2000a; Phraner 2000b; Phraner et al. 1999) and colleagues focusing on overseas developments in the application of light rail transit (LRT) and diesel multiple units (DMUs) in rail transit and commuter service, and the shared use of railroad infrastructure by both light rail and conventional rail services. The particular attraction of this form of sharing is that it allows a one-seat ride from points on an inner-city light rail network to suburban locations accessible via existing railroad tracks.

This form of shared use caught the attention of the U.S. transit community and gave impetus to development of shared operations. One of the most visible U.S. projects to evolve from limited acceptance of non-compliant shared use was NJT's RiverLINE between Camden and Trenton where a light rail service sharing track with local freight operations was being implemented. A request was submitted to the FRA for approval of the proposed operation, which directly conflicted with the new Part 238, which was then about to be published and which would prohibit such operation. After some deliberation, the FRA and the FTA published a proposed joint rule that shared operation would be permitted but with strict time-of-day separation (FRA and FTA 2000). NJT had to revise planned RiverLINE operations to comply with this requirement, with daytime passenger and overnight freight operations. Both parties had to accept less-than-ideal restrictions. Two other light rail transit lines with limited sharing (Baltimore, Maryland and St. Louis, Missouri) also complied, but with little inconvenience given very sparse freight operations. The San Diego Trolley, which had operated a shared use LRT line without attracting attention for years, also had to modify its operations.

Because of these events, both the FRA and the National Academies' Transit Cooperative Research Program (TCRP) have initiated projects to further explore the safety and feasibility of shared light rail operations. The conclusions reached by these studies are:

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- It is feasible (i.e., safe and operationally practical) for light rail service to share tracks concurrently with limited local freight operations during off-peak hours (Bing et al. 2007; Gross and Mortensen 2007). The key safety measure is to implement some form of automatic collision protection (train stops or ATC) to minimize collision risk.
- There are a number of potential applications where concurrent shared light rail and local freight-rail operations would be the best alternative to meeting both freight and passenger mobility needs (cheaper, better able to meet service needs) (Booz Allen Hamilton et al. 2009).
- The best way to implement the shared operation is for the transit agency to acquire the right-of-way and to give the freight operator permanent access to agreed train slots in off-peak hours (Booz Allen Hamilton et al. 2009).

The investigators in these studies express the view that this subject has been analyzed enough in the abstract, and the next step is a pilot project to implement a concurrent shared-use operation, including working with the FRA Office of Safety to gain approvals. The most likely locations for a demonstration would be further expansion of sharing on the San Diego Trolley or on the Southern New Jersey RiverLINE. Both operators have substantial service experience with limited sharing and both would benefit from expanded concurrent operations.

In parallel with this research, the FRA has recently permitted limited concurrent operations on both San Diego Trolley and the RiverLINE with appropriate safety controls and tightly defined operating procedures.

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APPENDIX D

Case Studies of Passenger Rail Service Developments and Processes

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D.1 Introduction

This appendix contains six case studies that illustrate how effective processes have been applied in successful passenger rail developments. The case studies are of two types. One type describes the development of passenger rail services on a single corridor or region, combining an overview of the history of the service(s) with a description or descriptions of processes that were influential in the success of the service. The examples of successful practice selected for a case study are:

- Development of passenger rail services in California, highlighting two functional areas: use of connecting bus services to extend the reach of passenger rail services; and methods used to ensure adequate capacity and good service on a busy freight corridor.
- The role of establishing a vision and long-term planning on the development of intercity and commuter passenger rail services in Washington State.
- A process developed by the BNSF Railway for quality management of commuter rail services, initially applied in Chicago.
- The highly collaborative approach used by the NNEPRA in developing the Downeaster service between Boston and Portland, Maine with the participation of state and local governments, Amtrak and host railroads.

The second type comprises two syntheses of successful processes in specific functional areas: the negotiation process and setting fees and incentives payable to the host railroad.

The source for the information presented in the case studies were primarily interviews with agencies and railroads responsible for developing, managing and operating the services, supplemented by information from reports, plans, federal, state and local government agencies, news articles and internet sources. It should be noted that the bulk of this material was gathered in 2008, prior to the passage of PRIIA and ARRA.

D.2 Passenger Rail Developments and Processes in California

There have been few large-scale passenger rail developments in the period since the late 1970s, where entirely new commuter and corridor-type intercity passenger services have been developed throughout a region. All are on the west coast of the United States (U.S.): two in California and one in Washington State. This section discusses developments in California, focusing on the southern area of the state centered on Los Angeles and on the northern area centered around San Francisco and Sacramento.

D.2.1 Southern California—Metrolink, Coaster, and the Pacific Surfliners

After the abandonment of the Pacific Electric interurban rail network by 1961, passenger rail service in Southern California was limited to a few long-distance services operated by the freight railroads. After a gap of more than 20 years, local rail service re-started in southern California to help relieve ever-growing highway congestion. The first initiative was the construction of a light rail line between Los Angeles and Long Beach along a former Pacific Electric right-of-way, starting in 1985. Other light and heavy rail lines followed. At the same time, interest grew in expanding rail service to include commuter rail, culminating in the approval of dedicated sales taxes in five counties around Los Angeles (Los Angeles, Orange, San Bernardino, Ventura, and Riverside) and approval of State Bond Propositions 108, 111 and 116 for capital expenses, all in 1989 and 1990. A portion of the bond funds were used to purchase more than 200 miles of railroad right-of-way, mostly from Southern Pacific and the Santa Fe, with a smaller amount from the Union Pacific (UP), for a total cost of more than $500 million.

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The Southern California Regional Rail Authority (SCRRA) was established in 1991 as a Joint Powers Authority under California law to implement and operate commuter rail services in the five-county region. Services are marketed under the Metrolink name. Train operations started on three routes in 1992 and have grown steadily since through additional routes, stations, and train frequencies. In 2008, the system comprised seven routes, 388 route-miles and 54 stations, carrying more than 40,000 weekday passenger trips. SCRRA services run over a mix of freight railroad–owned and county-owned tracks. The original owners of publicly owned lines retain the right to operate freight service. SCRRA negotiated access terms and fees for services operating over freight railroad–owned track.

The other commuter rail service in southern California is a single line from San Diego to Oceanside where there is an end-to-end connection with a Metrolink service and to a new light rail line to Escondido that opened in March 2008. This service is contractor-operated on behalf of North County Transit District (NCTD). NCTD purchased this line, as well as the Escondido branch, from the Santa Fe railroad in 1994.

The Amtrak intercity service in the area, known as the Pacific Surfliner, connects Los Angeles with San Diego and San Luis Obispo. The corridor, also known as the LOSSAN corridor, is owned by the county transportation authorities along the route between San Diego through Los Angeles to Moor Park, acquired from the Santa Fe and UP in 1991–1992 for SCRRA and NCTD commuter rail services, as described above. North of Moor Park the route belongs to the Southern Pacific, which was acquired by the UP in 1995. The Pacific Surfliner corridor, especially the southern portion between Los Angeles and San Diego, has long been identified as one of the most promising high-speed corridors in the United States, and had been a priority for development. It is also Amtrak's second-busiest corridor after the Northeast Corridor. At the startup of Amtrak, there were only two round trips per day between Los Angeles and San Diego, operated as part of the core Amtrak network. One round trip was added in 1976 as one of the first state-supported services under what was then the 403b program. Further trips have been added since, all with state support, so that there are now 12 round trips between Los Angeles and San Diego. On the northern part of the corridor, service has grown to five round trips between Los Angeles and Santa Barbara with two trips extending to San Luis Obispo, plus the daily long-haul Coast Starlight between Los Angeles and Seattle.

In cooperation with the commuter agencies, California DOT has continued to make investments along the line, including on UP track. These improvements include installing CTC and more and longer sidings resulting in improved capacity and operating speed. Further developments are in the planning stage. There is no single coordinating agency for these developments—Caltrans and Amtrak plan the developments with inputs from committees of governments and rail service operators in the service area. In 1995 and 2002 California also purchased a fleet of passenger cars and locomotives for intercity passenger service, totaling 126 California Cars, and 15 F59PHI locomotives. These include cab cars for push–pull operation, that are used on the Surfliners and Capitol Corridor trains, together with converted F40 locomotives used as cab/baggage cars on the San Joaquin Service in northern California.

The last factor in the region is investment directed at the freight network. The Alameda Corridor (another joint powers authority) has constructed a dedicated and fully segregated freight line from the ports of Los Angeles and Long Beach to the center of Los Angeles. This project provided a limited but valuable benefit for passenger service by building a flyover and improving track layout at Redondo Junction, just south of Los Angeles Union Station. A second investment program in the Alameda Corridor East will minimize grade crossings along the UP line east from Redondo Junction toward San Bernardino.

The effect of these investments in both commuter services and the Pacific Surfliner Amtrak intercity service has been massive increases in ridership. On Metrolink, the steady expansion of routes

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and daily trips from the beginning in 1992 has resulted in steady growth in annual passenger trips from zero in 1992 to 4.6 million in 1995, 8.1 million in 2000, 10.3 million in 2005 and 12.2 million in 2008. The San Diego to Oceanside commuter service experienced similar steady growth to 1.7 million trips by 2008 from its startup in 1995. The Surfliner Amtrak has also experienced rapid growth after 2000 after a period of level ridership in the 1990s. The initial service expansion on this route occurred earlier, between 1976 when the first state supported trips were introduced to supplement services provided as part of the basic Amtrak network. Growth has been massive after 2000, growing from 1.66 million trips to 3.10 million in 2008.

Aside from varying economic conditions, much of this growth has been due to a steady program of well-planned investments to remove operating constraints, reduce journey times and add capacity—daily round trips and additional cars on trains—all built around a regularly updated planning process. This illustrates the benefits from steady long-term support from all levels of government. High quality and well patronized rail services cannot be built on a one-time quick fix investment. It takes time to plan and execute investments and to build a loyal customer base. Another factor for the Pacific Surfliner services is a network of connecting bus services to link train stations to communities that would otherwise be difficult to serve by rail. California's connecting bus program is described in detail after the general discussion of northern California services below.

D.2.2 Northern California—Capitol Corridor, the San Joaquin, Caltrain, and the Altamont Commuter Express

There are four distinct passenger rail services in Northern California, two intercity corridors operated by Amtrak and two commuter operations. The intercity corridors are the Capitol Corridor between San Jose, Oakland, and Sacramento, and the San Joaquin Corridor between Oakland and Bakersfield. The Commuter operations are Caltrain between San Francisco and San Jose and the Altamont Commuter Express (ACE) between Stockton and San Jose. The ACE is unusual in that it does not provide service to the core cities of Oakland and San Francisco. Together with connecting bus routes, these services provide a substantial regional network of rail services.

The Capitol Corridor is the name given to the Amtrak operated service between San Jose, through Oakland and Sacramento to Auburn. The entire route is over UP track. The Capitol Corridor did not exist when Amtrak was formed in 1971 and has always been a fully state-supported service. It was initiated in 1991 with direct support for operating expenses and selected capital improvements from California DOT using funds from Proposition 116 rail bonds. Initial service was three round trips daily, increased to four in 1998. The Capital Corridor Joint Powers Authority (CCJPA) was established in 1996 as a partnership of six local transportation agencies to share in the management of the service. CCJPA took over direct management of the service in 1998 and embarked on a vigorous program of route and service improvements. In nearly a decade of CCJPA management, more than $400 million of public funds have been invested in the Corridor, frequency has grown to 16 round trips daily, and ridership has nearly quadrupled from 463,000 in 1998 to 1.76 million in 2008. Over the same period, freight traffic has grown from nine to 28 trains daily. This corridor is one of the best examples in the U.S. of the successful management of a rapidly growing shared freight and passenger corridor on a principal freight railroad main line. The other example is the Cascades service between Seattle, Washington and Portland, Oregon. A more detailed description of the approaches used to build this service on a busy shared corridor is described in a following subsection.

The San Joaquin Corridor between Oakland, Sacramento, and Bakersfield currently (2008) offers six round trips daily, two of which originate in Sacramento and four which originate in

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Oakland. The service was initiated with Amtrak funding in 1974, and California DOT has provided funding since 1979, growing from an original single round trip to the present service. Infrastructure investments on this route have been limited, mostly grade crossing improvements. The character of this route is somewhat different from the other two California corridors, being considerably longer with fewer commuters and short-trip business travelers.

Caltrain is the name given to a commuter service between San Francisco and San Jose. This is the only long-standing commuter service operating west of Chicago, and has a history resembling that of the eastern commuter rail systems. Originally operated by the Southern Pacific Railroad, California DOT, with support from local jurisdictions, took over financial responsibility for the service in 1977 to forestall abandonment, retaining Southern Pacific as a contract operator. Service improvements and new equipment followed and the service set on the path to growth. Ten years later, the Peninsular Corridor Study Joint Powers Board (later PCJPB) was established to put the corridor on a sound long-term foundation, leading to purchase of the corridor from Southern Pacific in 1991 for $220 million. "Study" was dropped from the name shortly after. The Southern Pacific and successor UP retain the right to provide freight service along the route. The PCJPB has pursued a continuous program of service improvements to the present day, with infrastructure investments to increase capacity and service reliability, and has added a limited stop express service (the Baby Bullets) and doubled train frequency. Ridership has grown from fewer than 5 million per year in 1991 to nearly 13 million in 2008. Investments in plant and equipment over 16 years have been on the order of $400 million.

The second commuter rail service in the region, the ACE, grew out of a grass-roots effort by local governments to improve transportation in that region of San Joaquin County. County taxpayers voted a $0.005 sales tax for transportation in 1990 and identified the ACE as a top priority. In 1995, a Joint Powers authority, the San Joaquin Regional Rail Commission (SJRRC), was established to implement the rail plan, and using $50 million of sales tax funds and contributions from other local government entities, worked to implement the service. Service started in October 1998 over UP tracks with two trains daily each way. The ACE service was initially viewed as a demonstration project that would be discontinued after 2 years if there was insufficient ridership. Cars and locomotives had been ordered before it was clear that a service could be implemented, on the assumption they could be sold to other agencies if ACE did not continue beyond the demonstration period. The access agreement with UP stipulated that ACE would make capacity investments if the service continued past the demonstration period. These arrangements enabled a low-risk low-cost startup period during which critical public support for heavier expenditures to follow could be built. The service was a success, building to four round trips daily in 2006, with more than 800,000 annual riders in 1998. However, the UP has stated that they will not permit any further increase, citing expected freight traffic growth.

Mention should also be made of Bay Area Rapid Transit (BART) which provides an extensive network of rail rapid transit services in the area, with connections to all the passenger rail services described above. This connectivity greatly expands the potential utility of the passenger rail services.

D.2.3 Capitol Corridor Growth and Service Quality Strategies

Background

Negotiations with SP in 1993–1994 led to an agreement by Caltrans to invest around $57 million in the Oakland–Sacramento alignment, enabling the track to be re-laid with continuous welded rail along with new ties, ballast, and double track. In exchange Caltrans obtained the perpetual right to operate up to twenty passenger train round-trips per day between the two cities. Initial capital work was completed in 1997.

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The Capitol Corridor Joint Powers Authority (CCJPA) was established in 1998 to develop and manage passenger rail services from San Jose–Oakland and Oakland–Sacramento. CCJPA is a partnership among the six local transit agencies in the eight-county service area which shares the administration and management of the Capitol Corridor. The San Francisco Bay Area Rapid Transit District (BART) provides day-to-day management support to the CCJPA.

Between 1998 and 2008 service grew from 4 to 16 daily round trips; ridership increased from 462,000 to 1.7 million. Fare box recovery jumped from 30 percent to 53 percent. Improved frequency has boosted ridership per train trip as more potential customers incorporate the service into their travel routines. This is a major factor in increasing revenue per train trip and overall financial performance.

Train operations and compensation to UP are pursuant to Amtrak's national agreement with the carrier. By statute, the operating compensation to freight carriers for Amtrak intercity trains is limited to "avoidable costs" and is not intended to provide an economic return on fixed investment for the route in question. As a result, Capitol Corridor has sought to create a business partnership with the freight owner (SP, and now UP) by participating in a fair but robust sharing of required capital upgrades and improved track maintenance in the Oakland–Sacramento corridor.

Keeping the Trains Moving

One unique aspect of the Capitol Corridor service is a contractual "20/40" rule, wherein the freight carrier is guaranteed a 40-minute window for freight operations following the scheduled movement of a passenger train. From an operations process perspective this protocol appears to work reasonably well in this corridor. Passenger trains, operating at higher speeds but with numerous stops, have an average forward velocity consistent with that of well-powered merchandise freight trains. As will be noted below, track quality standards are maintained above that strictly required for the 79-mph passenger operations and this, in turn, allows freights to move at higher speeds, more flexibly levering train slot availability.

CCJPA observes that one important contributor to the success of their relationship with UP is the delegation of significant operations and liaison authority to UP's local operations executives in Roseville, California. The Vice President of Regional Operations sets the tone for UP's dealings with Amtrak and CCJPA in northern California and has made clear the railway's desire to operate in a pragmatic, problem-solving mode. The frequency of both passenger and freight operations on the shared track requires all parties to perform in a disciplined, predictable fashion to preserve the quality of service for all users. Including the long-distance Coast Starlight, there are now 32 passenger trains and up to 20 freights daily in the Sacramento–Oakland corridor.

Planning the Future

Corridor operations and infrastructure are coded into an RTC (Berkeley Software) modeling platform to test proposals for new service and alternative capital investment scenarios. The ups and downs of public facility capital from year-to-year challenge the CCJPA and UP alike. Rather than continue reacting to "one-off" service proposals the railroad and CCJPA agreed in 2002 to develop a master "Vision Plan" that outlines long-term service goals for the corridor.

Under the Vision Plan structure CCJPA staff develops and delivers a service improvement proposal to UP. UP tests the proposal with RTC modeling, defines needed capital improvements, and develops engineering cost estimates. Construction contracts are then signed under a master Construction and Maintenance Agreement to perform the needed work. Each individual work effort moves the corridor in the direction of the Vision Plan and is required to be consistent with the long-term evolution of the corridor.

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The master Construction and Maintenance Agreement enables track improvements to be executed as simple work orders when funds become available. Under the old regime a funding package would have triggered an entire new round of negotiations between the parties. State-funded investments become the property of UP once they are installed; the state, in return, receives a minimum number of train slots and track maintenance guarantees from UP.

The parties have identified specific major bottlenecks that must be addressed at some point in the future for the continued growth of both freight and passenger operations. A Sacramento River bridge crossing just outside the downtown area and a single-span lift bridge crossing San Pablo Bay at Martinez, California will each need to be replaced to accomplish the long-range service goals of the Vision Plan. A collaborative approach to planning and funding of these efforts is essential, deepening the rationale for continued growth in the collaborative structure of the alignment.

Raising the Bar on Maintenance

The impact of irregular service is far greater for passenger and commuter operations than for typical rail freight service. Track used to support freight-only operations is generally programmed to receive major investment every few years, making best use of expensive trackwork equipment and crews by replacing or renewing significant volumes of rail, ties, and ballast over a long section of track. The Capitol Corridor service territory, for example, might be programmed for major work every 5 or 6 years. Service during this renew program would suffer major adjustments, including lengthened schedules, reduced frequencies, and greater likelihood of unplanned delays.

The CCJPA investigated alternative approaches for track maintenance in order to minimize impacts on passenger train service. The new protocol, adopted in 2002, includes an approximately equal volume of work performed each year as opposed to more typical maintenance "blitzes" every few years. Work is generally performed in February and March of each year. This is seasonally a period of surplus track maintenance labor on UP's service network, thanks to winter conditions throughout much of their territory. Fifteen route miles of the Capitol Corridor double-track main are renewed each year.

To minimize service impacts during peak commuter hours, CCJPA proposed a "nighttime only" schedule for track work. UP was successful in negotiating such an arrangement with labor, subject to a $1 per hour labor differential which is passed through to the CCJPA.

Another innovation that supports highly reliable service in the corridor is the practice of maintaining a higher track quality standard than is required by FRA regulation, to support the current 79 mph passenger train speeds. The Federal Railroad Administration (FRA) establishes maximum allowable speeds that are in turn tied to minimum standards for tie, rail, and surface conditions for all carriers. The Capital Corridor had been maintained to FRA Class 4 until 2002 when the new capital and maintenance regime was established. In addition to track work "load leveling" and regular seasonal scheduling of major track renewals, CCJPA agreed to fund an additional 12-month maintenance crew, making possible an upgrade of the route to FRA Class 5. Passenger service speeds remain at 79 mph, but the higher track standard provides a "buffer" against routine defects discovered as part of the regular inspection process. Regular maintenance issues can be addressed as it is convenient to do so without impacting service speeds in the interim. Freight operating speeds have been increased, improving the compatibility of freight and passenger operations during the daylight hours.

Capitol Corridor spokesmen have noted that the entire package of incentives and capital support for the UP-owned alignment has not been cheap, averaging more than $40,000 per track mile per year. High on-time performance, growth of ridership, and improved service frequencies are the rewards of "doing things right" from a facility management perspective in the West Coast's busiest mixed-use corridors.

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D.2.4 Use of Bus Connections to Extend the Reach of California's Amtrak Intercity Services

Background

A significant challenge faced by advocates of intercity passenger rail service is the need to draw ridership from broad geographic regions, with clients far dispersed from initial station locations. California, with a large and growing population base, faces this issue as many more sparsely populated areas due to sprawling patterns of development, much of which is beyond comfortable "commute" distances to intercity rail service nodes. Much of Caltrans' success with state-supported rail in its three corridors (Pacific Surfliner, Capitol and San Joaquin) is due to its coordination with connecting modes. Of particular note are the Amtrak-branded, high-quality bus services directly connecting trains.

Connecting the Gaps

Caltrans support for passenger rail service goes back to 1976, with the startup of the first 403b train service over Santa Fe Railway lines between San Diego and Los Angeles (LA). In subsequent years Caltrans acquired additional equipment for the trains, enabling three daily round-trips by 1980. Ridership soared. Today the Pacific Surfliners carry three million annual riders; it is the second most-heavily traveled intercity rail corridor in the country.

In the late 1970s Caltrans also started to provide funding for trains operating in the San Joaquin corridor between Bakersfield and Oakland. This service, operated over Santa Fe Railway tracks, stopped short of key destinations at either end of its route. Passengers wishing to connect northward to Sacramento or south into the LA basin needed a convenient, reliable option for completing their journeys. The rail route south from Bakersfield terminus of the San Joaquin trains to Los Angeles passed over the tortuous but scenic Tehachapi loop, and was very slow and indirect. The lack of a direct connection into LA also meant that San Diego passengers traveling north to the Bay Area lacked good options for continuing their journey beyond LA.

Caltrans addressed the connectivity issue with dedicated, high-quality bus connection services. The first such route connected Los Angeles to Bakersfield which is much quicker than a rail connection over the Tehachapi loop, and continues to account for around 60 percent of all riders on the San Joaquin trains. This initial bus route was considered an essential element of Caltrans' rail service development plan and was put in place without major cost-benefit assessments or justification. The second such service connected San Joaquin riders with Sacramento. Oakland–Sacramento service (the Capitol Corridor) was still several years away.

After the success of these two initial connecting service corridors other routes were initiated on a trial and error basis. Developing such connectors is a relatively low-risk approach to testing market demand without major commitments of long-term resources. Today, ridership assessments incorporating bus connection activity are incorporated into overall Caltrans rail service modeling through agreements with Amtrak. In addition to the "gap filling" role described above, Amtrak-branded bus services extend the effective reach of the intercity network to communities that will never enjoy direct rail service due to cost, right-of-way availability or ridership potential. In other circumstances the buses have proven so successful that investments to provide direct rail are seen as justified and have been incorporated into Caltrans' long-term rail service development plans.

Caltrans works closely with Amtrak to set service standards and secure operating agreements with the various bus service providers providing Amtrak Thruway service. Standards include luxury coach specifications, cleanliness, customer service demeanor, station hygiene, etc. Caltrans pays for 100 percent of the service, including the salaries of Amtrak officers who serve as bus service supervisors. In late 2008, seven bus operators provided dedicated connecting service around the state.

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Caltrans surveys of train riders found that many such patrons harbor serious doubts about motor carrier service and are particularly unwilling to contemplate bus rides of more than one hour. For these reasons special effort has been made to brand the buses as "Amtrak connectors." Stations have been designed to support that image and include shade/rain canopies for riders and other amenities. Driver uniforms, name tags, and other symbols further support efforts to overcome any bias against buses and distinguish the connectors from other intercity bus offerings.

The Thruway buses have guaranteed connections to their targeted trains; Caltrans will hold a train departure a reasonable amount of time to ensure that the connection is made. If a connection fails, Caltrans will either put passengers on the next available train or will bus them all the way to their destination.

The relatively short-haul nature of the motor carrier runs supports retention of an experienced and highly qualified labor base; drivers always return home at night, which is often not the case for general intercity bus driver assignments.

Caltrans management views the motor carrier connections as an integral part of the state's intercity service offerings. Total costs and revenues for passengers on both the rail and bus sides of specific trips are combined to assess the viability of a given service. For some heavily traveled "gap filling" routes, such as San Luis Obispo to San Francisco, the apparent overall "operating ratio" of the connecting service is approximately 200 percent.

The Greyhound Growls

Greyhound bus lines successfully lobbied the California legislature to limit perceived competition from Caltrans-contracted bus service, even in those alignments where no common carrier operates today. The restrictions preclude residents from using Caltrans bus services except to connect to or from an Amtrak train; "bus-only" riders are prohibited. The restrictions have effectively eliminated common carrier passenger service of any type in many communities. Local residents have become frustrated when they see Caltrans buses in their communities but are precluded from using them to the next city en route. Caltrans has suggested an alternative protocol that would have Caltrans buses exit any route where a private operator stepped up to offer service, but Greyhound and its lobbyists have held their ground.

Bus riders must tender their Amtrak paper ticket in order to board the throughway service. If a reservation has been made electronically, a rider must surrender his or her driver's license or other secure document. The license will then be returned to them upon boarding the connecting train.

Other Connecting Services

Caltrans also negotiates annual or multi-year inter-agency agreements with seventeen local transit operators around the state. Agreements include coordination protocol for transfer from rail to local transit and some state funding incentives to the local bodies. Success in negotiating these deals is inversely proportional to the size of the local system. No such agreements are in place, for example, with the San Diego or Los Angeles transit agencies.

Scheduling protocol is more critical in smaller communities with bus-centered, long-headway local service. Connections to higher-frequency, fixed route systems such as the Sacramento LRT are less important due to the modest (15 minute) headways between LRT trains. While the integration agreements have worked reasonably well, Caltrans admits there is always room for improvement. Larger local systems view Caltrans, at times, as a competitor for ridership and are sometimes leery of the joint promotion/information aspects of the coordination agreements.

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Seamlessness in the South

One major success in local coordination has been the "Rail 2 Rail" agreement negotiated between Caltrans and the Southern California Regional Rail Authority (SCRRA) in 2002. SCRRA is the operator of LA Metrolink, a wide-flung network of commuter rail services, tying distant suburbs to downtown LA. The "Rail 2 Rail" coordination program includes joint advertising, cooperative fare setting, and transferability of tickets purchased for one entity on the services (over the same shared corridor) of the partner agencies. Thus a Metrolink ticket holder traveling south over the shared Surfliner route south of the city can board the Amtrak train if and when it is more convenient to do so. The program has been wildly successful, with around 45,000 monthly pass holders taking advantage of the "Rail 2 Rail" program.

The success of "Rail 2 Rail" on the Metrolink systems prompted the North San Diego County Transit District (NCTD) to follow suit with a similar arrangement in 2004. NCTD operates the popular Coaster trains from Oceanside southward into downtown San Diego.

Another contributor to multi-modal success in southern California and elsewhere is Caltrans' investment in marketing and education campaigns to help the traveling public understand transit connections and alternatives. Website data is comprehensive and easy to use. The "Rail 2 Rail" program has its own dedicated site: www.railtorail.org. More generally, the www.amtrakcalifornia.com site has easy-to-use section headings that index station names and locations as well as all connecting mode information for those destinations.

Complementary service providers have begun to market "rail-specific" packages and have linked their offerings to the site, providing further incentives for residents and visitors alike to try the services. Kimpton Hotels and Marriott have each provided special rates for those taking advantage of Amtrak's service offerings.

Summary

The skeletal geographic nature of intercity passenger rail service in most of the nation implies that coordination with other modes is an essential part of building ridership. Caltrans has demonstrated the potential success of such programs by leveraging a wide range of client education, branding, and service coordination tools. Public transportation leaders have long recognized that the rail mode enjoys special powers of attraction when convincing the public to abandon their private vehicles. Motor carrier extensions of rail service must be therefore carefully branded and managed as a "premium" service offering, distinct from other intercity bus operations.

The overlap of rail services between commuter and intercity trains over shared alignments gives rise to new ways to improve service and ridership. Ticket sharing, joint marketing, and schedule coordination has been shown to build loyalty and ridership. Simplifying rail access dramatically reduces perceived barriers for those new to public transportation. For another example of bus to intercity rail cooperation see Section D.5 on the Downeaster service between Boston, Massachusetts and Portland, Maine.

D.3 Passenger Rail Developments and Processes in the Pacific Northwest

D.3.1 Background

Along with California, the Pacific Northwest region and specifically Washington State has been a pioneer in investing in passenger rail service to provide public transportation alternatives to highway mode. The first initiative described is the Cascades intercity service between Seattle, Washington and Portland, Oregon, with more limited service northward to Vancouver British

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Columbia and southward to Eugene, Oregon. The second service is the Sounder commuter rail route from Everett through Seattle to Tacoma, in Washington State. Because both services share the same route, BNSF Railway's main north–south line from Everett through Seattle to Tacoma, Washington, all planning has to include both services as well as BNSF's freight business. A focus of this case study is how Washington State DOT planned and implemented the Cascades intercity service in cooperation with county transportation agencies around Seattle that developed the Sounder commuter service and BNSF Railway.

D.3.2 The Sounder Commuter Rail Service

The Sounder commuter services operate over a 66-mile route from Everett in the north through Seattle to Tacoma in the south. Prior to implementation of the Sounder service attempts to introduce transit alternatives to the Seattle region had floundered, in spite of severe highway congestion. With the constricted geography through Seattle itself, it is almost impossible to expand highway capacity, and voters in the region finally authorized a $3.9 billion funding proposal to improve transit alternatives. In addition to the Sounder service the proposal included light rail between Tacoma, SeaTac Airport and Seattle and bus improvements.

Sounder commuter rail service began in 2000 with two daily round trips on the southern section between Seattle and Tacoma. This service grew steadily to nine round trips by 2009. Service started on the northern section in 2003 after Sound Transit purchased a permanent easement from BNSF Railway for commuter service between Seattle and Everett. The agreement obliges BNSF Railway to provide capacity for a maximum number of commuter trips, to an agreed schedule and trip time, but leaves responsibility for the specific investment in track capacity and quality to meet the performance targets to the BNSF Railway.

South of Seattle route improvements for commuter service were shared with investments for the Cascades intercity service and for State grants to improve freight railroad service, especially to the ports of Seattle and Tacoma and to add capacity on congested main lines to the east. An example of a shared investment was a re-design of the southern approaches to King Street station in Seattle. When Sounder was in the planning stage, the approaches to the station were operated under "yard rules" with hand operated switches and no signals, which added several minutes to the journey time of all trains. A series of improvements included CTC signaling, and a new track layout that could accommodate all passenger services, as well as separating passenger movements as far as possible from through freight trains. In a separate project, King Street station itself is undergoing (2008) a massive renovation. Finally a route extension from Tacoma to Lakeview was under construction in 2008. This segment requires upgrade and partial replacement of a BNSF branch line, and will be further extended to provide a quicker and less congested route for Cascades intercity trains to Portland, Oregon.

The net result from all this effort is that between its inception in 2000 and 2008 ridership on Sounder commuter services grew to 2.67 million.

D.3.3 The Cascades Intercity Service

Increased interest in intercity passenger rail service in Washington State took root in the late 1980s. A modest level of passenger train operations had survived the divestiture of such services by private carriers in 1971, with two daily Seattle–Portland trains and a single daily Coast Starlight between Seattle and Bakersfield serving as the baseline from which improvements could be considered.

In 1991 the State Legislature directed Washington DOT (WSDOT) to conduct a comprehensive feasibility assessment for high speed ground transportation in the state. Concern was growing over congestion on I-5, the main thoroughfare between Portland and Seattle, and demographic/travel

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trends confirmed that there was no prospect for adding enough highway capacity to accommodate expected travel between these points.

In 1992 the *High Speed Ground Transportation Study* was delivered to the Governor and the Legislature. In 1993 the legislature directed WSDOT to develop "high quality intercity passenger rail service . . . through incremental upgrading of the existing service". Support for this incremental approach was grounded in a desire to both manage costs and to build, over time, a "rail culture" in the state where intercity rail was seen as an attractive alternative to driving and regional air travel. Revised Code of Washington Chapter 47.79 stands as the cornerstone of rail's inclusion as a vital part of the state's mobility strategy.

This early and high-profile commitment to rail helped Washington and its regional partners obtain designation by the FRA of the route from Eugene, Oregon to Vancouver, British Columbia as one of the original five "High Speed Rail" corridors.

Of equal value in 1993 was a senior-level agreement between then-BNSF CEO Gerry Grinstein and WSDOT Secretary Sid Morrison to proceed cooperatively with long-term planning of improvements. Prior to that point, the speed and success of dealing with the BNSF Railway had been a product of an individual's personal and professional opinions about the merits of shared use. With blessing from the highest levels of management, the state and BNSF began the long and complex process of developing a trusting and transparent business partnership for the I-5 alignment.

A Long-Term View

In 1999 Washington State introduced the first state-owned rolling stock into the Seattle–Portland corridor, and the Amtrak *Cascades* were born. The Talgo train sets employ Spanish "passive tilt" technology, increasing passenger comfort and enabling curves to be navigated at higher speeds, shaving 25 minutes off the original Seattle–Portland schedule. The modern, distinctive trains helped bolster WSDOT's marketing efforts for the service and distinguish the state-supported operation from traditional Amtrak operations.

From the earliest days WSDOT had understood the need to embed service improvements within the context of a long-term vision. The current version of the long-term plan includes detailed rolling stock, transit time, operating speed, ridership, and financial data for the *Cascades* through 2023; it is readily accessible on the WSDOT Web site. The vision plan is seen as a living document and includes a regular, disciplined schedule of review and plan updates.

It should also be noted that the plan is financially unconstrained, describing in detail the sequence of improvements required in support of a robust system while acknowledging that the suggested timing of events are simply "placeholder" dates to be adjusted as financing from state, federal, or private sources becomes available.

Development of the long-term plan did not come cheaply or easily, but the resulting "framework agreement" has supported a maturing of the relationship between the state and BNSF as well as faster execution of real, physical improvements that deliver benefits to train riders and freight operations alike. WSDOT has staffed its rail functions to support its pro-active approach to rail—nearly two dozen engineering, planning, economic evaluation, and public agency liaison professionals carry forward the state's passenger and freight rail agenda.

Modeling Maneuvers

Modeling of freight and passenger operations for the *Cascades* corridor has evolved to a collaborative, one-shop exercise as levels of trust and transparency have grown between the partners. Initially, WSDOT hired its own consulting experts to model operations and capacity needs, while BNSF (though using the same software) employed its own experts. Considerable energy was then expended in probing the inevitable differences between the two assessments. Today the service

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and capacity profiles are updated with full transparency of inputs and outputs for all parties with shared funding of technical work. Each party has an enhanced understanding of the impacts for alternative investment scenarios and the complementary impacts on other corridor users. One challenge of the capacity assessment has been a perpetual trackage rights agreement held by UP over BNSF's Portland–Seattle line. Much of the growth in freight traffic has been for the UP account as a complement to UP's proprietary I-5 alignment from Portland to the LA Basin.

Shared long-term modeling of the *Cascades* led to recognition by both BNSF and the state of need for a dedicated, passenger-only third main track south of Tacoma in the latter years of the Vision Plan. Service scenarios had been programmed into the three track model under both "all users, all tracks" and assuming a dedicated passenger main; technical outputs on service and cost confirmed a clear advantage for the dedicated track. An investment and ownership decision that could well have become an acrimonious policy conflict was instead resolved through an objective, technically driven investigation.

Timing for construction of the new third-track configuration remains uncertain, but the speed and frequency drivers that would trigger this investment are well understood by all stakeholders. In this way the Washington State corridor vision is unique, accommodating both a medium-term traditional shared use investment regime with recognition of its limits and a future need for segregated track. Investing in the formal analysis required to support long-term enhancements builds trust for freight and passenger stakeholders and permits enhancements to be put in place more quickly once financing sources are accessible to the project sponsors.

An important advantage of the years of careful planning became apparent in 2008 with the passage of PRIIA and ARRA. Washington State is in a good position to compete for funding under this legislation with a well-founded long-term plan and excellent relations with the host railroad.

Freight as a Factor

Another key element of Washington's success in rail planning for the *Cascades* has been the simultaneous attention to rail freight mobility issues around the state, both within and external to the I-5 alignment. Traditional, resource-based industries such as mining and forestry as well as the position of the Puget Sound ports in booming Asian trade heavily depend upon reliable freight service, primarily via BNSF. WSDOT's freight rail assistance program is robust, well-established, and a respected element of the state's good mobility strategy.

Of particular importance to the I-5 alignment is the state's Free and Secure Transit (FAST) cross-border program, designed to speed the movement of freight through the central Puget Sound region. Rail improvements funded through this program have improved access of rail freight providers to the ports of Tacoma and Seattle as well as furtherance to points east. As an example, WSDOT played a supportive role in BNSF's decision to re-open a dormant alternative rail crossing route over the Cascades via Stampede Pass in 1996.

An underlying theme is the acknowledgement and understanding of rail freight issues and challenges as part of WSDOT's overall transportation agenda. Progress on passenger rail issues is easier to achieve when the negotiations arena includes potential gains for the host carrier's core business interests.

Outcomes

The results of these efforts were that Amtrak and WSDOT were able to increase the number of round trips between Seattle, Washington and Portland, Oregon from the one round trip in Amtrak's core service network to four round trips in 2008, exclusive of the daily Coast Starlight long distance train to and from Los Angeles. In addition service was extended to two round trips from Seattle to Vancouver British Columbia and three round trips from Portland to Eugene,

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Oregon, supported by the state of Oregon. Five Spanish Talgo train sets were acquired by Amtrak and WSDOT in the late 1990s providing shorter journey times and generally improving attractiveness to passengers. The extensive infrastructure investments plus the use of the Talgos enabled journey time from Seattle to Portland to be reduced from 3h 55m before the start of the program to 3h 30m in 2008. Ridership on the Cascades corridor grew from 94,000 in 2003 to 530,000 in 2000 and approximately 850,000 in 2008.

D.4 Passenger Rail Service Quality Monitoring on the Chicago Commuter Network

D.4.1 Background

Chicago has the most extensive commuter rail network outside of the large east coast systems. Most of these lines have been in operation for decades, and were originally operated by the numerous individual railroads that served Chicago. As with the east coast systems, facilities, equipment and service declined in the 1960s and early 1970s, as the profitability of the freight business declined and railroads neglected and sought to abandon passenger services. To preserve service, the State of Illinois created the Regional Transportation Authority (RTA) in 1974 with powers to levy a local tax in a six-county region around Chicago to support rail service under "purchase of service" agreements with the railroads. Indiana created a similar authority, the Northern Indiana Commuter Transportation District (NICTD) in 1977 to rescue the South Shore service to South Bend and Michigan City from abandonment. These actions helped, but difficulties continued with the bankruptcy of the Rock Island and Milwaukee Road. Milwaukee Road lines in the Chicago area continued to operate in bankruptcy, until they were purchased by the Soo Line (owned by Canadian Pacific), but the Rock Island was liquidated. After a short period of operation by the Chicago Northwestern Railroad, RTA purchased the Rock Island lines and created an operating railroad, the Northeastern Illinois Railroad Corporation (NIRC) to manage operations. In 1983, Metropolitan Rail (METRA) was established as a management and marketing agency under RTA, with NIRC being responsible for providing all METRA's directly operated services. The electrified commuter routes formerly operated by the Illinois Central railroad were acquired by RTA in 1987 and operations were also transferred to NIRC.

The rail services have continued to evolve over the following 25 years with substantial investment by RTA/METRA in new equipment, higher frequency service, and line extensions. Most notably, an entirely new route started service in 1996, the North Central service from Chicago to Antioch over the Wisconsin Central. Initially this was a low-budget initiative, costing $61 million for the 53-mile route (partly over an existing passenger route), with station costs born by en-route communities. Continuing success led to a further substantial investment in 2006 with additional stations and track investment to support higher frequency and mixed express and local trips. Also during this period, METRA had to respond to changes of ownership on most of the rail lines in the region, following mergers and line sales in the railroad industry. These changes are best summarized in Table D-1 for each route, listed counter clockwise from the northeast.

Two more new lines are in active development, one of which is a circumferential line joining suburbs north and west of Chicago. As well a METRA-specific projects, there is a 1.5 billion railroad investment program in progress in Chicago called CREATE (Chicago Region Environmental and Transportation Efficiency Program). CREATE is a partnership of the State of Illinois, City of Chicago, METRA, and the freight railroads to eliminate railroad bottlenecks and increase capacity of the Chicago railroad network to the benefit of both freight and passenger services. Investments are concentrated on five corridors that link all the railroads entering Chicago, and include rail-to-rail grade separations, grade crossing elimination, new connections between lines, additional track, and improved traffic control systems.

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Table D-1. Chicago area rail line current operators, ownership and maintenance, dispatching, and ownership history.

Route (railroad) Destination	Train Operations	Track Owner/ Maintenance	Dispatching	History Since Mid-1970s
Union Pacific North to Kenosha	UP	UP/UP	UP	CNW until 1995
North Central to Antioch	METRA/NIRC	CN	CN	Opened 1996 Host Wisconsin Central to 2001, then CN
Milwaukee District North to Fox Lake	METRA-NIRC	METRA/CP Rail	CP Rail	Milwaukee Road until 1982, then SOO line and CP
Union Pacific Northwest to Harvard and Mc Henry	UP	UP/UP	UP	CNW until 1995
Milwaukee District West to Big Timber	METRA-NIRC	METRA/CP Rail	CP Rail	Milwaukee Road until 1982, then SOO line and CP
Union Pacific West to Elburn	UP	UP/UP	UP	CNW until 1995
BNSF to Aurora	BNSF	BNSF/BNSF	BNSF	Burlington Northern to 1996
Heritage Corridor to Joliet	METRA-NIRC	CN/CN (ex-IC)	CN (ex-IC)	IC until 1999 (?) then CN
Southwest Service to Manhattan	METRA (NIRC)	NS, Leased to METRA/METRA	NS	Norfolk and Western to 1982, then NS
Rock Island District to Joliet	METRA (NIRC)	METRA/METRA (NIRC)	METRA (NIRC)	Rock Island until 1980, CNW 1980–1982 then METRA
METRA Electric To University Park	NETRA (NIRC)	METRA/METRA (NIRC)	METRA (NIRC)	IC and ICG until 1987
South Shore to Michigan City	NICTD	NICTD/NICTD	NICTD	South Shore until 1989

Unusually, several commuter routes continued to be operated by the host freight railroads, most notably by BNSF Railway (formerly BN) and by the UP (formerly the Chicago Northwestern). This is because the lines were also busy freight corridors and the host freight railroads preferred to have full control of all operations to ensure good service for both freight and passenger customers. BNSF Railway has been particularly active in seeking methods to ensure good service, and this case study presents the BNSF approach as a good example of service management. It should be noted that the approach described in the following paragraphs is not unique, nor is the Guidebook endorsing the approach as the only recommended approach. Rather the objective is to emphasize that good service does not just happen: both the host railroad and train operator must have a structured process to manage performance.

D.4.2 The BNSF Approach

Management gurus often tout the adage that "you cannot manage what you cannot measure," and this is nowhere more true than in the railroad industry. The complexity of operations, the interface of 15–20 work disciplines and day-to-day changes in demand for services add up to a challenging world for even the most seasoned operations managers. These challenges are magnified when a corridor is shared between two or more parties, each with their own sets of priorities and expectations.

BNSF Railway is a leading North American organization in setting standards for service performance measurement. This expertise, applied to both commuter and intercity passenger rail

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service over BNSF Railway's lines, has proven invaluable as a foundation for process improvements, allocation of capital, and robust on-time service delivery. These measures, coupled with a culture that values transparency with business and service partners, move the overall management of shared corridors away from "vendor/purchaser" paradigms and into a world where each partner understands and shoulders their role in the success of the operation.

D.4.3 Program Development

In 1995 Chris Green, Executive Director of British Rail met with BNSF staff to describe a number of service improvement initiatives then underway on the British Rail's services in the United Kingdom. Much of this effort centered on capturing delay information and then assigning individual events into discreet "root cause" categories. Delay data was then aggregated in a manner that would support capital budgeting for the upcoming year. Recurring delays that relate to personnel or policy issues are similarly laid bare through this process, as are associated remedies that may or may not require new investment or operations expense.

BNSF followed the British Rail example in developing its own structure of delay assignment and analysis. The BNSF delay includes nineteen categories:

1. Accident
2. ADA Car
3. Amtrak interference (equipment failure, staff positioning, etc.)
4. Amtrak Chicago Union Station operations
5. Subdivision Congestion
6. Freight Delays
7. Human Error
8. Mechanical, locomotive
9. Mechanical, car
10. Maintenance of Way (unplanned)
11. Maintenance of Way (planned)
12. Other
13. Passenger handling
14. Signal Malfunctions
15. Signal – Broken Grade Crossing Gates
16. Telecommunications
17. Centralized Traffic Control
18. Switch
19. Weather

Note that the BNSF Railway operated commuter service in Chicago terminates in Union Station, which is owned and operated by Amtrak.

A 5-year historic review of delays by category isolated key targets for improvement and helped establish a "delay budget" that benchmarked the overall levels of service integrity the railway might realistically achieve with a strong focus on the "root cause" issues. The initial target was 95–96 percent on-time performance. Total expected delays were then allocated to various internal and partner stakeholder groups, giving managers for those areas (for the first time) a very specific limit on the acceptable number incidents that would impact operations from their areas of responsibility.

Heightened operations measurement and control yielded some unexpected benefits, extending well beyond the limits of shared-use passenger corridors:

- Spikes in winter season turnout failures led to identification of switch heater flaws and a need to re-design the associated blower units. The same issue was in play across the entire network where such heaters were used, but was first identified in the shared-use territory.

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- Switch audits became coordinated between the signaling and track maintenance forces, improving field efficiency and building a more robust regimen of winter preparedness activity.
- Signaling system failure impacts led to an emphasis on "scalable" signaling control architecture, wherein signals for one line of a double main system may remain active even as repairs or maintenance are performed on signals for the adjoining track.
- Comprehensive reporting of accident impacts arms BNSF and passenger rail agency representatives with solid data for public meetings, presentations, and right-of-way security initiatives.

A decade of detailed "root cause" assignments for service delay has created a solid foundation from which BNSF may work with public rail authorities on the specific upgrade designs and features that make possible high levels of service integrity for all users of a given corridor. Specific empirical data from existing operations is combined with detailed service modeling (using the Berkeley Software platform) to develop the final plan. Chicago-area experience in particular was used to inform work in the Pacific Northwest region for the startup of BNSF-operated Sounder commuter rail operations:

- The location of maintenance facilities and wash tracks are carefully chosen to minimize interference with through operations. This generally includes co-locating multiple service activities and placing such support infrastructure on one side only of the through corridor.
- Robust investment in bypass routes in and around major freight terminals. Terminal operations have long been recognized as the "Achilles heel" of strategies to improve the service reliability of carload freight. It is not surprising, then, that new trackage specifically dedicated to isolation of passenger operations from these choke points is a high priority for development of reliable passenger operations.

It might be noted that on-time performance for commuter rail services in major communities served by BNSF (Seattle, LA, and Chicago) has ranked in the high 90 percent range for the past few years, due in no small part to the service performance measurement/delay assignment architecture and the careful channeling of capital improvement funds.

BNSF has an open-book strategy for dealing with public agencies. Delay assignment and service performance data is shared openly with all stakeholders along with corollary recommendations and rationale for capital investments. When an agency approaches BNSF with a proposal for passenger service, BNSF encourages the agency to speak with other commuter rail operators and members of the APTA Commuter Rail Committee. When a pattern of service failures emerges, BNSF dispatches ground personnel to engage with local agency and BNSF operations personnel. Potential solutions are discussed with operations, signaling, engineering, and dispatch personnel and then tested with an operations model for the corridor in question. The on-the-ground assessment, technical validation, and transparent engagement with passenger service authorities builds trust and understanding that will speed resolution of future such challenges. The state or agency understands the problem, is engaged in the service diagnosis and supports the proposed solution.

Passenger rail agencies are under great pressure to reduce startup capital investment as well as meet federal cost-effectiveness criteria where the FTA New Starts money is involved. In the associated corridor modeling, train dispatchers may be assumed to always make best use of available "slots," mechanical breakdowns are rare, and "all of the employees are above average." Analyses such as those described in this Appendix can be used to ensure that assumptions used in analysis reflect real-world variability and challenges, and are informed by the detailed service performance data collected in comparable service environments.

BNSF's service performance measurement regime has strengthened the carrier's multidisciplinary approach to passenger operations and shared use. The core team of engineering, operations, service modeling, and signaling experts are capable of leveraging past experience to inform their prescription of requirements for new shared service areas while dealing from a solid

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foundation of empirical service data. Traditional shared use negotiations would often resemble a football scrimmage, with competing teams of "experts" lobbing anecdotes back and forth across the table to validate their position on a specific investment or upgrade. Developing solutions based on solid technical service data may be less dramatic (and may even take as much time) but the end result builds the working relations and partnerships required to sustain the shared enterprise for the long haul.

D.5 Development of a Short Interstate Passenger Rail Corridor—The Downeaster Service

D.5.1 Background

Proponents of new intercity passenger services often confront the challenge of corridors that cross state lines, complicating efforts to raise capital and gain the support of citizens and legislators in multiple jurisdictions. The resounding success of the Boston to Portland Downeaster service can serve as an example to states and agencies whose resources, demographics and political environment might lead to an early conclusion that passenger rail simply will not work.

Key success factors supporting the Downeaster include:

- An organizational structure that affords considerable autonomy and flexibility to the sponsoring agency
- Support from Federal agencies and the STB in particular to overcome protracted initial opposition from the host carrier, together with consistent support from Maine officials and legislature
- Far-reaching grass roots support among local communities along the route. In some ways the Downeaster might be viewed as America's "most populist" intercity train service.
- A business-centered service philosophy that levers Amtrak's significant institutional advantages while continuing to engage local stakeholders.
- Careful control of the communications process, avoiding press-driven escalation of inevitable conflicts over service performance, costs and shared-asset issues. Significant time and energy is expended in regular, detailed interaction among all stakeholder groups.
- An unwavering focus on the service itself: speed, frequency and reliability. Planning centers on what will be required to improve service with or without "equitable" cost sharing by each of the three states involved in the route.

D.5.2 An Unlikely Corridor

The Downeaster service, initiated in late 2001, operated by the Northern New England Passenger Rail Authority (NNEPRA), operates over the multi-state rail corridor between Boston, Massachusetts and Portland Maine, with a planned extension to Brunswick ME approaching implementation. The Boston–Portland corridor is 120 miles long plus 30 miles for the planned extension to Brunswick, Maine. The Downeaster service is unique for many reasons, including:

- It serves communities in three states, it provides valuable pointers for others considering passenger rail service through multiple states.
- The service was implemented and is operated with a relatively limited budget, an example of how a passenger rail service can be developed by relatively small states that cannot afford the levels of funding typically available to larger states.
- The service has been successful, attracting a growing ridership, especially in recent years, as well as increasing the fraction of operating costs covered by farebox revenues.

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Lessons may be drawn from the Downeaster success, particularly with regard to managing the complex web of stakeholders typically engaged in the development of an intercity corridor. For the Downeaster, these included:

- State governments and legislatures of Maine, New Hampshire, and Massachusetts.
- Railroad service operators, including Pan Am Railways (formerly Guilford Rail System and Boston and Maine Railroad), Massachusetts Bay Transportation Authority (MBTA), and Amtrak (the operator of the Downeaster).
- Communities along the route that host passenger rail stations. From north to south these are Portland, Old Orchard Beach (seasonal), Saco and Wells in Maine, Dover, Durham and Exeter in New Hampshire, and Haverhill and Woburn in Massachusetts. Freeport and Brunswick Maine would be served by the Brunswick extension.
- Advocacy groups such as TrainRiders Northeast and the Bicycle Coalition of Maine.

The following sections describe the development of the Downeaster service, the roles played by the various stakeholders, and the approach taken to managing the service.

D.5.3 Downeaster Chronology

The key milestones in the origin, implementation, and continued operation of the Downeaster are listed below. The name of the freight railroad that owns the tracks over which the Downeaster operates changed from Guilford Rail System to Pan Am Railways in March 2006. The following items use the name used by the railroad at the time of the event listed.

1989: The advocacy group TrainRiders Northeast was formed with the objective of promoting passenger rail services in Maine and more generally throughout northern New England. The initial objective was a service between Boston and Portland. There had been no passenger rail service in Maine since 1965, except for a VIA–Rail Canada that passed through northern Maine en route between Montreal and Halifax.

July 1991: Strong support for a Maine citizens mandate directing the state government to implement passenger rail services in Maine encouraged the legislature to adopt the initiative before it came to a vote. In part, support for this mandate was driven by opposition to a proposed widening of the Maine Turnpike from two lanes to three between York and Portland, parallel to the proposed Boston–Portland rail service.

1991–1994: Engineering and environmental studies and assembly of a funding package to upgrade tracks of the Guilford Rail System from the Massachusetts/New Hampshire border occurred. Individual towns and cities developed plans for station locations and facilities. Amtrak offered to make available the two train sets needed for the service.

1995: NNEPRA formed to take financial and management responsibility for implementation and operation of the Downeaster service.

1996–1998: Prolonged legal disputes with Guilford Rail System as to applicability of Amtrak access rights to this service, compensation for passenger train operation, allowable speeds, and related issues. These are fully documented in Appendix A, describing Amtrak rights and responsibilities.

January 1999: Work started on track and right-of-way improvements to the 75 route miles from the Massachusetts/New Hampshire border to Portland, Maine. Work continued for three construction seasons, with a total cost of about $64 million ($850,000 per mile).

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December 14, 2001: Inaugural run of the Downeaster. Speeds were limited to 60 mph pending resolution by the STB and the FRA of a dispute with Guilford as to the adequacy of 115 lb/yd rail for 79 mph operation.

Summer 2004: Substantial service delays occur due to a collapsed bridge abutment in Kennebunk.

August 2004: Final resolution of speed dispute is reached with Guilford by the STB. Maximum speed raised to 79 mph, with corresponding reductions in journey time.

September 2004: Service shut down for two weeks for Democratic National Convention in Boston, held adjacent to the Downeaster's Boston terminal at North Station.

August 2007: Fifth round trip added, after extensive delays due to efforts in New Hampshire to secure Congestion, Mitigation, and Air Quality Improvement Program (CMAQ) funds for a contribution to an additional passing siding near Exeter, which was needed to operate the trip reliably. There was considerable opposition in New Hampshire to this use of CMAQ funds by parties preferring alternative projects. It is not clear whether funding the rail projects actually affected the chance that other projects would qualify for funding. A new and effective agreement to coordinate ticketing and schedules with bus operator C&J, which runs a Dover to Boston service, was a factor in overcoming the opposition.

April 2008: Maine legislature allocates $2.5 million per year from car rental tax funds to supporting the extension of Downeaster service to Brunswick Maine, a distance of 29 miles. NNEPRA is pursuing a Railroad Rehabilitation and Improvement Financing Program (RRIF) loan of $31.5 million to fund track upgrades for this extension. Pan Am Railways agreed to complete the work for a fixed price plus adjustments for material costs. The planned initial service to Brunswick can be provided with the existing train sets and crews.

April 2008: Additional car made available by Amtrak to be added to each train set when required by expected ridership levels.

The results of all these efforts are illustrated by the ridership history of the Downeaster, given in Table D-2.

The background to this history can be summarized as follows:

- Good ridership in the first several months of the service can be partly attributed to a novelty effect.
- Flat ridership during the next 2 years can be attributed to long journey times due to a 60 mph maximum speed, the economic downturn after 9/11, and continuing work to complete track upgrades and station projects.
- Lack of growth persisted through the second half of 2004 because of the Kennebunk bridge failure and a service shutdown for the Democratic National Convention in Boston.
- From 2005, ridership grew rapidly, with completion of improvement projects, no serious service interruptions, and schedule refinements.

Table D-2. Downeaster service ridership from 2001 through 2009.

Reporting Year[1]	2001–2002	2002–2003	2003–2004	2004–2005	2005–2006	2006–2007	2007–2008	2008–2009
Ridership (1000s)	165[2]	260	255	250	330	346	442	455[3]
Percent Change	na	na	–2%	–2%	+32%	+5%	+28%	na

[1] Reporting years run from July to June to coincide with State of Maine fiscal years.
[2] For 6.5 months. Service started in December 2001.
[3] Estimated.

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- Further boost in ridership in 2007–2008 with the addition of a fifth round trip and increasing fuel prices.

This history indicates that the public will use the train if good quality service is delivered—consistent, reliable, free of serious interruptions, and with a reasonable journey time. However, it requires constant attention to detail on the part of multiple entities involved in delivering the service.

D.5.4 The Northern New England Passenger Rail Authority (NNEPRA)

The NNEPRA was created by the State of Maine in 1995 to take financial and management responsibility for the implementation and operation of Downeaster service. New Hampshire was uninterested in passenger rail at the time and opposed providing or soliciting funding, so NH participation in NNEPRA was not considered. The autonomy of this small agency supported a more flexible negotiations style with Amtrak, Pan Am Railways, and other providers of materials and services, moving forward in a complex negotiations environment. NNEPRA is purely a Maine agency; it has no representation from the other states along the Downeaster route. NNEPRA's current functions include:

- Working with Maine DOT and other State of Maine government agencies, and the legislature, to prepare applications for grants, loans, and appropriations to support capital projects and ongoing passenger rail operations.
- Contract with Amtrak for the operation of the Downeaster. Amtrak in turn contracts with Pan Am Railways and MBTA for track usage rights and access to MBTA stations. Amtrak also provides the cars and locomotives used in the service, car, and locomotive maintenance, train crews, and ticketing and reservation services. The contract is a fixed formula (including escalation factors), except for fuel costs and host railroad payments. Amtrak is guaranteed these payments, independent of ticket sales revenues. Amtrak subtracts ticket revenues from the operating expense and bills NNEPRA for the difference.
- Contract with Pan Am Railways and others to implement capital projects, and monitor project progress against schedule and budget.
- Participate in the choice of an independent firm to provide food service aboard the Downeaster and in the choice of food offerings.
- Exercise responsibility for all actions related to designing and regional marketing the Downeaster service, deciding what capacity to offer, and setting fares. This NNEPRA is fully responsible for the revenue side of the service and free to take any and all actions to maximize revenue. NNEPRA carefully manages revenue and expenses within the annual budgets agreed upon with Maine DOT and the legislature, as an essential step to maintain credibility and build trust for continued support in the future.

D.5.5 Early Negotiations and Service Startup

The effort to reintroduce passenger rail service to Maine had a good start with firm support from the public, the state legislature, Amtrak, and the Congressional delegation at the time. Funding was secured and the necessary permitting was put in place, and Amtrak undertook to provide two train sets to operate the planned service. There was also enthusiastic support from municipalities along the route, both in New Hampshire and Maine, which immediately started making plans for developing stations and transportation centers linked to the proposed service. Finally, the Sunday River ski resort owners started a weekend ski-train service between Portland and Bethel, Maine over the St. Lawrence and Atlantic Railroad, which they hoped could connect with the new service to Boston.

Difficulties started when NNEPRA, Amtrak, and State DOT officials approached the railroads over which the service was to operate to negotiate the access agreements, and with Guilford, details

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of the track upgrade work. It is clear from contemporary reports and later recounting of the situations that developed, that this process was frustrating for all concerned. The factors that seem to have fed this frustration include:

- Stonewalling by Guilford Rail System, which threw up numerous legal roadblocks to implementing the service, each one of which had to be opposed and overcome by appeals to the STB and the courts. It is not clear that the public officials appreciated that behind the confrontational tactics lay the legitimate concerns that all freight railroads have, that hosting a passenger operation will limit their freedom to grow and adapt the freight service to meet customer needs. In this case, the attitudes of the Guilford management at the time were such that legal fights were probably inevitable, regardless of the approach taken by public officials.
- Expectations by many stakeholders (en-route municipalities, public advocacy groups, public at large) that once funding was secured, all that needed to be done was to carry out the track upgrades. There was a presumption that with Amtrak's right of access and the funding in place, the freight railroad would simply get on with the work. This presumption may have been shared by the public officials. Municipalities and communities expecting to host a station had to put their plans on hold. Advocacy groups and editorial writers in local newspapers expressed their frustrations in print, often critical of Guilford, Maine DOT officials, and the general progress.
- Missteps in negotiations with MBTA about access over their track from Haverhill, Massachusetts to Boston North Station, primarily relating to the issue of capacity on some single track sections of route and in the North Station area during peak hours. NNEPRA had no funds for capacity improvements in MBTA territory, but was arguing for more flexibility in scheduling than MBTA was prepared to grant at the time. Access to MBTA track relied on Amtrak's right of access privileges.
- A general lack of interest in this rail service on the part of New Hampshire officials, and active opposition in some quarters. Part of the opposition originated with the operator of the C&J bus service between Dover and Boston, who viewed the rail service as unfairly subsidized competition and actively lobbied New Hampshire legislators and officials to oppose funding for the train service. However, municipalities hosting stations were able to obtain funding for station area developments such as platforms, shelters and parking lots. Maine had to raise funds for track improvements to the New Hampshire portion of the route.
- Once construction had started, use of "time and materials" contracts for work by the railroad proved cumbersome, leading to a lot of paperwork and a tendency for NNEPRA to micromanage construction and quibble about details. With this experience, NNEPRA later moved to fixed price contracts for an agreed scope of work, with escalation clauses for materials costs.

In spite of these difficulties, construction work was largely complete by the end of the 2001 work season, and operations with four round trips daily started in December 2001.

D.5.6 Service Development Since Startup

After a spike in the first season of operation, attributed to the novelty effect of a new service, there was little growth in ridership in the first 3 years of operation, through late 2004. Ridership was also significantly below pre-service forecasts. Reasons for low ridership included:

- Extended trip times due to the 60 mph speed limit imposed by Guilford. The limit was finally increased to 79 mph in August 2004, after all Guilford's objections were overcome.
- Ongoing work to complete outstanding track improvement projects, which also lengthened journey times.
- Scheduling that was not well suited to customer requirements, partly due to operating constraints imposed by host railroads, and partly due to NNEPRA's other priorities at the time. The relatively late arrival of the first morning train in Boston and the early departure of the last train of the day were often mentioned as a factor.

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With most of the earlier problems resolved and speeds increased to 79 mph, ridership grew rapidly in 2005 and later. A marketing coordinator with travel industry experience appointed in mid 2005 helped to focus marketing efforts and identify the keys to growing ridership

In the period from its founding to 2004, NNEPRA focused on getting the train service up and running with less focus on refining the service. Some stakeholders may have felt neglected or taken for granted, if they were not involved in the immediate problems. Finally, the lackluster ridership threatened to increase the need for operating funds. Federal government CMAQ funding provided operating support in the early years, but in 2009 this support will have to be replaced by state and local funds. The funding request would be a hard sell with the state legislature, if there was a growing gap between expenses and revenue.

The approach taken by NNEPRA is to view the Downeaster service as a business. Both the present executive Director of NNEPRA and the Board have a largely business background. The business succeeds if it attracts riders and earns revenue that meets or exceeds plans and expectations. This success indicates that the service delivers on the expectations of the public and stakeholders in Maine and New Hampshire and the local, state, and federal government agencies which supported and funded the service. It also creates a favorable climate for future growth of passenger rail service in the region.

The service characteristics that attract ridership are well known: convenient schedules, consistent and reliable service, clean and attractive trains, good on-board amenities, and convenient access to services, both physical access at stations and with connecting services and access to information about the service. NNEPRA succeeds in delivering on these service requirements through a mixture of local choice of some service elements and carefully nurturing partnerships with other stakeholders to deliver on the others. Specific approaches follow.

Scheduling

Convenient schedules have been delivered by working on the relationships with the host railroads and Amtrak. The host railroads have become familiar with the operation and have been more flexible in considering schedule requests. NNEPRA holds regular meetings with the railroads to review any operational issues and to explore schedule changes when required. NNEPRA reassures the hosts that it respects their need to serve their primary business needs, and works constructively and co-operatively to understand those needs and find solutions that meet the needs of Downeaster service without interfering with the host railroads' activities. NNEPRA also makes a point of meeting regularly, even when there are no pressing concerns. Good relationships must be built before problems arise in order to encourage support from stakeholders when it is needed.

Service Reliability

The same cooperative relationship with the host railroads and Amtrak yields service reliability, although some problems are beyond immediate control. If a problem is identified that can be corrected with a minor schedule change, this can be done. If a modest infrastructure investment will correct a source of unreliability, then NNEPRA is willing to seek funds to help address the problem. In the case of a major problem that is outside NNEPRA control, it will do all it can to advise its customers, make temporary schedule changes if appropriate, and take similar actions to minimize impact on its business. As a recent example, major structural work on a large bridge spanning the Merrimac River near Boston was well-publicized to Downeaster customers along with expected impacts to train schedules and performance.

Shorter Journey Times

From a longer term perspective, NNEPRA identifies opportunities to shorten the overall journey time between Portland and Boston, and to take advantage of federal grant programs to realize these opportunities. For example, NNEPRA obtained a $500,000 grant from the FRA fiscal

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year 2008 grant program toward Portland area track improvements. A fifth daily round trip was also added in 2007. An important constraint at present is that NNEPRA cannot consider funding infrastructure improvements on MBTA territory and has to work around capacity constraints on some single track sections and in the North Station area in Boston.

Trains and On-board Amenities

For trains and on-board amenities, NNEPRA relies on Amtrak-provided equipment and has no plans to acquire its own vehicles. NNEPRA is very involved in the choice of cleaning services and arrangements with a private firm for on-board food service. The food service has been very well received, and although it operates at a loss it is considered an essential amenity to attract ridership.

Access to Stations and Information

NNEPRA relies heavily on partnerships for physical access to stations and for access to information about the service. These relationships include:

- Strong relationships with the six municipalities in New Hampshire and Maine that host passenger stations, including Old Orchard Beach (seasonal), Saco and Wells in Maine, and Dover, Durham and Exeter in New Hampshire. All the municipalities have invested heavily in stations, using local, state, and grant funding, and have linked other transportation and property developments to the stations. For example, in Saco, station improvements are linked to commercial and residential redevelopment of nearby old mill buildings, and have even included a 75 kW windmill. In Durham, the recently renovated station and transportation is close to the University of New Hampshire campus, and connects to the extensive bus service operated by the University. The partnerships are nurtured by bi-monthly meetings between NNEPRA staff and municipal representatives, hosted by the municipalities on a rotating basis.
- The advocacy group partners help with marketing and support future rail developments. They are also not shy about speaking out when events are not to their liking. Examples of activities by these groups include a volunteer on-train and station host program organized by TrainRiders Northeast, and rail-facilitated bicycle touring events organized by the Bicycle Coalition of Maine.
- Key partnerships have been developed with two regional intercity bus operators. Concord Coach operates services from Boston through Portland (sharing a terminal with the Downeaster) to major inland and coastal Maine communities beyond Portland. C&J Bus Lines, an early opponent of the Downeaster, now provides coordinating service between southeastern New Hampshire towns and Boston. Arrangements include ticket interchangeability on selected parallel services and showing each others' services in schedules. Experience has shown that parallel bus and rail services help each others' ridership by providing more travel options rather than competing for a fixed number of travelers.
- NNEPRA relies heavily on Amtrak for a number of services. As the operator of the service Amtrak has the primary relationship with host railroads and is responsible for day-to-day operations. NNEPRA is only involved if there is a systematic problem that may require negotiation of schedule changes, and investment or similar action. NNEPRA relies on the Amtrak national brand for marketing beyond the local area and for the reservation system. NNEPRA provides the Downeaster Web site and local marketing.

Interstate Relationships

Interstate relations proved to be a minor factor in developing and operating the Downeaster service. In Massachusetts, the MBTA is a host railroad on a similar basis to other host railroads over which Amtrak operates service. Massachusetts transportation agencies are not involved with the Downeaster beyond this role and have other pressing issues to address.

Until recently, New Hampshire state transportation agencies and legislators had little interest in passenger rail transportation and would not contribute any funding or apply for grants to sup-

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port the service. NNEPRA and the State of Maine did everything, except the activities undertaken by towns along the route. Since 2006, however, there has been a change in attitude. Opposition from the bus operator C&J ended with an agreement to cooperate on ticket interchangeability and scheduling. New Hampshire contributed the cost of a passing siding in Exeter needed for a fifth daily round trip from CMAQ funds. Overtures have been made about a contribution to annual operating costs, when these become a state responsibility in 2009, but there has been no agreement. New Hampshire has appointed an official responsible for passenger rail within the state DOT, but primary interest is centered on extending commuter rail service from Lowell and/or Lawrence, Massachusetts to Manchester, rather than the Downeaster route.

Observations and Summary

Developing a new passenger rail service is a lengthy and complex process requiring the participation of many parties. Not all activities are able to proceed at the same pace, and delays are almost inevitable. The sponsoring agency needs to identify all stakeholders, make sure all are aware of a realistic timescale, and make sure they are kept as fully informed as possible. This should be done without revealing confidential information about negotiations or being negative about the actions of any one group. The Downeaster development had some rough patches arising from unrealistic expectations of how quickly the service could be implemented and because various stakeholders felt they were not being properly informed of progress or left out.

NNEPRA benefits from having considerable independence from State government agencies, with more responsibilities and control over the details of the service than is usual for agencies that oversee state-sponsored intercity passenger rail services.

NNEPRA puts great emphasis on maintaining close contacts with all stakeholders, holding regular meetings, and being respectful of the concerns and positions taken by the stakeholders. It feels that there is nearly always a mutually acceptable solution to a problem, and finding and implementing that solution builds trust all round. Making critical remarks about a stakeholder is unacceptable. Maintaining good relationships with state agencies and legislators are especially important. The combination of solid financial performance and regular contacts builds trust and allows NNEPRA to maintain its independence.

With a very small staff of six people, NNEPRA cannot get involved in a lot of detail. It devotes part of its resources to basic performance tracking (ridership, revenue, on-time performance) and concentrates on a very small number of critical projects at one time. NNEPRA tries to avoid micromanaging its projects and is prepared to share project risk with its partners (especially the host railroad).

NNEPRA takes a pragmatic view of factors it cannot change or influence. For example, it would like New Hampshire to contribute to operating costs, and many would agree that it is unfair for Maine to bear the whole cost of a service given the number of New Hampshire passengers. But practically, NNEPRA knows it has no formal standing in New Hampshire, and in-state officials and interest groups in that state have to make the decisions themselves. Another example is the RRIF loan process, which can be tedious and bureaucratic, requiring a lot of apparently irrelevant information. However, instead of arguing, NNEPRA's attitude is just give them what they want and quickly, as the most effective way of getting rapid approval. In the event, the RRIF application was unsuccessful, and NNEPRA is pursuing funds through PRIIA or ARRA programs.

The limitations of the Downeaster example are that it is a very simple service serving a compact geographical area, and there is little need for complex capacity or cost modeling or service quality monitoring. Analysis and recordkeeping do not require much more than conventional spreadsheet methods. The structure of New England government is that many functions are the responsibility of individual towns and cities, which means that the Downeaster needs strong

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relationships with those entities. In other states with different governance structures, county, state and MPO authorities may play a larger role.

D.6 A Synthesis of Approaches to the Negotiation Process Introduction

Initiatives to develop new passenger rail service can be complex, given the mix of interests between transit agencies, other levels of government, and private rail corridor owners. Building a true long-term partnership between public and private interests is essential to address the changes that inevitably impact joint use of a rail corridor; goals of each side must include the ability to work through challenges in this dynamic environment, instead of simply "reaching an agreement" that permits the first stage of service to begin.

This case study is a synthesis of information about the negotiation process learned during interviews with passenger rail agencies and other stakeholders. The information from these interviews formed the foundation for Sections 2 and 4 in the Guidebook. However, the reader should note that the interviews and this synthesis were prepared before the passage of PRIIA, thus some statements may be out of date. However, almost all the content is considered to be useful and relevant to post-PRIIA conditions.

As noted elsewhere in this report, the rights of access and negotiating leverage associated with "intercity" passenger rail are significant. Commuter rail proponents, by contrast, must depend solely on the willingness of a corridor owner to provide access. There is no direct recourse if, in the final analysis, the freight railroad elects to refuse new operations on their property. The discussion here relates to commuter rail startups. An intercity startup is more fully described in the description of multi-state corridor development in Section D.5. It might be noted that the designation of the NNEPRA's service as "intercity" was essential to getting the train operations in place. Under today's legal framework a commuter operation, using these same tracks, would likely have been impossible given the original stance of the freight operator.

Most freight railroads want to be advised from the earliest point of interest that a corridor is under consideration for joint use. These initial contacts are often through the railway's public or government affairs offices. After an initial meeting, these railway officials may or may not elect to engage other officers from within the carrier organization, depending upon the seriousness attached to the public agency request. If the commuter service inquiry appears to be highly speculative or lacks any specific funding source, the carrier may elect to wait for a second, more serious stage of investigation to begin. From the outset it should be noted that freight carriers view engagement in these discussions as a public interest or franchise protection activity—and they may be reluctant to commit serious resources until such time as a real prospect of passenger service is apparent.

D.6.1 Setting the Stage

Passenger service proponents and freight carriers often enter discussions about joint use with sets of priorities that work against each other:

- Passenger rail agencies may be anxious to demonstrate the viability of the rail mode and to initiate a minimum "core" service offering at least cost to build support and political momentum. Developing a "long-term vision" with at least scoping-level costs may be viewed as premature and time-consuming. Long-term cost estimates may be used by service opponents as evidence that an agency is opening the door to a financially ruinous set of infrastructure investments.

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- Freight carriers recognize the political appeal of passenger operations and are reluctant to entertain "startup" operations without a robust funding regime and vision of long-term needs on both sides. They recognize the limits of political promises and the risks attendant to the election cycle.

As a confidence-building phase, both parties should acknowledge the other side's needs for a successful partnership:

- Passenger interests must understand the need for both passenger and freight service providers to have adequate capacity to serve their markets. Service to each is of equal importance.
- Freight carriers must acknowledge the goals of passenger interests, but do not wish the success of passenger operations to come at the expense of the freight franchise.
- All parties wish to create the safest possible operating environment.
- Costs for service and infrastructure should be shared "fairly" between the parties.

An ideal management environment for shared use is grounded in a partnership vision that moves well beyond the "vendor/purchaser" structure of older commuter rail agreements. Rigid, one-dimensional "purchase of service" agreements are poorly suited to shared-asset environments where the needs of both passenger authorities and freight interests are likely to change significantly over time. Passenger rail and DOT representatives from North Carolina, Washington State, and California in particular have noted the evolution of their relations with host freight railroads as a consequence of maturing relationships, higher levels of trust, and deepening of technical expertise on both sides of the table. Hallmarks of this evolution include:

- Sharing capacity modeling, work including transparency of model inputs and outputs.
- Creation and staffing by the public agency of positions that draw from railway engineering and operations experience. In some cases agency staff comes directly from the ranks of the host carrier.
- Development of a planning and management framework that permits more of the corridor-related work to be accomplished on a streamlined "task order" basis rather than as the object of new, formal negotiations.

All of this, of course, takes time—months, years, or even decades. A clearly defined business structure, at the outset, will help launch the shared-use voyage in positive direction.

D.6.2 Define the Business Structure

A public agency dealing with passenger rail issues for the first time is likely to find itself overmatched when first entering discussions with a freight corridor owner. Creating a better balance may require that the agency bring in some external resources to help with the negotiations—a consulting firm, personnel from a sister agency, or officials from another government department that has experience in dealing with freight carriers. Officials from the large railways have dealt with requests for shared use in numerous and varied circumstances and are likely to present the agency with a specific list of conditions that is precedent, from the carrier's perspective, of serious negotiations taking place.

The devil, they say, is in the details. One strategy to keep negotiations on track is to technically define, as clearly as possible, the tools and outcomes needed for a shared-use arrangement to move forward. Examples include:

- What is "capacity" and how is it measured? Is it a measure of daily throughput, ability to meet peak demand, or fluidity of operations during commute periods, and within what tolerances for on-time performance?
- How will changes in the physical plant and train operations be projected? What modeling tools are appropriate? What role do each of the parties play in confirming and reviewing the model inputs and outputs?

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- How are forecasts for future demand (both passenger and freight) developed?
- What is the baseline physical condition of the property in question? How will improvements to the plant (unrelated to capacity) be funded and/or credited?
- What technical standards will apply to capital improvements?
- What mechanisms are appropriate for allocating ongoing capital and maintenance expense?
- What role will the freight carrier play in and around proposed station locations?
- What is the appropriate term of the shared use arrangement? Does the passenger agency require a permanent right to the alignment? Will shared use include consideration of shared title to property or a permanent easement?
- What level of future demand must be protected in the initial capital investment?
- How will service performance be measured and reported? What role will this data play in guiding future capital allocations?
- What are the limits of shared use? Are there specific break-points with regard to speed or service frequency that make clear the need for separate, dedicated trackage?

Other, corridor-specific technical issues will likewise need to be addressed. Given the variety of conditions that apply to shared corridor development responses to the questions above, specific examples will not be provided in this report. The relative weight and importance of the various elements will differ from place to place.

What *is* important, however, is that the definitions be fleshed out in advance of a specific corridor analysis. Development of and access to these definitions should be kept as transparent as possible. Public agencies will have a solid rationale for their decisions and freight carrier interests will have a strong footing from which they can defend their legitimate commercial interests.

D.6.3 What Other Elements Can Be Leveraged?

Public agencies and freight carriers alike should consider other, tangential areas of mutual gain that, while not essential to the corridor itself, may strengthen the underlying partnership. Observers in Washington State have noted that corridor improvements for the Seattle–Portland Cascades service have occurred within a broader public rail context that includes support for BNSF Railway Company's (BNSF) freight service enhancements. These have included improved access to and from the Puget Sound ports and re-opening of BNSF's Stampede Pass route over the Cascades. Other elements of mutual interest may include: long-term strategies to address major rail bottlenecks such as tunnels or bridges; grade separation or elimination as a safety or quiet zone strategy; and public support for addressing environmental mitigation and regulatory requirements associated with freight rail improvements elsewhere in the state.

State officials have become ever more aware that the rail mode can be leveraged to offset a portion of future intercity freight growth on the nation's highways; specific initiatives to encourage truck to rail or intermodal handling may, at times, be coupled to plans for passenger rail capacity enhancements.

Opportunities to link such issues often lie beyond the immediate purview of a local sponsoring agency for passenger rail service. State DOTs, as partners in the development effort, may play an important facilitating role in such circumstances.

Passenger rail agencies and several DOTs noted the importance of senior-level public sector officials and relationships with key railway executives in keeping a negotiations process in motion. Public officials charged with developing a specific corridor for passenger service may simply not be in a position to offer or discuss the trade-offs available to those who exercise influence at state or federal levels. Developing such relationships and communications channels is best done well in advance of a specific project—food for thought to those who foresee a significant public rail agenda as part of their mobility strategy.

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D.6.4 A Vision of the Future

Development of a long-term vision for shared use should be an important goal of corridor stakeholders to build confidence, to streamline improvement negotiations, and to alleviate concern from either side that their needs will be held hostage to physical or institutional restraints at some future point. While fleshing out such a vision would ideally take place before the first trains ever run, the uncertainty of public acceptance of a new passenger service and the time and energy involved in creating the long-term plan means that this work must often be completed as a second phase. Some agencies never create such a vision at all.

A commitment to the time, staffing, and resources required for long-term planning should be made early in the discussions between the agencies and the corridor owners. The freight railroads must live within the constraints of a service network that, in most circumstances, will never move to new routes or alignments; this explains much of the conservatism such entities exhibit in protecting their priorities over the use of those assets. Time and energy invested in creating a robust and transparent framework for future operations and investment (by all parties) is time well spent.

D.7 A Synthesis of Approaches to Fees and Incentives

D.7.1 Background

Negotiation of fees for the shared use of any facility are often difficult, time-consuming, and a test of business relationships. This is true even of purely private negotiations between profit-seeking entities; it is even more difficult when a public agency and private firm are so engaged. Motivations of the two sides are very different, particularly in startup scenarios where a passenger agency is seeking to demonstrate the benefits of rail service at minimum cost. Freight rail corridor owners are meanwhile trying to protect the value of their franchise and to ensure that, at minimum, the passenger operator does not burden the economics of the overall rail operation over the line in question.

This section will describe the principal elements of a service fee arrangement for use of freight carrier-owned trackage by a passenger rail service provider. While other scenarios for shared use exist, such as between two passenger service agencies or, more rarely, for freight use of a publicly owned facility, the targeted scenario presents the situation for most future new start or expansion of passenger service operations.

As with discussion in Section D.6 on the negotiation process, this discussion was prepared before the passage of PRIIA, and may be similarly out of date in some respects. However, almost all the content is considered to be useful and relevant in post-PRIIA conditions.

D.7.2 Two Scenarios

At the outset it should be recognized that the negotiations scenarios and resulting fee arrangements differ markedly between intercity passenger offerings and commuter rail operations. Amtrak's right to operate using freight carrier trackage is described in detail in Section B.2.1 of Appendix B, and serves as a point of departure for discussions with a freight carrier and Amtrak relating to shared use. Commuter operations, on the other hand, enjoy no special legal status and may effectively be refused outright by a rail corridor owner. In this latter scenario the freight railway can be expected to take a more aggressive approach on compensation because the logic of moving forward, from their perspective, hinges on a contribution to the freight operator's bottom line.

The distinction between and commuter and intercity operations may at times appear to be quite arbitrary—services operating under Amtrak's rights include Downeaster trains between

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Boston, Massachusetts and Portland, Maine as well as California's Capitol Corridor Oakland – Sacramento operations. Each would appear, to a casual observer, to share more characteristics with a classic commuter operation than with long-distance Amtrak trains. Given the emphasis on medium-distance "corridor" passenger train investments by most states, it would appear that the number of services that operate in this "gray zone" will only grow in years to come.

D.7.3 Freight Railroads Are in the Business of . . . Moving Freight

No principle is more important in the design and management of a shared use corridor than the parties' mutual understanding that each has a right to exist and to protect their stakeholder interests. For passenger rail authorities it is the understanding that protecting the ability of a freight operator to serve their freight clients is and always will be the first criterion in judging the merit of any service or compensation scheme.

On a given day the marginal contribution of fees from the movement of a passenger train will **never** compete with the revenue from use of that same capacity to move a freight train, no matter how high the fees charged to the passenger operator. Therefore, the burden of capacity investment to protect the integrity of a passenger operation always falls to the sponsoring passenger rail agency while ensuring that, at minimum, no harm is done the freight road's ability to serve its customers.

The need for a passenger rail agency to provide service capacity is very similar for commuter and intercity service proposals. Amtrak's statutory "right of access" is qualified to not "unduly burden" freight service. When freight volumes were declining and capacity was easy to find, the marginal burden to initiate passenger service was low. When main freight corridors are operating close to capacity, the burden of additional train frequencies can be severe.

In main line service territory the requirement for up-front capital to improve capacity and service reliability may be substantial, easily totaling $2–3 million per mile. Much smaller investments are required where freight service is more modest. Some metro areas, such as Nashville, have discovered the value of first exploring service on short line freight operators for this very reason.

D.7.4 Performance Incentives—Pathway to Perfection?

Stakeholders on both sides of the shared use issue are consistent in emphasizing the need to first recognize and address the operational capabilities of a given physical alignment as an essential foundation for high-integrity service. With such a foundation in place, a fee structure to reward performance does appear to support high levels of service reliability. Another way to view this is to recognize that once a good physical plant is in place the dispatch and operations discipline needed, at the margin, to earn the additional fees is well worth the compensation received. The flip side is that if valuable freight is delayed due to an inadequate plant, the performance incentives for passenger operations are not a sufficient offset for jeopardizing priority freight traffic. It is essential to deal with capacity constraints before high quality passenger service can be initiated BUT the capacity investment must be accompanied by a firm commitment from the railroad to provide an agreed level of service—number of round trips, journey time and limits on aggregate delays.

D.7.5 Cost Escalation

Several passenger authorities have noted the importance of carefully considering, in advance, the issue of cost escalation in long-term shared use agreements. The Association of American Railroads publishes a variety of Railroad Cost Adjustment Factors (RCAF) on a quarterly basis;

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these benchmarks offer a superior calibration of needed contract adjustments than more broadly recognized measures such as the Consumer Price Index. If selecting an RCAF for agreement modifications, it is important to consider the specific circumstances in play; one index includes fuel costs, another does not. Similarly there are "productivity adjustments" incorporated in some of the indices that may or may not be relevant to the operations of a given rail corridor.

D.7.6 Intercity Passenger Rail

As of March 2009, there were no serious efforts in play to replace Amtrak's role in providing intercity passenger services. Some states, members of Congress, and corridor advocacy groups have recognized the potential value in considering competitive bids for services, but the simple truth is that Amtrak's unique statutory access rights, liability caps, and experience in dealing with the major freight carriers give Amtrak leverage in delivering new services that cannot be matched by alternative providers. Even states with relatively mature and far-reaching state supported rail programs defer to Amtrak for negotiation with freight carriers of operating rights and fees for intercity trains. Until and unless a replacement structure is legislated, Amtrak will continue to play its present role in development and management of intercity services.

Most interest in new services centers on routes in the 200–400 mile range. Amtrak will charge the sponsoring state or states the direct costs not covered by revenues for new services. Amtrak charges vary widely, depending on corridor length, patronage, fares, and the specific services provided by Amtrak, but passenger rail agencies report that typical charges often work out to between $1 million and $1.5 million per one way train trip (annually) in total charges payable by the state. States may be required to provide rolling stock for new service, as Amtrak itself has very limited surplus equipment even after rebuilds funded by ARRA, and is facing a replacement challenge internally due to the 26-year average age of its fleet.

Enlisting the cooperation of the host freight railroad may require a public capacity investment that delivers mobility gains to the freight operation as well as the new passenger services. Some carriers define this investment explicitly as protecting the **current** level of freight service **during the hours of passenger operation.** That additional capacity, available to the freight carrier during the overnight periods is their effective incentive for collaborating on an intercity proposal.

Other agencies underwrite capital and maintenance work in a given corridor to keep an alignment at a higher standard than would otherwise be the case for freight-only operations. Slow orders are reduced and, in some cases, the cycle of track work is "leveled" to a steady-state, year-by-year approach that minimizes track work disruptions during hours of passenger operations. While public support for these activities is not really a "fee payment" in a traditional sense, it does represent a set of ongoing incentives that substitute, to some degree, for relatively low payments by Amtrak to the host carrier.

Amtrak does provide system-wide incentives to host freight carriers for on-time performance of trains operating over each freight network. If a large system routinely delivers performance below the incentive thresholds, the efforts to provide performance incentives by an individual corridor sponsor may be frustrated. The Capitol Corridor Joint Powers Authority, faced with this dilemma, was able to negotiate specific incentive targets for its northern California operations:

- If trains are 92 percent on time, UP earns 50 percent of its maximum incentive the first month and 75 percent for each consecutive month thereafter.
- If trains are 96 percent on time, UP earns 75 percent of its maximum incentive and 100 percent for each consecutive month thereafter.
- When service falls below target levels, the incentive clock "re-sets" for incentive payments to again be in play.

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D.7.7 Commuter Operations

As for intercity passenger proposals, the "price of entry" for even beginning a serious conversation with freight carriers for shared use is a definition of proposed service. The proposed service may then be incorporated in capacity assessment that defines, in turn, the required initial public investment needed for the freight railroad to protect their existing freight clients. Public funding of new capacity above this level may also be considered or put forward by the corridor owner; the ultimate resolution of needed improvements is a product of the negotiating leverage and partnering strategy for the corridor in question.

Once an agreement for funding of needed capacity is achieved, the passenger rail agency will face three additional cost elements related to use of the corridor:

- **An access fee for a specified number of train slots, payable on a variable, annual, or capitalized basis.** Some recent agreements include a "perpetual easement" for a specified volume of trains. This latter approach may be attractive from a political perspective in that public funds are used on a one-time basis to secure an asset, but without the legal complexity attached to joint title or division of real property. Many agencies also prefer to capitalize a higher proportion of total project obligations as an easier political sell than higher levels of ongoing financial support.
- **An operations fee payable on a variable basis to the host carrier, generally on a train run or train mile basis.** Depending on the structure of the service, this fee may include most operations expenses associated with the service (if the host carrier is operating the trains) such as crewing, equipment maintenance, fuel, etc. In nearly all circumstances the fee is intended to cover the basic "management" of a given train operation such as signal maintenance, communications, and dispatching.

  The range of operating fees for commuter operations varies widely, even for similar coverage of cost elements. One explanation for this wide variation is the differing approach to capital investment from one corridor to another. A freight railroad may, for example, be willing to forgo higher operating fee revenue in exchange for a substantial public injection of new infrastructure capital that solves a freight operations bottleneck.
- **An infrastructure maintenance fee or allocation.** In some cases this factor is estimated by the host carrier and quoted to the passenger service provider in advance. In other circumstances actual capital and maintenance expenditures are apportioned to corridor users on a gross-ton-mile basis. This fee is intended to cover all ongoing maintenance and may or may not include an accrual for long-term capital renewals. In all cases it is desirable that engineering records be shared and kept transparent to engender a level of trust among the stakeholder groups as they share risks and opportunities for future use of the corridor assets.

While these steps have been described sequentially, assessing the viability of an entire service package requires simultaneous and somewhat iterative treatment of all these cost factors. Service frequency drives ridership and the required up-front capital investment as well as the ongoing fees for operation of the service. Each scenario will likely need to be fleshed out to provide at least a scoping-level estimate of required capital and operating support. Finally, the inclusion of federal funds as part of a commuter new-start package requires substantial up-front agreement with the host freight carrier for release of FTA planning monies at various stages of the project.

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Abbreviations and acronyms used without definitions in TRB publications:

AAAE	American Association of Airport Executives
AASHO	American Association of State Highway Officials
AASHTO	American Association of State Highway and Transportation Officials
ACI–NA	Airports Council International–North America
ACRP	Airport Cooperative Research Program
ADA	Americans with Disabilities Act
APTA	American Public Transportation Association
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
ATA	Air Transport Association
ATA	American Trucking Associations
CTAA	Community Transportation Association of America
CTBSSP	Commercial Truck and Bus Safety Synthesis Program
DHS	Department of Homeland Security
DOE	Department of Energy
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
HMCRP	Hazardous Materials Cooperative Research Program
IEEE	Institute of Electrical and Electronics Engineers
ISTEA	Intermodal Surface Transportation Efficiency Act of 1991
ITE	Institute of Transportation Engineers
NASA	National Aeronautics and Space Administration
NASAO	National Association of State Aviation Officials
NCFRP	National Cooperative Freight Research Program
NCHRP	National Cooperative Highway Research Program
NHTSA	National Highway Traffic Safety Administration
NTSB	National Transportation Safety Board
PHMSA	Pipeline and Hazardous Materials Safety Administration
RITA	Research and Innovative Technology Administration
SAE	Society of Automotive Engineers
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (2005)
TCRP	Transit Cooperative Research Program
TEA-21	Transportation Equity Act for the 21st Century (1998)
TRB	Transportation Research Board
TSA	Transportation Security Administration
U.S.DOT	United States Department of Transportation

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BEFORE THE

SURFACE TRANSPORTATION BOARD

Docket No. FD 35743

APPLICATION OF THE NATIONAL RAILROAD PASSENGER CORPORATION UNDER 49 U.S.C. Section 24308(a) - CANADIAN NATIONAL RAILWAY COMPANY

DEPOSITION OF PAUL E. VILTER

Tuesday, June 13, 2017

9:36 a.m.

Reported by Bess A. Avery, RMR, CLR

Job No. LA-129820

Pages 1 through 249

to internal metrics that Amtrak used.

MR. NEUMAN: Counsel, so the court reporter has an accurate record, the acronym PRIIA that he's referred to is P-R-I-I-A.

MR. HIRSH: And PRIIA stands for the Passenger Rail Investment and Improvement Act, technically, of 2008.

BY MR. HIRSH:

Q Can you explain to me what your involvement was in the development of the PRIIA metrics?

A Oversight and management role by basically working with the FRA as tasked by Congress in determining what would be the most appropriate metrics to fulfill the intent of Congress as we understood it to measure performance of Amtrak and host railroads.

Q And did you author any documents in connection with your participation in the development of PRIIA?

A What do you mean by documents?

Q Did you draft any documents that might be used as drafts by FRA or Amtrak?

A I don't remember if I personally did.

Q Okay. We'll return to that. Do you

recall participating on an NCHRP panel overseeing the study to develop a Guidebook on Improved Principles, Processes, and Methods for Shared Use Passenger and Freight Rail Cars?

A Yes.

Q Okay. What was your role on that panel?

A That was a panel in order to come up with a guidebook, as the name suggests. I was one of the panelists, and we basically reviewed information which had been created by consultants and looked for correctness and accuracy in these.

Q So as a member of the panel did you review drafts of the report?

A Yes.

Q Did you submit any written comments on the report?

A I believe I did, yes.

Q Did you submit any dissenting opinion to the final report?

A Not that I recall.

Q In your role as deputy chief did you have any involvement in seeking funding for Amtrak services?

A Can you define what you mean by "seeking funding for."

Exhibits 87-90 redacted

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EXHIBIT 91

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Redacted

AMTRAK FEASIBILITY STUDY PROCESS

INTERCITY PASSENGER TRAIN CORRIDOR SERVICE

ITEM	TASK	TASK ACTIVITY
1	STUDY REQUEST & CONTRACT	Amtrak is formally requested by one or more recognized state agencies (typically the state DOT) to perform a feasibility study for intercity passenger train service within a specified corridor, and the state(s) and Amtrak begin negotiations for the development of study contract terms, statement of work, and study fee. The state(s) provide to Amtrak the route(s) to be studied, the desired station stop cities, the desired frequency of service, and the desired maximum authorized speed (MAS) for the route. Specific station site locations within each station stop city is not required to perform the study, but can be helpful to the study team.
2	HOST RAILROAD NOTIFICATION	Letters of notification are sent to host railroads that would be involved in or affected by the proposed operation of intercity passenger train service within the requested study corridor. The purpose and parameters of the study are outlined, and follow-up meetings are suggested to plan inspection trips, gather data, and estimate the level of capacity analysis that will be required.
3	ROUTE HISTORY & DEMOGRAPHICS	Upon completion of a feasibility study contract, Amtrak will begin gathering information on route history and on local demographics of the municipalities to be served by the proposed intercity passenger train service. States will typically provide to Amtrak any past studies or data that may be relevant to the feasibility study.
4	DATA COLLECTION	Amtrak will begin to work with the host railroads to collect employee timetables, track charts, and other infrastructure and operating data needed for report preparation.
5	ROUTE INSPECTION	Amtrak arranges with host railroads to make a physical inspection, including hi-rail trips where appropriate, of the proposed corridor route. During the inspection trip Amtrak and the host railroad will begin a dialogue about the impact of new or expanded passenger train service on the corridor and the infrastructure improvements needed to meet both freight and passenger train operational goals.
6	PROVISIONAL TRAIN SCHEDULES	Amtrak will develop a provisional passenger train schedule based on the route and city station stops selected by the state(s), the number of frequencies and approximate departure times selected by the state(s), and a passenger train maximum authorized speed (MAS) agreed to by the state(s) and host railroads. The term "provisional", within the context of this study, implies the schedule will be realistic and doable; however, it is understood that the schedule may not be fully optimized due to the inherent time constraints and depth of research limitations of a feasibility study.
7	CAPACITY ANALYSIS	Host railroads will typically perform RTC modeling of the proposed service and route to evaluate the impact of proposed new passenger train operations on the existing and future freight train operations. This work may be done in-house by the host railroad or contracted to a consultant. The cost of RTC modeling is passed through to the states. Upon receipt of capacity analysis results from the host railroads, Amtrak, in cooperation with the host railroads, will technically analyze the results and assess whether the proposed infrastructure improvements (and costs) appear reasonable and whether adjustments to train schedules could reduce infrastructure costs.

AMTRAK FEASIBILITY STUDY PROCESS

INTERCITY PASSENGER TRAIN CORRIDOR SERVICE

8	AMTRAK FINANCE & OPERATIONS	Provisional schedules, frequency of service, and the number of trainsets for the proposed service is analyzed by Amtrak to identify the quantity and costs for equipment, train and on-board crews, crew new hires, and crew training. Amtrak also undertakes a ticket pricing study, which includes identification of Amtrak's total operating costs and required ticket prices.
9	REVENUE RIDERSHIP ANALYSIS	Amtrak utilizes a qualified consultant to develop ridership and revenue estimates based on the provisional schedule, service frequency, and the Amtrak-vetted host railroad capacity analysis results, all of which are developed prior to the revenue/ridership analysis.
10	ROLLING STOCK & EQUIPMENT MAINTENANCE	Based on provisional train schedules, agreed upon by the host railroads, and train consists developed from ridership data, Amtrak will develop a plan for equipment rotation, servicing, maintenance, and layover facilities, and will identify the associated capital costs required for implementation.
11	INFRA-STRUCTURE	Amtrak works cooperatively with host railroads to identify infrastructure improvements that will maintain the current level of freight operation fluidity, that will allow for appropriate growth of freight and passenger train services, and that will provide for a high level of passenger train on-time performance and passenger comfort.
12	DRAFT REPORT FOR RAILROAD REVIEW	Upon completion of steps 1 through 11, Amtrak will prepare a draft report containing a provisional schedule and an infrastructure plan with a capital cost estimate for review and general acceptance by the host railroads. Only those sections of the report that are relevant to the host railroads are sent to them. In many cases, achieving host railroad acceptance of the report is an iterative exercise in wordsmithing. Typically, the host railroads are concerned that the readers of the report understand that the railroads are accepting of the "report concept" at the feasibility level, but that additional planning, development, design and vetting are required before a project can be fully approved for implementation.
13	DRAFT REPORT FOR AMTRAK REVIEW	Upon receipt of the host railroads' comments, Amtrak incorporates the relevant comments into the draft report, then circulates the report for internal review prior to forwarding to the state(s). Typically, 30 days is allowed for internal review and approval by Amtrak.
14	DRAFT REPORT FOR STATE REVIEW	Upon receipt of Amtrak management approval, the draft report is forwarded to the state(s) for review and approval with or without comments and/or changes. Typically, 30 days is allowed for review and approval of the draft report by the state.
15	FINAL REPORT	Once Amtrak receives the state's comments on the draft report, a Final Report is prepared and submitted to the state(s). The Final Report will incorporate appropriate comments and/or changes from the State's review of the Draft Report, provided the comments/changes do not substantially alter the key components of the report, such as route, schedule, station stops, infrastructure capital, operating costs, etc.

What an Amtrak Feasibility Study Is, and Is Not

Nature of Feasibility Study

Amtrak corridor feasibility studies typically originate in the form of a request by a recognized state authority or agency that is responsible for state rail transportation – usually the Department of Transportation (DOT). Amtrak's policy for commencing a new corridor feasibility study is to enter into an agreement with the requesting agency to perform the study, specifying, along with various contract conditions, a scope of work, the study time line, and terms of payment to Amtrak for study costs.

The nature or purpose of a corridor study is to assist a state in determining the "feasibility" (viability, prospects for success, etc.) of a specific passenger train service proposed by the state. Based on routes, station stops, and frequencies of service selected by the state, the feasibility study develops a high level, order of magnitude assessment of schedules, ridership, revenue, infrastructure investments, operating costs, equipment needs (railcars and locomotives), and equipment maintenance costs. The Amtrak studies are not intended to be in-depth consultant type evaluations, which result in detailed cost and financial analyses, detailed operating parameters, long term revenue/ridership forecasts, highly developed infrastructure assessments, and engineering documents and financial reports that are "contract ready". The results of the feasibility studies are intended to assist states in deciding whether the apparent merits of a state proposed project can justify moving the project to the next steps toward implementation. In other words, the feasibility report serves as a first step indicator for the state to judge whether the proposed project appears to be viable and worthy of further study and development. The feasibility report is essentially a "snapshot" in time of a conceptual service plan and is in no way intended to be the sole basis of specific contracts between the state and the host freight railroads, between the state and Amtrak, or between Amtrak and the host freight railroads.

The feasibility report deliverables are presented in summary form and are developed through a process that combines Amtrak historical experience, empirical data from comparable operations, calculations based on rail industry standards and practices, and current material prices. A highly detailed breakdown of summary quantities has not been included in this report because many of the quantities are approximations developed through the process just described and are not supported by comprehensive technical and financial analyses. Furthermore, because the time lapse between release of the feasibility report and implementation of service could be years, many of the parameters of the feasibility study could be invalid by the date of service implementation. For example, a dramatic economic change, such as an increase in oil prices could push both freight cargo and the traveling public toward rail transportation, which is inherently more fuel efficient. This could lead to increases in both the total number of freight trains and the total number of rail passengers in a proposed corridor. In turn, the capital investment requirements for rail infrastructure improvements and equipment procurement would also likely increase. In such a scenario the actual service implementation "picture" could look much different than that described in the feasibility study.

If, having reviewed the feasibility report, the state decides to move forward with the project, the next steps include refining schedules and operating parameters, developing detailed analyses of capital and operating funding requirements and securing actual sources of funding, negotiating contracts with service providers (such as Amtrak), negotiating grant contracts with the host freight railroads for infrastructure improvements (which typically requires the hiring of consultants to produce preliminary engineering documents and construction budgets, and to identify the various required permits and environmental approvals), negotiating agreements with station providers, and selecting and procuring equipment.

It is presumed that the state, local communities, developers, or various combinations of the three will be responsible for providing station facilities, including platforms. Amtrak offers guidance for station facilities on its web site, www.greatamericanstations.com, but does not provide actual station design services.

Amtrak's primary concern related to the type of equipment procured for any state corridor service is that it meets industry standards for manufacturing and safety, including full compliance with Federal Railroad Administration (FRA) requirements, that its use has the concurrence of the host freight railroads, over whose tracks the equipment operates, and that it meets the market needs of the traveling public.

Due to the natural attrition of the Amtrak fleet resulting from aging and damage to rolling stock, Amtrak's fleet replacement needs have required it to retain stored/damaged rolling stock suitable for reconstruction and/or refurbishment for use in long-distance service and existing corridor service. Therefore, in this and all future corridor studies for new service or expanded existing service, the states should factor into their equipment capital estimates the cost of newly manufactured rail cars and locomotives.

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Exhibits 92-93 redacted

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EXHIBIT 94

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TESTIMONY

OF

WILLIAM L. CROSBIE
CHIEF OPERATING OFFICER
AMTRAK

BEFORE THE

SURFACE TRANSPORTATION BOARD

WEDNESDAY, FEBRUARY 11, 2009
10:00 AM
395 E STREET, SW
WASHINGTON, DC 20423

ATK0000093184

Chairman Nottingham, Vice Chairman Mulvey, and Member Buttrey, thank you for calling this hearing today. I am delighted to be here on behalf of Amtrak to offer our comments on the Passenger Rail Investment and Improvement Act of 2008 (PRIIA) and the Surface Transportation Board's important role in the implementation of the bill. We very much look forward to working with you, the DOT, the states, and all of the key stakeholders who will benefit from this legislation.

(Slide 1) - Background

Passage of PRIIA was a milestone for intercity passenger rail and the millions of passengers that we serve across the country. Amtrak operates a 21,100 mile network, and serves 527 stations in 46 states. We carried 28.7 million passengers in FY 2008, an all-time record. Amtrak divides our services into three basic categories – long-distance trains, which can travel up to 2,700 miles, short distance trains having routes shorter than 700 miles, and our Northeast Corridor service, which is run mostly on Amtrak-owned lines and is a very fast and very frequent short-distance service. Just over sixty-eight percent of our short distance trains arrived on time in FY 2008, but performance within that category varies widely by service. Some services average in the eighty-percent range, but in one case, OTP averages 18.6%. Our long distance trains posted an FY 2008 on time arrival average of 54.2%.

(Slide 2) – The Amtrak network

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This is our system – you'll note the division between short and long-distance routes. The long-distance routes are generally limited to a train a day in each direction, and the number of long-distance train miles we operate has changed very little since 1971. The short-distance routes can be very dense – 157 of our 310 daily trains run on some part of the NEC between Boston and Washington, while many of our other routes in California and Illinois, for example, have multiple daily departures on the same route.

(Slide 3) – The Passenger Rail Investment and Improvement Act

PRIIA sets national policy for intercity passenger rail service, replacing the last such authorization, which expired in 2002. Frankly, it has been a long time in coming. For too long, passenger rail has taken a back seat to the other modes of transportation when it comes to funding and policy issues. PRIIA finally puts intercity passenger rail on course for a bigger and brighter future. The creation of a federal capital matching program for state investment is one of the major tenets of the legislation. Significant funding is set aside for Amtrak's capital and operating needs. Amtrak has been working for years to return its infrastructure to a state of good repair, and the funds authorized in the bill will greatly assist in that effort.

But the new law does more than simply address funding needs. It addresses a number of policy and service quality issues at the heart of Amtrak and state intercity passenger rail service. We at Amtrak have established an internal Reauthorization Task Force (RTF) with representation from

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all the major departments of the company that have a role in meeting the requirements and deadlines in the bill. The RTF meets regularly and has already met several times with staff from the Federal Railroad Administration and also members of the staff here at the STB. We take this very seriously, and we will meet the deadlines and the mandates of this Act.

(Slide 4) – Title II - Amtrak reform and operational improvements

Now, I will touch on some of the specific provisions of the bill where the STB has a role and some of our thoughts on how we will work with you along the way. I will devote the bulk of my time to discussing the requirements set out in Title II.

(Slide 5) – Title III – Intercity passenger rail policy

I will also touch briefly on Title III, principally to highlight two provisions that are authorized by the legislation. These are involved with the issues I will discuss when we come to Section 213; certain of the findings the STB is empowered to make by Section 213 can be used to justify an application for capital funding under the terms laid out for grant programs in Sections 301 and 302.

(Slide 6) – Section 207 – Metrics and standards

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Section 207 requires that Amtrak and the Federal Railroad Administration, in consultation with the STB and others, work together to establish uniform metrics and standards. Specifically, the legislation requires improvement of existing or development of new "metrics and minimum standards for measuring the performance and service quality of intercity passenger train operations including cost recovery, on-time performance and minutes of delay, ridership, on-board services, stations, facilities, equipment, and other services." The law gives us 180 days to complete the metrics and standards. The President signed the bill on October 16, so we must come to an agreement on metrics and standards by mid-April. If we do not do so, the STB may be petitioned to assist the parties in resolving their disputes.

These metrics and standards are very important. They will be used as one measure to evaluate passenger train performance in Section 213, and they will also be used to evaluate our performance under other sections of the Act. For this reason, Amtrak takes these very seriously and will work with the STB and the FRA to develop them.

(Slide 7) – Section 213 – Passenger train performance

As I mentioned earlier, the on-time performance of our trains is highly variable. We want to make it very clear that the on-time performance of our trains is the lynchpin of our success. The U.S Department of Transportation Inspector General's March 28, 2008 report, "Effects of Amtrak's Poor On-Time Performance," found that poor on-time performance costs Amtrak over $100 million per year in lost revenues and increased costs. Reliable on-time service is critical on

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short haul and long distance trains. For years, we have struggled with our OTP numbers off the Northeast Corridor, which we own. I have included a graph, which you'll see on this slide, of our long-distance train OTP from FY 2006 through December, 2008. Generally speaking, the trend is upwards – but it's still far short of 80%.

(Slide 8) – Section 213 – Passenger train performance

The performance you have just seen is well short of the level we want to attain, and well short of the level the PRIIA mandates. Section 213 establishes that the STB may initiate an investigation if the on-time performance of any intercity passenger train averages less than 80% for any 2 consecutive calendar quarters, or if the service quality of intercity passenger train operations for which the minimum standards are established under section 207 fails to meet those standards for 2 consecutive calendar quarters. The Surface Transportation Board is also required to initiate an investigation upon the filing of a complaint by Amtrak, an intercity passenger rail operator, a host freight railroad over which Amtrak operates, or an entity for which Amtrak operates intercity passenger rail service.

The purpose of the investigation is to determine whether and to what extent delays or failure to achieve minimum standards are due to causes that could reasonably be addressed by a rail carrier. The Board is also authorized to investigate whether delays or failures to achieve minimum standards are attributable to a rail carrier's failure to provide preference, a statutory right that affords Amtrak preference over freight transportation in using a rail line, junction, or

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crossing. Among other things the Board can award damages under Section 213 if it finds that Amtrak's preference right has been violated.

I have included a graph of the top three causes of delays to long distance trains in FY 2008. As you can see, the top causes of delay are freight train interference and slow orders. The question of freight train interference gets into the vital issue of preference.

(Slide 9) – Legal sources of preference

The whole question of the preference to be accorded passenger trains is vitally important to Amtrak. Our metrics show that customer satisfaction tracks closely to the on-time performance of our trains. The Inspector General of the Department of Transportation, in its September 8, 2008 report "Root Causes of Amtrak Train Delays," found that actions by the host railroads, including dispatching practices, violate Amtrak's statutory rights to preference. We have been working hard with the host railroads on this situation, but when collaboration is not enough it is necessary that Amtrak have tools available to it to enforce its rights.

We pledge to you today that we will continue to work with our host partners to meet or exceed the standards set in the bill. But, if we do not hit those levels, we anticipate that we will file a complaint to begin the process of the Board's investigation of on-time performance. We can and we must hit those numbers and provide our passengers the kind of reliability and on-time performance that they expect.

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(Slide 10) – Section 209 – State-supported routes

The original Rail Passenger Service Act of 1971 allowed states to contract with Amtrak for passenger train service. Since 1997, Amtrak has been allowed to set the terms of its service, and between 1997 and 2002, each business unit set its own pricing policy. This led to significant variations, and our company is transitioning toward a consistent state contribution basis.

Amtrak trains currently receive operating support from fourteen states. On my slide, you'll notice the map that shows our "system corridors" in red, and "state supported corridors" in green. The former trains receive varying levels of support from states; the latter trains receive no state support. Many of them are designated as "system trains," and as part of the national system are run regardless of the level of state support.

We regard this provision as an important one, and we will implement it. We also regard the state partners as critically important, both to the maintenance of existing service and the development of new service. Amtrak is going to work closely with them and with the DOT to ensure that we get to a mechanism that provides, as the law mandates, "equal treatment in the provision of like services."

(Slide 11) – Section 212 – NEC Infrastructure

As I mentioned earlier, just about half of our daily trains use some portion of the Northeast Corridor. It is a very busy railroad, and Amtrak is not the only user. Eight commuter agencies and four freight companies also use the NEC main stem – a total of some 2,500 trains a day. Much of the infrastructure is aging, and to the question of basic reliability we increasingly face a question of capacity. Amtrak has established an infrastructure advisory group to address this issue, and we are currently working with our partners to develop a long term plan for maintaining and improving the NEC. We regard the implementation of a process that will improve the allocation of capital costs as a key step, and we will work closely with the DOT on the development of this formula.

(Slide 12) – Section 214 – Alternate Passenger Rail Service Pilot Program

The next two slides deal principally with alternate programs that are designed to allow other providers to enter the intercity passenger rail business, should they wish to do so. Section 214 empowers the FRA to collaborate with the STB to enforce a contract and continue service if a provider attempts to halt it.

(Slide 13) – Section 217 – Access to Amtrak equipment and services

Section 217 deals more directly with Amtrak, and requires us to negotiate agreements with other providers who need our assets or services to undertake a service. As with the other portions of

the law, this is reflective of the Congress's intent for national intercity rail policy, and we will cooperate with any requests we receive.

(Slide 14) – Sections 301 and 302

Finally, we come to the two provisions from Title III, Sections 301 and 302. They authorize capital investment programs. Section 301 authorizes a capital matching program administered by the FRA for the use of states, groups of states, and public agencies. Section 302 authorizes a capital matching fund for projects that are designed to facilitate ridership growth or mitigate congestion. An STB finding, under the process authorized by Section 213, can be one of a number of sufficient conditions that can allow the Secretary to authorize the funding of a project. These are important provisions, and I would hope that the STB keeps them in mind when and if it is called on to adjudicate cases under Section 213.

In closing, let me reiterate to you and the Board that our goal will be to work through each of these areas with care and consideration for all stakeholders involved. We'll do our very best to solve the challenges we face in a cooperative and collaborative way. Along the way, we will be sure to keep you and your staff fully apprised and briefed so that you know what is going on at all times with regard to these new requirements and where they intersect with your new jurisdictional roles. We hope to be a resource to you and your staff and we will make ourselves and our system accessible to you at all times so that you have all the information you need to make decisions on Amtrak issues.

ATK0000093193

Thank you, and good luck.

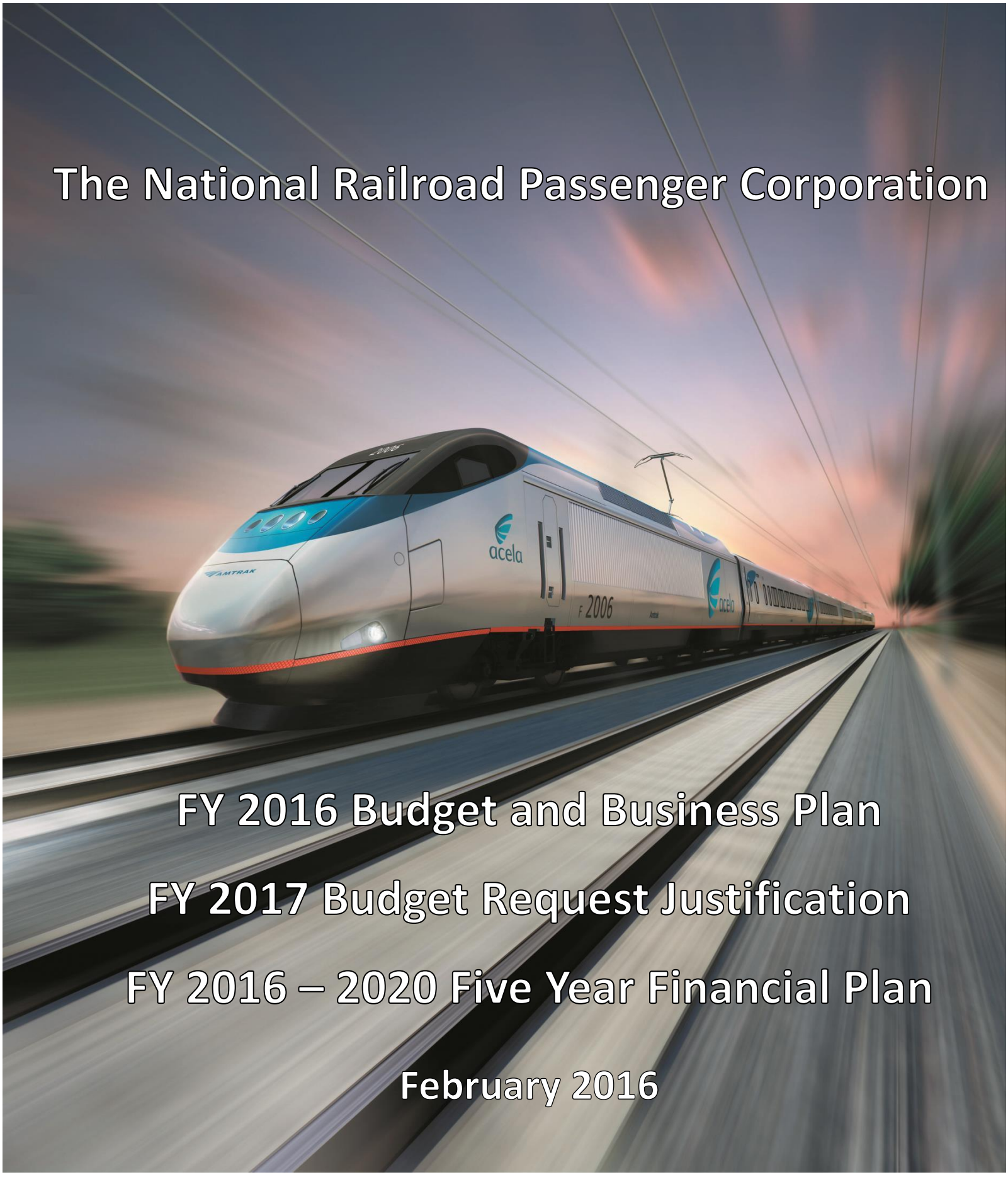
ATK0000093194

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EXHIBIT 95

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The National Railroad Passenger Corporation



FY 2016 Budget and Business Plan

FY 2017 Budget Request Justification

FY 2016 – 2020 Five Year Financial Plan

February 2016

AMTRAK

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Executive Summary

This Five Year Budget & Business Plan has been prepared pursuant to the Consolidated Appropriations Act of 2016 (Pub. L. 114-113, December 18, 2015) (2016 Appropriations Act).

As Amtrak concludes the first quarter of our 2016 fiscal year and submits this plan for the upcoming five years, we face an environment of challenges and opportunities in the short and long term.

In the short term, oil prices are at their lowest levels in over a decade due to a combination of factors causing global supply to outpace demand. As a result, many travelers are choosing modes other than rail to make their trips. While we are benefiting from lower diesel fuel prices, we are also seeing reductions in ridership and passenger revenue.

In the longer run, we believe Amtrak's value proposition remains strong. In many of the markets we serve, lower prices at the gas pump do not outweigh the congestion found on highways and at airports. Even as we emerge from the recent recession, Americans continue to look for alternatives to car ownership to provide the mobility they seek. We believe that Amtrak is well positioned to provide an important component of that mobility.

Despite these favorable trends, Amtrak – along with all other modes of transportation in the U.S. – faces serious challenges. Our infrastructure continues to age faster than our current level of replacement funding. To help address this issue, Congress recently passed the Fixing America's Surface Transportation or FAST Act. For the first time, intercity rail has been included in this multimodal transportation bill, and as a result now has a newly established place in national transportation policy discussions.

We realize that inclusion in the FAST Act does not give Amtrak a guarantee of additional funding – that is something we will have to continue to earn by delivering results to our stakeholders in the traveling public, our State and Agency partners, our business partners, and the Federal government. We will do this by continuing our focus on the following areas:

Implementing the FAST Act. The FAST Act contains multiple requirements for Amtrak, including the separation of Federal funding for the Northeast Corridor and the National Network. This change is in line with recommendations Amtrak has made in the past, but it will involve a detailed review of Amtrak's systems and processes. We welcome this clarification from Congress on how we should request and use funds, and we will devote the necessary resources to accomplish this transition.

Building our Business Lines, for the NEC and the National Network. Amtrak continues to build out the business line structure articulated in our FY14-18 Strategic Plan. Of our three operating business lines, Northeast Corridor Operations is driving the strategy of the Northeast Corridor, and State Supported and Long Distance carry out the long term and day-to-day activities on our National Network. Our newly rechartered Investment and Infrastructure Development (IID) business line works to maximize the value of Amtrak's assets on both the NEC and the National Network.

Continuing to Develop our Strategy Management System. Amtrak began using a new strategy management system four years ago based on the Balanced Scorecard system used by companies across the globe. We have taken our Strategic Plan, translated it into specific objectives, identified ways to measure our performance against those objectives, and created an integrated portfolio of initiatives designed to close the gaps. After having established it at the corporate level, we have translated it across multiple business lines and departments, as shown in the strategy maps within this plan. We continue to link personal goals and align our variable compensation plans to the Strategic Plan. The result has been better focus, alignment and accountability on achieving our strategic goals.

The framework of the FAST Act is a significant step towards a realistic acknowledgement of the funding requirements of the entire Amtrak network. However, the FAST Act itself can only take us so far. Amtrak – along with the rest of our nation's transportation assets – still requires a level of multi-year investment above today's in order to meet our nation's transportation demands. Within the current constrained level of annual appropriations, we believe this Five Year Plan represents the best way to optimize our nation's passenger rail network.

Amtrak's five year funding request is as follows:

Exhibit [1–1] – Amtrak Five Year Funding Summary

	Total Amtrak Funding					
($s in Millions)	**FY 2016**	**FY 2017**	**FY 2018**	**FY 2019**	**FY 2020**	**5 Year Total**
Operating	$ 288.5	$ 291.0	$ 293.5	$ 296.0	$ 299.0	$ 1,468.0
Federal Capital	932.8	1,328.0	1,486.6	1,545.7	1,502.3	6,795.4
Debt Service	160.2	199.0	120.5	123.2	117.2	720.0
State Supported Commission	-	2.0	2.0	2.0	2.0	8.0
NEC Commission	3.0	5.0	5.0	5.0	5.0	23.0
FRA Management Oversight	5.5	9.1	9.5	9.8	9.6	43.4
Total Federal Grant	**$ 1,390.0**	**$ 1,834.0**	**$ 1,917.1**	**$ 1,981.7**	**$ 1,935.1**	**$ 9,057.8**
State Contributions to Equipment Capital (PRIIA 209)	67.0	65.2	46.8	47.5	46.0	272.5
Commuter payments (PRIIA 212)	134.2	143.2	172.3	181.4	191.1	822.0
NEC Commuter Match (excl Gateway)	-	134.4	148.4	202.8	217.4	703.1
Total State & Commuter Funding	**201.1**	**342.8**	**367.5**	**431.7**	**454.5**	**1,797.6**
Other Capital Funds	336.2	888.6	1,543.8	1,695.3	1,828.1	6,292.0
Total Amtrak Funding	**$ 1,927.3**	**$ 3,065.5**	**$ 3,828.3**	**$ 4,108.7**	**$ 4,217.6**	**$ 17,147.4**

The following table provides an overview of the FY 2017 grant request by business line:

Exhibit [1–2] – FY 2017 Grant Request by Business Line

($'s in Millions)	FY 2017 Operating Estimates				
	Northeast Corridor	State Supported	Long Distance	Infrastructure & Investment Development	Total
Operating Estimates					
Operating Revenue	$ 1,760.2	$ 910.0	$ 621.5	$ 115.3	$ 3,407.0
Operating Expense	1,432.7	1,005.2	1,176.2	32.3	3,646.4
[1] NEC Revenue reserved for RRIF and FAST Act match	117.5	-	-	-	117.5
Net Operating Profit/(Loss)	210.0	(95.3)	(554.6)	83.0	(356.9)
Operating Profits used for Capital Investment	(210.0)	-	-	(83.0)	(293.0)
Total Operating Loss	**$ -**	**$ (95.3)**	**$ (554.6)**	**$ -**	**$ (649.9)**
				Operating Grant Request	**$ 649.9**

	FY 2017 Capital Estimates				
	Northeast Corridor	State Supported	Long Distance	Infrastructure & Investment Development	Total
Capital Needs					
NEC Shared Infrastructure (PRIIA 212)	$ 779.7	$ 46.3	$ 27.4	$ -	$ 853.4
Other Infrastructure	37.6	43.4	56.6	84.6	222.2
Train Services and Support	284.1	105.8	193.2	12.2	595.3
Subtotal Capital Needs	**$ 1,101.3**	**$ 195.4**	**$ 277.3**	**$ 96.8**	**$ 1,670.8**
Capital Funds					
Net Operating Profits	$ (210.0)	$ -	$ -	$ (83.0)	$ (293.0)
NEC Profits reserved for FAST Act match	(65.9)	-	-	-	(65.9)
Commuter payments (PRIIA 212)	(143.2)	-	-	-	(143.2)
[2] FAST Act award	(263.7)	-	-	-	(263.7)
NEC Commuter Match (excl Gateway)	(134.4)	-	-	-	(134.4)
State Contributions to Equipment Capital (PRIIA 209)	-	(65.2)	-	-	(65.2)
Net Capital Needs	**$ 284.1**	**$ 130.2**	**$ 277.3**	**$ 13.8**	**$ 705.4**
				Debt Service	199.0
				State Supported Commission	2.0
				NEC Commission	5.0
				FRA Management Oversight	9.1
				General Capital Request	**$ 920.4**
				Federal Discretionary Grant Programs (Authorized by FAST Act)	**$ 263.7**
				Total Federal Grant Request	**$ 1,834.0**
Gateway Funding Request					
Total Gateway Expense	**$ 719.3**	**$ 15.2**	**$ 22.5**	**$ -**	**$ 757.0**
Commuter/FTA share	(575.4)	(12.2)	(18.0)	-	(605.6)
FAST Act Grant Award/FRA	(115.1)	(2.4)	(3.6)	-	(121.1)
Gateway (Amtrak share)	(28.8)	(0.6)	(0.9)	-	(30.3)

[1] NEC Operating Revenue includes RRIF loan repayment and Amtrak FAST Act match

[2] FAST Act revenues are pursuant to a separate Federal request, not the General Capital grant

FY17 Budget Justification

FIXING AMERICA'S SURFACE TRANSPORTATION

The Fixing America's Surface Transportation (FAST) Act is five-year legislation to improve the Nation's transportation infrastructure, including the passenger rail network. President Obama's signature of the FAST Act into law represents a long-term, comprehensive surface transportation policy proposal that authorizes Federal highway, transit and rail programs from federal fiscal years 2016 through 2020. More specifically, the FAST Act authorizes approximately $8 billion of General Funds over the five year period for Amtrak. While Amtrak does not have a dedicated multi-year source of capital funding, the FAST Act supports improvement in rail infrastructure, enhances rail safety and accelerates rail project delivery.

One aspect of Amtrak that will be affected by passage of the FAST Act is the framework for Amtrak's annual grant request of the Federal government. Historically, Amtrak has requested specific operating and capital funding for the entire Amtrak network. The FAST Act divides Amtrak's business lines into two Accounts[1], the Northeast Corridor and the National Network, which will allow Amtrak to reinvest Northeast Corridor operating revenues into the corridor's capital investment needs. This measure is designed to improve transparency and provide more visibility into the funding requirements of Amtrak's business lines that focus on the needs of different customer groups, while maintaining the economies of scale of a unified system.

NORTHEAST CORRIDOR AND NATIONAL NETWORK ACCOUNTS METHODOLOGY

The requirements of the FAST Act have triggered a review within Amtrak, which will have major impacts on our accounting and reporting processes. Due to the recent enactment of the Act, Amtrak is requesting our funding in the new two Account structure. Amtrak's FY17 Budget justification is a very preliminary breakout of our costs for the Northeast Corridor and National Network Accounts as mandated by the FAST Act.

Amtrak, in conjunction with the Federal Railroad Administration (FRA), is submitting a budget justification that is consistent with the new FAST Act structure. This budget does not, however, exist to support a definitive request on the Accounts envisioned by the Act, but rather to serve as a preliminary supplementary estimate which is included in the table below. As we continue to develop and refine the allocation methodology, Amtrak will submit a final, updated, version of the grant request to the FRA and Congressional Committees in the future, which will provide a definitive statement of Amtrak's FY 2017 financial needs.

[1]In this context, "accounts" refers to accounts for Federal funding purposes, not for Amtrak's internal accounting processes.

In response to the FY 2016 Appropriations Act, below is the justification of the FY 2017 Budget in line with the FAST Act.

Exhibit [1–3] –FY 2017 FAST Act Budget

($s in Millions)		Amtrak Request FY 2017
Total National Network		1,205.0
Total Northeast Corridor		612.9
Total Capital & Debt	**$**	**1,817.9**
State Supported Commission		2.0
NEC Commission		5.0
FRA Management Oversight		9.1
Total Non-Amtrak Commitments	**$**	**16.1**
Total Federal Grant Request	**$**	**1,834.0**
Source of Funding:		
FAST Act Authorization		1,500.0
Other Federal Funding		334.0
Total Federal Request	**$**	**1,834.0**

Note: Total Federal Request includes Operating, General Capital and Federal Discretionary Grant Programs (Authorized by FAST Act)

Northeast Corridor

The FAST Act defines the Northeast Corridor Account as including the Northeast Corridor main line between Boston, Massachusetts, and the District of Columbia, and facilities and services used to operate and maintain that line. With this in mind, Amtrak's financial representation of the Northeast Corridor Account is defined to include assets that are only on the main line of the Northeast Corridor; any asset that is not directly part of the NEC main line was excluded.

For the preliminary estimate above, the NEC is comprised of Amtrak train routes (*Acela Express*, *Northeast Regional* and NEC special trains), commuter trains operated by Amtrak, reimbursable work associated with the NEC and Freight and Commuter Infrastructure access on the NEC. Also included are NEC Commercial Real Estate revenue and expenses on the main line of the NEC.

National Network

The FAST Act defines the National Network Account as activities associated with State Supported routes and Long Distance routes. With this in mind, Amtrak's financial representation of the National Network Account is defined to include all facilities and services outside of the Northeast Corridor definition per the FAST Act, such as State Supported and Long Distance trains. In addition, this includes commuter services that operate under the State Supported and Long Distance general managers, such as the Metrolink service.

AMTRAK SHARED SERVICES

Amtrak's passenger services on the NEC and the National Network make use of extensive shared resources, such as crews, equipment, computer and reservation systems, and more. While the FAST Act reorganizes the way Amtrak receives funding into two Accounts, with the NEC's operating profits invested into its infrastructure and equipment, Amtrak and its various stakeholders must continue to invest in the National Network to preserve the economies of scale that make the larger system work for the entire nation. Amtrak's shared services are those that cannot be simply associated on a one-to-one basis, and more efficiently and economically administered, such as a service facility, a train station, and corporate management functions.

The methodology for determining costs of Amtrak Accounts is through a combination of direct and shared costs. The current shared cost methodology for NEC and National Network implies no recommendation regarding the practical application of reorganizing the way Amtrak operates into two Accounts going forward. The shared costs are presented solely for the sake of objectively and comprehensively responding to this report's Congressional mandate. As Amtrak continues to translate these methodologies, in conjunction with the FRA, into the elements of its NEC and National Network Accounts, additional differences pertaining to shared costs may arise between this report's financial presentation of shared costs and future of how shared costs will be handled.

Corporate Strategy

BACKGROUND

The National Railroad Passenger Corporation – Amtrak – is incorporated under the District of Columbia Business Corporation Act (D.C. Code section 29-301 et seq.) in accordance with the provisions of the Rail Passenger Service Act of 1970 (P.L. 91-518) as a for-profit corporation providing intercity rail passenger transportation as its principal business.

Congress created Amtrak in 1970 to take over the nation's intercity rail passenger services. Prior to that, America's private railroad companies ran passenger rail as required by Federal law. Those companies had operated their passenger rail services at significant losses for many years. Amtrak faced decidedly unfavorable circumstances at its creation, and many expected it to fail. Forty five years later, the company has managed to both survive and grow in a manner that has exceeded every reasonable expectation, despite a bare minimum of capital investment and operating support.

The past decade has been a transformative one for Amtrak, from the brink of bankruptcy in 2002 to revenues for its Fiscal Year 2015 totaling approximately $3.2 billion. As a result of its strong operating performance, the company covered 91 percent of its operating costs with ticket sales and other revenues. Additionally, long-term debt has been reduced by approximately 59 percent over the past seven years to $1.3 billion. Amtrak's unaudited Federally funded operating loss was approximately $306.5 million, excluding $29.6 million of NEC Revenue to pay RRIF Loan.[2] Amtrak's value proposition continues to improve each year, as ridership and revenue remain strong. It is now time to leverage the company's successes by making much-needed investments in our nation's passenger rail system.

Throughout FY15, Amtrak continued to invest in the equipment, infrastructure and organization needed to ensure its strong growth continues. Over the past few years, the company has seen the expansion of State Supported Services, the introduction of Wi-Fi and eTicketing technologies, the procurement of new equipment for Northeast Corridor and Long Distance Services, and major planning efforts for the development of next-generation high-speed rail. These actions form the foundation that will support more and faster service, improve the reliability and safety of current and future operations, and meet the expectations of a growing number of customers choosing Amtrak for their travel needs.

Despite these achievements in FY15, Amtrak also experienced two significant derailments, one on Train 188 on the Northeast Corridor and one on the *Vermonter*. In both of these cases, the National Transportation Safety Board (NTSB) is continuing its investigations. In the interim, Amtrak has made specific changes in our operations to increase the safety of the system. When we have the NTSB findings, we will work diligently to take any further corrective actions.

[2] FY15 results are preliminary and unaudited.

As we work to further analyze the root causes of these accidents, other challenges also lay ahead. The equipment fleet is aging and is used more intensively than all other passenger rail equipment in North America. The condition of the Northeast Corridor continues to deteriorate as investment lags. In order to meet future passenger demands, increased levels of Federal capital investment are needed to improve, expand and replace the aging infrastructure and equipment that supports intercity passenger rail. Predictable dedicated funding from the Federal government to build new tracks, tunnels, bridges and other rail infrastructure, particularly on the Northeast Corridor and in Chicago, will keep Amtrak advancing and its customer base growing. Otherwise, the alternative is increased infrastructure- and equipment-related service disruptions and delays that will drive away passengers, increase costs, and harm local and regional economies.

While the Northeast Corridor once required a Federal operating grant, service improvements, pricing enhancements, increased demand, and cost controls have resulted in revenues that now exceed operating costs by $479 million.[3] The NEC experienced its highest ridership ever in FY15, driven by significant demographic trends as travelers increasingly turn to passenger rail as a way to move between cities quickly and safely, and to avoid congestion on other modes of transportation.

Historically, the NEC operating surplus has offset the majority of the operating funding needs of the State Supported and Long Distance trains. With the recent passage of the Fixing America's Surface Transportation Act, or "FAST Act," however, Amtrak's future Federal funding will be more clearly divided between the NEC and the rest of Amtrak's National Network, comprised of the State Supported and Long Distance business lines. These other two business lines play critical roles in meeting regional transportation needs, connecting metropolitan areas and America's small cities and rural towns, and providing economic development opportunities. Amtrak has successfully sustained and grown these services for over four decades, thanks to increases in ridership and ticket revenue and State partnerships on State Supported routes. Congress stated in Section 228 of the Passenger Rail Investment and Improvement Act of 2008 (PRIIA) that the operation of a national system was "a vital and necessary part of our national transportation system and economy," and that is a sentiment with which Amtrak strongly agrees.

All of Amtrak's services, both on the NEC and the National Network, make use of extensive shared resources, such as crews, equipment, computer and reservation systems, and more. While the time has come to begin investing the NEC's operating profits into its infrastructure and equipment, Amtrak and its various stakeholders must continue to invest in the National Network to preserve the economies of scale that make the larger system work for the entire nation. Reserving the NEC operating surplus for NEC investment is not a solution absent additional federal funding, but it does facilitate increased focus on essential State of Good Repair work and pursuing funding partnerships, which helps address some of Amtrak's larger capital challenges. With revenues reserved for the NEC, the company can pursue a broader array of funding options including debt, matched grants of assistance, public-private partnerships, and State/Commuter Rail partnerships.

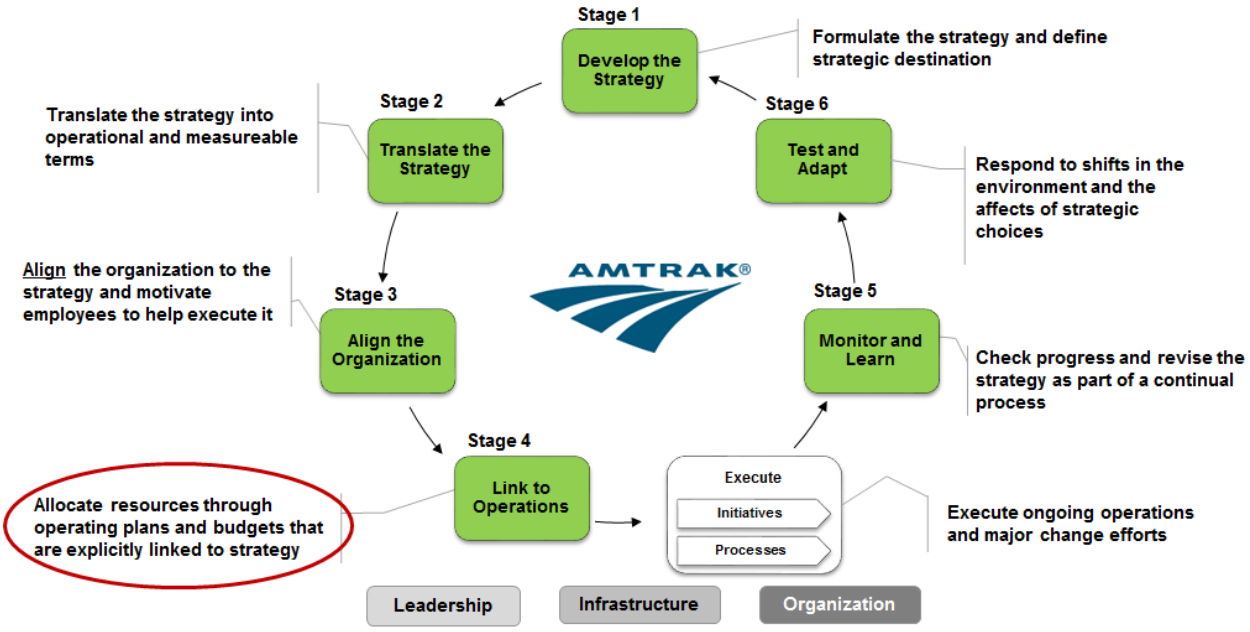
[3] NEC excluding Infrastructure, Reimbursable and Commuter allocations. FY15 results are preliminary and unaudited.

While all of these options will help, a significant and reliable multi-year capital commitment from the Federal government is also needed to avoid continued deterioration of the Northeast Corridor and other Amtrak assets. Only this type of commitment will permit planning and undertaking of major multi-year projects such as bridge and tunnel replacements.

Amtrak's capital investment deficit is most profound in the NEC, where many of the major infrastructure assets are at the end of their useful lives and in need of immediate replacement, from the Baltimore and Potomac Tunnel to the Connecticut River Bridge. The most urgent challenge is the Hudson River tunnel linking New Jersey and New York, where limited capacity, heavy congestion and overburdened and aging infrastructure all converge. The company has been proactive and done significant planning to advance the Gateway Program, a plan for doubling capacity under the Hudson River. But Federal leadership and investment is necessary now to avert the continuing deterioration of the NEC. Projects such as Gateway are critical to the American people and economy, and should be regarded as national projects that can only be addressed effectively through a combined commitment of the Federal Government, States, and Amtrak.

AMTRAK'S STRATEGIC PLANNING PROCESS

In this environment shaped by history and legislation, Amtrak began a reinvigorated strategic planning process in 2011. We acknowledged that existing planning efforts had been limited; that we did not have a rigorous process for translating strategic plans into our daily activities; and that elements of the existing organizational structure made it hard to achieve many of our goals. We set out to develop and implement a comprehensive Strategic Plan to address these shortcomings and we decided to use a proven methodology to help us execute the strategy. This strategy management system is based on the Balanced Scorecard, as developed and perfected by Kaplan and Norton, over the last 25 years through their work at Harvard Business School, the publication of several books on strategy execution, and many successful client projects in mission-based and private sector companies.



Using this framework over the last few years we have:

- Updated our original FY11-FY15 Strategic Plan with the more tightly focused FY14-FY18 Strategic Plan;
- Translated the plan into a Strategy Map and Balanced Scorecard (BSC) to communicate it throughout the organization and measure our progress;
- Linked personal goals and developed variable compensation aligned to goals of the Strategic Plan;
- Used the BSC performance to set agenda for executive team meetings – focusing management attention on gaps against Strategic Plan;
- Developed an integrated portfolio of corporate strategic initiatives aligned to strategic objectives; and
- Cascaded the plan to all the business lines and many of our critical functional areas, and described further in this plan.

We were pleased to see the Government Accountability Office (GAO) acknowledge the progress we have made in strategy management in its January 2016 report, though we realize we have further to travel on this journey.[4]

[4] *Better Reporting, Planning, and Improved Financial Information Could Enhance Decision Making,* http://www.gao.gov/assets/680/674520.pdf

In this simplified and more focused context, our Vision Statement is:

Moving America where it wants to go.

Our Mission is:

Delivering intercity transportation with superior safety, customer service and financial excellence.

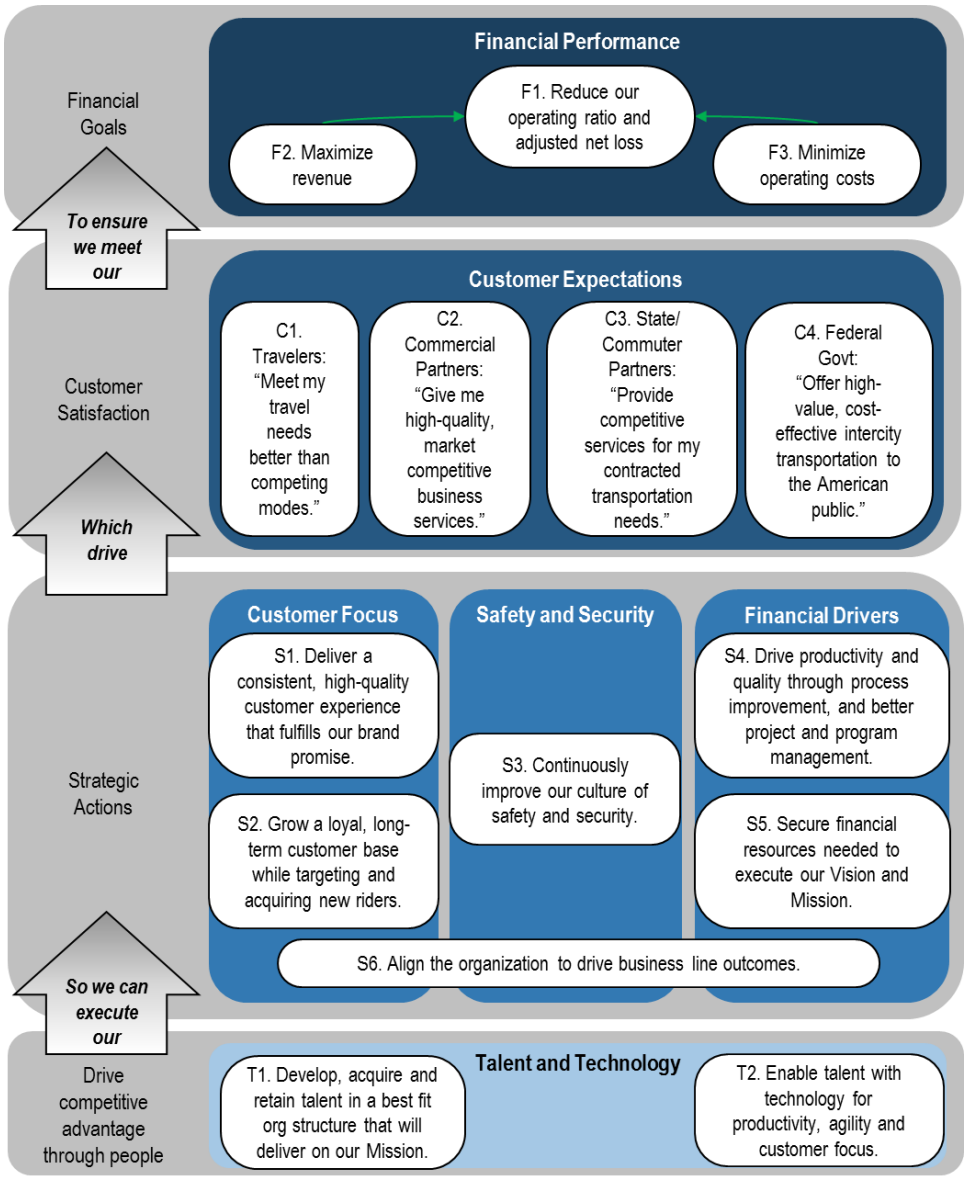
This Five Year plan is designed to make progress toward our strategic goals that focus on three key themes of Safety and Security, Customer Focus, and Financial Excellence.

The foundation of the Amtrak strategy management system is our corporate Strategy Map, which translates the strategy into a set of related, balanced objectives. The strategy consists of four major perspectives, each with specific objectives:

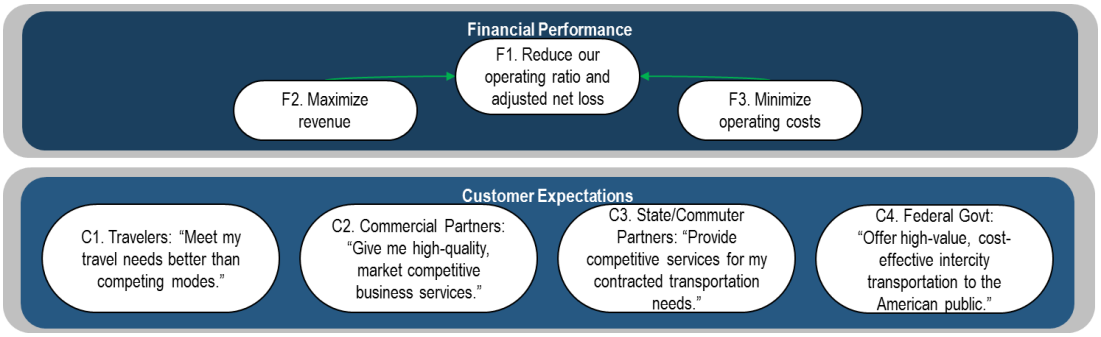
1. Talent and Technology – The foundation of Amtrak's entire strategic plan is having an engaged workforce that works within a strategically designed organizational structure and is equipped with the skills and tools needed to carry out our Mission.
2. Process Improvements in Customer Service, Safety and Security, and Financial Excellence – By developing the talent and technology needed to drive competitive advantage; we will then be able to improve service and processes in very targeted areas.
3. Customer Satisfaction – The targeted improvements we will make are designed to exceed the expectations of each business line's customers and drive customer satisfaction. Our focus is not only on exceeding expectations of passengers who ride our trains, but also the State, commuter and Federal agencies that pay us to operate services on their behalf.
4. Financial Outcomes – By driving customer satisfaction, we create greater demand for our service. Greater demand means more riders and higher revenue. Higher revenue, coupled with strategic improvements to reduce costs, gets us to our ultimate goal of reducing the operating ratio, improving our bottom line, and freeing up funds for capital improvements.

As Amtrak has made progress on executing the previous Strategic Plan, this tool has been valuable in translating the various objectives and strategies into a single, cohesive illustration. The Strategy Map shows the cause-and-effect relationships of each objective.

Amtrak Corporate Strategy Map



CUSTOMER AND FINANCIAL OUTCOMES



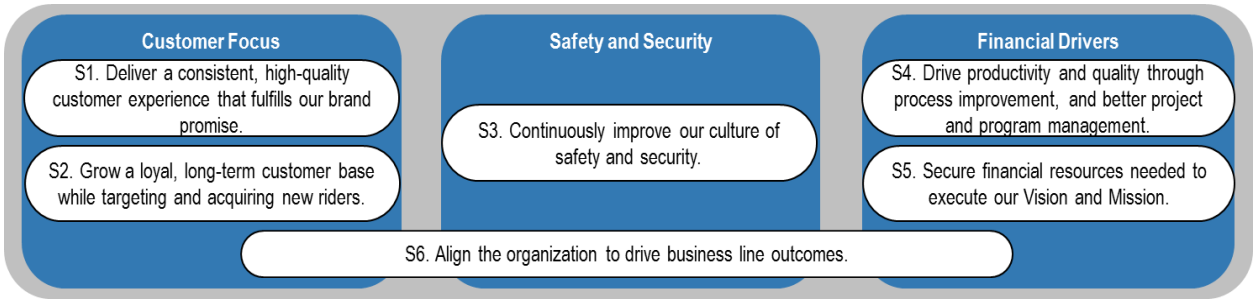
At the top of our Corporate Strategy Map are our Customer Expectations and Financial Performance.

At the corporate level, we have identified four groups of customers and articulated what they want from Amtrak:

- C1. Travelers – "Meet my travel needs better than competing modes." Amtrak focuses on being the best transportation choice for the customer segments traveling in the geographic markets that we serve. By offering a better end-to-end value and experience than travel by bus, automobile, and plane, we ensure that we continue to earn the right to serve the traveling public.
- C2. Commercial Partners – "Give me high-quality, market competitive business services." There are many services that Amtrak can provide that are complementary to our intercity train service and leverage our assets and expertise. We want to earn this business and realize these opportunities by providing high-quality, cost competitive, and profitable services.
- C3. States/Commuter Partners – "Provide competitive services for my contracted transportation needs." States and commuter agencies desire the experience and expertise that Amtrak offers the passenger rail industry at a competitive price that reflects the level of service desired. Increased competition demands that we be an efficient provider of contracted rail transportation. Amtrak needs to leverage and grow such contracted rail opportunities to enhance connectivity and realize greater economies of scale.
- C4. Federal Government – "Offer high value, cost-effective intercity transportation to the American public." The Federal government mandates operating the nation's intercity passenger rail network, and provides capital investment and operating support that help Amtrak fulfill its mission. For the government to continue making this necessary investment, Amtrak must be a responsible steward of public funds.

OUR THREE STRATEGIC THEMES

We will achieve our customer and financial outcomes by focusing on three strategic themes: Customer Focus, Safety and Security, and Financial Drivers. These themes are a high-level summary of what we need to do to achieve our mission and vision:



- Customer Focus – We need to provide the necessary service to retain our existing customers, and acquire new customers, across all the customer types identified above – travelers, commercial partners, states and commuter partners, and the Federal government.
- Safety and Security – Our goal is to set the industry standard for safety and security, to ensure that every customer and employee goes home injury-free every day.
- Financial Drivers – These are the foundation for our goal of Financial Excellence. Through improved use of our existing assets and resources, we will improve our financial performance and develop our track record as we pursue additional funding to achieve our goals.

These strategic themes have been translated into the detailed strategic objectives above, and are discussed in more detail in the following sections.

STRATEGIC OBJECTIVE S1: DELIVER A CONSISTENT, HIGH-QUALITY CUSTOMER EXPERIENCE THAT FULFILLS OUR BRAND PROMISE

For each of our customer segments, we must work to understand how our customer needs are evolving and how we can better meet them. Because the Amtrak brand is shared across business lines and touches all of our intercity travelers, we are addressing our passenger goals at the corporate level. In other areas that cross business lines, such as fleet and serving our passengers with disabilities, we also manage these components of the customer experience at the corporate level. We will measure our success on this objective primarily by our customer satisfaction index (eCSI) scores and the ratio of praises to complaints we receive from our customers.

Passenger Experience

Amtrak Customer Experience (ACE) Program – In the beginning of FY15, Amtrak finalized the development of and began piloting the Amtrak Customer Experience, or ACE, program of customer service education for all Amtrak employees. We believe that the majority of our employees today deliver great service to our customers – both internal and external – but we also know that it is not

always delivered consistently. The ACE program helps employees to understand who our internal and external customers are – including support departments, state partners, passengers and other stakeholders. The program defines the concepts that will consistently deliver a superior customer experience and communicates it across the organization as part of comprehensive, interactive education and reinforcing support program. ACE embraces the multiple perspectives inherent in our current society and strengthens employee knowledge, skills, and abilities to effectively engage one another to serve our customers as One Amtrak Team. The ACE curriculum engages employees on the following concepts to deliver a superior customer experience:

- Amtrak Values – the beliefs we hold and the culture we create to serve our customers;
- Customer Knowledge – how to better understand all of our customers, and use that knowledge to provide a superior experience;
- One Amtrak Team – how we can work more effectively across all departments to ensure that we provide a seamless and superior experience for one another and our customers; and
- Ownership – ensuring that our employees understand that they are accountable and responsible for the experiences our customers have with us.

Due to the widely distributed employee base, the ACE program will reach all employees over the next four years. We will be measuring the success of the program through customer feedback on specific elements of our eCSI scores and employee feedback on the type of environment that Amtrak is creating to support the success of our teams.

Pre/Post Trip Experience – Amtrak's program to enhance the pre-trip and post-trip experience is a multi-year capital program that is critical to Amtrak's strategic objectives of improving customer service and delivering financial excellence. Today, Amtrak's key customer touch points, such as Amtrak.com, contact centers and station agents, lack the functionality and seamlessness that customers expect. This drives costs for Amtrak and dissatisfaction for customers. Furthermore, the technology platforms of our distribution channels are outdated, costly to maintain and enhance, and prevent Amtrak from moving forward with customer and revenue initiatives, including maximizing sales of related products and services (ancillary revenues), in a cost-effective and timely manner.

This technology program will deliver functionality that will allow Amtrak to provide its customers with an intuitive, personalized experience when shopping, planning and booking their travel. It will also deliver the infrastructure to allow Amtrak to generate ancillary revenue and move forward with customer and revenue initiatives in an efficient and timely manner. Amtrak will thus realize customer service and revenue benefits through incremental revenue and cost savings. The program is a 20-24 month project which is on track to begin deployment in January 2017. This deployment will include a new version of Amtrak.com as well as new reservations and ticketing applications for the Contact Center and Station Agents.

The second phase of the project, scheduled for FY17-FY19, will deliver functionality such as seat assignment, enhanced handling of service disruptions, and modern, expanded payment processing options. Through this combination of initiatives, this program will provide benefits to our

passengers, and will also deliver the enhancements and customization that Amtrak's customers, business lines and State partners seek.

En Route Experience – Central to our program to enhance the Amtrak experience is to improve information about and enjoyment of the travel experience itself. These major strategic projects are now in process:

- Wi-Fi for the Auto Train and Long Distance single level fleet;
- Broadband Wi-Fi for the Northeast Corridor; and
- On-Board Information System (OBIS); and
- Passenger Information Display Systems (PIDS).

Customers today expect Wi-Fi as part of the service offering across the U.S. public transportation system. The Long Distance fleet Wi-Fi project builds on the success of Wi-Fi in the NEC and State Supported Services by extending the installation of Wi-Fi networks to the Auto Train and the Long Distance equipment. This program started in FY15 with implementation on the eastern (single-level) Long Distance fleet, and will be extended to the remaining fleet contingent on the performance of and customer satisfaction with the first phase.

On the NEC, demand for Wi-Fi service remains very strong, leading to over-subscription of bandwidth in an already capacity-constrained environment. To address this need, Amtrak has begun a program to test the feasibility of a dedicated trackside network to deliver true broadband Wi-Fi. Such a network could deliver sufficient bandwidth to allow customers to stream videos, download and stream music, and perform other activities that are not possible with existing technology. Amtrak completed a successful proof-of-concept trial in FY15 designed to test the viability of building a dedicated trackside broadband network along the NEC; Performance of the 10-mile section, located in Delaware, exceeded expectations.

This year, Amtrak is continuing the build-out of an adjacent additional 20-mile segment and completing the design process for the Washington, DC - New York segment, on which construction would begin in FY17, if approved.

The On-Board Information System (OBIS) and Passenger Information Display System (PIDS) programs provide ADA-compliant dual-mode (audio/visual) communications to customers at a select but growing number of Amtrak stations and eventually on our trains. Amtrak has partnered with the California Department of Transportation (Caltrans) and the Capital Corridor Joint Powers Authority (CCJPA) to develop and deploy a new national OBIS solution on their *San Joaquins*, *Capitol Corridor* and *Pacific Surfliner* fleets. Both programs aim to improve the passenger experience and enhance the efficiency of Amtrak staff by automating the dissemination of this information and delivering high-quality, reliable information in stations, on the platforms and on-board our trains. Amtrak will continue to expand these systems over the coming years.

Fleet Strategy

The core of a passenger's experience with Amtrak is the time spent on board, and the condition of our fleet is a significant driver of that experience. The following discussion responds to the direction in the 2016 Appropriations Act that Amtrak's Budget, Business Plan and Five-Year Financial Plan include information on Amtrak's fleet consistent with Amtrak's comprehensive fleet plan.

Amtrak has prepared comprehensive fleet plans for all Amtrak rolling stock. The most recent formal such plan, *Amtrak Fleet Strategy: Building a Sustainable Fleet for the Future of America's Intercity and High Speed Railroad Version 3.1*, was published on March 29, 2012 (March 2012 Fleet Strategy) and is available at www.amtrak.com. There have been no significant changes to the inventory of Amtrak's rolling stock or plans and time frames for rolling stock maintenance, refurbishment or replacement since the publication of that document, other than the specific ongoing acquisition projects noted below.

Fleet Planning at Amtrak – Fleet planning at Amtrak, like all capital planning, is constrained by Amtrak's lack of a reliable, multi-year source of capital funding (this challenge, and Amtrak's response to it, are addressed further in Objective S5). In the absence of capital for fleet replacement, Amtrak has historically spent operating funds on maintaining equipment that is past its expected life cycle, typically at higher cost than the alternative of planned fleet replacement.

At this time, Amtrak can undertake acquisitions of significant amounts of new equipment only in those limited situations, such as the new ACS-64 locomotives and the proposed Next Generation High-Speed Trainsets for the Northeast Corridor, where the company can reasonably expect that net incremental revenues will service most, if not all, of the costs of financing that equipment. A large portion of Amtrak's current equipment needs, however, are for services where America finds value in the mobility and national connectivity Amtrak provides, though all of that value is not captured in passenger ticket revenues.

Amtrak's comprehensive fleet plans of 2010, 2011 and 2012 detailed the need for significant capital investment in Amtrak's fleet. Excluding equipment required for NEC operations which Amtrak may be able to finance from net NEC operating revenues, the annual investment required to renew Amtrak's fleet as it now exists was projected in 2012 to be $321 million annually for 30 years. The appropriations in the years that Amtrak prepared those plans and in the years since, however, fell well short of the needed capital investment identified in them. The historic and current approach by the Federal government to funding the capital investment needs of intercity passenger rail service continues to leave Amtrak without adequate resources to properly maintain, improve, and expand its fleet and services. Absent a new approach to funding the capital investment needs of intercity rail passenger service, the lack of adequate capital investment in fleet will at some point become a significant, perhaps the most significant, factor in what services are provided. A different funding methodology is needed if capital planning at Amtrak, including fleet planning, is to be strategic rather than reactive.

Currently in process are three major projects of rolling stock replacement and expansion: 70 ACS-64 electric locomotives for NEC operations; 130 Long Distance Single Level baggage, diner, crew dorm and sleeper cars, and up to 28 Next Generation High-Speed Trainsets.

ACS-64 Electric Locomotives – Amtrak entered into a contract with the Mobility Division of Siemens Corporation in September 2010 for delivery of 70 electric locomotives, designated as ACS-64, for use on the NEC. These locomotives are replacing the AEM-7 and HHP-8 locomotives used on *Northeast Regional*, *Keystone* and various State Supported and Long Distance trains that operate over the electrified sections of the NEC. The first locomotive entered revenue service on February 7, 2014 and, as of this writing, 62 new locomotives have been delivered. These locomotives have replaced all 15 HHP-8 locomotives and nearly all AEM-7 type locomotives. The project continues to progress, and it is anticipated that the final unit will be delivered by the end of April 2016. The total cost, including program management, major capital spare parts and facility improvements, is being financed by a loan in the amount of $562.9 million made by FRA under its Railroad Rehabilitation and Improvement Financing (RRIF) Program. Amtrak's debt service payments related to this loan will come from net operating revenues from Amtrak's Northeast Corridor operations.

Long Distance Single Level Cars – Amtrak entered into a contract with CAF USA for delivery of 130 long-distance single level cars, designated as Viewliner II, for use on Long Distance trains and a limited number of State-Supported trains. They will be used primarily over routes where clearances prevent the operation of bi-level Superliner equipment. The order has been amended to better meet the needs of the business and now consists of 70 baggage cars, 10 crew dorm cars, 25 diners and 25 sleeping cars. The first baggage car of the order was received in May 2014 for testing. Deliveries of additional cars began in the first quarter of FY15, and the final unit is anticipated to be accepted by the end of March 2017. The total project cost will be $342.8 million. Acquisition of these cars and related spare parts is being funded by annual Federal capital appropriations and operating revenues that exceeded projections.

Next Generation High-Speed Trainsets for the Northeast Corridor – The introduction of Amtrak's first generation high-speed trainsets and the start of *Acela Express* service in late calendar year 2000 represented a watershed event for Amtrak's service on the NEC. In FY 2000, the last year before *Acela Express* began operation, Amtrak's NEC operations generated a net operating loss. In FY15, the NEC operations generated an operating surplus of nearly $479 million, down from approximately $500 million in FY14.[5] The large majority of this operating surplus, and hence the success of the NEC, is attributable to *Acela Express*.

Acela Express service is provided by 20 trainsets, each with approximately 300 seats that are based upon early to mid-1990s technology. These trainsets, which are of a design unique to Amtrak, are becoming progressively more difficult and expensive to maintain due to their aging technology. More important, however, are their capacity constraints and inability to meet growing demand. A majority of the departures between Washington and New York City on most days of the week see

[5] NEC excluding Infrastructure, Reimbursable and Commuter allocations. FY15 results are preliminary and unaudited.

load factors in excess of 90%. Trains that are completely sold out are becoming an increasingly common occurrence. This reflects potential income Amtrak cannot realize because of the limited capacity.

Amtrak's Next Generation High-Speed Trainset Project will address the short-term capacity constraints and position *Acela Express* service for the long-term. The project will acquire up to 28 contemporary, state-of-the-art, high-speed trainsets to first supplement and eventually replace the legacy *Acela Express* trainsets. Each will have substantially more seats than the current equipment, and the added number of trainsets will permit Amtrak to operate half-hourly service between Washington and New York City during peak hours and hourly service between New York City and Boston while maintaining the remaining existing schedules. Minimum requirements of the trainsets included that they meet or reduce the existing *Acela Express* trip times, and preserve or enhance on the existing customer experience.

This project will be the first application of a new "tier" of passenger equipment safety standards by FRA and the first large Amtrak equipment procurement using performance standards rather than a set of design specifications. Together, they will permit Amtrak to acquire equipment that will be the next generation of high-speed trainsets proven in service overseas. Amtrak published the request for proposals on July 1, 2014. Proposals were received on October 1, 2014 and evaluated, and Amtrak is presently in negotiations with an intended awardee. Amtrak anticipates the delivery of the first prototype trainset 36 months following the notice to proceed (NTP); the first revenue in-service trainset is anticipated 48 months after the NTP and the final revenue service trainset 60 months after the NTP.

A critical element of the project involves financing. In part because of the anticipated strong financial performance of the *Acela Express* service using the new equipment, in FY14 Congress directed that Amtrak seek to finance this equipment using the USDOT's RRIF Loan Program, whose advantageous terms will maximize the ability of Amtrak to use *Acela Express* passenger revenues to meet NEC investment needs. The RRIF application for these new trainsets and other investments necessary to position the Acela service for the future was filed with the FRA in July 2014. Amtrak's business case supporting the release of the request for proposals shows that incremental growth in NEC revenues resulting from the high-speed trainsets will fund Amtrak's debt service obligations associated with the financing. Amtrak anticipates a decision by USDOT on the RRIF application in the second quarter of FY16. A favorable decision on the RRIF application and successful conclusion with the intended awardee on the purchase of the equipment should permit a final decision by the Amtrak Board of Directors to proceed with this project and a NTP to builder late in the second quarter of FY16.

Status of Amtrak's Current Fleet – With no new deliveries during FY15, other than Viewliner baggage cars, Amtrak's passenger car fleet, already older than at any previous point in Amtrak's history, aged with another year of heavy use. We are rapidly approaching the time when equipment condition will limit Amtrak's ability to maintain service at current levels.

Exhibit [2-1] lists the current fleet age and average mileage of equipment used by Amtrak (including equipment owned by States).

Exhibit [2–1] – Average Age and Mileage of Rolling Stock

Passenger Cars

Equipment Type	Active Units 10/1/2015	Year Started in Service	Average Age in 2016	Average Mileage	Notes
Amfleet I	456	1975 - 1977	40 Years	4,703,000	(a)
Cab Cars / NPCU	23	1967 - 1988	39 Years	4,206,000	(b)
Horizon	92	1989 - 1990	27 Years	3,366,000	
Surfliner	49	2000 - 2002	16 Years	2,154,000	(c)
California Cars	92	1994 - 2002	21 Years	2,389,000	
North Carolina Cars	18	1953 - 1965	55 Years	647,000	(d)
Amfleet II	144	1981 - 1983	34 Years	6,341,000	
Heritage	62	1948 - 1961	62 Years	5,752,000	(e)
Viewliner	51	1995 - 1996	20 Years	3,815,000	
Viewliner II	58	2014 - 2015	1 Year	79,200	(f)
Superliner (I & II)	425	1979 - 1996	30 Years	5,662,000	(g)
Auto Carrier	80	2005	11 Years	1,929,000	
Other	7	Unknown	Unknown	N/A	(h)
Total	**1,557**				

(a) Average Amfleet I mileage lower than previous report due to the return to service of 55 cars formerly in storage for 5+ years

(b) Cab Car average mileage = 1,800,000 miles since inception of Amtrak data systems in 1970's - mileage prior to data systems not available. NPCU average mileage = 3,900,000

(c) Includes cars owned by Amtrak (39) and California (10)

(d) Mileage since last major overhaul, approximately 1995. Mileages were re-set at overhaul.

(e) Includes Service Cars, Wheel Cars Track & Catenary Inspection Cars, Bag / Bike Cars and Conference Car Mileage since inception of Amtrak data systems in 1970's; estimates not available for prior period

(f) Total order 70 Baggage cars, 25 Sleepers, 25 Diners, 10 Bag/Dorm Cars; baggage cars delivered first replacing Heritage fleet

(g) Average Superliner I mileage = 6,738,000 and Superliner II average mileage = 4,222,000 (Superliner I fleet was introduced during 1979 - 1981 while Superliner II cars came into service 1993 - 1996)

(h) Incudes two maintenance of way work cars and one conference car

Locomotives

Equipment Type	Active Units 10/1/2015	Year Started in Service	Average Age in 2016	Average Mileage	Notes
P32	18	1991	25 Years	2,113,000	
P32DM	18	1995 - 1998	20 Years	2,025,000	
P40	14	1993	23 Years	2,707,000	
P42	193	1996 - 2001	18 Years	2,868,000	
F59PHI	21	1998	18 Years	1,927,000	
AEM-7	17	1980 - 1988	34 Years	4,662,000	
HHP-8	0	1999 - 2001	16 Years	1,344,000	(i)
ACS-64	49	2014	1 Year	91,000	
California Diesels	17	1991 - 2001	20 Years	2,030,000	(j)
North Carolina Diesels	6	1988 - 1998	25 Years	422,500	(j)
Switchers	50	1950 - 2014	39 Years	N/A	
Total	**403**				

(i) HHP-8 mileages reflect mileage at time of out-servicing

(j) California and North Carolina diesel locomotives are not Amtrak-owned

Train Sets

Equipment Type	Active Sets 10/1/2015	Year Started in Service	Average Age in 2016	Average Mileage	Notes
Acela	20	1999 - 2000	17 Years	2,266,000	(k)
Northwest Service	7	1999 - 2013	13 Years	1,867,000	(l)

(k) 20 Trainsets = 40 power cars; 120 trailer cars plus one (1) non-revenue track geometry car

(l) Washington State owns 3 trainsets, Oregon DOT owns 2 trainsets, Amtrak owns 2 trainsets (Newly in-serviced Oregon trainsets lower overall fleet mileage)

Exhibit [2-2] lists expected availability of the current fleet in FY16 as compared to the two most recent fiscal years:

Exhibit [2–2] – Expected Fleet Availability

	FY 2013			FY 2014			FY 2015			FY 2016 (Forecast)		
	Active	Shop	Net Available	Active	Shop	Net Available	Active	Planned Shop	Net Available	Active	Planned Shop	Net Available
Car Fleet												
Amfleet I	463	48	415	463	47	416	456	60	396	456	60	396
Horizon	94	16	78	93	5	88	92	17	75	92	17	75
Surfliner	49	9	40	49	8	41	49	8	41	49	8	41
California Cars	78	10	68	92		92	92	12	80	92	12	80
North Carolina Cars	11	-	11	16	2	14	18	2	16	18	2	16
Amfleet II	145	22	123	145	23	122	144	26	118	144	26	118
Heritage Baggage Cars	64	12	52	63	7	56	32	10	22	38	2	36
Heritage Diner	20	5	15	20	5	15	20	6	14	20	-	20
Heritage Dome/Parlor Cars	6	2	4	6	1	5	6	1	5	5	1	4
Heritage Co. Serv., Exhibit [a]	7	-	7	4	-	4	4	-	4	4	-	4
Midwest Corridor Cars	-	-	-	-	-	-	-	-	-	61	-	61
Viewliner	51	10	41	51	10	41	51	9	42	51	9	42
Viewliner II [b]	-	-	-	-	-	-	58	11	47	100	16	84
SuperLiner I & II	429	76	353	426	66	360	425	70	355	425	70	355
Auto Carrier	80	9	71	80	9	71	80	9	71	80	9	71
Cab Cars / NPCU	40	8	32	37	10	27	23	5	18	23	5	18
Other [c]	3	1	2	7	-	7	7	1	6	7	-	7
Total Car Fleet	**1,540**	**228**	**1,312**	**1,552**	**193**	**1,359**	**1,557**	**247**	**1,310**	**1,665**	**237**	**1,428**
Locomotives												
Electric Locomotives [d]	62	17	45	61	16	45	66	20	46	93	20	73
Diesel Locomotives [e]	289	45	244	265	42	223	264	63	201	264	63	201
Diesel Locomotives (CA & NC)				23	4	19	23	6	17	23	6	17
Switchers [f]	45	6	39	50	-	50	50	-	50	50	-	50
Locomotives Totals	**396**	**68**	**328**	**399**	**62**	**337**	**403**	**89**	**314**	**430**	**89**	**341**
Trainsets												
Acela (20 Trainsets)												
- Cars	121	24	97	121	24	97	121	32	89	121	32	89
- Locomotives	40	8	32	40	8	32	40	8	32	40	8	32
Cascades Service (7 Trainsets) [g]												-
- Cars	84	3	81	83	-	83	83	3	80	83	-	83
- Locomotives	8	1	7	7	-	7	7	1	6	7	-	7
Total Trainsets	**253**	**36**	**217**	**251**	**32**	**219**	**251**	**44**	**207**	**251**	**40**	**211**
Grand Total	**2,189**	**332**	**1,857**	**2,202**	**287**	**1,915**	**2,211**	**380**	**1,831**	**2,346**	**366**	**1,980**

[a] Part of Exhibit Train

[b] Long Distance Single Level cars now known as Viewliner II, to replace Heritage Baggage and Diner Cars and augment Single Level Sleeper fleet (130 car order comprised of 70 bag cars, 25 diners,10 bag/dorm cars and 25 sleepers)

[c] Includes Service Cars, Wheel Cars Track & Catenary Inspection Cars and Conference Car

[d] Electric locomotive deliveries begin in FY14 and continue thru FY16

[e] California and North Carolina diesel locomotives included in pre-diesel Locomotive counts

[f] Switchers were not previously included in Planned Shop counts. Adding has no effect on passenger service

[g] Two new Oregon (ODOT) owned trainsets placed in service FY 2013

Exhibit [2–3] – Rolling Stock Unit Acquisition Plan

	Locomotives			Cars			New High Speed
	Electric	Diesel	Switcher	Single Level	Bi-Level	Auto Carriers	
2016	19	-	-	45	-	-	-
2017	-	-	-	25	-	-	-
2018	-	-	-	-	-	-	-
2019	-	-	8	100	-	-	1
2020	-	-	8	100	-	-	17
2021	-	-	5	100	100	-	10
2022	-	-	5	100	100	-	-
2023	-	-	5	100	100	-	-
2024	-	50	5	100	100	-	-
2025	-	50	-	95	100	-	-
2026	-	50	-	-	8	-	-
2027	-	50	-	-	-	-	-
2028	-	50	-	-	-	80	-
2029	-	30	-	-	-	-	-
2030	-	-	-	-	-	-	-
Cycle 1	**19**	**280**	**36**	**765**	**508**	**80**	**28**
2031	-	-	-	-	-	-	-
2032	-	-	-	-	-	-	-
2033	-	-	-	-	-	-	-
2034	-	-	-	-	-	-	-
2035	-	-	-	-	-	-	-
2036	-	-	-	-	-	-	-
2037	-	-	-	-	-	-	-
2038	-	-	-	-	-	-	-
2039	21	-	8	-	-	-	1
2040	30	-	8	-	-	-	17
2041	19	-	5	-	-	-	10
2042	-	-	5	-	-	-	-
2043	-	-	5	-	-	-	-
2044		-	5	-	-	-	-
2045		-	-	60	-	-	-
Cycle 2	**70**	**-**	**36**	**60**	**-**	**-**	**28**
Total	**89**	**280**	**72**	**825**	**508**	**80**	**56**

Planning the Future of Amtrak's Fleet – Going forward, key elements of Amtrak's equipment strategy include establishing the long-term equipment needs of the business lines, determining the tradeoffs between continuing to invest in the existing fleet versus acquisition of new equipment, and developing investment business cases that can support future decisions on capital investment in rail fleet. During FY15 Amtrak initiated engineering assessments of the P42 locomotives and Amfleet I passenger cars (used for *Northeast Regional* and State Supported service). A similar assessment of Superliners will begin in 2016. The results of these assessments will help determine the remaining useful life of this equipment and the costs associated with continuing this equipment in service over the long term. These costs could then be compared to other scenarios including purchasing new equipment.

The next step will be combing this information with an assessment of Amtrak's projected equipment requirements to develop business cases for investments to support future services, including costs of various scenarios involving equipment, opportunities for internal synergies, opportunities for external partnerships and financing, and estimates of return on investment, external benefits, and risks. The business case will then flow into Amtrak's resource allocation decision-making process, where the recommendations for use of Amtrak's equipment resources and future investment in equipment will be prioritized against other investment needs. In this regard, Amtrak fleet planning anticipated the statutory requirement for such business cases contained in section 11208 of the FAST Act.

Other equipment-related capital funding requirements over the five-year period will primarily involve overhauls of existing equipment, with a minor number of compliance-related acquisitions. To the extent that Amtrak is able to develop more reliable, multi-year sources of funding, the total expenditures on fleet and the expenditures by year will likely change.

On Time Performance (OTP)

Market research has shown that on-time performance (OTP) is a large determining factor in customer satisfaction, and poor OTP reduces revenues and increases costs. Amtrak is working to improve the elements of OTP we can directly control; insisting that our host railroad partners give us the preference in dispatching required by law; and working with the host railroads and others to tackle the underlying causes of rail congestion.

Currently there are several major initiatives underway to address the OTP issues including:

1. Chicago Gateway Blue Ribbon Panel. Amtrak's Chicago Gateway Blue Ribbon Panel was created in October 2014 to identify infrastructure and operational improvements to address rail network congestion in the Chicago area that is adversely impacting Amtrak, commuter and freight train operations, and actions to advance those improvements. The panel's members met with nearly 100 stakeholders and subject matter experts, including Federal, State and local elected and governmental officials and their staffs; freight and passenger rail executive, operations and planning officials; and transportation policy and finance experts. The panel also reviewed numerous studies and analyses prepared by rail industry associations and consultants, academic institutions, and Amtrak operations and planning staffs. In October 2015,

the panel released its report and recommendations aimed at solving the urgent need to improve the infrastructure and operations of the Chicago rail network, upon which the national economy depends. At this time, Amtrak is working with stakeholders to advance the recommendations of the Panel.

2. Surface Transportation Board (STB) Actions. Amtrak has filed petitions with the Surface Transportation Board seeking improvements in performance from some of our host railroad partners. We regret that we were not able to achieve acceptable performance outside of the STB, and we look forward to the STB's participation in enforcing the obligations of our host railroads.
3. Actions to Improve OTP Elements under Amtrak Control. While many elements of OTP are driven by external factors beyond Amtrak's control, we have committed internal resources to pursue a cross-department, comprehensive effort to analyze and improve elements of OTP that Amtrak can directly influence. Amtrak recognizes the importance of ensuring that trains depart on-time from the station where they originate, and has continued to implement action plans to minimize initial terminal delays. The performance of individual services is regularly reviewed to identify operational challenges and solutions, including strategies to minimize the adverse impact of weather-related events during winter months. Additionally, Amtrak's ability to monitor and analyze the root causes of delays is being enhanced through technological and process improvement efforts.

Americans with Disabilities Act

Amtrak recognizes that many of our passengers have challenges using our services, given the limitations of our current infrastructure and our aging equipment. With the funding we have available, our goal is to bring all Amtrak-served stations into compliance with the Americans with Disabilities Act (ADA) of 1990 through our ADA Stations Program. In order to accomplish this goal, Amtrak, in coordination with members from the disability community and the FRA, has developed the ADA priorities and work necessary to bring stations with existing accessibility deficiencies into compliance with the ADA. Our plan will address stations with known accessibility deficiencies in areas such as train access, passenger information, and station access and amenities, and bring them into compliance with the ADA within the five year plan period.

Our highest priorities are as follows:

1. Stations with known train access deficiencies
2. Stations with known Passenger Information Display Systems (PIDS) deficiencies
3. Stations with known station access and/or station amenity deficiencies
4. Adding level boarding platforms (where required)
5. Adding a level boarding type solution (based on Amtrak's Platform Design Policy) where level boarding is not required by the ADA

Priorities 4 and 5 will be funded from remaining funds after priorities 1-3 have been funded.

ADA Financial Commitments – In order to accomplish these goals, Amtrak has agreed to spend no less than $50 million of its capital funds on ADA improvements every year over the next five years.

In these years, Amtrak's ADA Stations Program consists of planning, surveys, ADA assessment, design, and construction work at 277 stations.

Amtrak is currently in the process of developing a supplemental plan that evaluates the current condition of the Amtrak system with respect to ADA access, which will project the amount of capital needed to fully fund all the ADA Program needs. This report will be issued as the information becomes available, and will be updated periodically to determine the required funding levels to achieve Amtrak's goal of ADA compliance.

STRATEGIC OBJECTIVE S2: GROW A LOYAL, LONG-TERM CUSTOMER BASE WHILE TARGETING AND ACQUIRING NEW RIDERS

Amtrak must begin targeting and acquiring new customers to ensure that demand continues to grow over the long-term. Amtrak ridership across all business lines is heavily skewed toward older age groups. Building satisfaction and loyalty among our current customer segments will be key to maintaining the growth we have experienced in recent years. However, we must also appeal to a new generation of passengers to sustain the business. We will measure our success on this objective by the number of new customers we acquire, and the number of new members who join our Amtrak Guest Rewards loyalty program.

Consumers who are currently between the ages of 18 and 34 will soon be entering their peak earning and traveling years. Research indicates that within the next 5-8 years, they will account for approximately half of all business travel, while Baby Boomers' business travel spending will drop sharply.

This represents a prime opportunity for Amtrak because younger customers have considerably different wants, needs and desires related to travel – needs that Amtrak is uniquely positioned to meet. These wants and needs include a preference for traveling in organized groups, using mobile devices for entertainment while on-board, and a higher desire for comfort and leg-room. We must communicate our ability to meet these needs better than competing modes, and offer the supplementary services and features needed to build long-term loyalty to Amtrak.

Advertising and Brand Communications – Advertising and Brand Communications campaigns will increase utilization of data mining and new digital/online advertising platforms to become more targeted and better leverage opportunities by route, market and consumer segment.

Northeast Regional advertising will focus on tactical pricing offers, such as Three-Day Flash sales and 14–day advance purchase tickets, and on promoting travel to conventions, sporting/entertainment events, and high profile NEC attractions. *Acela Express* advertising will reflect capacity constraints by targeting route segments with fewer sell-outs. Radio ads, and route-specific geo-targeted digital advertising, will position Long Distance trains as a better alternative to driving, and promote winter and other fare discounts. Advertising campaigns for State Supported routes will be developed in conjunction with state partners.

Brand video and TV advertising will elevate awareness of all business lines, and there will be an increased focus on emerging population segments such as Millennials, Hispanics and Asians/Chinese.

Ridership Five-Year Plan Overview – Amtrak's five-year ridership projection is for a total growth of 9.5% from FY15 actual ridership, or 1.8% annually. Growth will come from a variety of sources, including incremental demand associated with economic growth, system investments and expansions, loyalty and advertising program investments, increased advertising efficiency via targeted campaigns and new revenue management system capabilities.

Two primary factors limit growth projections. First are equipment capacity constraints, particularly in the Northeast Corridor but also on Amtrak's Long Distance train network and on select State Supported Services elsewhere. Equipment acquisitions that are underway will increase capacity, but most of the benefits of those acquisitions are not expected to be realized until the very end of the forecast period.

The second factor that may constrain growth is lower fuel and energy costs, which have driven a significant amount of modal shift from rail to auto. Amtrak estimates that the loss of passenger rail demand from lower gasoline prices could exceed $100 million per year.

STRATEGIC OBJECTIVE S3: CONTINUOUSLY IMPROVE OUR CULTURE OF SAFETY AND SECURITY

Amtrak experienced two significant derailments in 2015. On Tuesday, May 12 Amtrak *Northeast Regional* Train 188, operating from Washington to New York, derailed in northeastern Philadelphia, resulting in multiple injuries and fatalities. On October 5, Amtrak Train 55, the *Vermonter*, partially derailed while traveling from St. Albans, Vermont to Washington, DC, resulting in multiple injuries and no fatalities. The Train 188 derailment resulted in suspension of service for multiple days on the affected section of the NEC. At this time, the National Transportation Safety Board (NTSB) is investigating both incidents.

The Train 188 derailment was a tragedy that affected many of our passengers and families, and was a defining moment for all of Amtrak in 2015. While we have generally refrained from public comment on the issue due to the continuing investigation, Amtrak is in the process of analyzing the events that led to the derailment to understand the causes and implement the necessary corrective actions.

While safety and security is part of everyone's role at Amtrak, our programs are led through the combined efforts of our System Safety department, the Amtrak Police department, and the Emergency Management and Corporate Security department. Together, these groups are working towards our goal of every customer and employee going home injury-free every day. We will measure our success on this objective primarily by the contact rate generated by our behavior-based safety program, our numbers of serious injuries and fatalities, and our passenger injuries per 100 million passenger miles.

Safety – Amtrak's System Safety Department provides support to Amtrak's operations in a variety of ways. There is a behavior-based organizational safety culture program that has been in place for multiple years at Amtrak, with a goal of making our current safety practices and behaviors even more effective. This program is not just for the operating employees, but is a risk reduction philosophy that applies to all Amtrak personnel regardless of role.

The System Safety group will continue the implementation of the system safety program, evaluation of the safety of proposed new chemical products and maintenance of the electronic material safety data sheet database, compliance with Occupational Safety and Health Administration (OSHA) regulations, Federal Railroad Administration (FRA) safety compliance, facility safety audits, employee exposure surveys and controls, safety training program development, new hire safety orientation, development of job safety analyses, and expert OSHA testimony for Claims.

Another element of Safety is Operation RedBlock, an alcohol prevention and intervention program. The program emphasizes awareness, education, and prevention to employees. The program aims to change attitudes and behaviors of employees, in order to reduce the acceptance by non-users to job-related drug and alcohol use, and to encourage users to seek assistance.

Amtrak is also showing industry leadership in the installation of positive train control, or PTC. Prior to 2015, Amtrak had already installed and implemented PTC on the tracks we own in Michigan and Indiana, as well as on more than 200 miles of the Northeast Corridor (NEC). As of December 2015, we have activated PTC on the remainder of the Amtrak-controlled portions of the NEC between Washington, D.C., and Boston, and it will soon be activated on the Philadelphia-Harrisburg line. These actions will help better ensure the safety of passengers and co-workers.

Finally, Amtrak's Operation Lifesaver efforts will continue to collaborate with Operation Lifesaver Inc. and host railroads to reduce highway rail grade crossing accidents and trespasser fatalities. This is done through engineering, education, raising public awareness, and enforcement.

Amtrak Police Department (APD) – The Amtrak Police Department (APD) will align itself with the recommendations of the President's Taskforce on 21st Century Policing that focus in six key areas; Building Trust and Legitimacy, Technology and Social Media, Training and Education, Officer Wellness and Safety, Community Policing and Crime Prevention, and Policy and Oversight.

APD will continue prevention efforts through partnerships, preparedness, and participation. The Operation RAILSAFE program, where we strengthen the coordination and integration among Amtrak police and emergency responders, host railroads, transit agencies, and other members of law enforcement to protect passengers, employees, and infrastructure from acts of terrorism will continue to be expanded. We also plan to continue our training with our law enforcement partners in multi-agency drills and "tabletop" exercises and Operation RAILSAFE training, which will be delivered to hundreds of first responders in 10 cities.

APD will continue to expand its data-driven approach to predictive policing with enhanced data collection, analysis, and "comp stat" briefings to review and discuss trends, crime prevention strategies, and deployment. Enhancements to the APD Records Management System, expanded use

of technology and the relocation of the National Communications Center will improve communications and incident reporting. We will use the results of the workforce planning study to improve crime prevention and deployment and implement its recommendations as budget and staffing permit. Increased customer service is anticipated with the roll out of the Professional Communications Course; intended to improve customer oriented policing and deescalate conflict. Additionally, the APD will continue to explore ways to reduce injuries with the Amtrak Move SMART program that uses stretching to reduce strains and sprains, and the APD focus on wellness. An improved defensive tactics course and training will be developed as a follow on to the Professional Communications Course. The implementation of internal controls will be a focus of the APD as we examine opportunities to ensure appropriate documentation for training and personnel are in place for compliance purposes, safeguard assets and validate the accuracy of data. This also aligns with the APD reaccreditation with the Commission on Accreditation for Law Enforcement (CALEA) on site, which will demonstrate our commitment to the adherence of well-established law enforcement standards.

Emergency Management and Corporate Security (EMCS) – EMCS leads an integrated enterprise-wide emergency management and corporate security system to prepare and protect Amtrak employees, customers and assets. This includes the execution of a security risk management strategy and infrastructure protection program to address threats and vulnerabilities associated with natural hazards and acts of terrorism; oversight of emergency preparedness planning and incident management coordination; a security awareness, training and exercise program for employees and external stakeholders; and securing critical rail and key assets through the implementation and management of video surveillance and employee/contractor identification program (Smart ID). EMCS accomplishes this through its four functional areas:

1. Emergency Management – Implements security and preparedness planning, awareness, training and exercise initiatives to improve Amtrak's culture of safety and security, including the execution of regulatory (49 CFR 239, Passenger Train Emergency Preparedness) emergency preparedness planning activities; management of the Amtrak Ambassador program where Amtrak employees from multiple departments provide frontline passenger assistance during emergencies and disruptions; and oversight of Amtrak's Incident Response Team including implementation of Amtrak's Family Assistance Center and meeting assurances outlined in the Rail Passenger Disaster Family Assistance Act of 2008.
2. Corporate Security – Executes a risk-driven infrastructure protection strategy to include operational and planning activities, continuity of business program, vulnerability assessments, and identification of security counter measures (video security surveillance, access control, etc.) to protect and mitigate risks to critical rail infrastructure and key assets.
3. Policy and Programs – Ensures that EMCS policies, programs and activities are executed in alignment with department security risk management principles, Amtrak's Strategic Plan, and Management Controls Framework requirements.
4. Business Services – Provides oversight of the EMCS project management office, develops departmental operating and capital budgets, and implements administrative and operational

activities including human capital management, video security surveillance program and Amtrak's employees/contractor identification program.

STRATEGIC OBJECTIVE S4: DRIVE PRODUCTIVITY AND QUALITY THROUGH PROCESS IMPROVEMENT, AND BETTER PROJECT AND PROGRAM MANAGEMENT

Amtrak's focus on operating efficiency is enterprise-wide. The day-to-day operations of every business line, department and group within Amtrak must continually improve so that we can meet our goals at the lowest possible cost. Target areas include process improvements, optimizing service delivery, and efficiently using assets. We measure our success on this objective by tracking a basket of measures that include overtime; initial terminal performance (how many trains leave their originating terminal on schedule); Engineering unplanned delay minutes / 10,000 train miles; Mechanical cost per Units Used; and greenhouse gas emissions. By monitoring these measures at the corporate level, and understanding their components at the business line and department level, our goal is to continually find ways to improve our efficiency.

Specific initiatives to improve processes, and project and program management, include:

- Continue our progress in establishing Project Management Offices (PMO) throughout the organization. We have recently created a PMO in the Engineering group, and are in the process of creating a company-wide PMO to define standards and coordinate projects throughout the company.
- Management Control Framework. Amtrak's Management Control Framework (MCF) is the foundation upon which the organization is building and improving its Enterprise Risk Management process. The MCF starts with Amtrak's strategic objectives, documents their component objectives at a more detailed level, and identifies the risks that Amtrak faces in achieving them. To date, we have completed two annual assessments of management controls across the entire Company, and we have resolved over 400 identified control weaknesses.
- Continue rolling out Lean Enterprise Solutions (LES) across the organization. To date, the Lean Enterprise Solutions team has completed projects in Human Capital, Finance, Procurement & Logistics and IT, delivering process and compliance improvements worth millions of dollars in expense and working capital reductions. In the coming years, LES will continue its work in providing Green Belt training and expand its scope to the Operations department.
- Improved Overtime Reporting and Reduction. We continue our work to better document and report on overtime, with an ultimate goal of understanding its root causes and working to reduce unnecessary overtime.

STRATEGIC OBJECTIVE S5: SECURE FINANCIAL RESOURCES NEEDED TO EXECUTE OUR VISION AND MISSION

The availability and efficient use of investment dollars are critical for success in any capital-intensive industry, and this is especially true for railroads. The historic lack of financial resources for Amtrak has resulted in degrading fleet and infrastructure, higher operating costs, and an inability to invest in projects that will improve our bottom line. We will measure our success on this

objective by how much of the funding requested to support our business lines we are able to achieve.

Unlike transit and commuter rail or other forms of transportation, there is no reliable, multi-year source of funds for capital investment in intercity passenger rail. Amtrak must undertake capital planning without knowledge of how much capital will be provided from one year to the next. Indeed, Amtrak did not know the amount of capital available for FY16 until December 18, 2015, with almost one-quarter of the fiscal year having already elapsed. Under the current approach, if Amtrak were to make a multi-year commitment to a necessary capital investment and subsequent appropriations for capital were less than anticipated, other critical investments would have to be deferred or alternatively Amtrak would have to pay penalties for breach of contract.

The lack of predictability in the timing and levels of capital investment tends to force Amtrak away from systematic, long-term strategic planning and investment in favor of short-term fixes. Over the long run, this approach almost invariably costs us more when impacts on both revenue and expenses are taken into account. It requires maintaining assets long after the original manufacturer and many of the manufacturers of component parts have ceased to exist, asset failures have become frequent, and repairs are no longer cost effective. This drives up costs and reduces reliability, both of which have adverse impacts on passengers and the bottom line.

To address this issue over the next five years, Amtrak will pursue a multi-pronged approach:

1. Move toward a capital allocation process where investment decisions are made based on how projects impact strategic goals in combination with traditional financial measures of rates of return. By making decisions through these two lenses – financial benefit and strategic benefit – we will be better able to quantify for those who invest in Amtrak the value they get from their investment.
2. Retain NEC operating surpluses for use as investment capital. Given the strong and predictable performance of the NEC, operating surpluses are a stable source of capital and debt financing if they can be deployed for such purposes rather than directed to cover operating losses of other services.
3. Engage the Administration and Congress in establishing a long-term, predictable source of capital funding.
4. Engage the Administration and Congress on how to make Federal credit programs responsive to Amtrak's investment needs where such investments generate sufficient cash flow to service the debt.
5. Selectively pursue opportunities to utilize innovative financing, private debt or public-private partnerships to fund high-return and strategically vital projects.

Amtrak is currently pursuing multiple initiatives to broaden the sources of its funding:

Section 212 Implementation – Section 212 of PRIIA required the establishment of a Northeast Corridor Infrastructure and Operations Advisory Commission (NEC Commission) which, among other things, was charged with developing a standardized formula for determining and allocating

costs between intercity and commuter use of shared NEC infrastructure. Section 212 requires that the NEC Commission's formula ensure that there is no cross subsidization of commuter, intercity or freight rail transportation and that each service is assigned the costs incurred only for the benefit of that service and a proportionate share, based upon factors that reasonably reflect relative use, of cost incurred for the common benefit of more than one service.

The US DOT, Amtrak, and Northeastern States and commuter agencies adopted a methodology and cost-sharing formula extending to both operating and capital costs incurred in the NEC on September 17, 2015 with an effective date of October 1, 2015. The implementation of this new allocation method should result in additional investments by commuter agencies in Amtrak's NEC infrastructure that will supplement Amtrak's own capital funding, and usher in a new cooperative planning and coordination regime across the full NEC network. This effort is being led by the Infrastructure and Corporate Development business line and is discussed in further detail in its section of the Plan.

Section 209 Implementation – Section 209 of PRIIA required Amtrak and its State partners to develop a uniform cost-sharing methodology for all routes of less than 750 miles outside the Boston-Washington NEC main line. Amtrak reached agreement with 18 of 19 partners on a methodology, but because there was not unanimous agreement Section 209 required the issue to be decided at the Surface Transportation Board (STB). In March 2012, the STB approved the proposal developed by Amtrak and the 18 States and set an implementation date of October 1, 2013.

As a result of the new Section 209 formula, approximately $222.9 million in operating costs and $63 million of equipment capital costs were taken over by Amtrak's State partners in FY15. At this time, the major outstanding funding issue remains a detailed procedure for establishing the States' share of future fixed asset investment. Administering the requirements of Section 209, and developing a policy for State contributions to fixed asset investments, are currently being led by the State Supported Services business line and are discussed in further detail in that section.

RRIF Financing for Next Generation High-Speed Trainsets – FRA is responsible for the Federally-sponsored Railroad Rehabilitation and Improvement Financing (RRIF) loan program, designed to provide financing for investments in the nation's rail infrastructure. Amtrak recently received a loan from this program for the acquisition of the ACS-64 locomotives, and is currently applying for a loan for the proposed Next Generation High-Speed Trainsets discussed in detail in the Fleet Strategy section.

STRATEGIC OBJECTIVE S6: ALIGN THE ORGANIZATION TO DRIVE BUSINESS LINE OUTCOMES

Amtrak continues its journey on reorganizing around business lines. This decision was originally driven by a need to better align our operations with our customer segments, including passengers and our State/agency partners, as well as to increase accountability. Shifting from a functional/regional organization to a business line approach has been a substantial undertaking, and additional work remains ahead of us to help the business lines articulate their requirements to the support functions, and to ensure the support functions are effectively supporting those business

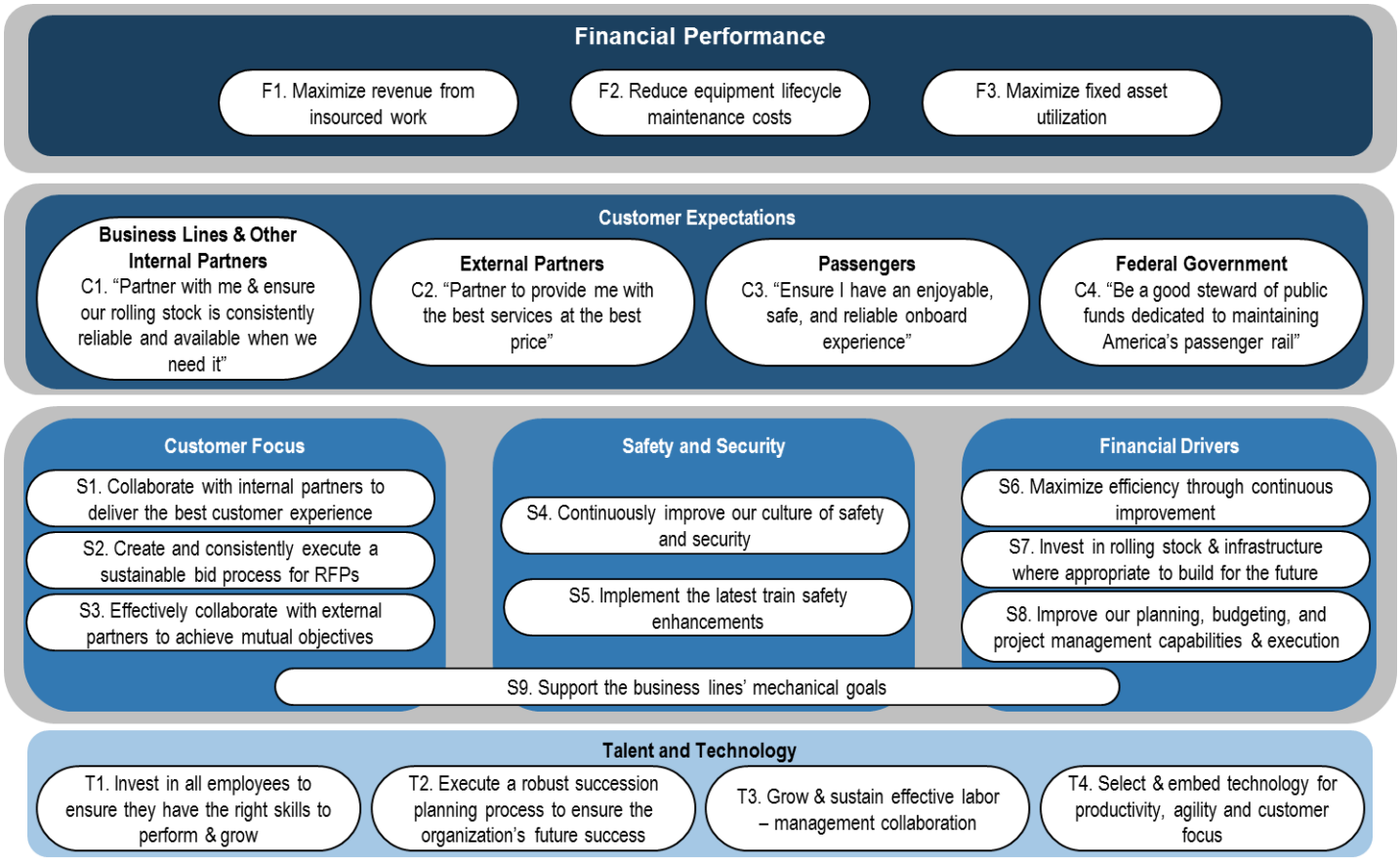
line efforts. In the midst of this activity, it remains important to balance the expected benefits of business line focus with continued system-wide standards and economies of scale. We are measuring our success on this objective by a regular survey of business lines and functions to help track our continuing progress on alignment.

We achieved significant progress in aligning the organization to business line outcomes in FY15. The Long Distance business line continued its successful use of the balanced scorecard and refreshed its strategy map, and the Northeast Corridor Operations business line launched its own. The Mechanical and Engineering departments each developed their own strategy maps and balanced scorecards aligned with business lines, and began holding monthly strategy review meetings. The Infrastructure and Investment Development (IID) business line has completed its strategy map and has also recently held its first strategy review meeting.

Major departments outside the business lines are pursuing the following activities and initiatives to support our strategy:

The Transportation function plays the primary leadership role in the development, maintenance, and continuous enhancement of safe operating policies, programs and practices, utilizing a proactive leadership approach. The Transportation function oversees the critical training, certification, and audit functions necessary to foster a successful operational safety program. It also leads the efforts to identify, analyze, launch and support programs geared toward fuel and energy conservation, particularly those influenced by employee operational behaviors. Collaborating with internal and external partners, the Transportation function has significant influence on the provision of safe and effective Amtrak service system wide.

The Mechanical department primarily consists of three backshop operations that strive to safely create and deliver industry leading, high value, competitive services for rolling stock assets in North America for our internal and external partners and customers, building loyalty by exceeding expectations. In FY15, the Mechanical Department developed a balanced scorecard. This process involved defining the objectives, the measures used to track these objectives, and the portfolio of initiatives that are established in support of the objectives to help ensure that the department will fulfill its mission. These efforts are reflected in the following strategy:

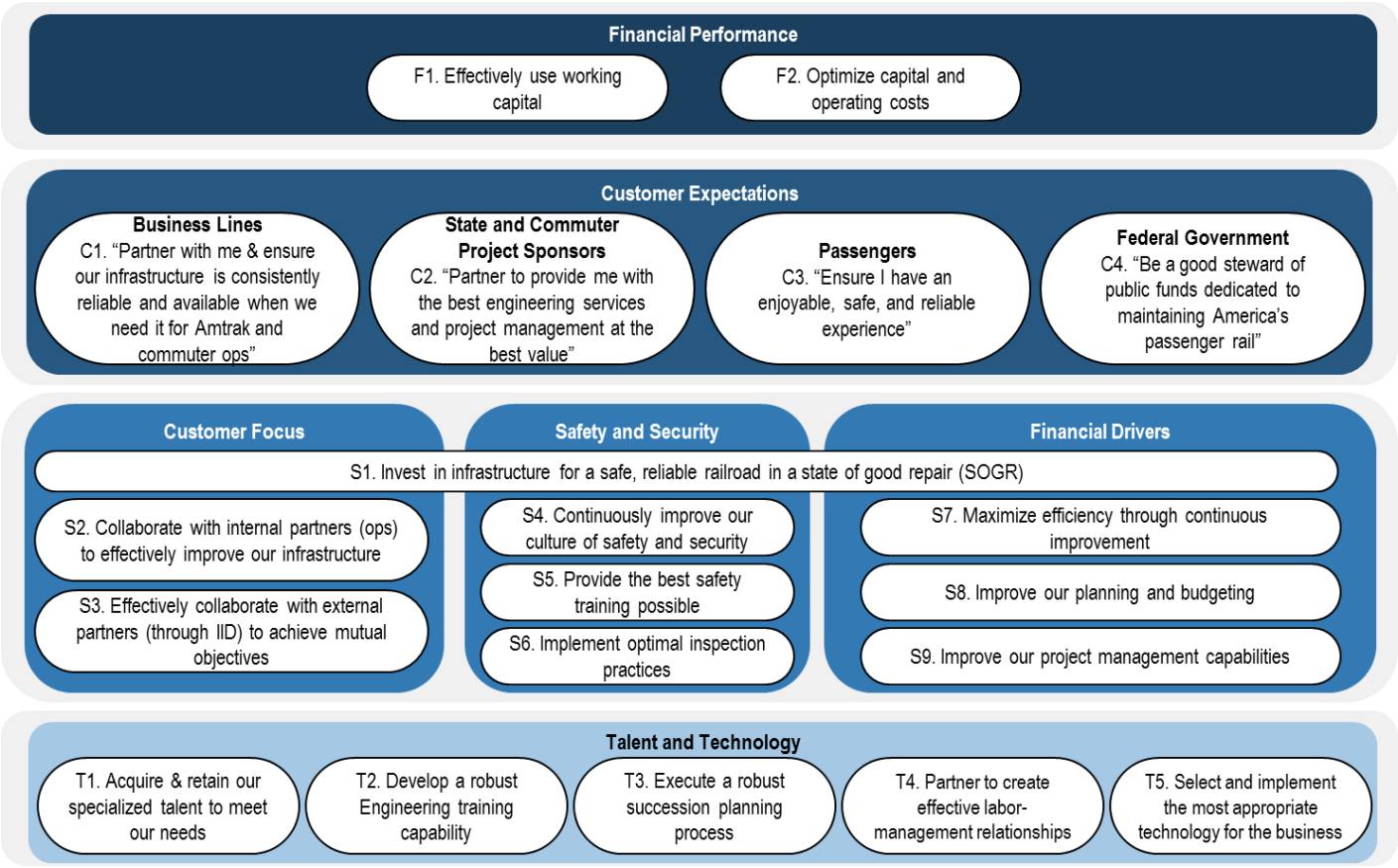


The Mechanical strategy was developed by starting with the Amtrak Corporate Strategy and adapting it to the unique environment of the Mechanical Department:

- The Mechanical Department's customers consist of business lines and other internal partners, external partners, passengers and the federal government.
- The Customer Focus objectives include collaborating with internal partners to deliver the best customer experience, and two objectives by which the Mechanical Department aims to grow third party work.
- In addition to continuously improving our culture of safety and security, the Mechanical Department is also focused on implementing the latest train safety enhancements, such as Positive Train Control.
- The Financial Drivers objectives include improving planning, budgeting and project management capabilities and execution, and investing in Amtrak's rolling stock and Mechanical Department infrastructure to build for the future.
- The Talent and Technology objectives include growing and sustaining effective labor-management collaboration and improving succession planning. The various disciplines are used to support the execution of this mission.

Engineering's foundational approach to support Amtrak's passenger operations is to provide for a safe, reliable, efficient and cost-effective infrastructure and network systems. Amtrak's physical plant is a complex network of infrastructure components, assets, facilities, and systems integrated and inextricably linked with each other to support a mix of high-speed rail, regional, commuter and freight rail traffic in the Northeast Corridor and its feeder lines and other rail lines owned and/or maintained by Amtrak.

In FY15, the Engineering Department developed a balanced scorecard. This process involved defining the objectives, the measures used to track these objectives, and the portfolio of initiatives that are established in support of the objectives to help ensure that the department will fulfill its mission. These efforts are reflected in the following strategy:



The Engineering strategy was developed by starting with the Amtrak Corporate Strategy and adapting it to the unique environment of the Engineering Department:

- The Engineering Department's customers consist of business lines; state and commuter project sponsors, which provide Amtrak capital funds for engineering services associated with design, construction, and maintenance of railroad infrastructure for the benefit of their constituents; passengers; and the federal government.

- A key strategic objective, "Invest in infrastructure for a safe, reliable railroad in a state of good repair," spans Customer Focus, Safety and Security and Financial Drivers, representing the many areas of Amtrak that it impacts.
- The Customer Focus objectives include collaborating with internal partners, such as the operating business lines, and external partners through the NEC Infrastructure and Investment Development business line.
- In addition to continuously improving our culture of safety and security, the Engineering Department has also prioritized providing the best safety training possible and implementing optimal inspection practices.
- Financial Drivers objectives include improving resource planning and budgeting and improving project management program capabilities.
- The Talent and Technology objectives include growing and sustaining effective labor-management collaboration and executing a robust succession planning process.

On the NEC main line, Engineering works closely with the Infrastructure and Investment Development business line and the NEC Commission to implement the maintenance actions and improvements developed in partnership with the stakeholders of the NEC. The Engineering Department 5-Year Plan is an integral part of Amtrak's contribution to the NEC Commission 5-Year NECD Capital Plan that is developed by Engineering, the Infrastructure and Investment Development business line, and the NEC Commission. The Engineering Plan identifies near-term investments to begin addressing long-term needs, and includes capital projects to maintain existing assets and to advance speed and capacity improvements. This requires the development of a systematic and comprehensive Capital Investment Plan for both infrastructure and improvement programs that will ensure meeting current service levels and supporting a transportation framework that addresses future market growth. The Plan also includes Government-mandated and safety programs to meet regulatory requirements. Engineering also works to maintain and improve the Hudson, New Haven-Springfield, Keystone, and Michigan Lines in partnership with the states of New York, Connecticut/Massachusetts, Pennsylvania, and Michigan respectively.

System Operations is responsible for developing the daily operations plan of equipment and crew assignments. This department is responsible for the operations of the Consolidated National Operations Center (CNOC). CNOC's responsibilities include crew and equipment assignments and charter train management.

Business Operations provides coordination of business processes and performance measures aligned to the Strategic Plan to ensure consistency, standardization, compliance, accuracy and continuous improvement across Operations. Business Operations relies on an integrated approach to process change by leveraging technology to improve service delivery, gain efficiencies and support the matrix organization.

Customer Service The Customer Service department acts as the voice of the customer and champions the development of innovative customer service solutions, employee support services, and tactical and strategic planning. This department is charged with developing customer service

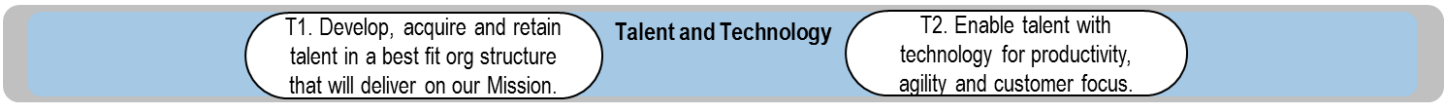
standards and ensuring that they meet the wants, needs and expectations of our customers. The department oversees Food and Beverage operations; culinary product development; On-Board, Train and Engine, and Station Service employee standards; and customer support within CNOC. It also provides innovative solutions for station development, Americans with Disabilities Act (ADA), and capital acquisitions for stations. Customer Service is directing the Amtrak Customer Experience (ACE) program described in Objective S1.

Operations Research & Planning produces and maintains Amtrak's train schedules; manages and enhances Amtrak's connectivity; provides operations and fleet planning and analysis capabilities; and designs, develops and partners with other departments to implement models, systems, processes and procedures that will reduce costs, enhance revenues and/or improve operational performance.

Finance supports business line accountability and provides critical information to our stakeholders.

The Marketing & Sales department's activities are detailed above as part of our Customer Focus objectives, and Human Capital and Information Technology department activities are detailed below in our Talent & Technology objectives.

TALENT AND TECHNOLOGY OBJECTIVES



The foundation of Amtrak's entire Strategic Plan is having an engaged workforce that works within a strategically designed organizational structure and is equipped with the skills and tools needed to carry out our mission.

STRATEGIC OBJECTIVE T1: DEVELOP, ACQUIRE AND RETAIN TALENT IN A BEST FIT ORGANIZATIONAL STRUCTURE THAT WILL DELIVER ON OUR MISSION

Amtrak's Human Capital (HC) team plays a critical role in ensuring every employee possesses the skills, capabilities and knowledge critical to achieve the Amtrak mission. The Human Capital Strategy, a multi-year roadmap designed to align people-related processes, programs and policies to the Amtrak Strategic Plan, has resulted in continued success:

Making the Right Investments in the Right Rewards - Amtrak completed a redesign of non-agreement pay and benefits programs to more directly link employee rewards to its organizational performance and strategic goals. Amtrak also achieved a substantial reduction in costs, including:

- $1.4 billion savings over 20 years (closed pension and retiree health plans to new employees)
- $655 million balance sheet improvement over 5 years (froze pension accruals and transitioned post-65 retirees to a private health exchange)
- $23 million savings over 5 years from other health benefit changes (introduced an incentive-based wellness program and consumer directed health plan)

Creating a Results-Oriented High Performance Culture - Amtrak has strengthened its non-agreement pay for performance processes to establish a stronger link between individual performance, customer service and organizational outcomes, and has implemented pay and performance differentiation.

Developing Tomorrow's Workforce…Today - Amtrak has begun to implement its multi-year, integrated approach to connect the organizational processes designed to attract, manage, develop, motivate and retain key people. Guided by the cross-functional Amtrak Learning Council, Amtrak has also begun to implement a robust suite of blended learning opportunities for non-agreement and agreement employees tied directly to the business critical Amtrak core competencies.

Amtrak continues to face a number of workforce challenges including:

- Lack of deep business acumen throughout the enterprise;
- Increased competition for highly skilled and qualified workers in areas such as IT, Finance and railroad crafts (e.g., Engineering, Mechanics, Road Foremen); and

- Inconsistent funding for needed interventions in the talent selection process, training and career development to address gaps in knowledge and skills to rapidly achieve Amtrak's Strategic Plan.

Amtrak continues to update its HC Strategic Plan to address these challenges through the following strategic actions:

1. Attract, select and onboard best-fit talent who thrive living the brand. Amtrak is committed to investing in its recruiting function to leverage technology and social media to attract millennials, who make up an increasing percentage of the external talent pool. Amtrak will also continue to invest in a robust series of selection and assessment tools, including physical capacity testing, to measure employee fit for specific roles. Beginning in late 2016, new employees will participate in an enterprise-wide orientation program designed to decrease time to productivity by helping them assimilate to the overall Amtrak culture, their specific positions and team.

2. Ensure workforce reflects the diversity of its customers. Amtrak continues to develop a comprehensive diversity and inclusion strategy for recruiting, developing and promoting minorities, women, veterans, people with disabilities and LGBT employees. Amtrak will also foster an inclusive work environment that is responsive to the needs of all employees in order to retain this critical population of our workforce.

3. Train and develop employees at every level of the enterprise. Human Capital will continue to build on the success of the Amtrak Leadership Development Excellence (ALDE) program—a customized, three-part learning opportunity that provides current and future leaders in every functional area and business line with the skills they need to effectively develop, mentor and coach their teams. Amtrak will invest in a comprehensive Learning Strategy to strengthen employee capabilities through a mix of development experiences, on-the-job learning, classroom-based training and e-learning.

4. Extend performance management to drive employee commitment and engagement. Amtrak's performance management process, "Performance Conversations," equips managers and non-agreement employees with the information required to establish clear goals and perform accurate, objective talent assessments. With the baseline process established, Amtrak will now extend the process throughout the year with ongoing commitment conversations to ensure all non-agreement employees receive actionable feedback and coaching.

5. Deliver effective labor management and employee relations outcomes. Amtrak has developed a comprehensive labor strategy, focusing on hiring/qualifications and effective use of existing rules/rights and negotiations.

STRATEGIC OBJECTIVE T2: ENABLE TALENT WITH TECHNOLOGY FOR PRODUCTIVITY, AGILITY AND CUSTOMER FOCUS

In order to compete effectively, grow our business and improve customer satisfaction, our employees must have technology that provides quick access to information, is linked to critical processes, and connects us to customers in a rapidly evolving marketplace. Information technology can also be leveraged to be more predictive and proactive so that we can provide a safer and more secure environment for our employees and customers. We will measure our success on this objective by how the Information Technology (IT) department is meeting its service level agreement (SLA) commitments to the business, and how IT is managing its costs.

The IT department has established the following three year technology objectives:

1. Run IT Like a Business – Provide a flexible IT delivery model that deploys business-enabling solutions to meet evolving expectations and deliver even greater business value through improved operational efficiency within IT.

2. Move to Digital, Mobile, and "Internet of Things" – The "Internet of Things" is a concept where physical objects are embedded with network connectivity, allowing them to send and receive data. We will prepare for this digital-physical blending of interconnected objects and people through communication networks and create the ability to gain new insights, and track performance and safety, through a consistent, seamless flow of information across digital and physical channels.

3. Complex Modelling and Analytics – Apply analytics (statistical and mathematical analyses) to solve business problems and enable the enterprise to deploy practical, well-informed actions that improve business decisions.

4. Generate Revenue – Leverage our resources to design and develop capabilities required to create, market and deliver technology value and generate profitable, sustainable revenue streams.

5. Innovate – Support the business in using technology to enable innovation and solve problems with simple solutions rather than complex ones.

For FY16, we will continue working on the following four major technology initiatives in support of the business:

1. Operations Foundation – The Operations Foundation program's goal is to collect the business process and technology needs of the Operations department, and use them to prioritize and steer the development of process and technology solutions. The Operations Foundation program has identified opportunities in multiple areas of focus over the next several years. This includes an Integrated Labor Management System for automated timekeeping; a Baggage Management System; general Information Management; improved Service Management for train service activities; Rolling Stock Asset Management; Fixed Asset Management; and Food & Beverage Management.

2. Customer Experience Program – As described in detail in Strategic Objective S1 (Customer Focus), the Customer Experience Program will deliver functionality that will allow Amtrak to provide its customers with an intuitive, personalized experience when shopping, planning and booking their travel. It will also deliver the infrastructure to allow Amtrak to sell related products and services (ancillary revenue) and allow Amtrak to move forward with customer and revenue initiatives in an efficient and timely manner.
3. Payment Platform – The improved Payment Platform will allow Amtrak to comply with the increased IT security requirements for accepting credit card payments, reducing the risk of future hacking or security breaches.

Business Lines

Today, Amtrak is almost five years in to the execution of its business line strategy and organizational structure. During this time, we have seen both the potential of having business lines that represent the interests of specific customers and services, and also the challenges of integrating these business lines with each other and with the corporation as a whole. With the benefit of these lessons, we continue to refine our business line strategy to articulate business line goals and deploy resources.

There are three operating business lines – Northeast Corridor Operations, State Supported Services, and Long Distance Services.

The other existing business line, formerly Northeast Corridor Infrastructure and Investment Development, continues its evolution to a nationwide Infrastructure and Investment Development (IID) business line, charged with planning, managing, and developing system-wide infrastructure, real estate and other corporate assets in order to maximize their financial and strategic value for Amtrak and other rail stakeholders.

NORTHEAST CORRIDOR OPERATIONS

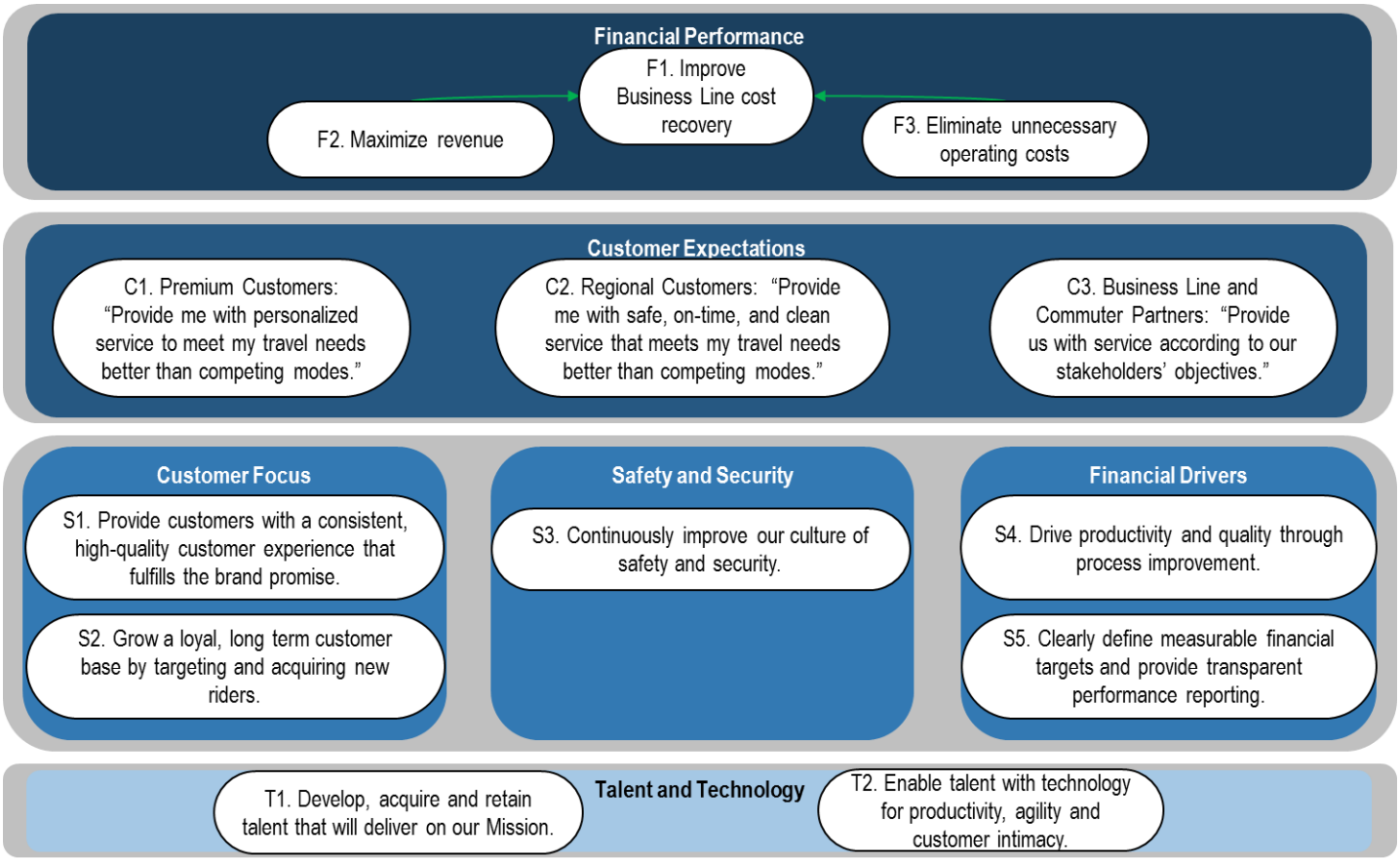
The Northeast Corridor Operations business line is accountable for the operating and financial performance of the Amtrak services on the NEC and the surrounding region; the day-to-day management of commuter railroad operations on the Amtrak-owned segments of the NEC; and services Amtrak performs for commuter agencies in the Northeast. On the Boston-Washington main line, NEC Operations include the *Northeast Regional* service and *Acela Express.* Surrounding the main line, NEC Operations runs State Supported extensions of *Northeast Regional* trains to Virginia along with the *Downeaster*, Springfield Shuttles, the *Vermonter*, the *Empire Service*, the *Ethan Allen*, the *Adirondack*, the *Maple Leaf*, the *Keystones*, and the *Pennsylvanian*. The business line also operates Long Distance trains on the segments on and surrounding the NEC, as well as the Shore Line East commuter line on behalf of Connecticut DOT and the MARC Penn Line commuter service on the NEC.

The NEC Operations business line has articulated the following mission:

> **Provide high speed intercity travel that reflects our commitment to safe, reliable and environmentally sustainable operations. Support Long Distance and State Supported Business Line services as well as work closely with the Infrastructure and Corporate Development Business Line to attain a "state of good repair" while making high speed rail infrastructure investments**

The NEC continues to enjoy strong demand for its services, which for some timeslots exceed the available capacity. As a result, NEC Operations will continue to look for ways to maximize existing capacity by optimizing use of the current infrastructure in the short term and acquiring new high-speed trainsets in the medium term. Revenue management remains an important tool for the business line to keep yields high to help generate the necessary funding for future investments in the NEC. This investment is critical to the long-term sustainability and growth of NEC Operations.

In FY15, the NEC Operations business line refreshed its strategy. This process involved reevaluating its objectives, the measurements used to track these objectives, and the portfolio of initiatives underway to support the objectives. These objectives are reflected in the following strategy:



The NEC Operations strategy was developed by starting with the Amtrak Corporate Strategy and adapting it to the unique environment of the NEC:

- The NEC customers consist of Premium Customers (*Acela Express*); *Northeast Regional* customers; and "wholesale" customers including other business lines whose trains operate in the NEC region (State Supported and Long Distance); commuter agencies operating on Amtrak-owned territory (Long Island Rail Road, NJ Transit, SEPTA, and others); and commuter agencies for whom Amtrak operates services (MARC and Shore Line East).

NEC Operations has begun a series of initiatives to improve the experience of both *Acela* and *Northeast Regional* passengers, ranging from a review of *Northeast Regional* business class, to improved boarding procedures in New York Penn Station where the infrastructure allows it, and better use of social media to understand and improve the customer experience.

- Financial drivers of the NEC strategy were updated to ensure consistent, accurate and actionable performance reporting to achieve financial and operational targets. To this end, the business line has recently begun a deep dive into the eCSI data set of customers who have traveled on the NEC to better understand the drivers of customer satisfaction and direct resources accordingly, and to share this performance information more broadly through the business line.

One significant aspect of the NEC Operations business line is that it does not have day-to-day responsibility for the longer term planning of the NEC. Those processes are carried out within the Infrastructure and Investment Development (IID) business line, but in consultation with the NEC Operations business line and other NEC stakeholders. As the IID business line concludes its own strategy development exercise, the two business lines should be poised for improved communication between each other, and better operating and planning outcomes.

Within the next five years, the NEC Operations business line looks forward to taking delivery of the Next Generation High Speed Trainsets currently in the procurement process described in the Fleet Strategy section. The business line is currently planning for the introduction of this equipment and how to best position the new capacity it will provide. (Note – the capital schedule below does not include capital expense for procurement of these trainsets.)

The following tables show the five-year projected operating results and capital investment by program for the NEC Operations business line:

Exhibit [3–1] – Five-Year Projected Operating Results, NEC

($s in Millions)	NEC FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Ticket Revenue (Adjusted)	$ 1,241.0	$ 1,293.1	$ 1,336.7	$ 1,368.5	$ 1,401.8
Food & Beverage	41.0	47.8	51.6	55.5	57.4
State Supported Train Revenue	-	-	-	-	-
Subtotal Passenger Related Revenue	**1,282.0**	**1,340.9**	**1,388.3**	**1,424.0**	**1,459.2**
Other Core Revenue	208.3	210.3	211.0	212.3	212.9
Ancillary Revenue	210.5	209.0	210.1	210.9	212.1
Total Revenue	**1,700.8**	**1,760.2**	**1,809.4**	**1,847.3**	**1,884.2**
Expenses that are Direct Responsibility of GM NEC					
Salaries, Wages & Benefits	568.2	585.0	604.6	634.5	655.3
Train Operations	6.2	6.3	6.4	6.6	6.7
Fuel, Power & Utilities	57.5	58.2	58.9	59.5	60.2
Materials	66.0	67.2	68.4	69.5	70.7
Facility, Communication & Office	32.5	33.3	34.1	35.0	35.8
All Other Expense	(1.6)	(1.5)	(1.5)	(1.4)	(1.4)
Total Expense Responsibility of GM NEC	**728.8**	**748.4**	**770.9**	**803.6**	**827.3**
Total allocated to Other Business Lines	**(269.6)**	**(269.2)**	**(277.5)**	**(288.9)**	**(297.5)**
Direct Expenses Remaining with GM NEC	**$ 459.2**	**$ 479.3**	**$ 493.4**	**$ 514.7**	**$ 529.8**
Gross Margin	***1,241.6***	***1,280.9***	***1,315.9***	***1,332.6***	***1,354.4***
Expenses allocated into NEC:					
GM State Supported	0.2	0.2	0.2	0.2	0.2
GM: Long Distance	23.5	24.2	24.8	25.7	26.3
Engineering	319.5	347.8	361.4	381.9	394.4
Mechanical	13.9	17.3	19.7	24.2	26.6
Customer Service	21.1	22.0	22.7	23.8	24.4
System Operations	4.1	4.2	4.4	5.5	5.8
Transportation	23.4	24.5	25.4	26.9	27.8
Safety	6.2	6.3	6.7	7.7	8.0
Business Operations	1.9	4.9	5.6	3.8	2.7
Ops Research & Planning	3.8	4.0	4.1	4.4	4.5
All Other Operations	0.8	0.8	0.8	1.0	1.1
Total from Operations	**418.4**	**456.2**	**475.8**	**505.1**	**521.7**
Train Fuel & Electric Propulsion Power	96.5	97.5	97.5	99.4	99.5
Credit Card Fees	61.9	60.5	59.6	61.3	63.7
IT	72.5	74.0	75.1	85.3	91.6
Marketing & Sales	73.3	74.6	83.5	94.4	96.0
Finance	36.7	37.5	38.4	44.7	47.0
Amtrak Police Department	48.3	50.1	51.1	52.4	52.9
General Counsel	21.1	22.7	22.9	26.6	27.8
Human Capital	12.9	18.1	20.3	24.1	24.8
EM&CS	4.0	3.9	4.2	4.8	4.9
All Other Corporate	90.0	58.2	36.8	(9.0)	(13.5)
Total from Corporate	**517.3**	**497.2**	**489.4**	**484.1**	**494.8**
Total Expenses allocated into NEC	**$ 935.7**	**$ 953.4**	**$ 965.3**	**$ 989.2**	**$ 1,016.4**
Total Operating Expense	**1,394.8**	**1,432.7**	**1,458.7**	**1,503.9**	**1,546.3**
Adjusted Operating Loss	**$ 305.9**	**$ 327.5**	**$ 350.7**	**$ 343.4**	**$ 337.9**

Note: NEC Operating revenue includes revenue reserved for payment on RRIF loan.

Exhibit [3–2] – Five-Year Projected Capital Investment by Program, NEC

($s in Millions)	NEC FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	5 Year Total
SOGR Base	$ 262.8	$ 366.9	$ 382.6	$ 438.0	$ 421.8	$ 1,872.2
Major Projects	14.1	106.3	99.9	105.5	182.7	508.6
Safety / Mandates	28.6	15.1	11.0	10.5	10.4	75.7
Support Equipment and Vehicles	3.4	6.2	3.6	2.5	3.6	19.3
Improvements	7.1	18.5	43.9	59.3	41.4	170.2
Amtrak Support	3.8	-	-	-	-	3.8
Infrastructure Renewal	**319.8**	**513.1**	**541.1**	**615.8**	**659.9**	**2,649.8**
SOGR Base	53.1	120.0	120.6	111.0	100.1	504.8
Major Projects	-	14.0	23.4	140.4	140.4	318.2
Safety / Mandates	0.2	0.5	-	-	-	0.6
Improvements	18.9	32.2	33.2	14.6	14.7	113.6
Amtrak Support	-	0.1	-	-	-	0.1
NEC Master Planning	8.2	31.6	27.9	36.1	37.3	141.2
Support Equipment and Vehicles	4.4	2.8	2.9	2.9	3.3	16.3
Stations and Facilities	**84.8**	**201.2**	**207.9**	**305.1**	**295.8**	**1,094.8**
Amfleet Programs	36.0	32.4	36.6	56.2	56.0	217.1
Acela Programs	31.6	15.0	15.0	15.0	15.0	91.6
Locomotives	12.0	5.1	0.1	0.1	0.1	17.5
Horizon/Surfliner Programs	4.0	6.0	2.6	3.2	4.5	20.4
Viewliner Programs	0.4	-	-	-	-	0.4
General Safety & Reliability	5.3	5.7	5.1	3.8	3.8	23.7
Mandatory Projects	1.7	3.8	3.8	3.8	3.8	16.9
Wrecks	2.3	3.8	3.8	3.8	3.8	17.5
Fleet Overhauls	**93.4**	**71.7**	**67.1**	**86.0**	**87.0**	**405.2**
Software	36.3	57.4	53.1	54.2	53.0	254.0
Operations Foundation	32.7	34.0	41.1	14.5	5.6	127.9
Hardware	11.7	52.0	47.7	35.8	32.1	179.3
Back Office Support	0.1	10.9	2.5	0.4	0.4	14.3
Technology Systems	**80.9**	**154.4**	**144.3**	**104.9**	**91.1**	**575.5**
Special Programs	56.5	143.9	321.5	323.4	346.5	1,191.6
Gateway Program	**56.5**	**143.9**	**321.5**	**323.4**	**346.5**	**1,191.6**
Safety / Mandates	4.8	10.4	8.0	4.8	7.5	35.4
Environmental Remediation	**4.8**	**10.4**	**8.0**	**4.8**	**7.5**	**35.4**
Special Programs	7.3	-	-	-	-	7.3
Amtrak Support	6.0	1.0	2.0	2.0	1.0	12.0
Rolling Stock Acquisition	**13.3**	**1.0**	**2.0**	**2.0**	**1.0**	**19.4**
Safety / Mandates	11.1	4.6	4.6	4.6	4.6	29.4
ADA Compliance	**11.1**	**4.6**	**4.6**	**4.6**	**4.6**	**29.4**
Future Capital Allocations	(19.9)	-	-	-	-	(19.9)
FAST Act: Small Business Participation Study	1.1	1.1	1.1	1.1	1.1	5.7
FAST Act: Gulf Coast Working Group	-	-	-	-	-	-
Hold Back for Operating	38.0	-	-	-	-	38.0
Capital Reserve	**19.2**	**1.1**	**1.1**	**1.1**	**1.1**	**23.8**
Federal & State Capital / Amtrak Operating Profits[a]	**$ 683.8**	**$ 1,101.3**	**$ 1,297.5**	**$ 1,447.7**	**$ 1,494.6**	**$ 6,024.9**
Department of Homeland Security	5.9	3.6	4.8	2.4	2.8	19.4
Hudson Yards Concrete Encasement Grant	26.0	-	-	-	-	26.0
NY-NJ High Speed Rail Grant	99.4	18.5	-	-	-	117.9
Sandy Capital Relief Appropriation	-	3.6	1.7	1.5	1.5	8.2
State, Local, and Other Funds	114.5	667.2	1,424.4	1,600.6	1,728.4	5,535.2
Total Capital NEC	**$ 929.5**	**$ 1,794.2**	**$ 2,728.5**	**$ 3,052.1**	**$ 3,227.3**	**$ 11,731.6**

[a] Fund Sources for these Programs are:	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	5 Year Total
Federal & State Capital	422.1	825.4	1,018.1	1,169.3	1,213.0	4,647.9
Amtrak Operating Profits - NEC	261.7	276.0	279.5	278.4	281.5	1,377.0
Federal & State Capital / Amtrak Operating Profits	**$ 683.8**	**$ 1,101.3**	**$ 1,297.5**	**$ 1,447.7**	**$ 1,494.6**	**$ 6,024.9**

NEC operating profits includes: Net Operating Profits and NEC Profits reserved for FAST Act match

STATE SUPPORTED SERVICES AND LONG DISTANCE – THE NATIONAL NETWORK

Together, the State Supported and Long Distance Business Lines comprise the National Network of services that cover the continental U.S. As defined by Section 209 of PRIIA, State Supported trains are trains of less than 750 miles outside the Northeast Corridor main line, and are primarily funded by Amtrak's state and local agency partners. Long Distance trains have routes that can extend thousands of miles, connecting smaller towns and cities that have few remaining transportation options today. Together, these services rely on shared stations, facilities, and other resources to keep America connected.

STATE SUPPORTED SERVICES

The State Supported Services business line is accountable for the operating and financial performance of Amtrak's State Supported Services across the country, comprising all routes less than 750 miles in length outside the Boston-Washington NEC main line. This business line also manages the relationships with the various States and agencies who partner with Amtrak to fund State Supported Services. The State Supported Services business line is responsible for the day-to-day operations of the State Supported trains in Northern California and the Pacific Northwest, and works with the other operating business lines to deliver State Supported Services elsewhere in the country. It also provides terminal services to the Long Distance business line in Northern California and the Pacific Northwest.

The State Supported corridors have become a major source of ridership growth, with ridership almost doubling between 1998 and 2015. Today, nearly half of the passengers who ride an Amtrak train ride a State Supported train. The frequency of service on these routes can vary from one train to as many as 30 trains a day. Each of the 29 routes has developed in close partnership with the sponsoring State to fill route-specific transportation needs. In Connecticut, Massachusetts, New York, and Michigan, Amtrak is upgrading Amtrak- and State-owned or leased infrastructure in partnership with States to improve the performance of the State Supported Services. In North Carolina, Illinois, and Washington, States are leading infrastructure improvements to benefit their services in partnership with host railroads and others.

The State Supported Services consist of the following routes:

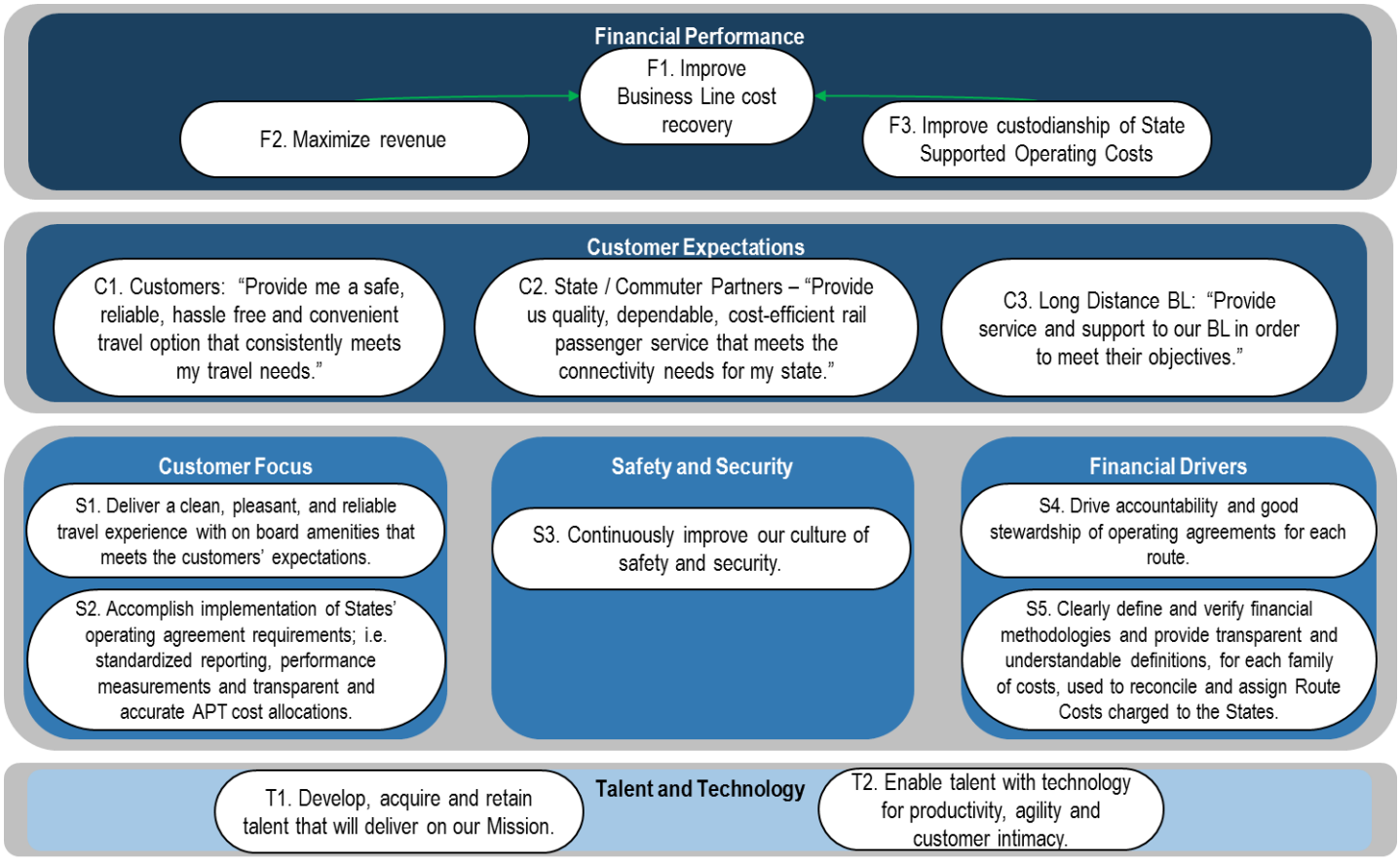
Pacific Surfliner	Chicago-St. Louis (Lincoln Service)	Piedmont
Capitol Corridor	Hiawatha	Keystone
San Joaquin	Wolverine	Pennsylvanian
Vermonter	Chicago-Carbondale (Illini/Saluki)	Ethan Allen
New Haven-Springfield	Chicago-Quincy (IL Zephyr/Carl Sandburg)	Albany-Niagara Falls-Toronto
Washington-Lynchburg	Blue Water	Empire (NYP-ALB)
Washington-Newport News	Hoosier State	Adirondack

Washington-Norfolk	Pere Marquette	Heartland Flyer
Washington-Richmond	Downeaster	Cascades
Carolinian	Kansas City-St. Louis (MO River Runner)	Maple Leaf

The State Supported Services business line has articulated the following mission:

> **Position Amtrak as the provider of choice for short-distance intercity rail transportation. We are committed to offering safe, convenient and reliable intercity passenger rail related services that exceed customer expectations and contribute to economic, environmental and social well-being of the communities.**

The State Supported business line will fulfill this mission through the following strategy:



The State Supported Strategy was developed to be consistent with the Amtrak Corporate Strategy, adapted to the unique environment of State Supported Services:

- The Customers consist of the passengers, the State/commuter partners, and the Long Distance business line. This reflects the unique nature of the States' partnership with Amtrak, which is further reflected in the strategic objectives.
- The Customer Focus includes the expectations of our State partners, and the requirements contained in their operating agreements for the services Amtrak provides.
- The Financial Drivers include clearly defining and verifying the financial methodologies used to calculate the costs of State Supported Services.

The State Supported business line continues its work on the implementation of Section 209 of PRIIA. Section 209 called for the States and Amtrak to jointly develop a uniform cost sharing methodology for all services under 750 miles in length outside the Boston-Washington main line. The methodology was approved by 18 of 19 States, and ultimately by the Surface Transportation Board (STB) in 2012, and implemented in State pricing in FY14. However, many issues remained surrounding the details of Section 209 implementation.

In July 2015, the States, Amtrak, and the FRA approved the creation of the State-Amtrak Intercity Passenger Rail Committee (SAIPRC), to oversee implementation and coordinate decision making related to Section 209. This Committee was intended to create a more structured format to handle the outstanding cost-sharing and other issues related to Section 209. Specifically, it calls for the creation of specific working groups jointly staffed by Amtrak, States, and FRA to research and make recommendations on ways to clarify and update elements of the Section 209 cost-sharing formula. These recommendations are then voted on by the Committee, with Amtrak, the States, and the FRA each having one vote and with all three votes required for any changes to take effect.

In November 2015, SAPIRC held, and passed, its first vote to update the cost-sharing formula of the Section 209 methodology. The package of changes consisted of modifications to the allocation methodology for stations, and reclassification of certain marketing costs that will take effect for FY16. At this time, working groups exist to consider allocation methodologies for contact centers; allocation methodologies for stations; processes for approving future equipment capital plans; processes for future updates of the Amtrak Performance Tracking (APT) system that will affect Section 209 pricing; additional documentation to help States understand Section 209 costs; and allocation methodologies for route-specific dispatching including block & tower operations.

In October 2015, the Equipment Capital Working Group of the PRIIA 305 Next Generation Equipment Committee approved an update of the Capital Investment Plan (CIP) approved in the previous year for Amtrak-owned rolling stock used in State Supported service.

While much work remains ahead for the SAIPRC, its working groups, and the PRIIA 305 Next Generation Equipment Committee, Amtrak believes that the results achieved in recent months have been very positive developments in its relationship with the States. These committees have created

successful venues for consolidating the varied issues among the states, and developing solutions that can meet the statutory requirements of Section 209 and Amtrak's business requirements for maintaining consistency across its services. The State Supported business line will continue to work through these committees and working groups to address the States' wants, needs, and expectations for their services.

As we continue to resolve more and more of the technical issues of the Section 209 cost-sharing formula and the related accounting issues, we are working to shift the focus of our interactions with States to how we can work together to expand the reach, speed, and effectiveness of passenger rail services in all State corridors.

The following tables show the five-year projected operating results and projected capital investment by program for the State Supported business line.

Exhibit [3–3] – Five-Year Projected Operating Results, State Supported

($s in Millions)	State Supported FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Ticket Revenue (Adjusted)	$ 504.8	$ 525.6	$ 545.2	$ 562.7	$ 580.9
Food & Beverage	25.1	29.5	31.9	34.3	35.5
State Supported Train Revenue	255.8	262.8	268.1	273.4	278.9
Subtotal Passenger Related Revenue	**785.8**	**818.0**	**845.1**	**870.5**	**895.3**
Other Core Revenue	4.4	6.1	7.7	8.0	8.2
Ancillary Revenue	120.2	85.9	53.2	49.0	49.5
Total Revenue	**910.4**	**910.0**	**906.0**	**927.5**	**952.9**
Expenses that are Direct Responsibility of GM State Supported					
Salaries, Wages & Benefits	142.8	147.5	152.9	161.8	167.5
Train Operations	33.7	34.4	35.1	35.8	36.4
Fuel, Power & Utilities	31.5	31.9	32.3	32.6	33.0
Materials	20.3	20.6	21.0	21.4	21.8
Facility, Communication & Office	10.2	10.5	10.7	11.0	11.2
All Other Expense	3.3	3.4	3.4	3.5	3.6
Total Expense Responsibility of GM State Supported	**241.9**	**248.3**	**255.5**	**266.1**	**273.5**
Total allocated to Other Business Lines	**(78.3)**	**(78.3)**	**(80.6)**	**(83.6)**	**(85.9)**
Direct Expenses Remaining with State Supported	**$ 163.6**	**$ 170.0**	**$ 174.9**	**$ 182.5**	**$ 187.6**
Gross Margin	***746.8***	***740.0***	***731.1***	***744.9***	***765.3***
Expenses allocated into State Supported:					
GM: NEC	168.6	173.2	178.8	186.4	192.2
GM: Long Distance	183.3	183.8	189.8	198.0	204.2
Engineering	92.3	61.3	33.6	37.0	38.6
Mechanical	19.0	20.4	21.6	24.5	25.9
Customer Service	17.4	18.0	18.5	19.4	19.8
System Operations	6.4	7.0	7.4	9.4	9.8
Transportation	73.6	76.0	78.7	82.2	84.9
Safety	2.4	2.7	2.5	2.9	3.0
Business Operations	1.7	4.7	4.7	3.3	2.5
Ops Research & Planning	4.3	4.5	4.6	5.0	5.1
All Other Operations	0.6	0.6	0.6	0.7	0.7
Total from Operations	**569.7**	**552.2**	**540.8**	**568.7**	**586.7**
Train Fuel & Electric Propulsion Power	3.1	3.3	3.3	3.4	3.4
Credit Card Fees	33.0	35.2	32.3	32.2	32.7
IT	55.6	64.1	60.5	65.4	67.5
Marketing & Sales	62.7	67.3	66.2	65.6	65.2
Finance	25.1	27.4	26.1	29.7	30.5
Amtrak Police Department	14.9	16.9	16.5	17.0	17.2
General Counsel	15.5	18.9	17.5	19.2	19.4
Human Capital	12.2	17.3	16.4	18.9	19.1
EM&CS	3.1	3.5	3.2	3.5	3.6
All Other Corporate	35.5	29.2	18.0	(15.1)	(18.1)
Total from Corporate	**260.5**	**283.0**	**260.2**	**239.6**	**240.5**
Total Expenses allocated into State Supported	**$ 830.2**	**$ 835.3**	**$ 801.0**	**$ 808.4**	**$ 827.2**
Total Operating Expense	**993.8**	**1,005.2**	**975.9**	**990.9**	**1,014.8**
Adjusted Operating Loss	**$ (83.3)**	**$ (95.3)**	**$ (69.9)**	**$ (63.4)**	**$ (61.9)**

Exhibit [3–4] – Five-Year Projected Capital Investment by Program, State Supported

($s in Millions)	State Supported FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	5 Year Total
SOGR Base	23.0	43.1	57.1	57.7	42.2	223.1
Major Projects	0.7	1.0	0.8	1.0	3.0	6.6
Safety / Mandates	4.3	0.8	0.8	0.7	0.7	7.3
Support Equipment and Vehicles	0.9	1.7	1.0	0.7	1.0	5.3
Improvements	6.0	5.3	4.8	2.2	1.7	20.0
Amtrak Support	1.0	-	-	-	-	1.0
Infrastructure Renewal	**35.9**	**51.9**	**64.5**	**62.3**	**48.7**	**263.2**
SOGR Base	7.5	21.5	22.0	21.5	21.5	93.9
Major Projects	-	0.4	0.6	3.7	3.7	8.4
Safety / Mandates	0.0	0.0	-	-	-	0.1
Improvements	5.6	12.9	8.5	6.6	7.1	40.7
Amtrak Support	-	0.0	-	-	-	0.0
NEC Master Planning	0.2	0.8	0.7	0.9	0.9	3.5
Support Equipment and Vehicles	1.2	0.8	0.8	0.8	0.9	4.4
Stations and Facilities	**14.5**	**36.4**	**32.6**	**33.4**	**34.1**	**151.1**
Amfleet Programs	30.5	28.5	29.5	28.1	28.3	144.8
Superliners	3.1	2.8	3.0	3.4	3.5	15.7
Locomotives	15.0	13.5	13.1	13.6	13.9	69.3
Horizon/Surfliner Programs	9.9	9.1	9.2	9.6	10.3	48.1
Viewliner Programs	0.1	-	-	-	-	0.1
General Safety & Reliability	1.5	1.6	1.4	1.0	1.0	6.5
Mandatory Projects	0.5	1.0	1.0	1.0	1.0	4.6
Wrecks	0.6	1.0	1.0	1.0	1.0	4.8
Fleet Overhauls	**61.2**	**57.6**	**58.3**	**57.8**	**59.1**	**293.9**
Software	9.9	15.7	14.5	14.8	14.5	69.5
Operations Foundation	9.0	9.3	11.2	4.0	1.5	35.0
Hardware	0.9	5.8	6.1	2.4	1.4	16.6
Back Office Support	0.0	1.9	0.6	0.1	0.1	2.7
Technology Systems	**19.9**	**32.7**	**32.5**	**21.2**	**17.5**	**123.7**
Special Programs	1.2	3.0	6.7	6.6	6.9	24.5
Gateway Program	**1.2**	**3.0**	**6.7**	**6.6**	**6.9**	**24.5**
Safety / Mandates	0.3	0.8	1.3	1.0	1.8	5.2
Environmental Remediation	**0.3**	**0.8**	**1.3**	**1.0**	**1.8**	**5.2**
Special Programs	2.0	-	-	-	-	2.0
Amtrak Support	1.6	0.3	0.6	0.6	0.3	3.3
Rolling Stock Acquisition	**3.6**	**0.3**	**0.6**	**0.6**	**0.3**	**5.3**
ADA Stations	8.8	11.0	11.0	11.0	11.0	52.8
Safety / Mandates	3.0	1.2	1.2	1.2	1.2	8.0
ADA Compliance	**11.9**	**12.2**	**12.2**	**12.2**	**12.2**	**60.9**
Future Capital Allocations	(5.4)	-	-	-	-	(5.4)
FAST Act: Small Business Participation Study	0.3	0.3	0.3	0.3	0.3	1.6
FAST Act: Gulf Coast Working Group	0.3	0.3	0.3	0.3	0.3	1.3
Hold Back for Operating	10.4	-	-	-	-	10.4
Capital Reserve	**5.5**	**0.6**	**0.6**	**0.6**	**0.6**	**7.7**
Federal & State Capital	**154.0**	**195.4**	**209.1**	**195.8**	**181.2**	**935.5**
Department of Homeland Security	1.6	1.0	1.3	0.6	0.8	5.3
Hudson Yards Concrete Encasement Grant	0.4	-	-	-	-	0.4
NY-NJ High Speed Rail Grant	2.8	0.5	-	-	-	3.3
Sandy Capital Relief Appropriation	-	0.1	0.0	0.0	0.0	0.2
State, Local, and Other Funds	67.0	168.6	65.9	39.4	41.3	382.1
Total Capital State Supported	**$ 225.8**	**$ 365.6**	**$ 276.3**	**$ 235.9**	**$ 223.3**	**$ 1,326.9**

LONG DISTANCE SERVICES

The Long Distance business line is accountable for the operating and financial performance of Amtrak's Long Distance routes, as well as the operation of State Supported Services in the Midwest, the Southern Plains, and Southern California.

The fifteen Long Distance routes are:

Crescent	Silver Star
Texas Eagle	Cardinal
Southwest Chief	Silver Meteor
Sunset Limited	Capitol Limited
California Zephyr	Palmetto
Coast Starlight	Auto Train
City of New Orleans	Empire Builder
Lake Shore Limited	

Amtrak's Long Distance routes are the backbone of our national system. They provide the only Amtrak service to more than half of the States and stations we serve. They connect the nation's major regions, provide a foundation of intercity passenger rail service, and preserve intercity mobility for underserved communities and populations. These trains are heavily patronized, and increasingly important to the communities and people along their routes that have been losing bus and air services. Since 1998, long distance ridership has grown by approximately 20%, without the introduction of any new services, frequencies, or equipment. Average load factors on Long Distance trains are higher on the peak leg of their trips than on the *Acela Express* services on the NEC.

Congress expressed its support for maintaining this national passenger rail network when it stated in PRIIA Section 228(b):

SENSE OF THE CONGRESS.— It is the sense of the Congress that— (1) long-distance passenger rail is a vital and necessary part of our national transportation system and economy; and (2) Amtrak should maintain a national passenger rail system, including long-distance routes, that connects the continental United States from coast to coast and from border to border.

Approximately 15% of total ridership comes from Long Distance trains, along with 17% of Amtrak's total revenue. Much of this ridership and revenue connects with other trains in the Amtrak system – for example, a FY14 analysis showed that, in both Chicago and Washington, DC, 41% of Capitol Limited passengers connect to or from other Amtrak trains.

Operating cost recovery for the Long Distance trains is around 48%, which is close to the average farebox recovery of 52% for U.S. commuter railroads. For FY15, Long Distance revenue was able to cover about 78% of the operating costs of crews, host railroad payments, fuel, provisions, day-to-day equipment maintenance at terminals, and stations serving only Long Distance routes – a rough

approximation of the trains' direct costs. The remaining operating costs are shared costs allocated across the Amtrak system, including shared stations, backshops, maintenance of way, yard, sales & marketing, and other. Many of these shared costs would continue to be incurred by NEC and State Supported operations in the absence of the Long Distance network.

Despite a cost recovery ratio comparable to commuter rail, and the ability to cover nearly all direct operating costs, the economics and consumer demand for Long Distance train service do not make it possible to cover all operating expenses solely with ticket revenue. Like other modes of transportation, the service requires Federal funding to keep it in operation. Amtrak intends to work with Congress and the Administration over the next five years to achieve the goal of making the Federal government both a strategic partner and a paying customer for the operation of the Long Distance network. In this way, we hope to replicate the emerging success we are seeing from the maturing PRIIA Section 209 cost sharing.

Rather than partially subsidizing Amtrak's losses for these services, we will advocate that the Federal Government pay Amtrak an agreed price to operate Long Distance routes, just as it pays contractors to build military equipment or technology systems. Like any other Federal contractor, money received from the government should be accounted for as revenue from a customer – not subsidy from a public entity. A shift to this type of relationship will fundamentally change Amtrak's ability to plan and invest for long-term value like any other for-profit corporation.

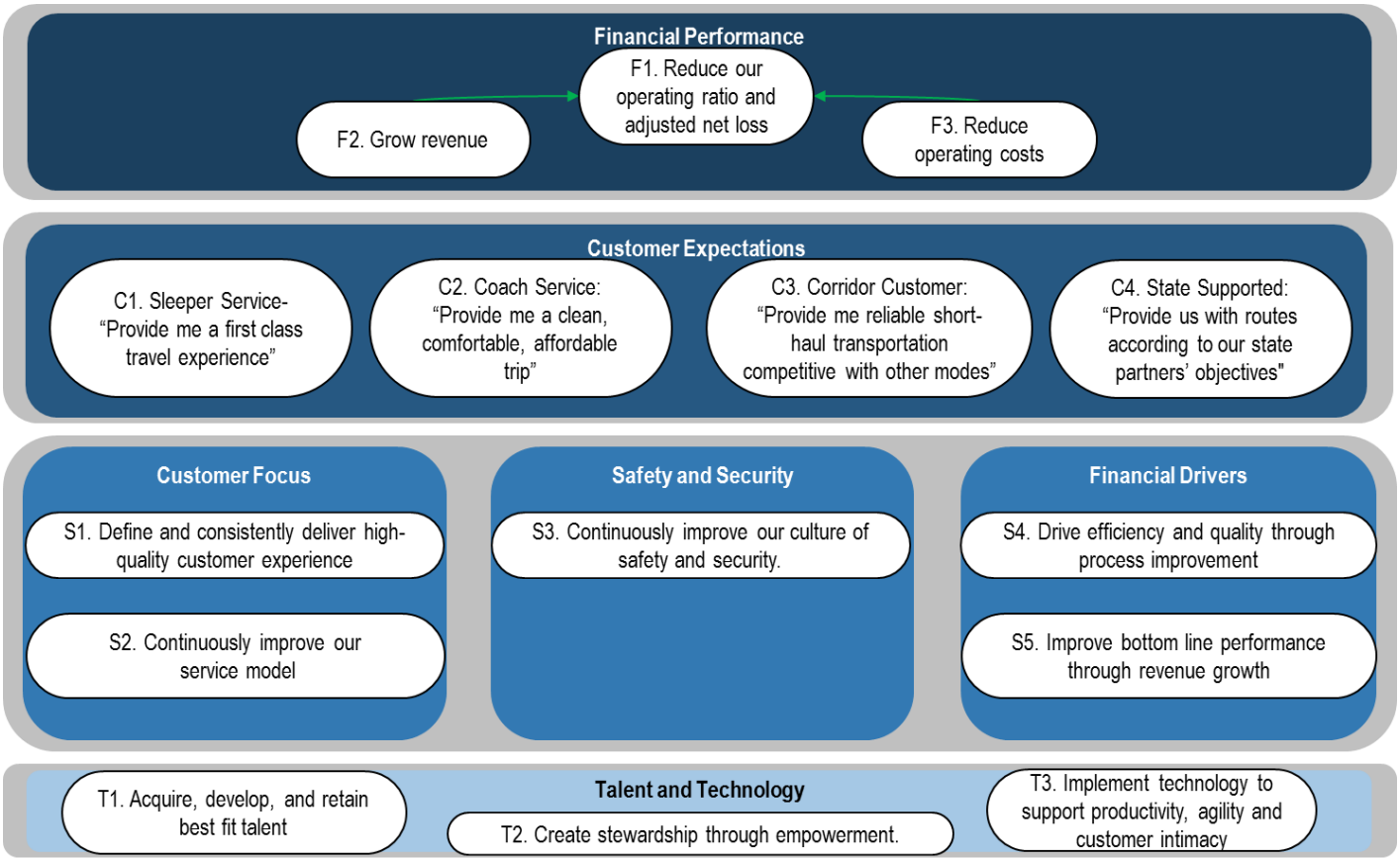
Long Distance routes also require significant capital investment. Although the routes are primarily on host railroad infrastructure, much of the current fleet equipment dates from the early 1980s and will require both overhauls and eventual replacement. The Superliner cars used in Long Distance service are the hardest-run passenger equipment in North America, with the average car traveling an annual distance equal to seven trips around the world.

Long Distance Strategy

The mission of the Long Distance Services business line is to:

> **Connect the nation's major regions through Amtrak's network of long-distance trains, providing a foundation of intercity passenger rail service and preserving intercity mobility for underserved communities or populations. Preserve and improve this network in a manner that demonstrates the highest value for taxpayer investment with a commitment to excellence in safety, customer service and experience, host railroad partner relationships and cost and revenue management.**

In FY15, the Long Distance business line refreshed its strategy based on the results and experiences of the prior year. This process involved the reevaluation of the objectives, the measures used to track these objectives, and the portfolio of initiatives that are established in support of the objectives. These efforts are reflected in the following strategy:



The Long Distance Strategy takes the Amtrak Corporate Strategy and adapts it to the unique characteristics of the Long Distance network:

- The Customers consist of sleeper passengers, long-haul coach passengers, shorter distance coach passengers, and the State Supported trains operated by the Long Distance business line for the State Supported Services business line.
- Customer Focus includes continuously improving the service model, as described further below.
- An objective of revenue growth – but revenue growth that is designed to improve bottom line performance.
- An additional Talent objective of developing a culture of stewardship through empowerment, reflecting the long periods of time that crews can be in service on a Long Distance train without immediate access to supervisors.

One significant initiative in the Long Distance business line is the "right sizing" of train consists, with a goal of running the optimal number of cars on trains. This initiative seeks to maximize revenue and minimize expenses by aggressively adjusting capacity, staffing, and fare structures to meet the market demand across seasons. This cross functional initiative includes stakeholders from Operations, Revenue Management, Mechanical, Food & Beverage, Market Research and Finance in addition to business line team members. In addition to pursuing efficiencies with seasonal

equipment deployment, the business line has recently concluded studies about how to improve the efficiency of terminal operations in Los Angeles and Chicago, and is preparing to begin implementing those conclusions in FY16 and beyond.

In addition to driving savings through efficiencies, Long Distance is also exploring how to increase revenue, in ways that result in improved gross margin to the business line. One option under consideration is a reconfiguration of existing service to serve a wider area in Texas and across the southern states. Another significant initiative is improved enforcement of the baggage policy, aimed at capturing $6 million in additional revenue by more rigorously following the current policy. In order to fully achieve this policy compliance, Amtrak will need the technology enhancements described in the Operations Foundation program in Strategic Objective T2, but the business line has begun the change management processes for these future transitions. Finally, Long Distance is exploring the possibility of adding premium coach or Business Class seating on routes where there is significant travel on shorter city pairs, to deliver extra value to those customers and improve yields. Business class has recently been added to the *Coast Starlight* and *Cardinal*, and early results are promising.

Long Distance Food and Beverage

Amtrak has committed to eliminating the loss associated with providing Food & Beverage (F&B) services on board trains within the next five years. This loss is associated with Long Distance trains due to the long duration of a typical long distance trip and the resulting food service requirements, and the PRIIA Section 209 cost sharing formula that requires States to fund F&B costs on State Supported trains. To achieve this goal, Amtrak is aggressively reviewing the service model to identify opportunities to reshape the business that address customer needs and the financial realities of providing such service.

One example of this is a test program on the *Silver Star* train between New York and Miami. The dining car has been removed to test the feasibility of providing food service entirely from the Café/Lounge car. These temporary changes are being implemented as an experiment, and Amtrak is examining customer reaction and market demand for this service. Passengers will continue to have the option of choosing traditional Dining Car service aboard the *Silver Meteor*, which operates along much of the *Silver Star* route.

In addition to the specific test on the *Silver Star*, the following elements continue to be reconsidered on other Long Distance services:

- On-board Logistics – Reduce spoilage; evaluate amenities offered; optimize on-board stock; and redefine and standardize service levels.
- Product Development and Supply Chain – Optimize product portfolio, menu development and supply chain activities.
- Training – Engage labor in revenue enhancement and cost control initiatives, and enforce loss prevention measures.
- Ticket Revenue – Align the perceived value of F&B services with revenue collected.

- Labor optimization – Align staffing with ridership and customer demand.
- Technology Enhancements and Policy Improvements – Continue implementation of point of sale system and evaluate ways to leverage new technology in decision support.
- Price Actions and Revenue Options – Continue to evaluate the menu prices and marketplace pricing. In addition, work with Finance to evaluate the feasibility of allocating a portion of ticket revenue attributable to F&B service to offset the cost of providing that service.
- Request for Information (RFI) – Pursue an RFI process to explore options for new ideas and business practices for delivery of F&B service.
- In accord with FAST, Amtrak is developing a plan, due in March, to eliminate the operating loss from food service by the end of 2020.

Exhibit [3–5] – Five-Year Projected Operating Results, Food and Beverage

($s in Millions)	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Cash Sales	$ 68.5	$ 71.6	$ 74.8	$ 78.2	$ 81.7
First Class Transfer	63.4	66.3	69.2	72.4	75.6
State Contribution to Food & Beverage	13.9	14.3	14.8	15.4	16.0
Total Revenue	**$ 145.8**	**$ 152.2**	**$ 158.9**	**$ 166.0**	**$ 173.3**
OBS Labor & Support	112.1	115.4	118.9	122.5	126.1
Commissary Provisions and Management	86.5	88.0	89.5	91.0	92.6
Total Expense	**$ 198.6**	**$ 203.4**	**$ 208.4**	**$ 213.5**	**$ 218.7**
Future expense reduction, revenue increases, and allocation from ticket revenue	-	10.0	20.0	30.6	45.4
Adjusted Contribution/(Loss)	**$ (52.8)**	**$ (41.2)**	**$ (29.5)**	**$ (16.9)**	**$ 0.0**
Cost Recovery	***73%***	***80%***	***86%***	***92%***	***100%***

The following tables show the five-year projected operating results and projected capital investment by program for the Long Distance business line.

Exhibit [3–6] – Five-Year Projected Operating Results, Long Distance

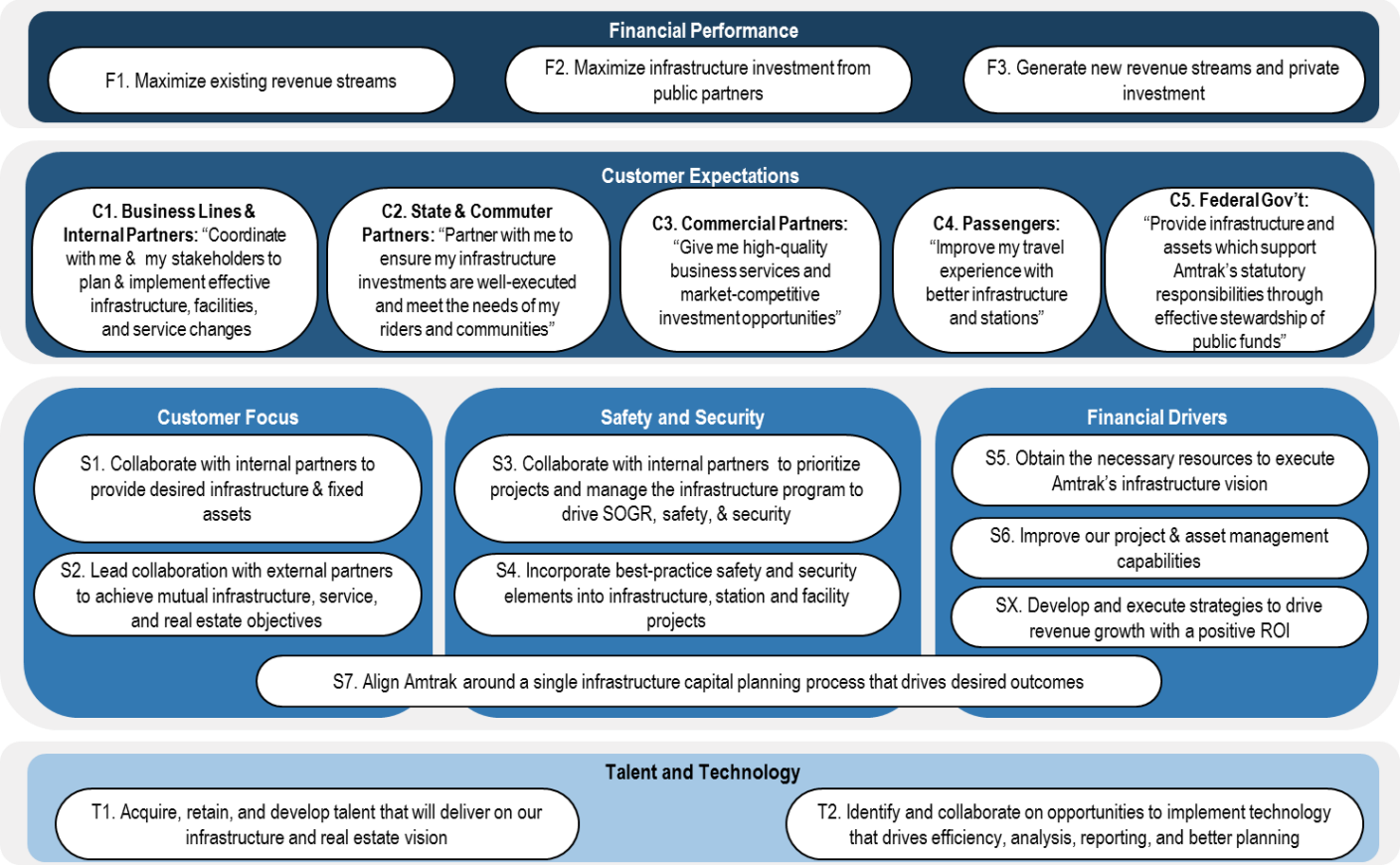
($s in Millions)	Long Distance FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Ticket Revenue (Adjusted)	$ 486.1	$ 497.2	$ 507.9	$ 516.0	$ 527.7
Food & Beverage	65.6	72.6	78.3	84.3	87.1
State Supported Train Revenue	-	-	-	-	-
Subtotal Passenger Related Revenue	**551.6**	**569.8**	**586.2**	**600.3**	**614.9**
Other Core Revenue	3.9	7.1	13.2	13.3	13.5
Ancillary Revenue	53.4	44.7	44.9	45.1	45.5
Total Revenue	**609.0**	**621.5**	**644.3**	**658.8**	**673.9**
Expenses that are Direct Responsibility of GM Long Distance					
Salaries, Wages & Benefits	541.1	558.5	578.6	608.2	629.3
Train Operations	20.5	20.8	21.2	21.6	22.0
Fuel, Power & Utilities	84.6	85.6	86.5	87.5	88.5
Materials	51.5	52.5	53.6	54.6	55.6
Facility, Communication & Office	30.8	31.7	32.5	33.6	34.6
All Other Expense	4.1	4.3	4.4	4.6	4.7
Total Expense Responsibility of GM Long Distance	**732.7**	**753.4**	**776.9**	**810.0**	**834.6**
Total allocated to Other Business Lines	**(207.4)**	**(208.5)**	**(215.1)**	**(224.2)**	**(231.0)**
Direct Expenses Remaining with Long Distance	**$ 525.3**	**$ 544.9**	**$ 561.8**	**$ 585.8**	**$ 603.6**
Gross Margin	***83.7***	***76.6***	***82.5***	***72.9***	***70.3***
Expenses allocated into Long Distance:					
GM: NEC	97.4	95.6	98.4	102.1	104.8
GM State Supported	75.6	78.0	80.2	83.3	85.6
Engineering	8.2	(0.5)	1.3	2.8	3.9
Mechanical	31.4	34.9	37.8	43.0	46.1
Customer Service	58.6	60.5	62.3	64.9	67.6
System Operations	7.9	8.3	8.7	11.2	11.7
Transportation	66.8	69.9	72.2	75.5	77.9
Safety	2.5	2.5	2.8	3.3	3.4
Business Operations	2.3	5.1	5.8	4.3	3.3
Ops Research & Planning	6.5	6.6	6.8	7.2	7.4
All Other Operations	0.7	0.7	0.8	1.0	1.0
Total from Operations	**357.8**	**361.7**	**377.0**	**398.6**	**412.8**
Train Fuel & Electric Propulsion Power	3.0	3.0	3.0	3.1	3.1
Credit Card Fees	36.2	36.0	39.0	38.4	38.0
IT	66.0	69.6	80.2	86.5	87.0
Marketing & Sales	57.8	61.0	65.3	70.5	69.8
Finance	32.0	33.0	36.5	41.5	42.0
Amtrak Police Department	9.7	10.7	11.4	12.0	12.3
General Counsel	18.5	20.4	23.3	25.5	25.2
Human Capital	15.5	19.4	22.4	25.8	25.6
EM&CS	3.4	3.4	3.6	4.1	4.2
All Other Corporate	27.3	13.1	9.4	(35.7)	(40.6)
Total from Corporate	**269.3**	**269.6**	**294.0**	**271.8**	**266.6**
Total Expenses allocated into Long Distance	**$ 627.1**	**$ 631.3**	**$ 671.0**	**$ 670.3**	**$ 679.4**
Total Operating Expense	**1,152.4**	**1,176.2**	**1,232.8**	**1,256.2**	**1,283.0**
Adjusted Operating Loss	**$ (543.4)**	**$ (554.6)**	**$ (588.5)**	**$ (597.4)**	**$ (609.1)**

Exhibit [3–7] – Five-Year Projected Capital Investment, Long Distance

($s in Millions)	Long Distance FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	5 Year Total
SOGR Base	$ 21.3	$ 26.0	$ 27.1	$ 28.6	$ 27.8	$ 130.8
Major Projects	0.7	1.2	0.9	1.1	4.4	8.3
Safety / Mandates	0.9	0.4	0.4	0.4	0.4	2.5
Support Equipment and Vehicles	0.1	0.3	0.2	0.1	0.2	0.8
Improvements	0.6	1.3	2.3	3.0	2.2	9.4
Amtrak Support	0.2	-	-	-	-	0.2
Infrastructure Renewal	**23.7**	**29.1**	**30.9**	**33.2**	**34.9**	**151.9**
SOGR Base	1.3	4.0	4.0	4.1	4.3	17.8
Major Projects	-	5.6	4.0	8.9	5.9	24.4
Safety / Mandates	0.0	0.0	-	-	-	0.0
Improvements	25.1	16.5	16.6	19.9	6.4	84.4
Amtrak Support	-	0.0	-	-	-	0.0
NEC Master Planning	0.5	2.0	1.7	2.2	2.3	8.8
Support Equipment and Vehicles	0.2	0.1	0.1	0.1	0.1	0.7
Stations and Facilities	**27.1**	**28.2**	**26.5**	**35.3**	**19.1**	**136.1**
Amfleet Programs	20.5	19.5	20.2	6.4	1.8	68.4
Acela Programs	-	-	-	-	-	-
Superliners	61.4	57.0	65.5	68.4	65.7	317.9
Locomotives	25.0	24.4	19.8	20.6	21.0	110.9
Horizon/Surfliner Programs	0.2	0.3	0.2	0.2	0.3	1.2
Viewliner Programs	8.7	8.2	9.2	8.7	9.7	44.5
General Safety & Reliability	1.2	1.7	0.2	0.2	0.2	3.5
Mandatory Projects	0.1	0.2	0.2	0.2	0.2	0.7
Wrecks	0.1	0.2	0.2	0.2	0.2	0.7
Fleet Overhauls	**117.3**	**111.5**	**115.4**	**104.8**	**99.0**	**547.9**
Software	1.6	2.4	2.3	2.3	2.3	10.8
Operations Foundation	1.4	1.5	1.8	0.6	0.2	5.5
Hardware	0.2	1.0	1.0	0.4	0.2	2.7
Back Office Support	0.0	0.5	0.1	0.0	0.0	0.6
Technology Systems	**3.1**	**5.3**	**5.1**	**3.3**	**2.7**	**19.6**
Special Programs	1.8	4.5	9.5	9.4	9.6	34.7
Gateway Program	**1.8**	**4.5**	**9.5**	**9.4**	**9.6**	**34.7**
Safety / Mandates	2.7	1.2	0.8	1.8	0.4	6.8
Environmental Remediation	**2.7**	**1.2**	**0.8**	**1.8**	**0.4**	**6.8**
Special Programs	42.3	63.8	12.6	-	-	118.7
Amtrak Support	0.3	0.0	0.1	0.1	0.0	0.5
Rolling Stock Acquisition	**42.5**	**63.9**	**12.7**	**0.1**	**0.0**	**119.3**
ADA Stations	26.5	33.0	33.0	33.0	33.0	158.5
Safety / Mandates	0.5	0.2	0.2	0.2	0.2	1.3
ADA Compliance	**27.0**	**33.2**	**33.2**	**33.2**	**33.2**	**159.8**
Future Capital Allocations	(0.9)	-	-	-	-	(0.9)
FAST Act: Small Business Participation Study	0.0	0.0	0.0	0.0	0.0	0.2
FAST Act: Gulf Coast Working Group	0.3	0.3	0.3	0.3	0.3	1.3
Hold Back for Operating	1.6	-	-	-	-	1.6
Capital Reserve	**1.1**	**0.3**	**0.3**	**0.3**	**0.3**	**2.3**
Federal & State Capital	**$ 246.2**	**$ 277.3**	**$ 234.3**	**$ 221.3**	**$ 199.2**	**$ 1,178.4**
Department of Homeland Security	0.3	0.2	0.2	0.1	0.1	0.8
Hudson Yards Concrete Encasement Grant	0.6	-	-	-	-	0.6
NY-NJ High Speed Rail Grant	4.4	0.8	-	-	-	5.3
Sandy Capital Relief Appropriation	-	0.2	0.1	0.1	0.1	0.3
State, Local, and Other Funds	13.1	24.4	45.3	50.7	53.1	186.6
Total Capital Long Distance	**$ 264.6**	**$ 302.8**	**$ 280.0**	**$ 272.1**	**$ 252.5**	**$ 1,371.9**

INFRASTRUCTURE AND INVESTMENT DEVELOPMENT

The Infrastructure & Investment Development (IID) organization performs numerous integral functions within Amtrak, including: long-term infrastructure planning, capital project management, corridor relationship management and coordination, and real estate asset management and development. The mission of this newly-evolving organization is to lead the development of Amtrak's nation-wide infrastructure and real estate to meet the future needs of rail passengers and other users. The IID organization will fulfill this mission through the following strategy:



In accordance with this mission, Amtrak is pursuing a programmatic approach to leverage its assets and gain strategic and financial value for the corporation, while attracting private sector interest and capital to fund Amtrak's long-term capital plan. The program will better utilize existing assets to drive the core business; realize substantial infusions of private equity; identify new sources of revenue that can be reinvested into the system; and demonstrate a more sophisticated acumen for operating as a business and identifying opportunities to maximize the value of Amtrak's portfolio of assets.

Amtrak's Real Estate department recently merged with the existing Northeast Corridor Infrastructure and Investment Development (NEC-IID) organization to establish a unified approach to maximize the value of Amtrak's infrastructure, assets and facilities nation-wide. IID will serve as the lead for real estate asset development assessments and oversight of asset improvement programs on a nationwide basis. Facility planning and development is also being aligned with real

property asset management to allow comprehensive oversight and implementation of processes to ensure the most efficient utilization of Amtrak's owned and leased property in support of Amtrak corporate goals.

Some major efforts currently underway and discussed in more detail in the following sections include creating the Amtrak Vision for the Northeast Corridor, Major Station Master Planning, the Gateway Program, PRIIA Section 212 Implementation, and developing the Five-Year NEC Capital Plan.

Amtrak Vision for the Northeast Corridor

The 457-mile Northeast Corridor, stretching from Washington, DC to Boston and serving Amtrak, commuter and freight trains, traverses eight states and the District of Columbia. Carrying over 2,200 daily trains, the Northeast Corridor is among the nation's most congested rail corridors and one of the highest volume rail corridors in the world. Service reliability, on-time performance, and opportunities for expansion have been negatively impacted by aged assets and a lack of capacity along key stretches, especially where Amtrak's operations overlap with the most intensive commuter and freight traffic.

To address these challenges, Amtrak has been building a new vision for the Northeast Corridor over the past several years, and has been advancing it on multiple fronts. Major progress has been made in advancing a new equipment order for high-speed trainsets to be introduced in 2019; developing the Gateway Program and other capacity enhancing projects on the Corridor; and major station master planning. Amtrak has also launched a program to improve the performance of Amtrak's NEC and nationwide assets in order to support and drive core business and to provide meaningful sources of new revenue and private equity.

In May 2010, Amtrak released the *Northeast Corridor Infrastructure Master Plan (NEC Master Plan)*. The plan resulted from a precedent-setting regional collaboration among the twelve Northeast States and District of Columbia, Amtrak, the Federal Railroad Administration (FRA), and eight commuter and six freight railroads. The development of the NEC Master Plan led to a collective realization that NEC travel capacity requirements by 2030 and beyond likely could not be met by improvements to the existing corridor alone. As a result, in September 2010, Amtrak released *A Vision for High-Speed Rail in the Northeast Corridor*, which presented the bold concept of a new 423-mile dedicated two-track high-speed rail (HSR) alignment from Washington, DC to Boston to increase corridor capacity, improve service reliability and reduce travel times for all rail users.

In July 2012 Amtrak integrated the two 2010 plans into a single service and investment program called the NEC Capital Investment Program. This update, summarized in *The Amtrak Vision for the Northeast Corridor: 2012 Update Report* (2012 Update Report), describes the current stage of conceptual development and planning for the future of the NEC rail network. It details actions taken by Amtrak and other stakeholders since the release of the two major NEC planning reports in 2010, and also highlights the key findings of Amtrak's NEC business and financial plan. The proposed NEC Capital Investment strategy outlined in the report consists of two parts:

- NEC Upgrade Program (NEC-UP) – projects proposed to be completed between 2015 and 2030 that will achieve a state of good repair on the Corridor, upgrade capacity-constrained segments, and allow for a top speed of 160 mph for HSR on selected segments
- NEC Next Generation High-Speed Rail – projects to be completed between 2025 and 2040 that utilize both new and existing alignments, built upon the foundation of the NEC-Upgrade Program, that allow for a top speed of 220 mph.

The NEC Capital Investment strategy called for a $151 billion investment (in constant 2011 dollars) in a cohesive service and investment program over the coming decades to improve and expand the NEC. It affirmed Amtrak's approach to implementing critically needed near-term NEC Master Plan projects while advancing the long-term development of a Next Generation (NextGen) HSR network. Amtrak received feedback from States, commuter rail agencies and other NEC users and stakeholders, and in response and collaboration, made several revisions to its NEC plans that were included in the 2012 Update Report.

The 2012 Update Report has provided input to the now ongoing NEC environmental analysis and planning process led by the FRA, known as NEC FUTURE, which is developing a new long-term service plan and related environmental analysis to guide an NEC investment plan for the next 30 years. NEC FUTURE is a critical step in defining and realizing future improvements to the NEC, and will provide necessary information to support future FRA investment decisions. It is made up of two components: a Service Development Plan that articulates the overall scope and approach for future intercity passenger rail service along the NEC, and a National Environmental Policy Act (NEPA) Tier I Programmatic Environmental Impact Assessment that addresses the broad environmental impacts for the entire Corridor along the route of proposed service. The NEC FUTURE process is expected to complete a Final Environmental Impact Statement (FEIS) and Service Development Plan in late 2016.

The 2012 Update Report also discussed key findings from Amtrak's *NEC Business and Financial Plan (B&F Plan)* which considered options for how to potentially fund and finance Amtrak's integrated vision for the NEC. To advance the Program, the B&F Plan concluded that Amtrak should pursue a phased approach and strategically advance specific elements, such as the Gateway Program, that would have the most significant impacts on improved reliability, increased capacity and reduced trip-time as quickly as funding allows, while deferring remaining elements to subsequent phases. This approach will help Amtrak achieve earlier successes that strengthen revenue and financial performance and create additional capital funding to support other program elements.

The B&F Plan also pointed to enhanced cost sharing among NEC users to support state of good repair and other improvement projects to the existing corridor that provide the greatest benefits to their services. Such cost sharing will materialize in FY16 with the implementation of the cost allocation methodology developed by the NEC Commission and adopted in final version at the end of 2015 pursuant to the requirements in Section 212 of PRIIA. Section 212 calls for a standardized formula for determining and allocating costs for the commuter and intercity use of Northeast Corridor shared-use infrastructure and assets, and for ending cross-subsidization between

commuter and intercity services on the NEC, as described in more detail below. Subject to its successful implementation through bilateral agreements, the new cost allocation methodology will result in a net increase in capital funding of approximately $100 million annually to Amtrak for investments in the NEC that benefit both Amtrak and commuter services.

Major Station Master Planning

As Amtrak seeks to better utilize its asset portfolio to drive revenue and reinvestment, master planning for major stations advances, consistent with Amtrak's role as steward of this critical infrastructure. Amtrak has initiated master planning efforts at its major stations recognizing that these stations act as critical urban gateways and regional hubs. These efforts acknowledge the growing importance of cities, demographics shifts and reinvestments now taking place at major rail stations across the nation. In addition, these plans look to address the capacity constraints found at many NEC stations due to increased ridership and aging infrastructure. Amtrak currently has master planning initiatives underway or starting in New York City, Philadelphia, Baltimore, Washington, D.C., and Chicago.

New York Penn Station and Moynihan Station: Amtrak has begun preliminary work to initiate a master planning process for the largest passenger rail station in Amtrak's network and the nation, New York Penn Station. Serving over 126 million annual rail passengers across Amtrak, Long Island Rail Road, and NJ TRANSIT, the station is unparalleled in its importance as a gateway to the New York Region but also faces steep challenges due to overcrowding and outdated infrastructure. At the same time, major investments that are planned or underway, including the conversion of the historic Farley Post Office across Eighth Avenue from Penn Station to the new Moynihan Station, and the creation of a new Penn Station concourse with eight new tracks south of 31st Street as part of the Gateway Program, will transform how Penn Station is used and experienced. The Penn Station Master Plan will seek to integrate the these new elements into the overall Penn Station "Campus" while strengthening and improving connections from the train station facilities to nearby public transit and the streets and sidewalks of the larger Penn Station district. The Master Plan will also focus on increasing revenues to Amtrak by enhancing and expanding the retail offerings throughout the Campus while improving passenger concourses, vertical circulation, and passenger amenity. The Master Plan will be conducted in partnership with key Federal, State, City and railroad agency partners as well as community stakeholders.

Philadelphia 30th Street Station: In 2014, Amtrak and partners launched the Philadelphia 30th Street Station District Plan. This plan is a two-year project to conduct a planning study with partner landowners — Brandywine Realty Trust, Drexel University, the Pennsylvania Department of Transportation (PennDOT), the Southeastern Pennsylvania Transportation Authority (SEPTA), and other public and private partners — to develop a future vision not only for the station but for the surrounding district. This planning process aims to connect different modes of transportation, find ways to elevate the customer experience at the station and determine the feasibility of overbuild. The project partners are engaging with the surrounding community by offering five public open houses throughout the length of the project which is anticipated to be completed in Summer 2016.

Baltimore Penn Station: As part of a programmatic approach to asset optimization, Amtrak is exploring the opportunity of a Master Development partnership for Baltimore Penn Station that provides opportunities for strategic alignment between Amtrak and a private counterparty or multiple counterparties. A Master Developer would be selected for all aspects of project delivery including planning, design, construction, financing, and operations/maintenance, with a scope to include the potential development of the station's upper floors and undeveloped land parcels adjacent to the station. The Master Developer approach would work in concert with simultaneous efforts to improve the station facility in the near-term, which include a number of State of Good Repair, and track and platform infrastructure projects.

Washington Union Station: In 2012, Amtrak, alongside key Union Station stakeholders, released the Union Station Master Plan. Renamed to reflect the plan's lasting impact, Washington Union Station's 2nd Century Plan is a comprehensive expansion and improvement initiative projected to triple passenger capacity and double train capacity by modernizing and expanding station facilities over the next 20 years.

Significant planning and feasibility initiatives have been advanced toward the implementation of 2nd Century's Phase 1 tasks – most notably concept design for Terminal Rail Yard Infrastructure Improvements and the Claytor Concourse Expansion. Through the Concourse Expansion, Union Station's sole intercity and commuter concourse will be expanded and modernized to alleviate congested conditions, doubling its present capacity. The project will enhance passenger comfort and accessibility, while enlivening the space with new architectural finishes and natural light. Concept design for an expanded concourse/boarding area was completed in 2015, with 100% design now underway. Relocation of certain utility equipment will begin in winter 2016 and more visible construction work will begin toward the end of 2016.

While the Concourse Expansion will be the first set of improvements to come to life as part of Phase 1 of Washington Union Station's 2nd Century Plan, ongoing design, feasibility, and environmental compliance work to advance the 2nd Century Plan continues simultaneously. The Federal Railroad Administration is preparing an Environmental Impact Statement (EIS) in accordance with the National Environmental Policy Act (NEPA) that is expected to be completed in 2018.

Chicago Union Station: As part of an ongoing effort to improve Chicago Union Station, Amtrak and its Union Station partners are advancing a comprehensive development and improvement program at the station. The development program falls in-line with Amtrak's new innovative procurement approach for engaging a Master Developer for all aspects of project delivery resulting in accelerated implementation. Simultaneously, Amtrak and its partners are advancing short term improvements outlined in the 2012 Chicago Union Station Master Plan. These early action improvements, known as Phase 1, include facility improvements that will better accommodate the growing demand from both intercity and commuter rail passengers. The first stage of Phase 1, Phase 1A was recently initiated and includes planning, historic review and preliminary engineering work.

Gateway Program

At the heart of Amtrak's efforts to upgrade the existing infrastructure on the NEC is the Gateway Program, a comprehensive program designed to preserve and improve current services and create new track, tunnel, bridge, and station capacity that will allow the doubling in the number of passenger trains crossing under the Hudson River and an expansion of Penn Station, New York, the nation's busiest train station. The program will eventually create four main line tracks between Newark, NJ, and Penn Station, New York, including a new, two-track Hudson River tunnel, and replace the Portal Bridge with twin two-track, high-level fixed rail bridges. The program also includes updates to, and modernization of, existing infrastructure, such as the electrical system that supplies power to the 450 daily trains using this segment of the Northeast Corridor. Finally, the program focuses on expanding Penn Station with new tracks, platforms and concourses to accommodate the growth in train services made possible by the other aspects of the program. The focus on Penn Station is critical, as it serves as the center of the Northeast Corridor and its capacity and performance determines the overall capacity and performance of the entire corridor.

In addition to the long-term benefits of additional capacity and improved performance, the construction of a new Hudson River Tunnel is necessary to preserve existing Northeast Corridor rail service because of Super Storm Sandy damage to the century-old Hudson River rail tunnel. Following salt water inundation of the tunnels during Super Storm Sandy, an expert consultant engineering study that assessed the condition of the existing Hudson and East River tunnels recommended that the both tubes of the Hudson Tunnel and two tubes of the East River Tunnel be taken out of service, one tube at a time, to completely rebuild interior components damaged by the seawater that penetrated the tunnels' bench walls, supporting electrical systems, and track ballast. In response, Amtrak has developed the Hudson Tunnel Project in cooperation with the Federal Railroad Administration and NJ Transit as the first major element of the Gateway Program to go forward. The Hudson Tunnel Project includes the construction of a new two-track Hudson River rail tunnel and the complete rehabilitation of the existing Hudson River Tunnel. Procurement for the NEPA Services and Preliminary Engineering consultants was underway at the beginning of FY16 by NJ Transit and Amtrak, respectively and the NEPA/P.E. process is expected to advance over a period of 2-4 years.

Amtrak also successfully protected a future possible Hudson Tunnel alignment from encroachment at Hudson Yards. Taking advantage of the developers' accelerated construction schedule and utilizing a P3 structure, Amtrak began construction at the end of FY13 on the first phase of the Hudson Yards Right-of-Way Preservation project to secure the future alignment of the Hudson Tunnel through Hudson Yards, where a major, mixed-use office and residential project of 13 million square feet is being erected by Related Companies and Oxford Properties Group. The first 825 feet of the concrete casing to protect the Gateway right-of-way – between 10th and 11th Avenues – has been completed, and Amtrak has moved on to preserve the next 105 feet under the 11th Avenue viaduct. This work was supported in part by funding made available in the Disaster Relief Appropriations Act of 2013 in response to Super Storm Sandy.

The major elements of the Gateway Program include the following:

- Hudson Tunnel Project: A new Hudson River rail tunnel from the Bergen Palisades in New Jersey to Manhattan that will directly serve Penn Station and the rehabilitation of the existing Hudson River Tunnel damaged by Super Storm Sandy. The new tunnel will, initially, allow the existing Hudson River tunnel system to be taken out of service for extensive repairs. Once the new tunnel is built and the existing tunnel is repaired, four tracks under the Hudson River will provide greater service reliability and operational flexibility for NJ Transit (NJT) and Amtrak services and lay the basis for the expansion of rail capacity as envisioned under the Gateway Program.

- Expanded Moynihan/Penn Station, New York: The southern expansion of existing Penn Station New York tracks and platforms, and the creation of new "Penn South" concourses with direct connections to the future Moynihan Station, will support the long-term growth of commuter and intercity passenger rail service at both Penn Station and the historic Farley Post Office Building, which is being transformed into the new Moynihan Station by the Moynihan Station Development Corporation. The expansion of Penn Station in concert with a new, two-track tunnel under the Hudson River will allow the doubling of rail service into Penn Station from New Jersey, responding to the continued, growing demand of the New Jersey commuter market into Manhattan and intercity and high-speed Amtrak services on the NEC.

- New Portal Bridges: Two new high-level, fixed bridges, known as Portal Bridge North and South, will replace the 100-year-old moveable Portal Bridge over the Hackensack River between Kearny and Secaucus, New Jersey, doubling corridor capacity. Final design and federal environmental review for the North Bridge, the first to be constructed, has been completed. The new bridge is estimated to cost $1 billion over a 5-year construction period, and will proceed with the cooperation of NJT and Amtrak as soon as funding can be secured.

- Newark-to-Secaucus Improvements: The existing NEC will be greatly improved between Newark and Secaucus, New Jersey. The main line will be expanded from two to four tracks between Newark and the Bergen Palisades tunnel portals. Better connections will be built to link the NEC with existing NJT rail services, as well as new direct connections to NJT's Main, Bergen, Pascack Valley and Metro-North Port Jervis Lines. Various bridges will also be upgraded or replaced.

Over the past three years, Amtrak has made substantial progress in raising public awareness about the need for the critical infrastructure improvements that comprise Gateway, and in taking decisive actions to protect the Gateway alignment through Manhattan. The ongoing deterioration of the tunnel infrastructure has also focused public and stakeholder attention on the need for the Gateway Program. A week of successive power failures and service delays in July 2015 caused major disruptions to NJT and Amtrak services and motivated elected officials in New York, New Jersey, and the Federal government to act. In November 2015, Federal and State officials announced agreement around a broad set of principles to advance the Gateway Program, including creating a Gateway Development Corporation as an affiliate of the Port Authority of New York and New Jersey to be governed by Amtrak, the two states, and the U.S. Department of Transportation, to serve as overall

Program lead. Additionally, the goal of achieving a 50%-50% sharing of Gateway Program costs between Federal and State funds, which represents a general average of the various share requirements of the various Federal Intercity Rail and Transit funding programs that are applicable to the Program, was endorsed. Fleshing out the legal and governance structure of the new Gateway Development Corporation and Amtrak's role in it will be a major focus in the coming year.

Summary of Preliminary Gateway Program Strategic Areas of Focus for FY17-21

1 Year	3 Years	5 Years
Gateway Development Corporation • Evaluate governance structure and define Amtrak's role • Open Gateway Program project office and finalize institution and governance structure • Complete Program Development Study: • Funding and finance plan • NY-NJ Property Strategy • Economic Benefit Study • NY Penn Station District Plan • Risk Register **Environmental:** • Hudson River Tunnel Project • Harrison 4th Track • "Saw Tooth" Bridge **Construction:** • Complete Hudson Yards Concrete Casing – Phase 1 and the 11th Avenue Extension. • Begin Portal North Bridge Early Works Projects with NJT **Property Acquisition** • Begin property acquisition for Hudson Tunnel Project	**Gateway Development Corporation** • Apply for RRIF Loan and other funding/finance streams **Concept Design:** • Portal South Bridge/ Secaucus South • High Line Renewal **Environmental**: • Hudson Tunnel Project - ROD • Penn Station Expansion • NJ High Line Renewal Program **P.E. and Final Design** • "Saw Tooth" Bridge **Construction:** • Hudson Yard Concrete Casing – Phase 3 • Portal North Bridge – Major Construction • Harrison 4th Track **Property Acquisition** • Continue property acquisition for Hudson Tunnel Project	**Gateway Development Corporation** • Secure remaining funding/ funding streams **Design** • Complete design of remaining Gateway program elements **Environmental** • Gateway Program Tier II NEPA **Construction** • Continue construction of Hudson Yards Phase 3 • Begin construction of Hudson Tunnel Project • Penn Station Expansion Acquisition/ Construction • Complete Portal North Bridge • "Saw Tooth" Bridge • High Line Renewal

PRIIA Section 212 Implementation

As discussed previously, Section 212 of PRIIA required the establishment of a Northeast Corridor Infrastructure and Operations Advisory Commission (NEC Commission), with membership comprised of representatives of US DOT, Amtrak, Northeastern states and commuter agencies. Among other things, the NEC Commission was charged with developing a standardized formula for determining and allocating operating and capital costs between intercity and commuter use of shared NEC infrastructure. Section 212 requires that the NEC Commission's formula ensure that there is no cross-subsidization of commuter, intercity or freight rail transportation, and that each service is assigned the costs incurred only for the benefit of that service and a proportionate share,

based upon factors that reasonably reflect relative use, of cost incurred for the common benefit of more than one service.

The NEC Commission adopted a cost-sharing formula in September, 2015. Implementation of this new allocation methodology in FY16 should result in additional commuter investments in Amtrak's NEC infrastructure that will supplement Amtrak's own capital funding, and usher in a new cooperative planning and coordination regime across the full NEC network.

NEC Commission Five-Year NEC Capital Plan

The members of the NEC Commission are collaborating on the annual update of the comprehensive, network-wide, Five-Year Northeast Corridor Capital Plan for FY2017-FY2021. The purpose of the Plan is to integrate service and infrastructure planning across the entire corridor so that all of the planned capital investments NEC assets, regardless of ownership or project sponsor, can be understood and coordinated across the network. Such visibility and coordination will permit necessary resource, track outage and procurement planning and prioritization, as well as improved project delivery and efficiency. Additionally, the Plan provides a collaborative process for programming the shared-use investments that are subject PRIIA Section 212 NEC Commission's cost allocation policy. With greater user financial participation in the capital costs of shared-use NEC infrastructure occurring in FY17, enhanced collaboration and planning processes must be deployed to ensure appropriate transparency and participation among all NEC users and owners.

The recently enacted reauthorization legislation, Fixing America's Surface Transportation (FAST) Act continues the requirement for the NEC Commission to develop a Five-Year capital investment plan of the NEC. Amtrak projects will be the major component of that plan. The Plan will:

- Reflect coordination and network optimization across the entire Northeast Corridor;
- Integrate the individual capital and service plans developed by each operator using the methods described in the cost allocation policy;
- Identify, prioritize, and phase the implementation of projects and programs to achieve the service outcomes identified in the Northeast Corridor service development plan and the asset condition needs identified in the Northeast Corridor asset management plans, once available; and;
- Include a financial plan that contains the identification of funding sources and financing methods.

The NEC Commission's recommendation in 2015 for the establishment of a new Federal up to 80%/20% matching program for shared-use NEC infrastructure was partially incorporated in the FAST Act for State of Good Repair backlog projects. Subject to appropriation funding, the Federal-State Partnership for State of Good Repair grant program (Sec. 11302) can, on a competitive basis, provide matched funding that can begin to reduce the high level of state of good repair backlog. In addition, the FAST Act now permits the Federal Transit Administration's Fixed Guideway Capital

Investment Grants (Sec. 5309, New Starts/Core Capacity) discretionary program to share funding for eligible joint public transportation (e.g., commuter rail) and intercity passenger rail projects.

Amtrak's own NEC infrastructure capital plan will both inform and be derived from the NEC Commission Five-Year Capital Investment Plan, detailing the programs of investment in both the shared-use and sole-use territories utilized by Amtrak in the NEC. The capital investment levels for NEC infrastructure in this document are predicated on current draft versions of the NEC Commission Plan for the FY17-FY21 periods, and will be updated to reflect the final Plan which is scheduled to be adopted by the Commission in March 2016.

The NEC Commission's Plan incorporates the adopted Commission's cost allocation methodology' including the anticipated payments from NEC commuter authorities for their respective shares of the allocated operating and capital costs of the shared-use NEC infrastructure operated by Amtrak. The Plan also reflects Amtrak's required payments to other NEC infrastructure owners for Amtrak's use of such infrastructure, and Amtrak's own required investments in its infrastructure pursuant to the cost allocation methodology. It is anticipated that plan refinements will be incorporated in the FY17-FY21 Plan, such as linking Plan projects with goals and outcomes, identifying the most critical projects with large unfunded needs and strengthening the emphasis on basic infrastructure needs.

Exhibit [3–8] – Five-Year Projected Operating Results, Infrastructure and Investment Development

($s in Millions)	Infrastructure & Investment Development FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Ticket Revenue (Adjusted)	$ 3.1	$ -	$ -	$ -	$ -
Food & Beverage	0.2	-	-	-	-
State Supported Train Revenue	2.0	-	-	-	-
Subtotal Passenger Related Revenue	**5.3**	**-**	**-**	**-**	**-**
Other Core Revenue	0.6	1.3	2.9	3.5	3.9
Ancillary Revenue	84.7	114.0	116.3	121.4	127.0
Total Revenue	**90.6**	**115.3**	**119.2**	**124.9**	**131.0**
Expenses that are Direct Responsibility of the GM					
Total Expense Responsibility of the GM	-	-	-	-	-
Total allocated to Other Business Lines	-	-	-	-	-
Direct Expenses Remaining with BL	$ -	$ -	$ -	$ -	$ -
Gross Margin	***90.6***	***115.3***	***119.2***	***124.9***	***131.0***
Expenses allocated into Infrastructure & Investment Development:					
Total from Operations	**1.2**	**5.9**	**5.9**	**6.0**	**6.0**
Train Fuel & Electric Propulsion Power	0.2	-	-	-	-
Credit Card Fees	0.8	0.3	0.3	0.3	0.4
All Other Corporate	11.8	26.1	27.6	32.0	34.2
Total from Corporate	**12.8**	**26.5**	**27.9**	**32.4**	**34.5**
Total Expenses allocated into Infrastructure & Inv. Dev.	**$ 14.0**	**$ 32.3**	**$ 33.8**	**$ 38.4**	**$ 40.6**
Total Operating Expense	**14.0**	**32.3**	**33.8**	**38.4**	**40.6**
Adjusted Operating Loss	**$ 76.6**	**$ 83.0**	**$ 85.4**	**$ 86.5**	**$ 90.4**

Exhibit [3–9] – Five-Year Projected Capital Investment, Infrastructure and Investment Development

($s in Millions)	Infrastructure & Investment Development					
	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	5 Year Total
Major Projects	$ -	$ 5.0	$ 5.0	$ 5.0	$ 5.0	$ 20.0
Support Equipment and Vehicles	27.8	27.6	27.9	28.1	29.4	140.8
Improvements	0.0	-	-	-	-	0.0
Infrastructure Renewal	**27.8**	**32.6**	**32.9**	**33.1**	**34.4**	**160.8**
SOGR Base	11.0	22.0	42.0	42.0	32.0	149.0
Safety / Mandates	0.6	-	-	-	-	0.6
Improvements	7.7	37.0	33.2	32.5	12.4	122.8
Stations and Facilities	**19.3**	**59.0**	**75.2**	**74.5**	**44.4**	**272.4**
Safety / Mandates	2.8	5.2	5.0	5.0	3.0	21.0
Environmental Remediation	**2.8**	**5.2**	**5.0**	**5.0**	**3.0**	**21.0**
Federal & State Capital / Amtrak Operating Profits[a]	**$ 49.9**	**$ 96.8**	**$ 113.1**	**$ 112.7**	**$ 81.8**	**$ 454.2**
State, Local, and Other Funds	0.4	-	-	-	-	0.4
Total Capital Infrastructure & Investment Development	**$ 50.3**	**$ 96.8**	**$ 113.1**	**$ 112.7**	**$ 81.8**	**$ 454.6**

[a] **Fund Sources for these Programs are:**	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	5 Year Total
Federal & State Capital	(26.7)	13.8	27.6	26.2	(8.6)	32.4
Amtrak Operating Profits	76.6	83.0	85.4	86.5	90.4	421.8
Federal & State Capital / Amtrak Operating Profits	**$ 49.9**	**$ 96.8**	**$ 113.1**	**$ 112.7**	**$ 81.8**	**$ 454.2**

Economic Impact of Amtrak Activities

INTRODUCTION

Amtrak is engaged in interstate commerce, supports the development of state and local economies, and connects towns and cities to the national economy. In key markets, Amtrak bolsters the productivity of the U.S. business sector, supports long-term economic growth and enhances the global competitiveness of the United States.

When considering the appropriation of public funds to support a service such as Amtrak, it is important to determine what benefits the American public will receive in return from its investment. Many of these benefits are easily identifiable, such as intercity connectivity, improved livability in the communities served, reduced energy use and emissions, and a critical link in the national transportation system. Additionally, there are also a significant number of economic benefits as a result of Amtrak's activities that are returned to the American public, such as increased employment, infrastructure investments and tax revenue generated.

This high-level analysis explores the direct economic output of Amtrak's activities in order to measure their impact on the American economy. The analysis establishes the direct economic output of the following different categories related to Amtrak's activities:

- Spending by passengers during their travels
- Jobs supported and tax revenue generated due to travel spending
- Direct Amtrak jobs and the income taxes paid by its employees
- Goods and services purchased by Amtrak

The economic benefit analysis utilizes a conservative, high-level, approach and does not attempt to quantify the "multiplier" economic effect of the induced spending and tax generated by the employment created by Amtrak activity. If this "multiplier" economic effect were considered, the economic impact would be much greater than presented, as the analysis would take into account the ripple economic effects of Amtrak's spending and investments within the regional and State economies.

THE ECONOMIC IMPACT OF TRAVEL

The economic benefit analysis of travel expenditures by Amtrak's passengers relies on research data published by the U.S. Travel Association, more specifically, its annual report *The Impact of Travel on State Economies* (2014 Research Report, utilizing 2013 economic data). The U.S. Travel Association has published this economic impact report for over 30 years in order to raise awareness of passenger travel's contribution to the U.S. economy. Its economic impact data is produced by its proprietary Travel Economic Impact Model (TEIM), developed expressively to quantify the expenditures and employment, and payroll and tax revenue, generated by travel away from home in the United States.

The U.S. Travel Association estimates that, in 2014, travelers made 2.1 billion "person-trips" in the United States with those trips generating $928 billion in traveler spending.[6] Respectively, travel-generated employment in 2014 was 8.0 million in American jobs that cannot be outsourced abroad, directly producing about $222 billion in payroll for Americans and approximately $142 billion in tax revenue for Federal, State and local governments.[7] Utilizing the data published in *The Impact of Travel on State Economies,* Amtrak incorporated the following information into its calculation of the economic impact of Amtrak travelers with key statistics utilized in this analysis circled:

Exhibit [4–1] – U.S. Travel Spending Key Metrics – 2014[6]

Category	2014 U.S. Travel Spending ($ billions)	Payroll Supported by Travel Spending ($ billions)	Payroll % of Travel Spending	Jobs Supported by Travel Spending (thousands)	Average Annual Wage / Job
Public Transportation	$ 175.6	$ 48.0	27.3%	956.3	$ 50,193.5
Auto Transportation	162.8	8.2	5.0%	265.8	30,850
Subtotal Transportation	**$ 338.4**	**$ 56.2**	**16.6%**	**1,222.1**	**$ 45,986.4**
Lodging	181.7	40.6	22.3%	1,481.6	27,403
Foodservices	220.3	55.0	25.0%	3,160.0	17,405
Recreation/Amusement	92.7	37.3	40.2%	1,341.9	27,796
Retail	94.7	12.6	13.3%	491.4	25,641
Travel Planning	-	7.7	0.0%	164.7	46,752
Subtotal Non-Transportation	**$ 589.4**	**$ 153.2**	**26.0%**	**6,639.6**	**$ 23,073.7**
Total Travel Spending	**$ 927.9**	**$ 209.4**	**22.6%**	**7,861.7**	**$ 26,635.5**

Exhibit [4–2] – Taxes Generated by U.S. Travel Spending – 2014[6]

Government	Taxes ($ billions)	% Total of Travel Spending
Federal	$ 77.1	8.3%
State	39.9	4.3%
Local	24.4	2.6%
Total	**$ 141.5**	**15.2%**

A person-trip is defined as one person traveling at least 50 miles from home one-way or spending at least one night away from home. Utilizing the 2014 total travel spending of $928 billion amongst 2.1 billion person-trips, regardless of mode of transportation, the 2014 average total spend per person-trip was $434. Excluding the cost of transportation, the total spend per person-trip was $275:

[6] U.S. Travel Answer Sheet, U.S. Travel Association, https://www.ustravel.org/sites/default/files/page/2013/08/US_Travel_AnswerSheet.pdf

[7] U.S. Travel Association, *The Impact of Travel on State Economies (2014)*, 2014 Research Report, Page 3

Exhibit [4–3] – Total Travel Spending – 2014

Category	Travel Spending ($ billions)	Person-Trips (billions)	Spending Per Person-Trip ($)
Transportation	$ 338.4	2.1	$ 158
Non-Transportation	589.4	2.1	275
Total Travel Spending	**$ 927.9**	**2.1**	**$ 434**

TRAVEL EXPENDITURES BY AMTRAK PASSENGERS

The U.S. Travel Association key statistics were applied to Amtrak's ridership in order to compute the total economic impact of Amtrak's passengers during their travels. In FY14, Amtrak transported 30.9 million passengers, a number which includes commuters traveling on multi-ride tickets. These commuters do not meet the definition of a person-trip as defined by the U.S. Travel Association and were excluded from the analysis. The adjusted ridership number without multi-ride passengers is 28.2 million passengers. Amtrak passenger spending on transportation costs reflects the purchase of Amtrak tickets, revenues from which are used to pay Amtrak employees and purchase goods and services. The economic benefit of Amtrak spending activity is quantified in the following section, excluding the cost of the transportation itself. Amtrak's economic benefit due to passenger spending, jobs supported by travel expenditures, and tax revenue generated is as follows:

Exhibit [4–4] – Amtrak Passenger Spending, Jobs Supported and Tax Revenue Generated – 2014

Spending by Passengers in FY 2014		NEC	State Supported	Long Distance	Total Amtrak
(a)	Ridership (millions)	11.2	12.4	4.5	28.2
(b)	Spending per person-trip (dollars)	$ 275.4	$ 275.4	$ 275.4	$ 275.4
(c) = a x b	**Spending by passenger while traveling ($ millions)**	**$ 3,092.3**	**$ 3,428.4**	**$ 1,250.6**	**$7,771.3**

Jobs Supported by Passenger Spending in FY 2014		NEC	State Supported	Long Distance	Total Amtrak
(d)	% Non-transportation passenger spending supporting payroll	26.0%	26.0%	26.0%	26.0%
(e) = c x d	Payroll supported ($ millions)	$ 803.8	$ 891.1	$ 325.1	$2,020.0
(f)	Avg pay per job non-transportation spending ($ thousands)	$ 23.1	$ 23.1	$ 23.1	$ 23.1
(g) = e / f	**Jobs supported by passenger spending (thousands)**	**34.8**	**38.6**	**14.1**	**87.5**

Tax Revenue Generated by Passenger Spending in FY 2014		NEC	State Supported	Long Distance	Total Amtrak
(h)	Federal taxes generated as a % of passenger spending	8.3%	8.3%	8.3%	8.3%
(i)	State taxes generated as a % of passenger spending	4.3%	4.3%	4.3%	4.3%
(j)	Local taxes generated as a % of passenger spending	2.6%	2.6%	2.6%	2.6%
(k) = c x h	Federal taxes generated ($ millions)	$ 257.1	$ 285.0	$ 104.0	$ 646.1
(l) = c x i	State taxes generated ($ millions)	$ 133.1	$ 147.6	$ 53.8	$ 334.5
(m) = c x j	Local taxes generated ($ millions)	$ 81.4	$ 90.2	$ 32.9	$ 204.4
(n) = k + l + m	**Total taxes generated ($ millions)**	**$ 471.6**	**$ 522.8**	**$ 190.7**	**$1,185.1**

In summary, in FY14, Amtrak's passengers spent an estimated $7.8 billion during their travels, which supported 87,500 jobs and generated approximately $1.2 billion in tax revenue.

AMTRAK EMPLOYMENT

Amtrak spends a portion of its revenue and Federal support on its workforce, employing approximately 20,400 people in highly-skilled professional jobs in the United States that return significant tax revenue to each level of government. The following table represents Amtrak's employment, payroll and income taxes for 2014; 2014 data is utilized in order to be consistent with the 2014 analysis from the U.S. Travel Association:

Exhibit [4–5] – Amtrak Employment and Tax Revenue Generated – 2014

($ millions)	NEC	State Supported	Long Distance	Infrastructure & Investment Development	Total Amtrak
Amtrak Payroll	**$ 593.8**	**$ 342.3**	**$ 472.2**	**$ 5.5**	**$ 1,413.7**
Amtrak Jobs (thousands)	**8.6**	**4.9**	**6.8**	**0.1**	**20.4**
Income Tax Witholdings					
Federal	$ 93.0	$ 53.6	$ 73.9	$ 0.9	$ 221.3
State	27.6	15.9	21.9	0.3	65.7
Local	3.6	2.1	2.9	0.0	8.6
Total Tax Witholdings	**$ 124.2**	**$ 71.6**	**$ 98.7**	**$ 1.1**	**$ 295.6**

Note that the tax revenue generated represents only income taxes withheld from employees. Additional railroad retirement (RRTA), RUIA taxes, and medical taxes that are paid by Amtrak or withheld from employees are not included in this analysis as tax revenue generated. Also excluded are excise taxes paid and remitted sales taxes by Amtrak in 2014.

AMTRAK GOODS AND SERVICES PURCHASED

In addition to providing well-paying jobs, Amtrak also spends its funds on the purchases of goods and services which in turn support jobs and generate tax revenue:

Exhibit [4–6] – Amtrak Purchases, Jobs Supported and Tax Revenue Generated – 2014

	Goods & Services Purchased by Amtrak ($ millions)	NEC	State Supported	Long Distance	Infrastructure & Investment Development	Total Amtrak
(a)	Goods & Services Purchased	$ 628.8	$ 417.8	$ 545.1	$ 13.5	$ 1,605.3

	Jobs Supported by Amtrak	NEC	State Supported	Long Distance	Infrastructure & Investment Development	Total Amtrak
(b)	% Non-transportation passenger spending supporting payroll	26%	26%	26%	26%	26%
(c)=a x b	Payroll supported ($ millions)	$ 163	$ 109	$ 142	$ 4	$ 417
(d)	Average annual U.S. Wage - 2014 ($ thousands)	$ 45.2	$ 45.2	$ 45.2	$ 45.2	$ 45.2
(e) = c /d	**Jobs supported (thousands)**	**3.6**	**2.4**	**3.1**	**0.1**	**9.2**

Tax Revenue Generated by Amtrak		NEC	State Supported	Long Distance	Infrastructure & Investment Development	Total Amtrak
(f)	Federal taxes generated as a % of passenger spending	8.3%	8.3%	8.3%	8.3%	8.3%
(g)	State taxes generated as a % of passenger spending	4.3%	4.3%	4.3%	4.3%	4.3%
(h)	Local taxes generated as a % of passenger spending	2.6%	2.6%	2.6%	2.6%	2.6%
(i) = a x f	Federal taxes generated ($ millions)	$ 52.3	$ 34.7	$ 45.3	$ 1.1	$ 133.5
(j) = a x g	State taxes generated ($ millions)	$ 27.1	$ 18.0	$ 23.5	$ 0.6	$ 69.1
(k) = a x h	Local taxes generated ($ millions)	$ 16.5	$ 11.0	$ 14.3	$ 0.4	$ 42.2
(l) = i + j + k	**Total taxes generated ($ millions)**	**$ 95.9**	**$ 63.7**	**$ 83.1**	**$ 2.1**	**$ 244.8**

In 2014, Amtrak spent approximately $1.6 billion on qualifying purchases of goods and services for its operations and capital projects in 50 states.[8] This total excludes the costs of Amtrak's workforce, payroll taxes and retirement benefits, casualty and claims, depreciation and amortization. These expenditures supported approximately 9,200 jobs and generated $245 million in tax revenue.

In order to quantify the jobs supported and tax revenue due to these expenditures, different salary metrics were used as compared to the passenger spending calculations at the beginning of this analysis. The percentage of total spending dedicated to payrolls was assumed to be the same as for passenger spending. The average salary per job was assumed to be higher than that of the passenger analysis because the suppliers of the goods and services purchased by Amtrak generally employ more highly-skilled, full-time, and highly paid employees than the retail, food-service and lodging businesses that cater to travelers. Accordingly, the average wage used to quantify jobs supported is $45,200 per year, which is the installation, maintenance, and repair occupations average wage according to the U.S. Bureau of Labor Statistics.[9] The percentage of the overall spending that generated tax revenue was assumed to be consistent with the rates of passenger spending.

SUMMARY

In summary, the analysis shows that Amtrak and its passengers generated an economic benefit of approximately $10.8 billion annually (based on 2014), which supports 117,200 jobs and generates $1.7 billion in taxes for Federal, State and local governments. When compared to Amtrak's FY16 plan for Federal funding support, this represents a net contribution of $9.4 billion to the U.S. economy on an annual basis. The table below summarizes our findings, supported by the assumptions and calculations made in this analysis:

[8] Amtrak Goods and Services purchased represents payments made by Amtrak to vendors in each state, http://www.amtrak.com/servlet/ContentServer?c=Page&pagename=am%2FLayout&cid=1246041980432

[9] Occupational Employment Statistics, U.S. Bureau of Labor Statistics, http://www.bls.gov/oes/current/oes_nat.htm#49-0000

Exhibit [4–7] – Summary of Amtrak Economic Benefits, Jobs Supported and Tax Revenue Generated

	Economic Benefit		Tax Revenue Generated	
	$ Millions	Jobs (000s)	Government	$ Millions
Amtrak Direct Expenditures			Federal	$ 1,001
Amtrak Payroll	$ 1,414	20.4	State	$ 469
Goods & Services Purchased	$ 1,605	9.2	Local	$ 255
Total Amtrak Direct	**$ 3,019**	**29.7**	**Total**	**$ 1,725**
Passenger Travel Spending*	**$ 7,771**	**87.5**		
Total Amtrak Impact on Economy	**$ 10,790**	**117.2**		
Federal Operating Subsidy (FY15)	$ 1,390			
Net Economic Benefit	**$ 9,400**	**117.2**		

*Excludes purchase of Amtrak tickets

Amtrak's economic benefits are likely to increase in the coming years. The U.S. travel and tourism industry continues to grow. Amtrak's ridership has been growing, and our travel demand model predicts ridership will increase further with continued economic growth, particularly in the Northeast Corridor. Capital investments, such as the Next-Generation High Speed Trainsets, will increase passenger capacity and contribute to economic growth.

The American public receives a significant return on its investment in Amtrak. Amtrak creates and sustains good jobs, spurs economic development, and makes our communities more livable and accessible. Investment in Amtrak advances national priorities and goals, and produces significant economic and quality-of-life benefits for the American people.

Amtrak Financial Summary

INCOME STATEMENT AND FIVE YEAR PLAN

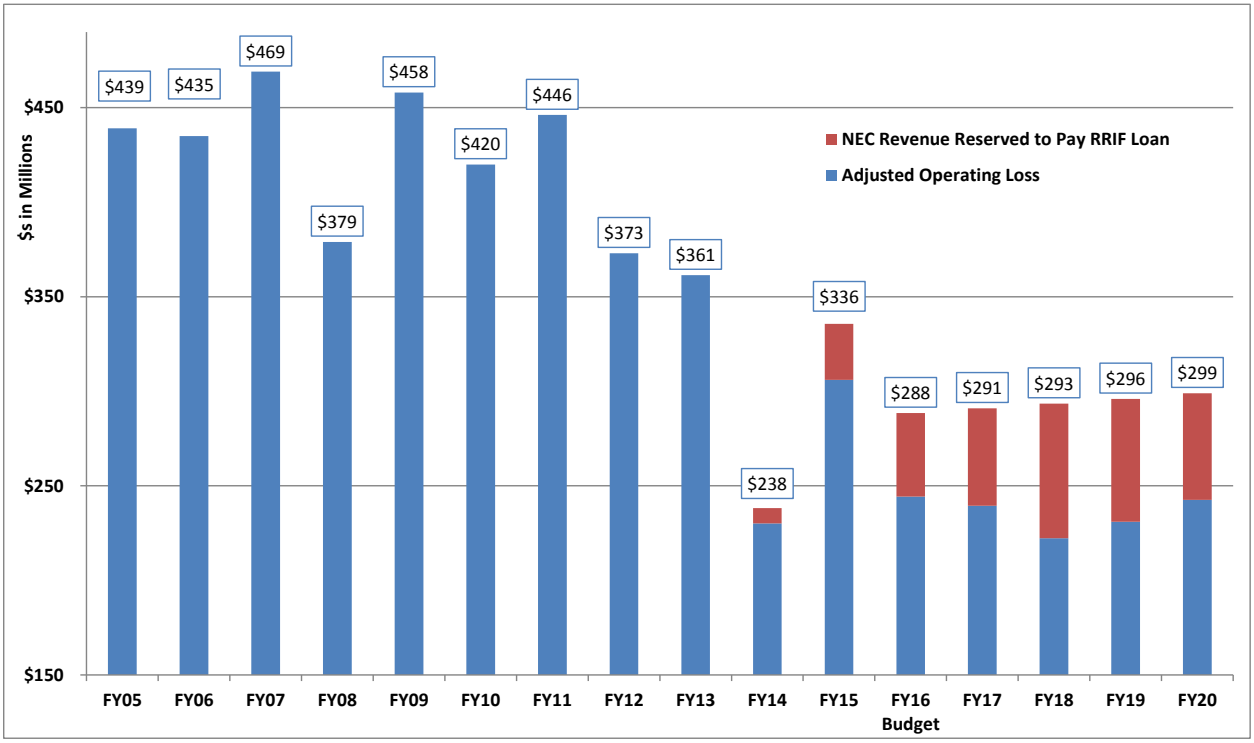
In FY15, our efforts to operate a more financially sound railroad for our stakeholders achieved positive results. Amtrak successfully delivered and executed on key initiatives aimed at reducing operating costs and driving margin improvement. Amtrak reported unaudited revenue totaling approximately $3.2 billion for the fiscal year 2015, 1% below the previous year.[10] In FY15, Operating cost recovery remained strong; Amtrak was able to cover 91% of its operating costs with ticket sales and other revenues. In addition, Amtrak's unaudited Federally Funded operating loss of approximately $306.5 million, excluding $29.6 million of NEC Revenue to pay RRIF Loan, represents a 35% reduction from FY07. Although higher than the previous year, Amtrak's financial results show the resiliency of a company that faced a range of challenges.

Amtrak has worked to achieve the goal of operating a financially sound railroad by reducing our operating loss and investing more funds into capital. Compared to five years ago, operating loss has improved as a result of revenue growth and operating margin improvement. With an operational and corporate focus on efficiency, productivity, and increased financial transparency, we made improvements in our financial performance.

A fundamental goal of Amtrak is to continue to reduce operating losses. Amtrak is committed to achieving those reductions. Accordingly, Amtrak has targeted operational improvements that will hold operating losses essentially flat in the FY16-FY20 period despite contractual increases in wages, host railroad fees, rising employee costs, and additional operational investment in areas of strategy focus. Amtrak will mitigate these cost increases by optimizing resources, increasing operating efficiencies, and improving margins to allow increased revenue to fall to the bottom line. Amtrak is on path to achieving the financial excellence goal outlined in our strategic plan: maximizing revenue, minimizing operating costs, reducing operating loss and continuing to exceed expectations in operating a more financially sound railroad.

[10] FY15 results are preliminary and unaudited.

Exhibit [5–1] – Net Operating Loss History and FY 2016 – FY 2020 Projections



Note: FY14 excludes one-time insurance proceeds from Super Storm Sandy of $62.8M; including the proceeds Adjusted Operating Loss would be at $175M. FY15 excludes one-time insurance proceeds from Super Storm Sandy of $14.2M; including the proceeds Adjusted Operating Loss would be at $322M.

Exhibit [5–2] – Amtrak Five Year Funding Summary

($s in Millions)	Total Amtrak Funding FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	5 Year Total
Operating	$ 288.5	$ 291.0	$ 293.5	$ 296.0	$ 299.0	$ 1,468.0
Federal Capital	932.8	1,328.0	1,486.6	1,545.7	1,502.3	6,795.4
Debt Service	160.2	199.0	120.5	123.2	117.2	720.0
State Supported Commission	-	2.0	2.0	2.0	2.0	8.0
NEC Commission	3.0	5.0	5.0	5.0	5.0	23.0
FRA Management Oversight	5.5	9.1	9.5	9.8	9.6	43.4
Total Federal Grant	**$ 1,390.0**	**$ 1,834.0**	**$ 1,917.1**	**$ 1,981.7**	**$ 1,935.1**	**$ 9,057.8**
State Contributions to Equipment Capital (PRIIA 209)	67.0	65.2	46.8	47.5	46.0	272.5
Commuter payments (PRIIA 212)	134.2	143.2	172.3	181.4	191.1	822.0
NEC Commuter Match (excl Gateway)	-	134.4	148.4	202.8	217.4	703.1
Total State & Commuter Funding	**201.1**	**342.8**	**367.5**	**431.7**	**454.5**	**1,797.6**
Other Capital Funds	336.2	888.6	1,543.8	1,695.3	1,828.1	6,292.0
Total Amtrak Funding	**$ 1,927.3**	**$ 3,065.5**	**$ 3,828.3**	**$ 4,108.7**	**$ 4,217.6**	**$ 17,147.4**

Change in Methodology

The FY16 five year plan assumes that, beginning in FY17, the net profits of the Northeast Corridor will be used to fund Amtrak's obligations under PRIIA Section 212, repay loans specific to the NEC, and fund NEC capital investments, thereby supplementing Amtrak's available capital. Amtrak's

FY16–FY20 projected operating losses, without cross-subsidization, are shown in Exhibit 5-3. FY16 is shown with cross-subsidization continuing, in accordance with the FY16 operating appropriation.

Exhibit [5–3] – Amtrak Five Year Operating Losses

FY 2016 Utilizes Legacy Methodology with Cross-Subsidization

($s in Millions)	FY 2016 NEC	State Supported	Long Distance	Infrastructure & Investment Development	Total Amtrak
Direct Route Revenue	$ 1,300.3	$ 896.4	$ 568.2	$ 89.3	$ 2,854.2
Direct Route Expenses	806.1	975.5	1,098.1	13.4	2,893.1
Adjusted Operating Income/(Loss) Direct Routes	**494.2**	**(79.1)**	**(529.9)**	**75.9**	**(38.9)**
Infrastructure Responsibility Profit/(Loss)	(139.2)	-	-	-	(139.2)
Reimbursable Responsibility Profit/(Loss)	(71.9)	(0.3)	(0.7)	-	(72.9)
Commuter Responsibility Profit/(Loss)	22.9	(3.9)	(12.9)	0.7	6.7
RRIF Payment	(44.2)	-	-	-	(44.2)
Adjusted Operating Income/(Loss) Total Responsibility	**261.7**	**(83.3)**	**(543.4)**	**76.6**	**(288.5)**
Capital Contribution	-	-	-	-	-
Net Federal Operating Subsidy	**$ 261.7**	**$ (83.3)**	**$ (543.4)**	**$ 76.6**	**$ (288.5)**

FY 2017 - FY 2020 Eliminates Cross-Subsidization

($s in Millions)	FY 2017 NEC	State Supported	Long Distance	Infrastructure & Investment Development	Total Amtrak	FY 2018 NEC	State Supported	Long Distance	Infrastructure & Investment Development	Total Amtrak
Direct Route Revenue	$ 1,359.6	$ 896.0	$ 580.8	$ 114.0	$ 2,950.4	$ 1,408.8	$ 892.0	$ 603.5	$ 117.9	$ 3,022.3
Direct Route Expenses	801.6	986.0	1,118.4	31.7	2,937.7	819.3	956.2	1,173.8	33.1	2,982.4
Adjusted Operating Income/(Loss) Direct Routes	**558.0**	**(90.1)**	**(537.6)**	**82.4**	**12.7**	**589.5**	**(64.2)**	**(570.3)**	**84.9**	**39.9**
Infrastructure Responsibility Profit/(Loss)	(145.7)	-	-	-	(145.7)	(147.1)	-	-	-	(147.1)
Reimbursable Responsibility Profit/(Loss)	(104.2)	(0.6)	(0.8)	-	(105.6)	(111.0)	(0.9)	(0.8)	-	(112.7)
Commuter Responsibility Profit/(Loss)	19.4	(4.5)	(16.3)	0.6	(0.9)	19.3	(4.9)	(17.3)	0.6	(2.4)
RRIF Payment	(51.6)	-	-	-	(51.6)	(71.2)	-	-	-	(71.2)
Adjusted Operating Income/(Loss) Total Responsibility	**276.0**	**(95.3)**	**(554.6)**	**83.0**	**(291.0)**	**279.5**	**(69.9)**	**(588.5)**	**85.4**	**(293.5)**
Capital Contribution	(276.0)	-	-	(83.0)	(358.9)	(279.5)	-	-	(85.4)	(364.9)
Net Federal Operating Subsidy	**$ -**	**$ (95.3)**	**$ (554.6)**	**$ -**	**$ (649.9)**	**$ -**	**$ (69.9)**	**$ (588.5)**	**$ -**	**$ (658.4)**

($s in Millions)	FY 2019 NEC	State Supported	Long Distance	Infrastructure & Investment Development	Total Amtrak	FY 2020 NEC	State Supported	Long Distance	Infrastructure & Investment Development	Total Amtrak
Direct Route Revenue	$ 1,445.9	$ 913.4	$ 618.0	$ 123.6	$ 3,100.9	$ 1,482.8	$ 938.9	$ 633.1	$ 129.7	$ 3,184.5
Direct Route Expenses	843.7	970.4	1,194.9	37.7	3,046.7	864.7	993.6	1,220.1	39.9	3,118.3
Adjusted Operating Income/(Loss) Direct Routes	**602.2**	**(57.0)**	**(576.9)**	**85.9**	**54.2**	**618.1**	**(54.7)**	**(587.0)**	**89.8**	**66.3**
Infrastructure Responsibility Profit/(Loss)	(158.6)	-	-	-	(158.6)	(170.1)	-	-	-	(170.1)
Reimbursable Responsibility Profit/(Loss)	(118.7)	(1.1)	(0.9)	-	(120.7)	(127.9)	(1.4)	(1.0)	-	(130.3)
Commuter Responsibility Profit/(Loss)	18.4	(5.3)	(19.5)	0.6	(5.9)	17.8	(5.8)	(21.1)	0.6	(8.5)
RRIF Payment	(65.0)	-	-	-	(65.0)	(56.4)	-	-	-	(56.4)
Adjusted Operating Income/(Loss) Total Responsibility	**278.4**	**(63.4)**	**(597.4)**	**86.5**	**(296.0)**	**281.5**	**(61.9)**	**(609.1)**	**90.4**	**(299.0)**
Capital Contribution	(278.4)	-	-	(86.5)	(364.8)	(281.5)	-	-	(90.4)	(372.0)
Net Federal Operating Subsidy	**$ -**	**$ (63.4)**	**$ (597.4)**	**$ -**	**$ (660.8)**	**$ -**	**$ (61.9)**	**$ (609.1)**	**$ -**	**$ (671.0)**

Total Capital Five Year Plan

Amtrak's capital planning process is designed to ensure cash is invested in a manner that is consistent with its overall Corporate Strategy, while enhancing revenue growth, operating margins, asset efficiency, and improving safety.

Amtrak's capital program is funded from the following sources: Federal General Capital (the majority of Amtrak capital), Federal Discretionary Grant Programs (authorized by the FAST Act), Homeland Security grants (fund investments that improve security), Special Federal Grants (stem from legislation that funds specific initiatives), State/Local Capital Support (investments that mutually benefit Amtrak and municipalities are often co-funded with Amtrak's portion usually funded from the Federal General Capital grant), RRIF loans (Amtrak may borrow through RRIF to finance investments within the NEC that demonstrate economic benefit and the ability to repay the loan), State and commuter railroad capital payments under Sections 209 and 212 of PRIIA, and commercial debt.

Amtrak is subject to satisfying legally mandated reporting requirements to the FRA, as required by the Federal Grant, as well as other reporting requirements to Congress imposed by statute.

The capital process at Amtrak mandates that a budget is submitted in a five-year plan format, and that each Project/Program is accompanied by a Business Case and a Financial model that details the Return on Investment Analysis (ROI), Net Present Value (NPV) and Payback period. The Finance team reviews and vets the Business Cases, and subsequently allocates the capital requests into three main categories of capital spending buckets. The allocation process includes the following basic principles:

1) The proposed investments will support Amtrak's Corporate Strategy.
2) The rankings will be objective, and trade-offs are analyzed/debated.
3) The rankings will be risk-based to ensure the projects drive value.
4) Ensure the overall portfolio returns a payback annually.

Exhibit [5–4] – Five Year Total Capital Plan by Department

($s in Millions)	Total Capital Program by Department					
	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	5 Year Total
Engineering	$ 753.9	$ 1,029.3	$ 1,049.4	$ 1,343.5	$ 1,382.3	$ 5,558.4
Mechanical	281.5	248.3	248.2	256.0	252.6	1,286.7
Operations	77.2	140.2	137.3	103.8	75.1	533.5
Subtotal Operations	**1,112.5**	**1,417.7**	**1,434.9**	**1,703.3**	**1,710.0**	**7,378.5**
ADA	50.0	50.0	50.0	50.0	50.0	250.0
Gateway	86.4	757.0	1,688.1	1,696.8	1,815.0	6,043.3
CAF	42.0	63.8	12.6	-	-	118.4
IT	41.9	53.6	50.3	51.8	53.3	250.9
Marketing	13.3	80.4	66.1	52.0	44.0	255.8
Environmental	10.5	17.6	15.0	12.7	12.7	68.5
Procurement	3.4	3.4	3.4	2.9	2.8	15.9
Finance	11.7	4.4	2.0	2.0	2.0	22.0
NECIID	28.1	78.8	44.3	75.2	69.7	296.1
Fleet Strategy	17.5	1.3	2.7	2.7	1.3	25.5
Emergency Management	8.0	4.7	6.3	3.1	3.7	25.8
Other Departments	5.3	10.6	6.1	0.8	0.8	23.6
Amtrak Obligation BCC	13.8	14.0	14.0	17.5	17.5	76.8
Hold Back for Operating	50.0	-	-	-	-	50.0
FAST Act Requirements	2.0	2.0	2.0	2.0	2.0	10.0
Future Capital Allocations	(26.2)	-	-	-	-	(26.2)
Subtotal Capital - Other	**357.6**	**1,141.7**	**1,962.9**	**1,969.4**	**2,074.8**	**7,506.4**
Total Capital Funding Needs	**$ 1,470.2**	**$ 2,559.4**	**$ 3,397.8**	**$ 3,672.7**	**$ 3,784.8**	**$ 14,884.9**

Exhibit [5–5] – Total Federal & State Capital Program by Department

($s in Millions)	Total Federal & State Capital Program by Department					
	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	5 Year Total
Engineering	$ 463.5	$ 757.9	$ 862.4	$ 1,008.7	$ 1,009.9	$ 4,102.5
Mechanical	281.5	248.3	248.2	256.0	252.6	1,286.7
Operations	77.2	135.7	137.3	103.8	75.1	529.0
Subtotal Operations	**822.2**	**1,141.9**	**1,247.9**	**1,368.5**	**1,337.6**	**5,918.1**
ADA	50.0	50.0	50.0	50.0	50.0	250.0
Gateway	59.5	151.4	337.6	339.4	363.0	1,250.8
CAF	42.0	63.8	12.6	-	-	118.4
IT	41.9	53.6	50.3	51.8	53.3	250.9
Marketing	12.3	79.9	66.1	52.0	44.0	254.3
Environmental	10.5	17.6	15.0	12.7	12.7	68.5
Procurement	3.4	3.4	3.4	2.9	2.8	15.9
Finance	2.0	2.4	2.0	2.0	2.0	10.4
NECIID	27.6	78.8	44.3	75.2	69.7	295.6
Fleet Strategy	17.5	1.3	2.7	2.7	1.3	25.5
Emergency Management	0.2	-	-	-	-	0.2
Other Departments	5.3	10.6	6.1	0.8	0.8	23.6
Amtrak Obligation BCC	13.8	14.0	14.0	17.5	17.5	76.8
Hold Back for Operating	50.0	-	-	-	-	50.0
FAST Act Requirements	2.0	2.0	2.0	2.0	2.0	10.0
Future Capital Allocations	(26.2)	-	-	-	-	(26.2)
Subtotal Capital - Other	**311.8**	**528.9**	**606.1**	**608.9**	**619.1**	**2,674.8**
Total Federal & State Capital	**$ 1,133.9**	**$ 1,670.8**	**$ 1,854.1**	**$ 1,977.4**	**$ 1,956.8**	**$ 8,593.0**

Exhibit [5–6] – Five Year Total Sources of Capital

($s in Millions)	Total Sources of Capital					
	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	5 Year Total
General Capital	$ 594.5	$ 705.4	$ 694.2	$ 694.3	$ 609.3	$ 3,297.7
Federal Discretionary Grant Programs (Authorized by FAST Act)	-	263.7	427.5	486.6	521.0	1,698.7
NEC Commuter Match (excl Gateway)	-	134.4	148.4	202.8	217.4	703.1
State Contributions to Equipment Capital (PRIIA 209)	67.0	65.2	46.8	47.5	46.0	272.5
Commuter payments (PRIIA 212)	134.2	143.2	172.3	181.4	191.1	822.0
Amtrak Operating Profits - NEC	261.7	276.0	279.5	278.4	281.5	1,377.0
Amtrak Operating Profits -Infrastructure & Investment Development	76.6	83.0	85.4	86.5	90.4	421.8
Total Federal & State Capital	**1,133.9**	**1,670.8**	**1,854.1**	**1,977.4**	**1,956.8**	**8,593.0**
Department of Homeland Security	7.8	4.7	6.3	3.1	3.7	25.5
Hudson Yards Concrete Encasement Grant	26.9	-	-	-	-	26.9
NY-NJ High Speed Rail Grant	106.6	19.9	-	-	-	126.5
State, Local, and Other Funds	194.9	258.5	187.0	334.7	372.4	1,347.5
Gateway Third Party	-	605.6	1,350.5	1,357.4	1,452.0	4,765.5
Subtotal Other Capital	**336.2**	**888.6**	**1,543.8**	**1,695.3**	**1,828.1**	**6,292.0**
Total Capital	**$ 1,470.2**	**$ 2,559.4**	**$ 3,397.8**	**$ 3,672.7**	**$ 3,784.8**	**$ 14,884.9**

Exhibit [5–7] – Five Year Total Capital Summary by Business Line

($s in Millions)	Total Capital Summary By Business Line					
	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	5 Year Total
NEC	$ 929.5	$ 1,794.2	$ 2,728.5	$ 3,052.1	$ 3,227.3	$ 11,731.6
State Supported	225.8	365.6	276.3	235.9	223.3	1,326.9
Long Distance	264.6	302.8	280.0	272.1	252.5	1,371.9
Infrastructure & Investment Development	50.3	96.8	113.1	112.7	81.8	454.6
Total Capital Funding Needs	**$ 1,470.2**	**$ 2,559.4**	**$ 3,397.8**	**$ 3,672.7**	**$ 3,784.8**	**$ 14,884.9**

Exhibit [5–8] – Five Year Total Federal & State Capital by Business Line

($s in Millions)	Total Federal & State Capital by Business Line					
	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	5 Year Total
NEC	$ 683.8	$ 1,101.3	$ 1,297.5	$ 1,447.7	$ 1,494.6	$ 6,024.9
State Supported	154.0	195.4	209.1	195.8	181.2	935.5
Long Distance	246.2	277.3	234.3	221.3	199.2	1,178.4
Infrastructure & Investment Development	49.9	96.8	113.1	112.7	81.8	454.2
Total Federal & State Capital	**$ 1,133.9**	**$ 1,670.8**	**$ 1,854.1**	**$ 1,977.4**	**$ 1,956.8**	**$ 8,593.0**
State Contributions to Equipment Capital (PRIIA 209)	(67.0)	(65.2)	(46.8)	(47.5)	(46.0)	(272.5)
Commuter payments (PRIIA 212)	(134.2)	(143.2)	(172.3)	(181.4)	(191.1)	(822.0)
Federal Discretionary Grant Programs (Authorized by FAST Act)	-	(263.7)	(427.5)	(486.6)	(521.0)	(1,698.7)
NEC Commuter Match (excl Gateway)	-	(134.4)	(148.4)	(202.8)	(217.4)	(703.1)
Amtrak Operating Profits - NEC	(261.7)	(276.0)	(279.5)	(278.4)	(281.5)	(1,377.0)
Amtrak Operating Profits -Infrastructure & Investment Development	(76.6)	(83.0)	(85.4)	(86.5)	(90.4)	(421.8)
General Capital	**$ 594.5**	**$ 705.4**	**$ 694.2**	**$ 694.3**	**$ 609.3**	**$ 3,297.7**

CASH FLOW

Exhibit [5–9] – Cash Flow

($s in Millions)	Cash Flow FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Beginning Cash Balance	**$ 576.1**	**$ 601.9**	**$ 587.0**	**$ 484.7**	**$ 360.4**
Uses:					
Operating Expenses	(991.1)	(975.0)	(957.9)	(1,076.4)	(1,088.0)
Non-Cash Adjustments (Depreciation & Non-Cash OPEB's)	746.8	735.6	735.6	845.4	845.4
Adjusted Operating Loss	**(244.3)**	**(239.4)**	**(222.3)**	**(231.0)**	**(242.6)**
RRIF Loan Payment	(44.2)	(51.6)	(71.2)	(65.0)	(56.4)
Federally Funded Operating Loss	**(288.5)**	**(291.0)**	**(293.5)**	**(296.0)**	**(299.0)**
Capital Expenditures	(1,064.6)	(1,502.8)	(1,719.3)	(1,854.9)	(1,721.7)
Third Party and Other	(809.8)	(1,436.5)	(2,548.2)	(2,590.2)	(2,513.2)
Debt Service Principal & Interest[(a)]	(161.5)	(199.0)	(120.5)	(123.2)	(117.2)
Total Uses	**$ (2,324.4)**	**$ (3,429.3)**	**$ (4,681.5)**	**$ (4,864.3)**	**$ (4,651.2)**
Sources:					
Operating	338.5	291.0	293.5	296.0	299.0
Capital	1,002.8	1,489.4	1,637.0	1,750.5	1,721.7
Debt Service Principal & Interest	160.2	199.0	120.5	123.2	117.2
Subtotal Federal Grants	**1,501.5**	**1,979.4**	**2,051.0**	**2,169.7**	**2,137.9**
Third Party and Special Grants	803.7	1,435.0	2,528.2	2,570.2	2,513.2
Balance Sheet, Revenue, and Operating Improvements	45.0				
Total Sources	**$ 2,350.1**	**$ 3,414.4**	**$ 4,579.2**	**$ 4,739.9**	**$ 4,651.2**
Ending Cash Balance	601.9	587.0	484.7	360.4	360.4
Less: Escrow Cash	(50.0)	(19.2)	(19.2)	(16.9)	(16.9)
Outstanding Checks - Float	(30.0)	(30.0)	(30.0)	(30.0)	(30.0)
Ending Available Cash	**$ 521.9**	**$ 537.8**	**$ 435.5**	**$ 313.5**	**$ 313.5**

Notes:
[(a)] Debt Service Principal and Interest will be paid by the Federal Grant and internal funds.

Amtrak's five year simple sources and uses of cash statement assumes net operating losses and net capital expenditures within each respective year are offset by its federal operating and capital grant funds.

Available cash balances improved $89.8 million in FY2015, primarily as a result of delayed capital expenditures. Amtrak is targeting cash balance improvements of $45.0 million in FY2016 as the company continues work to accelerate its collection process, resolve contractual issues that delay customer payments and implement initiatives with vendors to reduce inventory lead time (see Balance Sheet, Revenue, and Operating Improvements in the chart below). However, this may be more than offset by projected increases in capital spending.

Amtrak's ending cash balance of $521.9 million in FY2016 excludes various restricted cash pools that must be set aside to meet ongoing obligations. These restricted cash pools consist of escrow cash and outstanding check obligations. The restricted cash pools are not available to Amtrak on a

daily basis except for their stated purpose. $50 million in escrow cash in FY2016 is held by a small group of lenders. Beginning in FY2017, some of the escrow cash will become available to Amtrak (see chart below). $30 million in FY2016 in outstanding check obligations is set aside to fund these checks when presented to Amtrak's bank for payment. Outstanding check obligations are recurring and reflected as an obligation during FY2016 through FY2020.

The $521.9 million ending available cash balance in FY2016 includes a balance of $112.5 million in insurance proceeds, after cash expended for repairs during FY2014 and FY2015, related to Amtrak's Super Storm Sandy insurance claim.

DEBT AND DEBT SERVICE

Exhibit [5–10] – Debt and Debt Service

($s in Millions)	Debt and Debt Service FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Beginning Debt Balance	$ 1,258.4	$ 1,438.6	$ 1,621.3	$ 2,326.5	$ 2,895.4
Debt Increase					
Projected ACS-64 RRIF Loan Drawdown	93.8	3.6	-	-	-
Projected NGHSR RRIF Loan Drawdown	205.6	337.4	782.7	642.3	448.1
NGHSR RRIF Capitalized Interest on Credit Risk Premium	4.2	11.1	27.4	41.5	52.2
Debt Reduction					
Principal Repayments (Includes RRIF)	(123.4)	(169.4)	(105.0)	(114.9)	(114.1)
Ending Debt Balance	**$ 1,438.6**	**$ 1,621.3**	**$ 2,326.5**	**$ 2,895.4**	**$ 3,281.6**
Debt Service					
Principal Repayments	(111.3)	(155.2)	(90.2)	(99.6)	(98.1)
Interest Expense	(49.0)	(43.7)	(30.3)	(23.6)	(19.1)
Sub Total - Paid by Federal Funding	**(160.2)**	**(199.0)**	**(120.5)**	**(123.2)**	**(117.2)**
ACS-64 RRIF Repayments	(12.2)	(14.2)	(14.8)	(15.4)	(16.0)
ACS-64 RRIF Interest Expense	(20.1)	(22.3)	(21.8)	(21.2)	(20.6)
ACS-64 RRIF Credit Risk Premium	(2.9)	(0.2)	-	-	-
Sub Total ACS-64 RRIF - Paid by NEC Revenues	**(35.1)**	**(36.6)**	**(36.6)**	**(36.6)**	**(36.6)**
NGHSR RRIF Credit Risk Premium	(9.1)	(14.9)	(34.6)	(28.4)	(19.8)
Sub Total NGHSR RRIF - Paid by NEC Revenues	**(9.1)**	**(14.9)**	**(34.6)**	**(28.4)**	**(19.8)**
Total Debt Service	**$ (204.4)**	**$ (250.5)**	**$ (191.7)**	**$ (188.2)**	**$ (173.6)**

Amtrak has cut its outstanding indebtedness over the past seven years from $3.2 billion to $1.3 billion as of September 30, 2015, a decline of 59%. Debt reduction was accomplished by a variety of means, including (i) exercise of lease early buyout options; (ii) negotiated early terminations of leases and loans; and (iii) scheduled principal amortization.

The current debt level of $1.3 billion outstanding will likely be the lowest point at which Amtrak debt will stand over the next decade; purchase of 28 NextGen Trainsets and related investments by Amtrak will require new debt to be incurred. This new debt, expected to amount to approximately $2.5 billion in total, will be sourced via the FRA's RRIF loan program, and will likely permit at least a

six-year deferral of repayment during the construction period and approximately twenty-three year mortgage-style repayment period, thereafter.

AMTRAK FINANCIAL STABILITY

Amtrak's financial stability and its ability to continue to provide passenger rail services depend upon and are influenced by numerous variables. The possibility exists that matters beyond Amtrak's control may alter its current estimate of capital and operating funding needs. Uncertainties regarding Government funding and the economy, weather events, and fluctuations in fuel prices are serious concerns. An economic downturn, particularly in the Northeast Corridor region, could lead to unfavorable results in ridership and revenues. Budgetary issues faced by some State partners could likewise pressure our operating budget needs. Risks that can impact Amtrak's operating and capital funding needs include:

- If Amtrak does not receive sufficient Federal government funding, Amtrak's ability to operate in its current form may be adversely affected.
- Amtrak's business is capital intensive, and without sufficient capital investment Amtrak will be unable to maintain and improve current infrastructure and rolling stock, much less make planned infrastructure and equipment investments to support growing demand.
- Instability or unavailability of Amtrak's information technology systems could have a detrimental effect on Amtrak's business.
- Legal proceedings may adversely affect Amtrak's business operations.
- Amtrak's business is subject to numerous operational risks – such as changes in general economic, weather or other conditions; equipment failure; disruption of its supply chain; war; acts of terrorism; and other catastrophic events – which could result in significant disruptions to Amtrak's operations, increased expenses or decreased revenue.
- Amtrak's costs and revenues could be substantially adversely or positively affected by competition from airlines, buses and other modes of transportation.
- Amtrak's business is vulnerable to decreasing fuel costs and disruptions in fuel supplies.
- Amtrak's business is subject to Federal, and in some cases State and local, laws and regulations.
- Amtrak's business is subject to environmental laws and regulations that may result in significant costs.
- Most of Amtrak's employees are covered by collective bargaining agreements, and failure to reach agreements may lead to labor dissatisfaction impacting the business and collateral, and distracting bargaining proceedings. The end of agreement cycles every three to five years will drive some rise in wage and benefit costs.
- Catastrophic events could result in liabilities exceeding Amtrak's insurance coverage.
- Amtrak has a mature work force, with substantial employee retirements expected in upcoming years, and therefore has large potential pension and other post-employment benefit obligations. Significant changes in the amount of those obligations could result from small changes in assumptions about health care cost trends and other variables.

Amtrak has significantly reduced its dependence on Federal operating support over the past several years. On a total company basis Amtrak will continue to require Federal operating support during the FY16 to FY20 period. Assuming these external risks to our business do not materialize, when the business is viewed by segment, the Northeast Corridor does not require Federal operating support as a result of its significantly improved financial performance, but Amtrak will continue to require Federal operating support for State Supported and Long Distance services (see Exhibit 5-3).

Delivery of passenger rail services requires significant and increasing capital investment in Amtrak's infrastructure and rolling stock. The level of deferred infrastructure maintenance that has accumulated as a result of insufficient funding is well documented, as is the age of Amtrak's rolling stock. These assets must be improved and replaced in order to continue delivery of current services. Amtrak's plan to reinvest the operating surplus from NEC passenger rail services in NEC infrastructure and rolling stock (which is dependent upon full Federal funding of operating losses on other services), combined with PRIIA Section 212 funding requirements, mitigates, but does not eliminate, the need for Federal capital support in the NEC. Likewise, PRIIA Section 209 State funding requirements reduce but do not eliminate the need for Federal capital support for State Supported Services. Long Distance capital requirements are solely reliant upon Federal capital investment. Without adequate Federal capital investment, Amtrak's ability to deliver passenger rail services will be adversely impacted and could eventually end.

METHODS OF ESTIMATION AND SIGNIFICANT ASSUMPTIONS

Each year Amtrak departments and Finance staff formulate a one-year budget appropriation request and five-year financial plan documents. These efforts are greatly impacted by the timing of Federal appropriations actions. Typically our planning cycles involve the following major milestones:

1. A detailed one-year budget is developed and published in February of each year as part of Amtrak's appropriations request justification.
2. Upon enactment of a Federal appropriation, the one-year budget is adjusted as necessary to match the appropriated amount.
3. A Five Year Financial Plan, beginning with the fiscal year of the appropriation, is developed concurrently with the one-year budget and finalized upon passage of the annual appropriations bill. Amtrak is required by its grant agreement to submit this document within sixty days of passage of the appropriations bill or October 1, whichever is later.

Although the Amtrak Office of the Inspector General (OIG) is a part of the National Railroad Passenger Corporation, Federal funding is appropriated directly to the OIG and is not a part of this budget.

Operating Five Year Plan

The FY16 operating budget was developed by Amtrak's operating departments, governed by a targeted reduction to Amtrak's overall operating loss and the successful execution of our strategy and key initiatives. The budget process consisted of five rounds of refinements, reductions and reviews with the ultimate goal of creating an FY16 operating budget that improved upon FY15 results. The plans for FY17 to FY20 were based on the FY16 budget, with the following adjustments:

1. Passenger Revenue was estimated for each year in a manner consistent with FY16.
2. State Supported Revenue was estimated in a manner consistent with the expected terms of the PRIIA Section 209 methodology.
3. All other revenue was estimated based on delivering services consistent with FY16, plus modest estimated increases in fees paid by other rail operators to operate on the Northeast Corridor as directed by PRIIA Section 212.
4. Straight-time Wages for agreement-covered employees were inflated annually by continuing to apply the gross wage increase (GWI) pattern of the current contracts for planning purposes only; this provision has been made for new GWI's during the FY16 to FY20 period. Actual GWI amounts, if any, will be determined by new contracts which are under negotiation.
5. Salaries for non-agreement employees include a provision for a modest merit-based annual salary increase.
6. Employee benefits were inflated by 4.6% annually, and include Pension and Other Post Retirement Benefit Plans numbers based on AON's updated estimate of the accounting expense calculated using new mortality tables released by the Society of Actuaries for post-retirement benefit plan valuations.
7. Funding for key strategic initiatives described above was identified and accounted for as "StratEx" to provide focus and accountability in executing our FY16 plan.
8. Miscellaneous other expense accounts were increased for expected inflation of approximately 2% to 4% per year.

The following is a description of major revenue and operating expense categories:

Revenue

Passenger Revenue including ticket sales, was developed with a complex model that takes into account numerous factors such as population growth, shifts, and preferences; employment; household income; travel industry competition including the price of gasoline; economic conditions; service schedules; and proposed pricing actions.

State Supported Revenue was budgeted in accordance with existing State contracts and projected route performance in those States. Amtrak has 19 State partnerships to provide services for 30 routes. Each of these route agreements was renegotiated effective October 1, 2013 in compliance with PRIIA Section 209 which requires States to pay their full proportional share of the operating costs of routes under 750 miles in length. These new agreement terms have resulted in a significant increase in Amtrak's budget for State Supported Revenue.

Ancillary Business Revenue consisting of Commuter, Reimbursable, and Commercial Development revenue was budgeted according to the operating agreements and operating expenses needed to deliver those services.

- Commuter Revenue: Amtrak partners with the States or regional transportation authorities in Virginia, Maryland, Florida, Connecticut, California and Washington to provide commuter services.
- Reimbursable Revenue: Amtrak performs reimbursable project work for a number of State agencies on an as-needed basis. Reimbursable revenue and expenses are decreasing each year due to an existing one-time project coming to end and no new large projects added in the plan.
- Commercial Development: Amtrak leverages and maximizes revenue from its real estate holdings through retail, parking, advertising, real property leases/easements/sales and right-of-way fees.
- Other Revenue: Amtrak charges other railroads access fees in relation to their use of the NEC. Other revenue sources include resale of electric propulsion to State commuter agencies, commissions from co-branded credit cards, and revenue from other travel partners.

Operating Expenses

Salaries: Salaries are budgeted for current and planned positions, with a modest merit-based salary increase provision each year.

Wages: Wage rates are governed by the labor agreements that remain in effect through and beyond the current terms. Agreements with all unions follow the same wage increase patterns, and accordingly all unions including those still not yet ratified were budgeted using the terms of the agreements. The final contractual General Wage Increase (GWI) for most agreements was in 2015. For planning purposes only, a provision has been made for new GWIs during FY16–FY20 period.

Employee Benefits: Employee benefit costs were calculated using total planned payroll expense across all business activity including capital and reimbursable projects. An outside consulting firm provided actuarial projections for the pension and retirement expense planning. Insurance costs were projected by Amtrak's Benefit Accounting group, with assistance from the outside firm, using the projected participation in each plan and the projected costs of those plans. Railroad taxes were planned in accordance with the prevailing tax rates applied to wage and salary budgets.

Fuel, Power and Utilities

Train Propulsion: Electricity to power electric locomotives operating in the NEC was budgeted in accordance with projected contractual power costs and projected consumption based on the service schedule. Amtrak negotiates multi-year contracts for electric power to be used for train propulsion. NEC propulsion power distribution services are provided by seven utility companies and electric power generation services are mostly provided by two retail suppliers, Constellation New Energy and Direct Energy. Several contracts of varying lengths have been executed that will be effective in calendar year 2016.

Consumption of diesel fuel to power the off-corridor diesel locomotives was planned in accordance with the service schedule and historical per-mile consumption statistics. The price per gallon of diesel fuel was computed using a historic correlation between the price of oil (per barrel), retail gasoline, and diesel fuel. Diesel fuel prices vary by geographic region due to the sourcing, delivery and transportation options available in each area. The five year per-gallon price outlook was based on U.S. Department of Energy estimates.

Utilities: Utility budgets were developed with the assistance of an energy management consultant based upon historical utility cost analyses at a detail level.

Other Expenses

Materials: Materials consumed in the maintenance of track infrastructure, work train equipment and rolling stock were budgeted by the Engineering and Mechanical departments according to the work production plans in each department.

Occupancy: Rent, Common Area Maintenance, and other occupancy costs were budgeted by the Real Estate department to reflect lease agreement terms and are part of the "Facility, Communications and Office" Account.

Casualty Claims: Estimates for casualty claims including employee Federal Employers' Liability Act (FELA) and passenger liability were developed with actuarial assistance from outside actuarial consultants.

Capital Five-Year Plan

Tier discussion

Capital Projects are allocated into the following three categories:

- Tier 1 – Compliance – Legally required, FRA/DOT compliance, other regulatory and executive requirements (e.g., station compliance with ADA; Positive Train Control (PTC) on the Northeast Corridor; FRA mandated components of Level I equipment overhauls)
- Tier 2 – Maintain Performance – Projects that contributed to keeping the railroad operationally stable (e.g., SOGR projects, capitalized maintenance requirements, support services in IT, Operations)

- Tier 3 – Increase Performance – Enhancements of existing assets and services (e.g., revenue management software improvements, Quik-Trak updates, increased fraud protection)

Projects placed in Tier 3 (Increase Performance) are ranked based on the following criteria: a) Strategic Objective Priority, b) Impact on Performance Improvement, c) Financial Benefit, and d) Risk, and a final weighted score is generated. A ranking selection is performed by Tier.

The following is a summary and description of the information that is required for Capital budget submissions in the form of a Business Case and Financial Model

- Business Opportunity - What the project is trying to accomplish, the opportunity it will provide, and how the project aligns with the strategic plan.
- Project Description/Scope of Work – An overview of what the project is and a description of work to be performed.
- Financial Analysis – An overview of the benefits and return on investment the project will generate.
- Alternatives – A discussion on alternatives to doing/not doing the project and the benefits under each alternative.
- Recommendation – Recommended course of action for the selected alternative.
- Implementation plan – Description of the project plan and how it will be implemented, and any inherent risks associated with the implementation.
- Follow–Up/Project Success – A description of how the project benefits and performance will be tracked next to scope, schedule and budget.
- Conclusion – A discussion why the project should be approved for funding by Amtrak's Executive Committee.
- Funding Sources – The assumed source of funds that will pay for the project.
- National Environmental Policy Act (NEPA) Codes - Codes that describe the status of environmental impact assessment of a project.
- Return on Investment Analysis – An analysis estimating the return on capital investment. All projects that claim business improvement benefits were required to have this analysis completed; state of good repair programs including rolling stock rehabilitation are excluded.
- Project Outcome and Performance Measures - A worksheet to input outcomes and performance measures. This is a brief description of major outcome or outcomes anticipated upon completion of the project, and the metrics to measure the outcome(s).

- Return on Investment (ROI) – A performance measure of profitability that indicates whether or not Amtrak is using its capital in an efficient manner, expressed as the ratio of net benefits derived from the project to the average capital employed.
- Net present value (NPV) – The discounted benefit/cost of a project taking into consideration the time value of money.
- Payback Period – The time between the start of a project until the time that the benefits achieved have "paid back" the costs of the investment.

Appendix

FY 2016 – FY 2020 SUMMARY METRICS

	Total Amtrak				
	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
KPIs					
RASM - Revenue per Seat Mile [a]	$0.214	$0.220	$0.225	$0.230	$0.237
CASM - Expenses per Seat Mile [b]	$0.223	$0.226	$0.230	$0.235	$0.241
Cost Recovery Ratio [c]	96.0%	97.1%	97.9%	98.2%	98.5%
Ridership (000's)	31,798	32,435	32,880	33,313	33,825
Passenger Miles per total core employee (000's)	31	32	32	32	33
Customer Satisfaction Index	78	N/A	N/A	N/A	N/A
Host Railroad Performance [d]	900	900	900	900	900
Other Indicators					
Seat Miles (000's)	12,928,830	12,914,140	12,916,190	12,918,100	12,897,290
Passenger Miles (000's)	6,754,884	6,878,651	6,963,815	7,046,918	7,145,852
Train Miles (000's)	38,544	38,527	38,535	38,539	38,473
Average Load Factor	52.2%	53.3%	53.9%	54.6%	55.4%
Seat Miles per total core employee (000's) [e]	60	60	59	60	60
Unadjusted Ticket Revenue ($000's)	$2,289,574	$2,380,080	$2,464,465	$2,532,892	$2,600,659
Average Ticket Yield	$0.3390	$0.3460	$0.3539	$0.3594	$0.3639
Average Ticket Price	$72.00	$73.38	$74.95	$76.03	$76.88
Core Revenue per Train Mile [f]	$68.37	$71.38	$73.95	$75.91	$78.00
Core Expenses per Train Mile [g]	$67.19	$68.30	$70.27	$72.01	$73.99
Operating Ratio [h]	1.04	1.03	1.02	1.02	1.02
Average cost per gallon of diesel [i]	$2.46	$2.49	$2.51	$2.53	$2.56

Notes:

[a] RASM is calculated as NTS Total Revenue divided by Available Seat Miles to be consistent with the KPIs.

[b] CASM is calculated as NTS Total Operating Expense less OIG, PRJ, Depreciation and non-cash OPEBs divided by Available Seat Miles.

[c] Cost Recovery Ratio is calculated as RASM divided by CASM.

[d] Host Railroad Performance is calculated as average monthly minutes of delay per ten thousand Train Miles.

[e] Average monthly Seat Miles divided by year-end headcount.

[f] Core Revenue per Train Mils is calculated as Total Core Revenue divided by Total Train Miles for National Train Service and excludes Ancillary and Infrastructure activities.

[g] Core Expense per Train Mile is calculated as Total Core Expense less Depreciation and non-cash OPEBs divided by Total Train Miles and excludes Ancillary and Infrastructure activities.

[h] Operating Ratio is calculated as Total Operating Expenses (excluding Depreciation, OIG, OPEBs and PRJ) by total Operating Revenue (excluding state capital payments) and excludes all Ancillary and Infrastructure activities.

[i] Average Cost per Gallon of Diesel Fuel for all of Amtrak, excluding those used for commuter services.

	NEC				
	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
KPIs					
RASM - Revenue per Seat Mile [(a)]	$0.363	$0.381	$0.394	$0.404	$0.413
CASM - Expenses per Seat Mile [(b)]	$0.225	$0.229	$0.235	$0.242	$0.248
Cost Recovery Ratio [(c)]	161.3%	166.2%	168.1%	167.0%	166.8%
Ridership (000's)	12,041	12,300	12,411	12,512	12,641
Passenger Miles per total core employee (000's)	33	33	33	33	34
Customer Satisfaction Index	75	N/A	N/A	N/A	N/A
Other Indicators					
Seat Miles (000's)	3,586,580	3,572,240	3,573,320	3,575,670	3,586,370
Passenger Miles (000's)	1,989,788	2,032,710	2,049,995	2,065,995	2,086,962
Train Miles (000's)	9,415	9,375	9,379	9,386	9,414
Average Load Factor	55.5%	56.9%	57.4%	57.8%	58.2%
Seat Miles per total core employee (000's) [(d)]	59	59	58	58	58
Unadjusted Ticket Revenue ($000's)	$1,259,948	$1,315,495	$1,362,676	$1,398,175	$1,433,016
Average Ticket Yield	$0.6332	$0.6472	$0.6647	$0.6768	$0.6867
Average Ticket Price	$104.64	$106.95	$109.80	$111.75	$113.36
Core Revenue per Train Mile [(e)]	$136.95	$143.91	$148.98	$152.73	$156.07
Core Expenses per Train Mile [(f)]	$77.80	$77.72	$79.83	$82.73	$84.93
Operating Ratio [(g)]	0.62	0.60	0.59	0.60	0.60

Notes:

[(a)] RASM is calculated as NTS Total Revenue divided by Available Seat Miles to be consistent with the KPIs.

[(b)] CASM is calculated as NTS Total Operating Expense less OIG, PRJ, Depreciation and non-cash OPEBs divided by Available Seat Miles.

[(c)] Cost Recovery Ratio is calculated as RASM divided by CASM.

[(d)] Average monthly Seat Miles divided by year-end headcount.

[(e)] Core Revenue per Train Mils is calculated as Total Core Revenue divided by Total Train Miles for National Train Service and excludes Ancillary and Infrastructure activities.

[(f)] Core Expense per Train Mile is calculated as Total Core Expense less Depreciation and non-cash OPEBs divided by Total Train Miles and excludes Ancillary and Infrastructure activities.

[(g)] Operating Ratio is calculated as Total Operating Expenses (excluding Depreciation, OIG, OPEBs and PRJ) by total Operating Revenue (excluding state capital payments) and excludes all Ancillary and Infrastructure activities.

	State Supported				
	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
KPIs					
RASM - Revenue per Seat Mile [a]	$0.194	$0.194	$0.193	$0.197	$0.205
CASM - Expenses per Seat Mile [b]	$0.212	$0.213	$0.207	$0.210	$0.217
Cost Recovery Ratio [c]	91.9%	90.9%	93.3%	94.1%	94.5%
Ridership (000's)	15,172	15,471	15,749	16,028	16,348
Passenger Miles per total core employee (000's) [d]	27	28	30	30	31
Customer Satisfaction Index	83	N/A	N/A	N/A	N/A
Other Indicators					
Seat Miles (000's)	4,612,210	4,625,130	4,625,030	4,625,920	4,580,570
Passenger Miles (000's)	1,992,485	2,029,430	2,065,604	2,101,943	2,143,645
Train Miles (000's)	14,373	14,439	14,439	14,441	14,303
Average Load Factor	43.2%	43.9%	44.7%	45.4%	46.8%
Seat Miles per total core employee (000's) [d]	63	63	66	67	66
Unadjusted Ticket Revenue ($000's)	$502,870	$524,245	$544,260	$562,281	$580,610
Average Ticket Yield	$0.2524	$0.2583	$0.2635	$0.2675	$0.2709
Average Ticket Price	$33.15	$33.89	$34.56	$35.08	$35.52
Core Revenue per Train Mile [e]	$54.98	$57.07	$59.06	$60.83	$63.16
Core Expenses per Train Mile [f]	$57.94	$60.13	$60.20	$61.48	$63.69
Operating Ratio [g]	1.09	1.10	1.07	1.06	1.06

Notes:

[a] RASM is calculated as NTS Total Revenue divided by Available Seat Miles to be consistent with the KPIs.

[b] CASM is calculated as NTS Total Operating Expense less OIG, PRJ, Depreciation and non-cash OPEBs divided by Available Seat Miles.

[c] Cost Recovery Ratio is calculated as RASM divided by CASM.

[d] Average monthly Seat Miles divided by year-end headcount.

[e] Core Revenue per Train Mils is calculated as Total Core Revenue divided by Total Train Miles for National Train Service and excludes Ancillary and Infrastructure activities.

[f] Core Expense per Train Mile is calculated as Total Core Expense less Depreciation and non-cash OPEBs divided by Total Train Miles and excludes Ancillary and Infrastructure activities.

[g] Operating Ratio is calculated as Total Operating Expenses (excluding Depreciation, OIG, OPEBs and PRJ) by total Operating Revenue (excluding state capital payments) and excludes all Ancillary and Infrastructure activities.

	Long Distance				
	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
KPIs					
RASM - Revenue per Seat Mile [a]	$0.120	$0.123	$0.128	$0.131	$0.134
CASM - Expenses per Seat Mile [b]	$0.232	$0.237	$0.249	$0.253	$0.258
Cost Recovery Ratio [c]	51.7%	51.9%	51.4%	51.7%	51.9%
Ridership (000's)	4,585	4,664	4,720	4,773	4,836
Passenger Miles per total core employee (000's) [d]	34	34	33	34	34
Customer Satisfaction Index	72	N/A	N/A	N/A	N/A
Other Indicators					
Seat Miles (000's)	4,730,040	4,716,770	4,717,840	4,716,510	4,730,350
Passenger Miles (000's)	2,772,611	2,816,511	2,848,216	2,878,979	2,915,245
Train Miles (000's)	14,756	14,713	14,717	14,712	14,756
Average Load Factor	58.6%	59.7%	60.4%	61.0%	61.6%
Seat Miles per total core employee (000's) [d]	57	57	55	55	56
Unadjusted Ticket Revenue ($000's)	$523,636	$540,340	$557,528	$572,436	$587,033
Average Ticket Yield	$0.1889	$0.1918	$0.1957	$0.1988	$0.2014
Average Ticket Price	$114.21	$115.85	$118.12	$119.92	$121.39
Core Revenue per Train Mile [e]	$37.65	$39.21	$40.73	$41.71	$42.58
Core Expenses per Train Mile [f]	$69.43	$70.33	$74.07	$75.52	$76.99
Operating Ratio [g]	1.93	1.93	1.94	1.93	1.93

Notes:

[a] This is calculated as NTS Total Revenue divided by Available Seat Miles to be consistent with the KPIs.

[b] This is calculated as NTS Total Operating Expense less OIG, PRJ, Depreciation and non-cash OPEBs divided by Available Seat Miles.

[c] This is calculated as RASM divided by CASM.

[d] Average monthly Seat Miles divided by year-end headcount.

[e] Core Revenue per Train Mils is calculated as Total Core Revenue divided by Total Train Miles for National Train Service and excludes Ancillary and Infrastructure activities.

[f] Core Expense per Train Mile is calculated as Total Core Expense less Depreciation and non-cash OPEBs divided by Total Train Miles and excludes Ancillary and Infrastructure activities.

[g] Operating Ratio is calculated as Total Operating Expenses (excluding Depreciation, OIG, OPEBs and PRJ) by total Operating Revenue (excluding state capital payments) and excludes all Ancillary and Infrastructure activities.

FY 2016 – FY 2020 BUDGET STATISTICS BY ROUTE

($s in Millions)	FY 2016 Ridership	Revenue	Operating Expense [a]	Capital Project Allocation [b]	Contribution/ (Loss) per Rider ($)	Avg. PM per Core employee (000's) [c]	Avg. SM per Core employee (000's) [c]
Acela	3,582,700	$635.5	$325.0	$253.5	$86.67	28	45
Regional	8,443,855	$662.8	$478.4	$427.3	$21.85	37	69
NEC Special Trains	14,383	$2.0	$2.8	$2.9	($54.21)	13	45
NEC Spine	**12,040,937**	**$1,300.3**	**$806.1**	**$683.8**	**$41.05**	**33**	**59**
Ethan Allen Express	53,159	$5.6	$10.0	$0.8	($82.62)	13	31
Vermonter	101,151	$6.8	$12.5	$1.9	($55.90)	28	59
Maple Leaf	408,936	$53.4	$35.9	$8.2	$42.95	45	84
The Downeaster	521,253	$13.2	$15.9	$4.6	($5.25)	36	109
New Haven - Springfield	343,300	$26.7	$24.3	$2.9	$7.07	17	27
Keystone Service	1,445,861	$47.1	$57.2	$9.0	($7.01)	30	68
Empire Service	1,177,180	$59.3	$113.2	$12.9	($45.74)	17	43
Chicago-St.Louis	633,425	$35.0	$39.9	$8.4	($7.75)	36	79
Hiawathas	816,113	$22.8	$22.6	$4.6	$0.27	38	102
Wolverines	492,216	$97.8	$83.9	$7.4	$28.05	16	33
Illini	298,477	$18.8	$18.3	$4.9	$1.59	39	96
Illinois Zephyr	211,760	$15.1	$15.3	$4.1	($1.06)	30	84
Heartland Flyer	73,935	$7.3	$9.0	$1.6	($23.48)	19	48
Pacific Surfliner	2,873,547	$119.5	$131.9	$17.3	($4.29)	25	79
Cascades	783,612	$63.5	$62.6	$10.2	$1.19	26	46
Capitols	1,481,761	$62.0	$77.7	$12.7	($10.61)	17	66
San Joaquins	1,197,691	$80.5	$99.2	$14.4	($15.56)	22	55
Adirondack	135,085	$13.2	$16.3	$1.9	($22.78)	33	41
Blue Water	185,365	$13.6	$12.7	$2.5	$4.98	39	88
Washington-Lynchburg	185,930	$11.7	$8.9	$1.4	$15.09	62	92
Washington-Newport News	357,478	$26.7	$18.8	$3.1	$22.04	57	80
Washington - Norfolk	169,034	$10.9	$6.0	$1.7	$28.78	67	171
Washington - Richmond	188,918	$10.9	$7.3	$1.5	$18.89	55	116
Hoosier State	30,468	$2.9	$4.0	$0.9	($34.29)	15	37
Kansas City-St.Louis	184,197	$14.1	$14.3	$4.4	($1.11)	31	77
Pennsylvanian	234,073	$15.0	$13.3	$2.8	$7.29	56	81
Pere Marquette	96,641	$6.4	$7.2	$1.3	($8.05)	27	53
Carolinian	303,765	$23.9	$25.9	$3.8	($6.52)	46	59
Piedmont	165,757	$6.9	$9.0	$2.7	($13.07)	26	62
Non NEC Special Trains	21,658	$6.0	$2.9	$0.2	$140.58	17	27
State Supported Routes	**15,171,744**	**$896.4**	**$975.5**	**$154.0**	**($5.23)**	**27**	**63**
Silver Star	389,898	$38.1	$72.2	$18.5	($87.44)	37	63
Cardinal	102,076	$8.5	$23.7	$5.8	($149.71)	24	46
Silver Meteor	361,315	$44.4	$74.2	$17.0	($82.59)	41	62
Empire Builder	442,704	$56.4	$124.2	$31.6	($153.23)	35	72
Capitol Limited	229,132	$21.6	$48.1	$9.5	($115.39)	29	47
California Zephyr	379,307	$55.2	$108.9	$30.5	($141.48)	37	63
Southwest Chief	365,763	$48.8	$116.2	$27.8	($184.15)	37	56
City of New Orleans	255,585	$20.9	$45.3	$11.4	($95.46)	32	52
Texas Eagle	335,422	$29.1	$59.5	$15.8	($90.75)	40	57
Sunset Limited	100,959	$13.1	$51.2	$10.5	($376.75)	21	44
Coast Starlight	470,503	$48.2	$110.9	$16.9	($133.17)	27	44
Lake Shore Limited	365,074	$42.7	$67.3	$14.0	($67.31)	35	64
Palmetto	210,774	$18.4	$24.0	$10.0	($26.69)	46	106
Crescent	290,502	$35.5	$85.1	$16.5	($170.88)	24	47
Auto Train	285,812	$87.3	$87.6	$10.5	($0.93)	37	52
Long Distance Routes	**4,584,826**	**$568.2**	**$1,098.1**	**$246.2**	**($115.63)**	**34**	**57**
National Train Service [d]	**31,797,508**	**$2,764.9**	**$2,880.2**	**$1,084.0**	**($3.63)**	**31**	**60**
Non-Allocated Capital [e]				**$49.9**			
Total Federal & State Capital				**$1,133.9**			

[a] Budget route results are projected based on APT historical ratios. Expenses exclude net Depreciation, OPEBs, PRJ and Interest.

[b] This represents the allocation of Federal, Operating Profits and PRIIA Funded Capital Projects to Routes.

[c] Employee data is not aggregated by route in Amtrak's Financial Systems. The data presented here is based on an allocation of Core employees based on total costs of each route. PM equals Passenger Miles and SM equals Seat Miles.

[d] National Train Service does not include Ancillary or Infrastructure routes.

[e] Non-Allocated Capital category represents Infrastructure & Investment Development Business Line.

($s in Millions)	FY 2017 Ridership	Revenue	Operating Expense [a]	Capital Project Allocation [b]	Contribution/ (Loss) per Rider ($)	Avg. PM per Core employee (000's) [c]	Avg. SM per Core employee (000's) [c]
Acela	3,646,628	$666.7	$316.7	$408.3	$95.97	29	45
Regional	8,639,174	$690.9	$481.8	$688.3	$24.21	37	68
NEC Special Trains	14,390	$2.0	$3.0	$4.7	($73.04)	11	40
NEC Spine	**12,300,193**	**$1,359.6**	**$801.6**	**$1,101.3**	**$45.37**	**33**	**59**
Ethan Allen Express	53,867	$5.8	$10.3	$1.0	($84.79)	13	30
Vermonter	102,707	$7.2	$12.2	$2.4	($49.39)	29	60
Maple Leaf	414,000	$35.1	$16.9	$10.3	$44.02	98	179
The Downeaster	528,246	$13.7	$18.0	$5.8	($8.24)	32	96
New Haven - Springfield	377,912	$27.8	$39.2	$3.7	($30.22)	11	23
Keystone Service	1,487,030	$50.8	$60.4	$11.5	($6.42)	29	64
Empire Service	1,200,335	$61.0	$116.5	$16.4	($46.26)	17	42
Chicago-St.Louis	665,082	$36.5	$28.8	$10.6	$11.53	53	114
Hiawathas	824,645	$23.6	$23.4	$5.9	$0.21	38	99
Wolverines	504,824	$85.1	$79.1	$9.4	$11.89	18	36
Illini	303,455	$19.3	$19.6	$6.2	($1.05)	37	90
Illinois Zephyr	213,861	$15.5	$16.2	$5.2	($3.66)	29	80
Heartland Flyer	74,345	$7.5	$10.0	$2.0	($32.97)	17	44
Pacific Surfliner	2,925,429	$122.7	$129.7	$21.9	($2.41)	26	81
Cascades	787,472	$70.2	$66.4	$12.9	$4.75	25	44
Capitols	1,493,618	$63.5	$81.6	$16.1	($12.11)	16	63
San Joaquins	1,209,004	$82.6	$101.5	$18.3	($15.70)	22	54
Adirondack	136,497	$13.7	$16.9	$2.4	($23.35)	33	40
Blue Water	187,654	$14.0	$13.2	$3.2	$4.19	38	85
Washington-Lynchburg	191,080	$12.2	$9.6	$1.7	$13.64	60	85
Washington-Newport News	366,457	$27.7	$19.2	$3.9	$23.30	58	79
Washington - Norfolk	172,281	$11.5	$7.6	$2.2	$22.56	55	136
Washington - Richmond	192,520	$11.2	$7.9	$1.9	$17.14	52	107
Hoosier State	30,788	$3.0	$3.1	$1.1	($5.04)	20	47
Kansas City-St.Louis	187,389	$14.5	$15.5	$5.6	($5.22)	30	72
Pennsylvanian	241,620	$15.6	$14.0	$3.5	$6.76	55	77
Pere Marquette	97,298	$6.6	$7.7	$1.7	($11.24)	26	50
Carolinian	309,868	$25.1	$28.3	$4.8	($10.26)	44	54
Piedmont	169,851	$7.1	$9.4	$3.4	($13.56)	26	60
Non NEC Special Trains	21,667	$6.0	$3.6	$0.2	$112.08	14	23
State Supported Routes	**15,470,803**	**$896.0**	**$986.0**	**$195.4**	**($5.82)**	**28**	**63**
Silver Star	400,286	$39.8	$62.7	$20.8	($57.29)	44	72
Cardinal	105,164	$9.0	$27.9	$6.5	($179.77)	21	39
Silver Meteor	370,633	$46.7	$66.5	$19.1	($53.41)	47	69
Empire Builder	445,170	$58.1	$130.4	$35.6	($162.53)	33	69
Capitol Limited	231,964	$22.1	$52.7	$10.7	($132.05)	27	43
California Zephyr	382,449	$56.7	$114.9	$34.3	($152.04)	36	60
Southwest Chief	369,577	$50.4	$121.2	$31.3	($191.55)	36	54
City of New Orleans	259,454	$21.5	$48.3	$12.9	($103.25)	31	49
Texas Eagle	341,377	$30.3	$62.3	$17.8	($93.74)	39	55
Sunset Limited	103,212	$13.8	$51.7	$11.8	($367.06)	21	43
Coast Starlight	479,987	$50.2	$118.1	$19.1	($141.38)	26	42
Lake Shore Limited	374,555	$35.6	$64.4	$15.8	($77.06)	38	68
Palmetto	215,459	$19.2	$21.3	$11.2	($9.79)	53	121
Crescent	295,663	$37.0	$91.6	$18.5	($184.40)	23	44
Auto Train	289,289	$90.4	$84.4	$11.8	$20.59	39	54
Long Distance Routes	**4,664,240**	**$580.8**	**$1,118.4**	**$277.3**	**($115.27)**	**34**	**57**
National Train Service [d]	**32,435,235**	**$2,836.3**	**$2,906.0**	**$1,574.0**	**($2.15)**	**32**	**60**
Non-Allocated Capital [e]				**$96.8**			
Total Federal & State Capital				**$1,670.8**			

[a] Budget route results are projected based on APT historical ratios. Expenses exclude net Depreciation, OPEBs, PRJ and Interest.

[b] This represents the allocation of Federal, Operating Profits and PRIIA Funded Capital Projects to Routes.

[c] Employee data is not aggregated by route in Amtrak's Financial Systems. The data presented here is based on an allocation of Core employees based on total costs of each route. PM equals Passenger Miles and SM equals Seat Miles.

[d] National Train Service does not include Ancillary or Infrastructure routes.

[e] Non-Allocated Capital category represents Infrastructure & Investment Development business line.

($s in Millions)	Ridership	Revenue	FY 2018 Operating Expense [a]	FY 2018 Capital Project Allocation [b]	FY 2018 Contribution/ (Loss) per Rider ($)	FY 2018 Avg. PM per Core employee (000's) [c]	FY 2018 Avg. SM per Core employee (000's) [c]
Acela	3,661,466	$692.5	$318.1	$481.1	$102.25	29	46
Regional	8,734,785	$714.3	$498.1	$810.9	$24.75	36	66
NEC Special Trains	14,398	$2.0	$3.1	$5.5	($74.81)	11	40
NEC Spine	**12,410,649**	**$1,408.8**	**$819.3**	**$1,297.5**	**$47.50**	**33**	**58**
Ethan Allen Express	54,710	$6.0	$10.7	$1.1	($87.03)	13	30
Vermonter	104,362	$7.5	$12.7	$2.6	($49.91)	29	59
Maple Leaf	418,478	$36.0	$19.0	$11.1	$40.66	90	162
The Downeaster	536,285	$14.3	$19.3	$6.2	($9.26)	31	92
New Haven - Springfield	383,859	$28.6	$20.0	$4.0	$22.45	22	46
Keystone Service	1,532,252	$53.6	$63.0	$12.3	($6.13)	29	62
Empire Service	1,225,337	$62.9	$121.1	$17.6	($47.45)	17	41
Chicago-St.Louis	682,271	$37.7	$30.0	$11.4	$11.32	53	111
Hiawathas	834,817	$24.4	$24.6	$6.3	($0.16)	37	95
Wolverines	516,324	$57.5	$46.2	$10.1	$21.95	32	62
Illini	308,867	$19.8	$20.6	$6.6	($2.55)	36	87
Illinois Zephyr	216,185	$15.8	$17.1	$5.5	($5.68)	28	77
Heartland Flyer	74,789	$7.8	$10.4	$2.1	($35.41)	17	43
Pacific Surfliner	2,984,766	$124.0	$131.8	$23.4	($2.58)	27	80
Cascades	792,037	$71.4	$67.4	$13.8	$5.01	25	44
Capitols	1,509,026	$65.0	$79.8	$17.2	($9.81)	17	66
San Joaquins	1,222,039	$84.7	$100.2	$19.6	($12.67)	23	55
Adirondack	137,915	$14.2	$17.7	$2.6	($25.45)	32	39
Blue Water	189,679	$14.5	$13.8	$3.4	$3.32	37	82
Washington-Lynchburg	195,997	$12.8	$9.9	$1.9	$14.50	60	84
Washington-Newport News	375,894	$28.9	$19.7	$4.2	$24.32	58	78
Washington - Norfolk	175,849	$11.9	$7.9	$2.4	$22.89	55	133
Washington - Richmond	196,520	$11.7	$8.1	$2.1	$17.92	52	106
Hoosier State	31,157	$3.0	$3.2	$1.2	($5.17)	20	47
Kansas City-St.Louis	190,702	$15.0	$16.3	$6.0	($7.15)	29	69
Pennsylvanian	249,067	$16.3	$14.6	$3.8	$6.69	55	75
Pere Marquette	98,059	$6.8	$8.1	$1.8	($13.13)	25	48
Carolinian	316,311	$26.4	$29.3	$5.1	($8.99)	44	53
Piedmont	174,231	$7.4	$9.6	$3.7	($12.67)	27	59
Non NEC Special Trains	21,677	$6.0	$4.0	$0.2	$93.17	13	21
State Supported Routes	**15,749,462**	**$892.0**	**$956.2**	**$209.1**	**($4.07)**	**30**	**66**
Silver Star	404,626	$41.4	$65.6	$17.6	($59.88)	43	70
Cardinal	106,298	$9.5	$29.5	$5.5	($187.85)	21	38
Silver Meteor	374,649	$48.7	$69.9	$16.1	($56.40)	46	67
Empire Builder	447,787	$60.2	$136.6	$30.1	($170.76)	32	67
Capitol Limited	234,964	$23.0	$55.3	$9.0	($137.57)	27	41
California Zephyr	385,834	$58.8	$120.6	$29.0	($160.19)	35	58
Southwest Chief	373,592	$52.5	$126.9	$26.4	($199.08)	35	52
City of New Orleans	263,575	$22.3	$50.7	$10.9	($107.68)	30	47
Texas Eagle	347,634	$31.7	$65.5	$15.0	($97.16)	39	53
Sunset Limited	105,366	$14.6	$54.0	$10.0	($374.27)	21	42
Coast Starlight	489,993	$52.5	$123.7	$16.1	($145.32)	26	40
Lake Shore Limited	376,754	$36.5	$68.5	$13.3	($84.79)	37	65
Palmetto	219,957	$20.1	$22.5	$9.5	($10.71)	52	116
Crescent	296,507	$38.3	$95.5	$15.7	($192.89)	23	43
Auto Train	292,431	$93.2	$88.9	$10.0	$14.73	38	52
Long Distance Routes	**4,719,967**	**$603.5**	**$1,173.8**	**$234.3**	**($120.82)**	**33**	**55**
National Train Service [d]	**32,880,079**	**$2,904.4**	**$2,949.3**	**$1,741.0**	**($1.37)**	**32**	**59**
Non-Allocated Capital [e]				**$113.1**			
Total Federal & State Capital				**$1,854.1**			

[a] Budget route results are projected based on APT historical ratios. Expenses exclude net Depreciation, OPEBs, PRJ and Interest.

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[c] Employee data is not aggregated by route in Amtrak's Financial Systems. The data presented here is based on an allocation of Core employees based on total costs of each route. PM equals Passenger Miles and SM equals Seat Miles.

[d] National Train Service does not include Ancillary or Infrastructure routes.

[e] Non-Allocated Capital category represents Infrastructure & Investment Development business line.

($s in Millions)	FY 2019 Ridership	Revenue	Operating Expense [a]	Capital Project Allocation [b]	Contribution/ (Loss) per Rider ($)	Avg. PM per Core employee (000's) [c]	Avg. SM per Core employee (000's) [c]
Acela	3,673,195	$712.5	$330.6	$536.7	$103.97	28	45
Regional	8,823,928	$731.4	$509.8	$904.8	$25.11	37	66
NEC Special Trains	14,398	$2.0	$3.3	$6.2	($85.84)	11	39
NEC Spine	**12,511,520**	**$1,445.9**	**$843.7**	**$1,447.7**	**$48.13**	**33**	**58**
Ethan Allen Express	55,548	$6.1	$11.0	$1.0	($87.19)	13	30
Vermonter	105,943	$7.8	$12.9	$2.4	($48.40)	30	59
Maple Leaf	422,760	$36.8	$19.4	$10.4	$41.14	91	162
The Downeaster	544,443	$14.8	$19.3	$5.8	($8.35)	32	93
New Haven - Springfield	389,705	$29.4	$18.2	$3.7	$28.78	25	52
Keystone Service	1,578,520	$56.3	$64.8	$11.5	($5.35)	30	62
Empire Service	1,250,099	$64.7	$123.6	$16.4	($47.13)	17	41
Chicago-St.Louis	699,480	$38.8	$30.4	$10.7	$12.03	55	112
Hiawathas	845,018	$25.1	$24.7	$5.9	$0.40	38	97
Wolverines	527,776	$59.0	$47.8	$9.5	$21.17	32	61
Illini	314,186	$20.3	$20.9	$6.2	($1.88)	37	88
Illinois Zephyr	218,386	$16.2	$17.4	$5.2	($5.47)	29	77
Heartland Flyer	75,163	$8.0	$10.7	$2.0	($35.94)	17	43
Pacific Surfliner	3,045,044	$124.5	$135.4	$22.0	($3.56)	27	80
Cascades	796,152	$71.9	$69.5	$12.9	$3.00	25	43
Capitols	1,524,428	$66.5	$79.0	$16.1	($8.20)	18	68
San Joaquins	1,234,538	$86.6	$99.9	$18.3	($10.74)	24	57
Adirondack	139,328	$14.6	$18.0	$2.4	($23.86)	33	39
Blue Water	191,603	$14.9	$14.0	$3.2	$4.68	38	83
Washington-Lynchburg	200,940	$13.3	$10.1	$1.7	$15.74	62	84
Washington-Newport News	385,367	$29.9	$20.1	$3.9	$25.46	60	78
Washington - Norfolk	179,403	$12.3	$8.0	$2.2	$24.00	56	134
Washington - Richmond	200,487	$12.0	$8.3	$1.9	$18.51	53	106
Hoosier State	31,531	$3.1	$3.3	$1.1	($6.81)	20	46
Kansas City-St.Louis	193,977	$15.4	$16.5	$5.6	($5.81)	30	70
Pennsylvanian	256,598	$16.9	$14.7	$3.5	$8.69	58	76
Pere Marquette	98,775	$7.0	$8.2	$1.7	($12.43)	25	48
Carolinian	322,696	$27.6	$29.9	$4.8	($7.31)	44	53
Piedmont	178,633	$7.6	$9.9	$3.4	($12.55)	27	59
Non NEC Special Trains	21,677	$6.0	$4.6	$0.2	$66.87	11	18
State Supported Routes	**16,028,206**	**$913.4**	**$970.4**	**$195.8**	**($3.55)**	**30**	**67**
Silver Star	408,760	$42.6	$67.1	$16.6	($59.93)	44	70
Cardinal	107,386	$9.8	$30.0	$5.2	($187.78)	21	38
Silver Meteor	378,470	$50.4	$71.3	$15.2	($55.26)	47	67
Empire Builder	450,127	$60.9	$139.2	$28.4	($173.94)	33	67
Capitol Limited	237,842	$23.5	$56.2	$8.5	($137.75)	27	42
California Zephyr	389,003	$59.8	$122.8	$27.4	($162.03)	35	58
Southwest Chief	377,408	$53.5	$129.5	$25.0	($201.50)	36	52
City of New Orleans	267,593	$22.9	$51.8	$10.3	($108.18)	30	47
Texas Eagle	353,793	$32.6	$66.6	$14.2	($96.18)	39	53
Sunset Limited	107,499	$15.0	$55.2	$9.4	($374.66)	22	42
Coast Starlight	499,899	$54.4	$126.5	$15.2	($144.24)	26	40
Lake Shore Limited	378,717	$37.1	$69.6	$12.6	($85.88)	37	65
Palmetto	224,404	$20.8	$23.1	$9.0	($9.92)	53	116
Crescent	297,168	$39.2	$97.5	$14.8	($196.15)	23	43
Auto Train	295,412	$95.7	$88.5	$9.5	$24.24	40	54
Long Distance Routes	**4,773,480**	**$618.0**	**$1,194.9**	**$221.3**	**($120.86)**	**34**	**55**
National Train Service [d]	**33,313,207**	**$2,977.3**	**$3,009.0**	**$1,864.7**	**($0.95)**	**32**	**60**
Non-Allocated Capital [e]				**$112.7**			
Total Federal & State Capital				**$1,977.4**			

[a] Budget route results are projected based on APT historical ratios. Expenses exclude net Depreciation, OPEBs, PRJ and Interest.

[b] This represents the allocation of Federal, Operating Profits and PRIIA Funded Capital Projects to Routes.

[c] Employee data is not aggregated by route in Amtrak's Financial Systems. The data presented here is based on an allocation of Core employees based on total costs of each route. PM equals Passenger Miles and SM equals Seat Miles.

[d] National Train Service does not include Ancillary or Infrastructure routes.

[e] Non-Allocated Capital category represents Infrastructure & Investment Development business line.

($s in Millions)	FY 2020 Ridership	Revenue	Operating Expense [a]	Capital Project Allocation [b]	Contribution/ (Loss) per Rider ($)	Avg. PM per Core employee (000's) [c]	Avg. SM per Core employee (000's) [c]
Acela	3,694,500	$733.4	$339.8	$554.1	$106.54	29	45
Regional	8,932,597	$747.4	$521.5	$934.1	$25.28	37	66
NEC Special Trains	14,398	$2.0	$3.4	$6.4	($92.07)	11	39
NEC Spine	**12,641,495**	**$1,482.8**	**$864.7**	**$1,494.6**	**$48.90**	**34**	**58**
Ethan Allen Express	56,512	$6.3	$11.3	$0.9	($88.13)	13	30
Vermonter	107,803	$8.1	$13.2	$2.3	($47.50)	30	59
Maple Leaf	427,893	$37.4	$20.0	$9.6	$40.82	92	162
The Downeaster	553,782	$15.3	$19.4	$5.4	($7.48)	33	96
New Haven - Springfield	396,484	$30.2	$18.6	$3.5	$29.33	26	52
Keystone Service	1,629,762	$59.2	$66.6	$10.6	($4.53)	31	62
Empire Service	1,278,296	$66.4	$126.1	$15.2	($46.71)	17	41
Chicago-St.Louis	718,583	$39.9	$30.9	$9.9	$12.48	57	113
Hiawathas	856,947	$25.7	$25.0	$5.5	$0.76	39	99
Wolverines	540,574	$60.5	$49.3	$8.8	$20.68	33	61
Illini	320,327	$20.8	$21.2	$5.7	($1.20)	39	89
Illinois Zephyr	221,083	$16.5	$17.6	$4.8	($5.15)	29	78
Heartland Flyer	75,652	$8.1	$10.9	$1.8	($36.55)	17	43
Pacific Surfliner	3,113,563	$128.6	$139.4	$20.3	($3.46)	28	80
Cascades	801,861	$73.3	$71.6	$11.9	$2.19	25	43
Capitols	1,543,801	$67.8	$81.2	$14.9	($8.67)	18	58
San Joaquins	1,250,162	$88.4	$102.5	$17.0	($11.26)	24	57
Adirondack	140,973	$15.1	$18.3	$2.3	($23.17)	33	39
Blue Water	193,925	$15.3	$14.2	$3.0	$5.73	39	84
Washington-Lynchburg	206,390	$13.8	$10.3	$1.6	$16.59	64	85
Washington-Newport News	395,727	$30.9	$20.5	$3.6	$26.27	62	79
Washington - Norfolk	183,485	$12.6	$8.1	$2.0	$24.90	58	137
Washington - Richmond	205,086	$12.4	$8.5	$1.8	$18.87	55	107
Hoosier State	31,957	$3.2	$3.4	$1.0	($8.15)	20	46
Kansas City-St.Louis	197,656	$15.8	$16.8	$5.2	($5.17)	31	70
Pennsylvanian	264,847	$17.5	$14.8	$3.2	$10.16	61	78
Pere Marquette	99,700	$7.2	$8.4	$1.6	($11.67)	26	49
Carolinian	329,844	$28.7	$30.6	$4.4	($5.84)	46	53
Piedmont	183,531	$7.9	$10.2	$3.2	($12.38)	28	59
Non NEC Special Trains	21,677	$6.1	$4.7	$0.2	$64.13	11	19
State Supported Routes	**16,347,883**	**$938.9**	**$993.6**	**$181.2**	**($3.34)**	**31**	**66**
Silver Star	413,776	$43.9	$68.7	$15.0	($60.08)	44	71
Cardinal	108,460	$10.1	$30.6	$4.7	($188.60)	21	38
Silver Meteor	383,144	$52.1	$72.9	$13.7	($54.31)	47	68
Empire Builder	453,165	$61.7	$142.2	$25.6	($177.64)	33	68
Capitol Limited	241,172	$23.9	$57.7	$7.7	($139.95)	28	42
California Zephyr	392,892	$60.7	$125.1	$24.7	($163.79)	36	59
Southwest Chief	381,883	$54.4	$132.2	$22.5	($203.61)	36	53
City of New Orleans	272,173	$23.4	$52.9	$9.2	($108.49)	31	48
Texas Eagle	360,674	$33.4	$67.8	$12.8	($95.54)	40	54
Sunset Limited	109,649	$15.3	$56.4	$8.5	($374.77)	22	43
Coast Starlight	510,952	$56.3	$129.2	$13.7	($142.66)	27	41
Lake Shore Limited	381,321	$37.6	$71.3	$11.3	($88.33)	38	65
Palmetto	229,365	$21.5	$23.6	$8.1	($9.15)	55	116
Crescent	298,299	$40.0	$99.6	$13.3	($199.76)	23	43
Auto Train	299,149	$98.7	$89.9	$8.5	$29.43	41	54
Long Distance Routes	**4,836,074**	**$633.1**	**$1,220.1**	**$199.2**	**($121.38)**	**34**	**56**
National Train Service [d]	**33,825,452**	**$3,054.8**	**$3,078.4**	**$1,875.0**	**($0.70)**	**33**	**60**
Non-Allocated Capital [e]				**$81.8**			
Total Federal & State Capital				**$1,956.8**			

[a] Budget route results are projected based on APT historical ratios. Expenses exclude net Depreciation, OPEBs, PRJ and Interest.

[b] This represents the allocation of Federal, Operating Profits and PRIIA Funded Capital Projects to Routes.

[c] Employee data is not aggregated by route in Amtrak's Financial Systems. The data presented here is based on an allocation of Core employees based on total costs of each route. PM equals Passenger Miles and SM equals Seat Miles.

[d] National Train Service does not include Ancillary or Infrastructure routes.

[e] Non-Allocated Capital category represents Infrastructure & Investment Development business line.

COMPLIANCE WITH PRIIA SECTION 204

The terms of the agreement between Amtrak and the Federal Railroad Administration specify that Amtrak's Five Year Plan continues to comply with the requirements of PRIIA Section 204. The PRIIA Section 204 requirements are listed below, along with a reference to the section of this document that complies with each.

(a) DEVELOPMENT OF 5-YEAR FINANCIAL PLAN - The Amtrak Board of Directors shall submit an annual budget and business plan for Amtrak, and a 5-year financial plan for the fiscal year to which that budget and business plan relate and the subsequent 4 years, prepared in accordance with this section, to the Secretary and the Inspector General of the Department of Transportation no later than:

(1) the first day of each fiscal year beginning after the date of enactment of this Act; or
(2) the date that is 60 days after the date of enactment of an appropriations Act for the fiscal year, if later.

(b) CONTENTS OF 5-YEAR FINANCIAL PLAN - The 5-year financial plan for Amtrak shall include, at a minimum:

(1) all projected revenues and expenditures for Amtrak, including governmental funding sources;

- See Exhibits 3-1, 3-3, 3-6, 3-8, 5-2, 5-10,

(2) projected ridership levels for all Amtrak passenger operations;

(in Millions)	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
NEC	12.0	12.3	12.4	12.5	12.6
State Supported	15.2	15.5	15.7	16.0	16.3
Long Distance	4.6	4.7	4.7	4.8	4.8
Total Ridership	**31.8**	**32.4**	**32.9**	**33.3**	**33.8**

(3) revenue and expenditure forecasts for non-passenger operations;

($s in Millions)	FY 2016 Reimbursable	FY 2016 Commuter	FY 2016 Commercial Development	FY 2016 Total Non Passenger	FY 2017 Reimbursable	FY 2017 Commuter	FY 2017 Commercial Development	FY 2017 Total Non Passenger
Total Revenue	**$ 126.5**	**$ 150.0**	**$ 82.1**	**$ 358.6**	**$ 125.6**	**$ 150.0**	**$ 83.6**	**$ 359.2**
Salaries, Wages & Benefits	34.8	8.6	3.1	46.5	34.0	8.0	2.7	44.8
Train Operations	0.0	0.7	0.0	0.7	0.1	0.7	0.0	0.8
Fuel, Power & Utilities	1.0	0.1	0.2	1.4	1.0	0.1	0.2	1.4
Materials	2.5	(0.0)	0.0	2.5	2.5	0.0	0.0	2.5
Facility, Communication & Office	3.6	2.1	0.6	6.3	3.4	2.0	0.5	5.9
Advertising and Sales	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Casualty and Other Claims	3.1	1.3	0.3	4.7	2.8	1.0	0.2	4.1
Professional Fees & Data Processing	7.9	3.7	1.1	12.7	8.5	3.5	0.9	13.0
All Other Expense	21.5	2.5	0.6	24.5	20.8	2.0	0.4	23.2
Transfer to Capital & Ancillary	51.8	151.0	0.1	202.8	71.8	189.7	0.2	261.8
Core Expense	**126.2**	**170.0**	**6.1**	**302.3**	**145.0**	**207.1**	**5.3**	**357.3**
Ancillary Expense	73.2	(26.7)	10.0	56.6	86.1	(56.2)	11.5	41.5
Total Expense	**199.4**	**143.3**	**16.1**	**358.8**	**231.1**	**150.9**	**16.8**	**398.8**
Adjusted Operating Loss	**$ (72.9)**	**$ 6.7**	**$ 66.0**	**$ (0.2)**	**$ (105.6)**	**$ (0.9)**	**$ 66.8**	**$ (39.6)**

($s in Millions)	FY 2018 Reimbursable	FY 2018 Commuter	FY 2018 Commercial Development	FY 2018 Total Non Passenger	FY 2019 Reimbursable	FY 2019 Commuter	FY 2019 Commercial Development	FY 2019 Total Non Passenger
Total Revenue	**$ 125.6**	**$ 150.0**	**$ 86.0**	**$ 361.5**	**$ 125.6**	**$ 150.0**	**$ 91.0**	**$ 366.6**
Salaries, Wages & Benefits	34.8	8.1	2.7	45.7	34.2	7.7	2.6	44.6
Train Operations	(0.0)	0.7	0.0	0.7	(0.1)	0.6	(0.0)	0.5
Fuel, Power & Utilities	1.0	0.1	0.2	1.4	1.0	0.1	0.3	1.4
Materials	2.5	0.0	0.0	2.5	2.5	(0.0)	0.0	2.5
Facility, Communication & Office	3.4	2.0	0.5	5.9	3.6	2.1	0.6	6.2
Advertising and Sales	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Casualty and Other Claims	2.7	1.0	0.2	3.8	2.8	1.0	0.2	4.0
Professional Fees & Data Processing	8.6	3.4	0.9	12.9	9.2	3.7	1.0	13.8
All Other Expense	20.6	1.8	0.4	22.8	20.8	1.9	0.4	23.1
Transfer to Capital & Ancillary	78.2	189.7	0.3	268.2	84.4	189.7	0.5	274.5
Core Expense	**151.8**	**206.9**	**5.3**	**364.0**	**158.4**	**206.8**	**5.5**	**370.8**
Ancillary Expense	86.5	(54.5)	12.3	44.3	87.9	(51.0)	14.0	50.9
Total Expense	**238.2**	**152.4**	**17.6**	**408.2**	**246.3**	**155.9**	**19.5**	**421.6**
Adjusted Operating Loss	**$ (112.7)**	**$ (2.4)**	**$ 68.4**	**$ (46.7)**	**$ (120.7)**	**$ (5.9)**	**$ 71.5**	**$ (55.1)**

($s in Millions)	FY 2020 Reimbursable	FY 2020 Commuter	FY 2020 Commercial Development	FY 2020 Total Non Passenger
Total Revenue	**$ 125.6**	**$ 150.0**	**$ 96.7**	**$ 372.3**
Salaries, Wages & Benefits	35.9	8.2	2.7	46.8
Train Operations	(0.2)	0.6	(0.0)	0.4
Fuel, Power & Utilities	1.0	0.1	0.3	1.4
Materials	2.5	(0.0)	(0.0)	2.5
Facility, Communication & Office	3.8	2.1	0.6	6.5
Advertising and Sales	0.0	0.0	0.0	0.0
Casualty and Other Claims	2.9	1.0	0.2	4.2
Professional Fees & Data Processing	9.9	3.9	1.1	14.8
All Other Expense	21.1	1.9	0.4	23.5
Transfer to Capital & Ancillary	90.7	189.7	0.6	281.0
Core Expense	**167.6**	**207.7**	**5.8**	**381.1**
Ancillary Expense	88.2	(49.1)	14.3	53.4
Total Expense	**255.9**	**158.5**	**20.1**	**434.5**
Adjusted Operating Loss	**$ (130.3)**	**$ (8.5)**	**$ 76.6**	**$ (62.2)**

(4) capital funding requirements and expenditures necessary to maintain passenger service in order to accommodate predicted ridership levels and predicted sources of capital funding;
- See Exhibits 3-2, 3-4, 3-7, 3-9, 5-4, 5-5, 5-6, 5-7, 5-8

(5) operational funding needs, if any, to maintain current and projected levels of passenger service, including State-supported routes and predicted funding sources;
- See Exhibits 3-1, 3-3, 3-6, 3-8, 5-3

(6) projected capital and operating requirements, ridership, and revenue for any new passenger service operations or service expansions;
- Plan contains no new or expanded passenger services

(7) an assessment of the continuing financial stability of Amtrak, as indicated by factors such as anticipated Federal funding of capital and operating costs, Amtrak's ability to efficiently recruit, retain, and manage its workforce, and Amtrak's ability to effectively provide passenger rail service;
- See "Amtrak Financial Stability" in page 92 and Strategic Objective T1

(8) estimates of long-term and short-term debt and associated principal and interest payments (both current and anticipated);
- See "Debt and Debt Service" in page 91

(9) annual cash flow forecasts;
- See "Cash Flow" in page 90

(10) a statement describing methods of estimation and significant assumptions;
- See "Methods of Estimation and Significant Assumptions" in page 93

(11) specific measures that demonstrate measurable improvement year over year in the financial results of Amtrak's operations;
- See Strategic Objective T1

(12) prior fiscal year and projected operating ratio, cash operating loss, and cash operating loss per passenger on a route, business line, and corporate basis;
- See FY16-FY20 Statistics by Route

(13) prior fiscal year and projected specific costs and savings estimates resulting from reform initiatives;
- See Strategic Objective T1

(14) prior fiscal year and projected labor productivity statistics on a route, business line, and corporate basis;
- See FY16-FY20 Statistics by Route

(15) prior fiscal year and projected equipment reliability statistics
- See Exhibit 2-1

(16) capital and operating expenditures for anticipated security needs

($s in Millions)	FY 2016 Amtrak Police	FY 2016 EM & CS	FY 2016 Total Security Expense	FY 2017 Amtrak Police	FY 2017 EM & CS	FY 2017 Total Security Expense
Salaries, Wages & Benefits	68.8	5.3	74.1	73.3	5.5	78.8
Train Operations	0.0	-	0.0	0.1	-	0.1
Fuel, Power & Utilities	0.0	0.0	0.0	0.0	0.0	0.0
Materials	0.0	-	0.0	0.0	-	0.0
Facility, Communication & Office	3.8	2.4	6.2	3.9	2.4	6.3
Advertising and Sales	-	-	-	-	-	-
Casualty and Other Claims	-	-	-	-	-	-
Professional Fees & Data Processing	0.2	2.9	3.1	0.2	2.9	3.1
All Other Expense	1.7	0.1	1.8	1.8	0.1	1.9
Transfer to Capital & Ancillary	-	-	-	-	-	-
Core Expense	**74.6**	**10.7**	**85.2**	**79.2**	**10.9**	**90.1**
Ancillary Expense	-	-	-	-	-	-
Total Operating Expense	**74.6**	**10.7**	**85.2**	**79.2**	**10.9**	**90.1**
Capital Programs	**1.3**	**8.0**	**9.3**	**4.6**	**4.7**	**9.3**
Total Security Expense	**$ 75.8**	**$ 18.7**	**$ 94.5**	**$ 83.8**	**$ 15.6**	**$ 99.4**

($s in Millions)	FY 2018 Amtrak Police	FY 2018 EM & CS	FY 2018 Total Security Expense	FY 2019 Amtrak Police	FY 2019 EM & CS	FY 2019 Total Security Expense
Salaries, Wages & Benefits	74.5	5.7	80.2	76.9	7.1	84.0
Train Operations	0.0	-	0.0	0.0	-	0.0
Fuel, Power & Utilities	0.0	0.0	0.0	0.0	0.0	0.0
Materials	0.0	-	0.0	0.0	-	0.0
Facility, Communication & Office	3.9	2.4	6.4	3.9	2.5	6.4
Advertising and Sales	-	-	-	-	-	-
Casualty and Other Claims	-	-	-	-	-	-
Professional Fees & Data Processing	0.2	2.9	3.1	0.2	2.9	3.1
All Other Expense	1.9	0.1	2.0	1.9	0.1	2.0
Transfer to Capital & Ancillary	-	-	-	-	-	-
Core Expense	**80.6**	**11.1**	**91.7**	**83.0**	**12.5**	**95.6**
Ancillary Expense	-	-	-	-	-	-
Total Operating Expense	**80.6**	**11.1**	**91.7**	**83.0**	**12.5**	**95.6**
Capital Programs	**4.4**	**6.3**	**10.6**	**0.8**	**3.1**	**3.9**
Total Security Expense	**$ 85.0**	**$ 17.4**	**$ 102.3**	**$ 83.9**	**$ 15.6**	**$ 99.5**

($s in Millions)	FY 2020 Amtrak Police	FY 2020 EM & CS	FY 2020 Total Security Expense
Salaries, Wages & Benefits	77.8	7.3	85.2
Train Operations	0.0	-	0.0
Fuel, Power & Utilities	0.0	0.0	0.0
Materials	0.0	-	0.0
Facility, Communication & Office	4.0	2.5	6.4
Advertising and Sales	-	-	-
Casualty and Other Claims	-	-	-
Professional Fees & Data Processing	0.2	2.9	3.1
All Other Expense	1.9	0.1	2.0
Transfer to Capital & Ancillary	-	-	-
Core Expense	**84.0**	**12.8**	**96.8**
Ancillary Expense	-	-	-
Total Operating Expense	**84.0**	**12.8**	**96.8**
Capital Programs	**0.8**	**3.7**	**4.5**
Total Security Expense	**$ 84.8**	**$ 16.5**	**$ 101.3**

FY 2018 GRANT REQUEST BY BUSINESS LINE

($'s in Millions)

	FY 2018 Operating Estimates				
	Northeast Corridor	State Supported	Long Distance	Infrastructure & Investment Development	Total
Operating Estimates					
Operating Revenue	$ 1,809.4	$ 906.0	$ 644.3	$ 119.2	$ 3,478.9
Operating Expense	1,458.7	975.9	1,232.8	33.8	3,701.2
[1] NEC Revenue reserved for RRIF and FAST Act match	178.1	-	-	-	178.1
Net Operating Profit/(Loss)	172.6	(69.9)	(588.5)	85.4	(400.4)
Operating Profits used for Capital Investment	(172.6)	-	-	(85.4)	(258.0)
Total Operating Loss	**$ -**	**$ (69.9)**	**$ (588.5)**	**$ -**	**$ (658.4)**
				Operating Grant Request	**$ 658.4**

	FY 2018 Capital Estimates				
	Northeast Corridor	State Supported	Long Distance	Infrastructure & Investment Development	Total
Capital Needs					
NEC Shared Infrastructure (PRIIA 212)	$ 977.6	$ 57.3	$ 33.1	$ -	$ 1,068.1
Other Infrastructure	45.8	44.4	54.7	101.1	246.0
Train Services and Support	274.2	107.3	146.5	12.0	540.0
Subtotal Capital Needs	**$ 1,297.5**	**$ 209.1**	**$ 234.3**	**$ 113.1**	**$ 1,854.1**
Capital Funds					
Net Operating Profits	$ (172.6)	$ -	$ -	$ (85.4)	$ (258.0)
NEC Profits reserved for FAST Act match	(106.9)	-	-	-	(106.9)
Commuter payments (PRIIA 212)	(172.3)	-	-	-	(172.3)
[2] FAST Act award	(427.5)	-	-	-	(427.5)
NEC Commuter Match (excl Gateway)	(148.4)	-	-	-	(148.4)
State Contributions to Equipment Capital (PRIIA 209)	-	(46.8)	-	-	(46.8)
Net Capital Needs	**$ 269.9**	**$ 162.3**	**$ 234.3**	**$ 27.6**	**$ 694.2**
				Debt Service	120.5
				State Supported Commission	2.0
				NEC Commission	5.0
				FRA Management Oversight	9.5
				General Capital Request	**$ 831.3**
				Federal Discretionary Grant Programs (Authorized by FAST Act)	**$ 427.5**
				Total Federal Grant Request	**$ 1,917.1**
Gateway Funding Request					
Total Gateway Expense	**$ 1,607.3**	**$ 33.4**	**$ 47.4**	**$ -**	**$ 1,688.1**
Commuter/FTA share	(1,285.8)	(26.7)	(38.0)	-	(1,350.5)
FAST Act Grant Award/FRA	(257.2)	(5.3)	(7.6)	-	(270.1)
Gateway (Amtrak share)	(64.3)	(1.3)	(1.9)	-	(67.5)

[1] NEC Operating Revenue includes RRIF loan repayment and Amtrak FAST Act match

[2] FAST Act revenues are pursuant to a separate Federal request, not the General Capital grant

FY 2019 GRANT REQUEST BY BUSINESS LINE

($'s in Millions)

	FY 2019 Operating Estimates				
	Northeast Corridor	State Supported	Long Distance	Infrastructure & Investment Development	Total
Operating Estimates					
Operating Revenue	$ 1,847.3	$ 927.5	$ 658.8	$ 124.9	$ 3,558.4
Operating Expense	1,503.9	990.9	1,256.2	38.4	3,789.4
[1] NEC Revenue reserved for RRIF and FAST Act match	186.6	-	-	-	186.6
Net Operating Profit/(Loss)	156.7	(63.4)	(597.4)	86.5	(417.6)
Operating Profits used for Capital Investment	(156.7)	-	-	(86.5)	(243.2)
Total Operating Loss	**$ -**	**$ (63.4)**	**$ (597.4)**	**$ -**	**$ (660.8)**
				Operating Grant Request	**$ 660.8**

	FY 2019 Capital Estimates				
	Northeast Corridor	State Supported	Long Distance	Infrastructure & Investment Development	Total
Capital Needs					
NEC Shared Infrastructure (PRIIA 212)	$ 1,155.4	$ 62.4	$ 41.0	$ -	$ 1,258.8
Other Infrastructure	41.5	38.5	53.8	100.7	234.5
Train Services and Support	250.7	94.9	126.5	12.0	484.1
Subtotal Capital Needs	**$ 1,447.7**	**$ 195.8**	**$ 221.3**	**$ 112.7**	**$ 1,977.4**
Capital Funds					
Net Operating Profits	$ (156.7)	$ -	$ -	$ (86.5)	$ (243.2)
NEC Profits reserved for FAST Act match	(121.6)	-	-	-	(121.6)
Commuter payments (PRIIA 212)	(181.4)	-	-	-	(181.4)
[2] FAST Act award	(486.6)	-	-	-	(486.6)
NEC Commuter Match (excl Gateway)	(202.8)	-	-	-	(202.8)
State Contributions to Equipment Capital (PRIIA 209)	-	(47.5)	-	-	(47.5)
Net Capital Needs	**$ 298.5**	**$ 148.3**	**$ 221.3**	**$ 26.2**	**$ 694.3**
				Debt Service	123.2
				State Supported Commission	2.0
				NEC Commission	5.0
				FRA Management Oversight	9.9
				General Capital Request	**$ 834.3**
				Federal Discretionary Grant Programs (Authorized by FAST Act)	**$ 486.6**
				Total Federal Grant Request	**$ 1,981.7**

Gateway Funding Request					
Total Gateway Expense	**$ 1,616.8**	**$ 33.2**	**$ 46.8**	**$ -**	**$ 1,696.8**
Commuter/FTA share	(1,293.4)	(26.6)	(37.4)	-	(1,357.4)
FAST Act Grant Award/FRA	(258.7)	(5.3)	(7.5)	-	(271.5)
Gateway (Amtrak share)	(64.7)	(1.3)	(1.9)	-	(67.9)

[1] NEC Operating Revenue includes RRIF loan repayment and Amtrak FAST Act match

[2] FAST Act revenues are pursuant to a separate Federal request, not the General Capital grant

FY 2020 GRANT REQUEST BY BUSINESS LINE

($'s in Millions)

	FY 2020 Operating Estimates				
	Northeast Corridor	State Supported	Long Distance	Infrastructure & Investment Development	Total
Operating Estimates					
Operating Revenue	$ 1,884.2	$ 952.9	$ 673.9	$ 131.0	$ 3,642.0
Operating Expense	1,546.3	1,014.8	1,283.0	40.6	3,884.6
[1] NEC Revenue reserved for RRIF and FAST Act match	186.7	-	-	-	186.7
Net Operating Profit/(Loss)	151.3	(61.9)	(609.1)	90.4	(429.2)
Operating Profits used for Capital Investment	(151.3)	-	-	(90.4)	(241.7)
Total Operating Loss	**$ -**	**$ (61.9)**	**$ (609.1)**	**$ -**	**$ (671.0)**
				Operating Grant Request	**$ 671.0**

	FY 2020 Capital Estimates				
	Northeast Corridor	State Supported	Long Distance	Infrastructure & Investment Development	Total
Capital Needs					
NEC Shared Infrastructure (PRIIA 212)	$ 1,225.7	$ 56.3	$ 44.1	$ -	$ 1,326.1
Other Infrastructure	28.9	32.0	50.5	69.8	181.1
Train Services and Support	239.9	92.9	104.7	12.0	449.5
Subtotal Capital Needs	**$ 1,494.6**	**$ 181.2**	**$ 199.2**	**$ 81.8**	**$ 1,956.8**
Capital Funds					
Net Operating Profits	$ (151.3)	$ -	$ -	$ (90.4)	$ (241.7)
NEC Profits reserved for FAST Act match	(130.2)	-	-	-	(130.2)
Commuter payments (PRIIA 212)	(191.1)	-	-	-	(191.1)
[2] FAST Act award	(521.0)	-	-	-	(521.0)
NEC Commuter Match (excl Gateway)	(217.4)	-	-	-	(217.4)
State Contributions to Equipment Capital (PRIIA 209)	-	(46.0)	-	-	(46.0)
Net Capital Needs	**$ 283.5**	**$ 135.2**	**$ 199.2**	**$ (8.6)**	**$ 609.3**
				Debt Service	117.2
				State Supported Commission	2.0
				NEC Commission	5.0
				FRA Management Oversight	9.6
				General Capital Request	**$ 743.2**
				Federal Discretionary Grant Programs (Authorized by FAST Act)	**$ 521.0**
				Total Federal Grant Request	**$ 1,935.1**

Gateway Funding Request					
Total Gateway Expense	**$ 1,732.4**	**$ 34.7**	**$ 47.9**	**$ -**	**$ 1,815.0**
Commuter/FTA share	(1,385.9)	(27.8)	(38.3)	-	(1,452.0)
FAST Act Grant Award/FRA	(277.2)	(5.6)	(7.7)	-	(290.4)
Gateway (Amtrak share)	(69.3)	(1.4)	(1.9)	-	(72.6)

[1] NEC Operating Revenue includes RRIF loan repayment and Amtrak FAST Act match

[2] FAST Act revenues are pursuant to a separate Federal request, not the General Capital grant

CONSOLIDATED OPERATING P&L

($s in Millions)	Budget FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Ticket Revenue (Adjusted)	$ 2,235.0	$ 2,315.9	$ 2,389.8	$ 2,447.2	$ 2,510.4
Food & Beverage	131.9	149.9	161.7	174.1	180.0
State Supported Train Revenue	257.8	262.8	268.1	273.4	278.9
Subtotal Passenger Related Revenue	**$ 2,624.7**	**$ 2,728.6**	**$ 2,819.5**	**$ 2,894.7**	**$ 2,969.3**
Other Core Revenue	217.2	224.8	234.8	237.1	238.5
Ancillary Revenue	468.8	453.5	424.6	426.5	434.2
Total Revenue	**$ 3,310.7**	**$ 3,407.0**	**$ 3,478.9**	**$ 3,558.4**	**$ 3,642.0**
Salaries, Wages & Benefits	2,025.2	2,088.4	2,163.7	2,226.2	2,302.1
Train Operations	286.9	297.5	305.4	312.8	320.9
Fuel, Power & Utilities	295.9	299.3	301.8	306.3	308.9
Materials	134.6	138.6	142.1	145.4	148.4
Facility, Communication & Office	160.0	165.6	169.7	174.4	179.2
Advertising and Sales	114.0	116.1	129.0	141.7	145.1
Casualty and Other Claims	60.9	61.0	61.0	61.0	61.0
Professional Fees & Data Processing	228.6	267.3	282.1	291.2	299.6
All Other Expense	133.8	117.3	86.1	74.3	67.5
Transfer to Capital & Ancillary	(256.2)	(265.3)	(272.4)	(279.2)	(286.2)
Core Expense	**$ 3,183.8**	**$ 3,285.8**	**$ 3,368.6**	**$ 3,454.1**	**$ 3,546.6**
Ancillary Expense	**371.3**	**360.6**	**332.6**	**335.2**	**338.0**
Total Expense	**$ 3,555.0**	**$ 3,646.4**	**$ 3,701.2**	**$ 3,789.4**	**$ 3,884.6**
Adjusted Operating Loss	**$ (244.3)**	**$ (239.4)**	**$ (222.3)**	**$ (231.0)**	**$ (242.6)**
NEC Revenue reserved for RRIF	**(44.2)**	**(51.6)**	**(71.2)**	**(65.0)**	**(56.4)**
Federally Funded Operating Loss	**$ (288.5)**	**$ (291.0)**	**$ (293.5)**	**$ (296.0)**	**$ (299.0)**

OPERATING EXPENSES BY ACCOUNT AND DEPARTMENT

($s in Millions)	Salary, Wages & Benefits Expense FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
GM: NEC	$ 527.6	$ 544.2	$ 563.5	$ 592.2	$ 612.7
GM: State Supported	138.5	143.1	148.4	157.0	162.5
GM: Long Distance	511.4	527.8	546.8	574.2	594.1
Engineering	260.7	270.7	281.7	302.4	313.9
Mechanical	92.8	96.6	100.9	111.6	116.3
Customer Service	6.7	7.0	7.3	9.2	9.6
System Operations	16.9	18.0	18.9	24.5	25.7
Transportation	13.4	13.9	14.3	17.0	17.5
Safety	9.6	10.0	10.4	12.2	12.6
Business Operations	4.6	5.8	6.0	3.1	3.3
Ops Research & Planning	2.9	3.0	3.1	4.0	4.1
All Other Operations	1.4	1.5	1.5	2.0	2.1
Total Operations	**$ 1,586.4**	**$ 1,641.6**	**$ 1,703.0**	**$ 1,809.3**	**$ 1,874.4**
IT	45.3	52.0	54.0	69.3	71.7
Marketing & Sales	86.6	89.8	91.1	97.8	94.8
CFO	32.8	34.5	36.1	45.0	46.6
Procurement	42.5	43.4	45.1	51.0	52.9
Amtrak Police Department	68.8	73.3	74.5	76.9	77.8
General Counsel	20.4	22.5	23.8	30.9	32.0
Human Capital	31.5	36.9	39.5	50.0	51.4
EM&CS	5.3	5.5	5.7	7.1	7.3
NEC IID	7.0	7.8	8.5	10.9	11.3
CEO	1.7	1.9	1.5	2.0	2.2
Gov't Affairs	5.2	5.4	5.7	7.2	7.4
Research & Strategy	0.9	1.0	1.0	1.3	1.3
Strategic Fleet Rail Initiatives	0.4	0.4	0.4	0.5	0.5
NEC Advisory	1.6	1.7	1.7	2.2	2.3
Other Corporate	65.0	46.8	47.8	(60.3)	(57.1)
Total Corporate	**$ 415.0**	**$ 423.0**	**$ 436.6**	**$ 391.8**	**$ 402.4**
Other Core Expense	23.8	23.9	24.2	25.0	25.3
Core Operating Expense	**$ 2,025.2**	**$ 2,088.4**	**$ 2,163.7**	**$ 2,226.2**	**$ 2,302.1**
Ancillary Expense	152.5	155.6	152.6	159.5	162.0
Total Operating Expense	**$ 2,177.7**	**$ 2,244.0**	**$ 2,316.3**	**$ 2,385.7**	**$ 2,464.1**

Note: Salaries include only non-agreement employee payroll. Wages include straight time and overtime for agreement employees. Benefits include company funded costs for employee payroll taxes (including RRTA Tier II), health insurance, pension, and savings plans.

($s in Millions)	Train Operations Expense FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
GM: NEC	$ 6.2	$ 6.3	$ 6.4	$ 6.6	$ 6.7
GM: State Supported	33.7	34.4	35.1	35.8	36.4
GM: Long Distance	18.6	18.9	19.3	19.6	20.0
Engineering	0.2	0.2	0.2	0.2	0.2
Customer Service	87.2	90.0	92.6	95.1	98.4
System Operations	0.1	0.1	0.1	0.1	0.1
Transportation	133.5	138.8	144.2	149.5	154.9
Business Operations	(0.4)	(3.4)	(4.8)	(6.7)	(8.5)
Ops Research & Planning	11.8	12.1	12.3	12.5	12.8
All Other Operations	(0.0)	0.0	0.0	(0.0)	(0.0)
Total Operations	**$ 290.9**	**$ 297.5**	**$ 305.3**	**$ 312.8**	**$ 320.9**
Amtrak Police Department	0.0	0.1	0.0	0.0	0.0
Other Corporate	(4.0)	0.0	0.0	0.0	0.0
Total Corporate	**$ (4.0)**	**$ 0.1**	**$ 0.0**	**$ 0.0**	**$ 0.1**
Other Core Expense	-	-	-	-	-
Core Operating Expense	**$ 286.9**	**$ 297.5**	**$ 305.4**	**$ 312.8**	**$ 320.9**
Ancillary Expense	2.4	2.4	2.4	2.5	2.5
Total Operating Expense	**$ 289.3**	**$ 300.0**	**$ 307.8**	**$ 315.3**	**$ 323.4**

Note: Train Operations expenses include access to host railroads and related host railroad costs, cost of Food & Beverage inventory and supplies including cost of outsourced commissary operations, costs of train crew layover including transportation, connecting motor coach services, contracted vehicle loading/unloading service for auto train and rental of locomotives and cars.

($s in Millions)	Fuel, Power & Utilities Expense FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
GM: NEC	$ 50.6	$ 51.3	$ 52.0	$ 52.7	$ 53.4
GM: State Supported	27.9	28.2	28.5	28.8	29.1
GM: Long Distance	84.6	85.6	86.5	87.5	88.4
Engineering	8.9	9.3	9.6	10.0	10.3
Mechanical	5.1	5.1	5.1	5.1	5.1
Customer Service	0.1	0.1	0.1	0.1	0.1
System Operations	0.4	0.4	0.4	0.4	0.4
Transportation	14.6	14.8	14.9	15.1	15.2
Total Operations	**$ 192.2**	**$ 194.7**	**$ 197.1**	**$ 199.6**	**$ 202.1**
Marketing & Sales	0.4	0.4	0.4	0.4	0.4
Procurement	0.4	0.4	0.4	0.4	0.4
Other Corporate	102.8	103.8	103.8	105.9	106.0
Total Corporate	**$ 103.7**	**$ 104.7**	**$ 104.7**	**$ 106.8**	**$ 106.9**
Other Core Expense	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)
Core Operating Expense	**$ 295.9**	**$ 299.3**	**$ 301.8**	**$ 306.3**	**$ 308.9**
Ancillary Expense	11.5	11.6	11.7	11.7	11.8
Total Operating Expense	**$ 307.4**	**$ 310.9**	**$ 313.5**	**$ 318.1**	**$ 320.7**

Note: Fuel, Power & Utilities include the cost of electric propulsion power for the electric locomotives, cost of diesel fuel for the diesel locomotives, and utilities for building, stations, and facilities.

($s in Millions)	Materials Expense FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
GM: NEC	$ 60.0	$ 61.1	$ 62.3	$ 63.5	$ 64.6
GM: State Supported	17.2	17.5	17.8	18.1	18.4
GM: Long Distance	51.5	52.5	53.6	54.6	55.6
Engineering	15.8	16.5	17.1	17.7	18.4
Mechanical	(23.8)	(23.2)	(22.6)	(22.0)	(21.2)
Customer Service	0.2	0.2	0.2	0.2	0.2
Transportation	0.4	0.4	0.4	0.4	0.4
Business Operations	-	(0.2)	(0.5)	(1.0)	(2.0)
Total Operations	**$ 121.3**	**$ 124.7**	**$ 128.2**	**$ 131.5**	**$ 134.4**
Procurement	0.3	0.3	0.3	0.3	0.3
Human Capital	0.1	0.1	0.0	0.0	0.0
Other Corporate	13.0	13.5	13.6	13.6	13.6
Total Corporate	**$ 13.3**	**$ 13.8**	**$ 13.9**	**$ 13.9**	**$ 14.0**
Core Operating Expense	**$ 134.6**	**$ 138.6**	**$ 142.1**	**$ 145.4**	**$ 148.4**
Ancillary Expense	31.4	31.4	27.4	27.4	27.5
Total Operating Expense	**$ 166.0**	**$ 170.0**	**$ 169.5**	**$ 172.9**	**$ 175.9**

Note: Materials include parts, components, and supplies used in maintenance of track infrastructure and rolling stock.

($s in Millions)	Facility, Communication & Office Expense FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
GM: NEC	$ 31.9	$ 32.7	$ 33.5	$ 34.4	$ 35.2
GM: State Supported	9.5	9.8	10.0	10.2	10.5
GM: Long Distance	30.7	31.5	32.4	33.5	34.4
Engineering	17.5	18.2	18.9	19.6	20.3
Mechanical	7.5	7.8	7.8	7.8	7.8
Customer Service	2.4	2.4	2.5	2.6	2.7
System Operations	0.9	1.0	1.0	1.0	1.0
Transportation	1.1	1.1	1.1	1.1	1.2
Safety	0.3	0.3	0.3	0.3	0.3
Business Operations	1.3	1.8	1.8	1.8	1.9
All Other Operations	0.6	0.6	0.7	0.7	0.7
Total Operations	**$ 103.7**	**$ 107.2**	**$ 110.0**	**$ 113.0**	**$ 116.0**
IT	30.0	31.2	32.4	33.7	35.0
Marketing & Sales	8.1	8.6	8.8	8.9	9.0
CFO	2.4	2.4	2.4	2.5	2.5
Procurement	3.7	3.4	3.4	3.5	3.6
Amtrak Police Department	3.8	3.9	3.9	3.9	4.0
General Counsel	1.9	2.0	2.1	2.1	2.2
Human Capital	2.6	3.1	2.9	3.0	3.1
EM&CS	2.4	2.4	2.4	2.5	2.5
NEC IID	0.2	0.2	0.2	0.2	0.2
CEO	0.2	0.2	0.2	0.2	0.2
Gov't Affairs	0.4	0.5	0.5	0.5	0.5
Research & Strategy	0.1	0.1	0.1	0.1	0.1
NEC Advisory	0.4	0.4	0.4	0.5	0.5
Other Corporate	8.0	8.0	8.0	8.0	8.0
Total Corporate	**$ 64.3**	**$ 66.4**	**$ 67.8**	**$ 69.4**	**$ 71.2**
Other Core Expense	(8.0)	(8.0)	(8.0)	(8.0)	(8.0)
Core Operating Expense	**$ 160.0**	**$ 165.6**	**$ 169.7**	**$ 174.4**	**$ 179.2**
Ancillary Expense	24.4	24.5	23.9	24.0	24.1
Total Operating Expense	**$ 184.4**	**$ 190.1**	**$ 193.6**	**$ 198.4**	**$ 203.3**

Note: Facility, Communication and Office expenses include rental stations, offices, and facilities; building maintenance and repair services and materials; and data and voice network and communication costs including cellular phones.

($s in Millions)	Advertising & Sales Expense FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
GM: Long Distance	0.2	0.2	0.2	0.2	0.2
Total Operations	**$ 0.2**	**$ 0.2**	**$ 0.2**	**$ 0.2**	**$ 0.2**
Marketing & Sales	60.9	60.9	72.6	84.4	86.5
Gov't Affairs	0.1	0.1	0.1	0.1	0.1
Other Corporate	52.9	54.9	56.1	57.0	58.2
Total Corporate	**$ 113.8**	**$ 115.9**	**$ 128.8**	**$ 141.5**	**$ 144.9**
Core Operating Expense	**$ 114.0**	**$ 116.1**	**$ 129.0**	**$ 141.7**	**$ 145.1**
Total Operating Expense	**$ 114.0**	**$ 116.1**	**$ 129.0**	**$ 141.7**	**$ 145.1**

Note: Advertising and Sales expense includes all advertising media and production costs; credit card commissions; cost of Amtrak Guest Rewards program; timetables and brochures; third party sales channels such as ticket agents and airline systems.

($s in Millions)	Casualty & Other Claims Expense FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
GM: Long Distance	0.2	0.2	0.2	0.2	0.2
Total Operations	**$ 0.2**	**$ 0.2**	**$ 0.2**	**$ 0.2**	**$ 0.2**
General Counsel	4.2	4.2	4.2	4.2	4.2
Other Corporate	56.0	56.0	56.0	56.0	56.0
Total Corporate	**$ 60.1**	**$ 60.2**	**$ 60.2**	**$ 60.2**	**$ 60.2**
Other Core Expense	0.6	0.6	0.6	0.6	0.6
Core Operating Expense	**$ 60.9**	**$ 61.0**	**$ 61.0**	**$ 61.0**	**$ 61.0**
Total Operating Expense	**$ 60.9**	**$ 61.0**	**$ 61.0**	**$ 61.0**	**$ 61.0**

Note: Casualty & Other Claims include costs associated with claims under the Federal Employers Liability Act (FELA); passenger claims; legal disbursements; costs of investigations, surveillance, and expert witnesses.

($s in Millions)	Other Expense FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
GM: NEC	$ 2.7	$ 2.8	$ 2.8	$ 2.9	$ 2.9
GM: State Supported	3.5	3.5	3.6	3.7	3.7
GM: Long Distance	5.3	5.4	5.5	5.6	5.7
Engineering	28.8	29.9	31.0	32.1	33.2
Mechanical	1.6	1.6	1.6	1.6	1.6
Customer Service	0.4	0.4	0.5	0.5	0.5
System Operations	0.0	0.0	0.0	0.0	0.0
Transportation	0.3	0.3	0.4	0.4	0.4
Safety	0.4	0.4	0.4	0.4	0.4
Business Operations	-	(0.3)	(0.8)	(1.5)	(2.8)
Total Operations	**$ 43.1**	**$ 44.2**	**$ 45.0**	**$ 45.6**	**$ 45.7**
Marketing & Sales	5.4	5.4	5.4	5.4	5.4
CFO	0.9	0.9	0.9	0.9	0.9
Procurement	0.4	0.4	0.4	0.4	0.4
Amtrak Police Department	1.7	1.8	1.9	1.9	1.9
General Counsel	2.2	2.5	2.9	3.4	3.4
Human Capital	0.1	0.1	0.1	0.1	0.1
EM&CS	0.1	0.1	0.1	0.1	0.1
Other Corporate	85.0	66.9	34.4	21.5	14.6
Total Corporate	**$ 95.8**	**$ 78.2**	**$ 46.2**	**$ 33.8**	**$ 26.9**
Other Core Expense	(5.1)	(5.1)	(5.1)	(5.1)	(5.1)
Core Operating Expense	**$ 133.8**	**$ 117.3**	**$ 86.1**	**$ 74.3**	**$ 67.5**
Ancillary Expense	49.1	35.5	20.7	20.7	20.7
Total Operating Expense	**$ 182.9**	**$ 152.7**	**$ 106.8**	**$ 95.0**	**$ 88.3**

Note: Other Expenses are costs that are not classified in any specific category.

($s in Millions)	Professional Fees & Data Processing Expense FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
GM: NEC	$ 0.1	$ 0.1	$ 0.1	$ 0.1	$ 0.1
GM: State Supported	0.2	0.2	0.3	0.3	0.3
GM: Long Distance	2.4	2.5	2.5	2.6	2.6
Engineering	7.3	7.6	7.9	8.2	8.5
Mechanical	15.7	19.1	20.7	22.0	23.4
Customer Service	0.2	0.2	0.3	0.3	0.3
System Operations	0.1	0.1	0.1	0.1	0.1
Transportation	1.0	1.0	1.1	1.1	1.1
Safety	0.9	0.9	1.0	1.0	1.0
Business Operations	0.5	11.1	14.5	15.9	16.7
Total Operations	**$ 28.6**	**$ 43.0**	**$ 48.3**	**$ 51.5**	**$ 54.1**
IT	120.3	125.3	130.1	135.2	140.4
Marketing & Sales	22.4	27.8	30.8	32.4	33.5
CFO	6.8	7.7	7.4	7.5	7.5
Procurement	3.4	3.9	3.9	4.0	4.0
Amtrak Police Department	0.2	0.2	0.2	0.2	0.2
General Counsel	26.8	30.9	30.9	30.9	30.9
Human Capital	6.4	14.6	16.5	15.8	15.0
EM&CS	2.9	2.9	2.9	2.9	2.9
NEC IID	1.2	1.2	1.2	1.2	1.2
CEO	0.3	0.4	0.3	0.3	0.3
Gov't Affairs	0.8	0.8	0.8	0.8	0.8
Research & Strategy	0.2	0.2	0.2	0.2	0.2
Strategic Fleet Rail Initiatives	0.3	0.3	0.3	0.3	0.3
NEC Advisory	3.0	3.0	3.0	3.0	3.1
Other Corporate	1.8	1.8	1.8	1.8	1.7
Total Corporate	**$ 196.6**	**$ 220.9**	**$ 230.4**	**$ 236.3**	**$ 242.0**
Other Core Expense	3.4	3.4	3.4	3.4	3.5
Core Operating Expense	**$ 228.6**	**$ 267.3**	**$ 282.1**	**$ 291.2**	**$ 299.6**
Ancillary Expense	23.1	22.7	16.9	12.3	12.3
Total Operating Expense	**$ 251.7**	**$ 289.9**	**$ 299.0**	**$ 303.5**	**$ 311.9**

Note: Professional Services includes the costs of consultants, advertising agencies and outside legal counsel. Data Processing Services include the cost of outsourced data center operations, outsourced IT staff, and software licenses.

($s in Millions)	Transfer to Capital & Ancillary Expense FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
GM: NEC	$ (26.1)	$ (26.1)	$ (26.1)	$ (26.1)	$ (26.1)
GM: State Supported	(2.8)	(2.8)	(2.8)	(2.8)	(2.8)
GM: Long Distance	(18.8)	(18.8)	(18.8)	(18.8)	(18.8)
Engineering	(140.9)	(140.9)	(140.9)	(140.9)	(140.9)
Mechanical	(31.3)	(31.3)	(31.3)	(31.3)	(31.3)
Total Operations	**$ (219.9)**	**$ (219.9)**	**$ (219.9)**	**$ (219.9)**	**$ (219.9)**
Other Corporate	(36.3)	(45.4)	(52.5)	(59.3)	(66.3)
Total Corporate	**$ (36.3)**	**$ (45.4)**	**$ (52.5)**	**$ (59.3)**	**$ (66.3)**
Core Operating Expense	**$ (256.2)**	**$ (265.3)**	**$ (272.4)**	**$ (279.2)**	**$ (286.2)**
Ancillary Expense	77.0	77.0	77.0	77.0	77.0
Total Operating Expense	**$ (179.2)**	**$ (188.3)**	**$ (195.4)**	**$ (202.2)**	**$ (209.2)**

Note: Expense Transfers are transactions between Amtrak and its subsidiaries.

FY 2016 CAPITAL PROJECT LIST

($s in Millions)	Total Federal & State Capital	Other Third Party	Total Capital	NEC	State Supported	Long Distance	Infrastructure & Investment Development	Total Capital
ADA Compliance	**50.0**	**-**	**50.0**	**11.1**	**11.9**	**27.0**	**-**	**50.0**
Safety / Mandates	**14.6**	**-**	**14.6**	**11.1**	**3.0**	**0.5**	**-**	**14.6**
AMTRAK SYSTEM ADA PLATFORM GAP SOLUTION	1.6	-	1.6	1.2	0.3	0.1	-	1.6
Passenger Information Display SYS (PIDS)	13.0	-	13.0	9.9	2.7	0.4	-	13.0
ADA Stations	**35.4**	**-**	**35.4**	**-**	**8.8**	**26.5**	**-**	**35.4**
ADA COMPLIANCE PROJECTS	35.4	-	35.4	-	8.8	26.5	-	35.4
Environmental Remediation	**10.5**	**-**	**10.5**	**4.8**	**0.3**	**2.7**	**2.8**	**10.5**
Safety / Mandates	**10.5**	**-**	**10.5**	**4.8**	**0.3**	**2.7**	**2.8**	**10.5**
Asbestos, Lead Paint and Mold	0.5	-	0.5	0.4	0.1	0.0	-	0.5
BEECH GROVE FACILITY - WASTEWA	0.3	-	0.3	-	-	-	0.3	0.3
CEDAR HILL REMEDATION	0.3	-	0.3	0.2	0.0	0.0	-	0.3
HIALEAH FL PAHS REMEDIATION	0.2	-	0.2	-	-	0.2	-	0.2
LA WASTEWATER/STORMWATER UPGR	0.8	-	0.8	-	-	0.8	-	0.8
MIDWAY, CT STORMWATER TREATMENT SYSTEM	0.1	-	0.1	0.1	-	-	-	0.1
NEW BRUNSWICK COMMUTER YARD REMEDIATION	0.2	-	0.2	0.2	0.0	0.0	-	0.2
NEW ORLEANS DAF UPGRADES	0.5	-	0.5	-	-	0.5	-	0.5
NEW ORLEANS FUELING FACILITY UPGRS	0.9	-	0.9	-	-	0.9	-	0.9
Oakland Stormwater Treatment System	0.1	-	0.1	-	-	0.1	-	0.1
PENN COACH YD FUELING SITE SPILL PREVENT	0.4	-	0.4	0.3	0.0	0.0	-	0.4
Prevention of Groundwater Cont	0.3	-	0.3	0.2	0.1	0.0	-	0.3
SANFORD FL WASTEWATER SYSTEM UPGRADE	0.1	-	0.1	-	-	0.1	-	0.1
SUNNYSIDE YARD OIL/PCB REMED	1.7	-	1.7	1.7	0.0	-	-	1.7
SUNNYSIDE YD WASTEWATER SYSTEM UPGRADE	0.3	-	0.3	0.3	0.0	-	-	0.3
TRENTON NJ - COMMUTER YARD REMEDIATION	0.2	-	0.2	0.1	0.0	0.0	-	0.2
Wilmington Maintenance Facility	0.1	-	0.1	0.0	0.0	0.0	-	0.1
WILMINGTON MOFE FACILITY-PCB/O	2.5	-	2.5	-	-	-	2.5	2.5
Wilmington West Yard	0.3	-	0.3	0.2	0.0	0.0	-	0.3
SUNNYSIDE YARD ASBESTOS WRAP ABATEMENT	1.0	-	1.0	0.9	0.1	0.0	-	1.0
SEATTLE MAINT FAC LEAD CONTM REMEDIATION	0.1	-	0.1	-	-	0.1	-	0.1
PENN STATION - TRACK REMEDIATION	0.2	-	0.2	0.1	0.0	-	-	0.2
Fleet Overhauls	**271.8**	**-**	**271.8**	**93.4**	**61.2**	**117.3**	**-**	**271.8**
Acela Programs	**31.6**	**-**	**31.6**	**31.6**	**-**	**-**	**-**	**31.6**
ACELA OVERHAUL	31.6	-	31.6	31.6	-	-	-	31.6
Amfleet Programs	**87.0**	**-**	**87.0**	**36.0**	**30.5**	**20.5**	**-**	**87.0**
AMFLEET I COACH LEVEL 2 OVERHAUL	31.6	-	31.6	18.5	12.6	0.5	-	31.6
Amfleet II Coach Overhaul Level 2	18.6	-	18.6	-	2.7	15.9	-	18.6
Cab Car Overhauls - Level 2	2.4	-	2.4	0.7	1.7	-	-	2.4
AMFLEET I COACH OVERHAUL LEVEL 1	20.1	-	20.1	11.7	8.0	0.3	-	20.1
AMFLEET I CAFE/CLUB OVERHAUL LEVEL 1	10.8	-	10.8	5.1	5.4	0.4	-	10.8
AMFLEET II DINER OVERHAUL LEVEL 2	3.5	-	3.5	-	-	3.5	-	3.5
General Safety & Reliability	**8.0**	**-**	**8.0**	**5.3**	**1.5**	**1.2**	**-**	**8.0**
ENGINEERING MODIFICATION PROJECT	5.0	-	5.0	3.8	1.0	0.2	-	5.0
Wheel Scan	1.0	-	1.0	0.8	0.2	0.0	-	1.0
LONG DIST SINGLE LEVEL BAGGAGE CAR IMPV	1.0	-	1.0	-	-	1.0	-	1.0
Wayside Defect Detection	1.0	-	1.0	0.8	0.2	0.0	-	1.0
Horizon/Surfliner Programs	**14.2**	**-**	**14.2**	**4.0**	**9.9**	**0.2**	**-**	**14.2**
Horizon Cafe Overhaul	1.4	-	1.4	1.0	0.3	0.0	-	1.4
HORIZON COACH OVERHAUL - LEVEL 2	8.9	-	8.9	-	8.8	0.1	-	8.9
SURFLINER CAB CAR OVERHAUL	0.8	-	0.8	0.6	0.2	0.0	-	0.8
SURFLINER COACH OVERHAUL	1.5	-	1.5	1.1	0.3	0.0	-	1.5
Surfliner Cafe Overhaul	1.1	-	1.1	0.8	0.2	0.0	-	1.1
SURFLINER CUSTOM COACH OVERHAUL	0.6	-	0.6	0.5	0.1	0.0	-	0.6
Locomotives	**52.0**	**-**	**52.0**	**12.0**	**15.0**	**25.0**	**-**	**52.0**
DIESEL LOCOMOTIVE LCPM	29.8	-	29.8	0.1	11.8	17.8	-	29.8
F59 Locomotive Overhaul	3.6	-	3.6	2.7	0.7	0.1	-	3.6
Non-Powered Control Units(NPCU)-Overhaul	3.9	-	3.9	3.0	0.8	0.1	-	3.9
P-32-ED Locomotive Overhaul	6.7	-	6.7	-	-	6.7	-	6.7
LOCOMOTIVES-INWARD-OUTWARD FACING CAMERA	8.1	-	8.1	6.2	1.7	0.3	-	8.1
Mandatory Projects	**2.2**	**-**	**2.2**	**1.7**	**0.5**	**0.1**	**-**	**2.2**
CAR MANDATORY PROGRAMS	2.0	-	2.0	1.5	0.4	0.1	-	2.0
LOCOMOTIVE MANDATORY PROGRAMS	0.2	-	0.2	0.2	0.0	0.0	-	0.2
Superliners	**64.5**	**-**	**64.5**	**-**	**3.1**	**61.4**	**-**	**64.5**
SL I SLEEPER OVERHAUL	7.1	-	7.1	-	-	7.1	-	7.1
SUPERLINER I COACH OVERHAULS	19.1	-	19.1	-	3.1	16.0	-	19.1
SUPERLINER I LOUNGE OVERHAULS	4.3	-	4.3	-	-	4.3	-	4.3
SUPERLINER II COACH OVERHAUL	6.8	-	6.8	-	-	6.8	-	6.8
SUPERLINER II DINER OVERHAUL	4.7	-	4.7	-	-	4.7	-	4.7
SUPERLINER II LOUNGE OVERHAUL	1.2	-	1.2	-	-	1.2	-	1.2
SUPERLINER II SLEEPER OVERHAUL	8.7	-	8.7	-	-	8.7	-	8.7
Superliner Diner Lounge Overhaul	4.5	-	4.5	-	-	4.5	-	4.5
SUPERLINER II TRNS SLEEPER/DORM OVERHAUL	6.0	-	6.0	-	-	6.0	-	6.0
SUPERLINER I DINER OVERHAULS	2.0	-	2.0	-	-	2.0	-	2.0
Viewliner Programs	**9.2**	**-**	**9.2**	**0.4**	**0.1**	**8.7**	**-**	**9.2**
VIEWLINER SLEEPER - OVERHAUL	8.6	-	8.6	-	-	8.6	-	8.6
VIEWLINER DINER - OVERHAUL	0.6	-	0.6	0.4	0.1	0.0	-	0.6

($s in Millions)	Federal & State Capital	Other Third Party	Total Capital	NEC	State Supported	Long Distance	Infrastructure & Investment Development	Total Capital
Wrecks	**3.0**	**-**	**3.0**	**2.3**	**0.6**	**0.1**	**-**	**3.0**
Car Wreck Rehabilitation Program	1.0	-	1.0	0.8	0.2	0.0	-	1.0
Locomotive Wreck Program	2.0	-	2.0	1.5	0.4	0.1	-	2.0
Gateway Program	**59.5**	**26.9**	**86.4**	**82.4**	**1.6**	**2.3**	**-**	**86.4**
Special Programs	**59.5**	**26.9**	**86.4**	**82.4**	**1.6**	**2.3**	**-**	**86.4**
GATEWAY PRELIMINARY DESIGN AND PLANNING	2.0	-	2.0	1.8	0.0	0.1	-	2.0
HARRISON NY 4TH TK DESIGN AND INITIATION	0.5	-	0.5	0.5	0.0	0.0	-	0.5
HUDSON INTERLOCKING-TURNOUT INSTALLATION	0.3	-	0.3	0.3	0.0	0.0	-	0.3
HUDSON YD CONSTRUCT TUNNEL BOX	-	1.2	1.2	1.2	0.0	0.0	-	1.2
LIRR HUDSON YD CONSTRUCT TUN BOX PHASE 2	-	25.7	25.7	24.8	0.4	0.5	-	25.7
NJ006.10 NEW PORTAL NORTH BR CONSTR	34.3	-	34.3	32.1	0.8	1.3	-	34.3
NJ007.80&NJ007.96-BRDG CAPACITY UPGR DSN	0.2	-	0.2	0.1	0.0	0.0	-	0.2
NY PENN STATION MASTER PLAN IMPROVEMENTS	4.3	-	4.3	4.2	0.0	-	-	4.3
SECAUCUS STA-BERGEN LOOPS CONCEPT DESIGN	0.5	-	0.5	0.5	-	-	-	0.5
GATEWAY PROGRAM MANAGEMENT	1.8	-	1.8	1.7	0.0	0.1	-	1.8
HUDSON RIVER-CONSTRUCT NEW TUNNELS DSN	7.0	-	7.0	7.0	0.0	-	-	7.0
CONSTRUCT NEW FIXED PORTAL NORTH BRIDGE	0.8	-	0.8	0.7	0.0	0.0	-	0.8
HUDSON RIVER CONSTRUCT NEW TUNNELS NEPA	5.0	-	5.0	4.8	0.1	0.1	-	5.0
TUN NY GATEWAY TUNNEL BOX-HUDSON YARDS D	3.0	-	3.0	2.8	0.1	0.1	-	3.0
Infrastructure Renewal	**407.3**	**268.9**	**676.2**	**510.2**	**98.1**	**39.8**	**28.2**	**676.2**
Improvements	**13.7**	**21.2**	**34.9**	**26.1**	**7.0**	**1.4**	**0.4**	**34.9**
B&P TUNNEL REPLACMENT DSN	-	20.0	20.0	18.7	0.5	0.8	-	20.0
BAY INTERLOCKING C&S INTERLOCKING UPGRS	0.4	-	0.4	0.4	0.0	0.0	-	0.4
CENTRAL DIV - UNDERGRADE BRIDGE UPGRADES	0.5	-	0.5	-	0.3	0.3	-	0.5
CHICAGO UNION STA- OH STRUCTURE REMOVAL	0.0	0.4	0.4	-	-	-	0.4	0.4
HOOK INTERLOCKING UPGRADE TO MICROLOK 2	0.2	-	0.2	0.2	0.0	0.0	-	0.2
MICHIGAN LINE - RAIL LUBRICATOR INSTALL	0.1	-	0.1	-	0.1	-	-	0.1
MID-ATLANTIC DIV EVENT RECORDERS UPGRS	0.1	-	0.1	0.1	0.0	0.0	-	0.1
MID-ATLANTIC NORTH C&S CABLE REPLACEMENT	0.1	-	0.1	0.1	0.0	0.0	-	0.1
MID-ATLANTIC SOUTH C&S CABLE REPLACEMENT	0.1	-	0.1	0.1	0.0	0.0	-	0.1
PHIL NEW CETC CTRL CENTER	6.4	-	6.4	5.0	1.2	0.2	-	6.4
PORTER-KALAMAZOO ITCS SERVERS BACKUP PWR	0.9	-	0.9	-	0.9	-	-	0.9
RENSSELAER, NY-M/W DIRECT FIX TRACK UPGR	0.0	-	0.0	-	0.0	0.0	-	0.0
WIL MOFE FACILITY TIE/TIMBER	0.1	-	0.1	0.1	0.0	0.0	-	0.1
FORT WASH PARK INSTALL SECURITY FENCE	0.5	0.5	1.0	-	0.9	0.1	-	1.0
SOUTHWEST CORRIDOR - LIGHTING UPGRADES	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
SUB KEARNY SUB 41 SUBSTATION UPGRADES	0.1	-	0.1	0.1	0.0	0.0	-	0.1
DELMARVA SECONDARY-SIGNAL IMPROVEMENTS	-	0.3	0.3	0.3	0.0	0.0	-	0.3
NED ENERGY EFFICIENT SWITCH HEATER REPL	0.8	-	0.8	0.7	0.0	0.0	-	0.8
SWIFT I/L SW HTR INSTALLATION	0.2	-	0.2	0.2	0.0	0.0	-	0.2
MICHIGAN LINE MP152-MP208 SIGNAL SYS UPG	3.0	-	3.0	-	3.0	-	-	3.0
CABF NEW ENGLAND DIVISION - INSTALL INTE	0.2	-	0.2	0.1	0.0	0.0	-	0.2
SOGR Base	**307.1**	**56.8**	**363.9**	**302.2**	**31.9**	**29.8**	**-**	**363.9**
30TH ST STA BLOCK TIES	0.9	-	0.9	0.8	0.0	0.0	-	0.9
ABERDEEN-WAS INNER TK PLTFRM-XINGS UPGRS	-	0.4	0.4	0.4	0.0	0.0	-	0.4
ADAMS SUBDIV CULVERT UPGR	0.3	-	0.3	0.3	0.0	0.0	-	0.3
ALBANY LINE - CULVERTS UPGRADE	-	0.2	0.2	-	0.2	0.0	-	0.2
ALBANY LINE - TIMBER PROGRAM	1.7	3.7	5.4	-	5.0	0.4	-	5.4
ALBANY LINE CURVE & TRAIL TK RAIL REPL	-	0.3	0.3	-	0.3	0.0	-	0.3
ALBANY LN INSULATED JNT RENEW	-	0.1	0.1	-	0.1	0.0	-	0.1
AMT SYS ROADBED STABILITY UPGR	1.0	-	1.0	0.8	0.2	0.0	-	1.0
AMTK SY SURFACING PRG DEVELOP	0.4	-	0.4	0.3	0.1	0.0	-	0.4
AMTK SYS MUD SPOT ELIMINATION	1.5	-	1.5	1.1	0.3	0.0	-	1.5
B&P TUN BLOCK TIE/RAIL RENEWAL	2.5	-	2.5	2.3	0.1	0.1	-	2.5
B&P TUNNEL - CATENARY BRACKET UPGRADES	0.2	-	0.2	0.2	0.0	0.0	-	0.2
BAL SUBDIV CATENARY POLE UPGRS	0.3	-	0.3	0.2	0.0	0.0	-	0.3
BAL SUBDIV SERVICE&POTENTIAL TRANS UPGR	0.1	-	0.1	0.1	0.0	0.0	-	0.1
BAL SUBDIV-INSTL TRACK AND CODE RELAYS	0.2	-	0.2	0.1	0.0	0.0	-	0.2
BAL SUBDIV-PHASE SELECTIVE UNIT UPGR	0.2	-	0.2	0.2	0.0	0.0	-	0.2
BALTIMORE STA PLATFORM 2 LIGHTING UPGRS	-	0.1	0.1	0.0	0.0	0.0	-	0.1
BALTIMORE SUBDIV - CAT HARDWARE RENEWAL	0.5	-	0.5	0.5	0.0	0.0	-	0.5
BALTIMORE SUBDIV AIRBREAK SW REPLACEMENT	0.1	-	0.1	0.0	0.0	0.0	-	0.1
BALTIMORE SUBDIV INTERLOCKING SEC SWITCH	0.2	-	0.2	0.1	0.0	0.0	-	0.2
BALTIMORE SUBDIV KOUPLER UPGR	0.1	-	0.1	0.1	0.0	0.0	-	0.1
BALTIMORE SUBDIV SUBST IMPRV	0.1	-	0.1	0.1	0.0	0.0	-	0.1
BALTIMORE SUBDIV SUBSTA BATTERY SYS UPGR	0.2	-	0.2	0.2	0.0	0.0	-	0.2
BALTIMORE SUBDIV TROLLEY BREAKER UPGR	0.2	-	0.2	0.2	0.0	0.0	-	0.2
BALTIMORE SUBDIVISION-SIGNAL POWER UPGR	0.1	-	0.1	0.1	0.0	0.0	-	0.1
BALTIMORE TUNNEL IMPROVEMENTS	-	0.3	0.3	0.2	0.0	0.0	-	0.3
BALTIMORE-TRANS LINE AND HARDWARE UPGR	0.1	-	0.1	0.1	0.0	0.0	-	0.1
BAY INTERLOCKING TURNOUT RENEWAL	1.0	-	1.0	0.9	0.0	0.0	-	1.0
BIDDLE INTERLOCKING TURNOUT RENEWAL	1.5	-	1.5	1.4	0.0	0.1	-	1.5
BOSTON SUBDIV TIE/TIMBERS	1.6	-	1.6	1.5	0.0	0.1	-	1.6
BOSTON SUBDIV-CIRCUIT BREAKER INSTALL	0.3	-	0.3	0.2	0.0	0.0	-	0.3
BRG/TUNNEL/WALL FUTURE DESIGN	1.5	-	1.5	1.2	0.3	0.0	-	1.5
BRYN MAWR I/L TURNOUT REPLACEM	1.0	-	1.0	0.4	0.6	-	-	1.0
C&S LANCASTER SHOP EQI UPGR	0.2	-	0.2	0.2	0.0	0.0	-	0.2
C&S SYSTEM - NETWORK UPGRADES	0.1	-	0.1	0.0	0.0	0.0	-	0.1
CAT ET TRANING FACILITY UPGR	0.3	-	0.3	0.2	0.1	0.0	-	0.3
CENTRAL DIV TK REHABILITATION	6.0	-	6.0	-	3.0	3.0	-	6.0
CENTRAL DIV-SECURITY FENCE INSTALLATIONS	0.3	-	0.3	-	0.1	0.1	-	0.3
CHARLES INTERLOCKING - TURNOUT RENEWAL	3.6	-	3.6	3.4	0.1	0.1	-	3.6

($s in Millions)	Federal & State Capital	Other Third Party	Total Capital	NEC	State Supported	Long Distance	Infrastructure & Investment Development	Total Capital
CHICAGO-NEW ORLEANS I-ETMS INSTALLATION	4.4	-	4.4	-	-	4.4	-	4.4
CHICAGO-ST. LOUIS LOCOMOTIVE PTC UPGRADE	-	2.3	2.3	-	-	2.3	-	2.3
CONCRETE TIE REDESIGN	1.0	-	1.0	0.8	0.2	0.0	-	1.0
CONESTOGA STEPUP YD REPLACE TRANSFORMER	1.5	-	1.5	1.4	0.0	0.1	-	1.5
CYNWYD/PAXTON I/L RENEWAL	-	0.2	0.2	0.1	0.1	-	-	0.2
DAVIS INTERLOCKING RENEWAL	0.5	-	0.5	0.5	0.0	0.0	-	0.5
DAVISVILLE I/L MICROLOK 2 UPGR	0.3	-	0.3	0.2	0.0	0.0	-	0.3
DOCK INTERLOCKING C&S RENEWAL	5.4	-	5.4	5.0	0.1	0.2	-	5.4
DOCK INTERLOCKING T/O RENEWAL	3.0	-	3.0	2.8	0.1	0.1	-	3.0
DOCK TO ELMORA CATENARY HARDWARE RENEWAL	0.1	-	0.1	0.0	0.0	0.0	-	0.1
EAST RIV TUN-REHAB PUMP STA DEWATER SYS	-	2.3	2.3	2.2	0.1	0.1	-	2.3
EAST RIVER TUN BENCHWALL-DIAMOND PLATE	1.2	-	1.2	1.1	0.0	0.0	-	1.2
EAST RIVER TUN REHAB SCADA CTRL PANELS	-	0.3	0.3	0.2	0.0	0.0	-	0.3
EDGELY SUB 33 IMPROVEMENTS	0.1	-	0.1	0.0	0.0	0.0	-	0.1
ELECTRIC TRACTION DSN REVIEW	0.3	-	0.3	0.2	0.0	0.0	-	0.3
ELMORA-UNION CATENARY UPGR	0.4	-	0.4	0.3	0.0	0.0	-	0.4
EMPIRE CORRIDOR REPLACE HOT BOX DETECTOR	-	0.3	0.3	-	0.2	0.0	-	0.3
EMPIRE CORRIDOR UNDERGRADE BRG UPGRADES	-	1.0	1.0	-	0.9	0.1	-	1.0
EMPIRE LINE CATENARY HARDWARE RENEWAL	0.1	-	0.1	-	0.0	0.0	-	0.1
ERT LINE 3/4 RAIL/TIES	7.5	-	7.5	7.0	0.2	0.3	-	7.5
ET SUBSTATION RELAY UPGRADES	0.1	-	0.1	0.1	0.0	0.0	-	0.1
FAIR I/L DC SW/BATTERY INSTALL	0.1	-	0.1	0.0	0.0	0.0	-	0.1
GROVE INTERLOCKING TURNOUT RENEWAL	1.0	-	1.0	0.9	0.0	0.0	-	1.0
HARRISBURG LINE - SUBSTATION UPGRADES	0.1	-	0.1	0.0	0.0	0.0	-	0.1
HARRISBURG LINE CULVERTS UPGRS	0.3	-	0.3	0.1	0.2	-	-	0.3
HARRISBURG LINE SIG PWR UPGRS	0.2	-	0.2	0.1	0.1	-	-	0.2
HARRISBURG LINE-CATENARY POLE REPLACMENT	0.3	-	0.3	0.1	0.2	-	-	0.3
HARRISBURG LN CATENARY HARDWARE RENEWAL	0.9	-	0.9	0.8	0.0	0.0	-	0.9
HBG LINE 12KV SUBSTATION BRKS	0.5	-	0.5	0.2	0.3	-	-	0.5
HELLGATE LINE - C&S CABLE RENEWAL	0.2	-	0.2	0.1	0.0	0.0	-	0.2
HELLGATE LINE KOUPLER BRAKE REPLACEMENT	0.1	-	0.1	0.0	0.0	0.0	-	0.1
HELLGATE/EMPIRE I/L STEEL	0.4	-	0.4	0.4	0.0	0.0	-	0.4
HELLGATE/EMPIRE RAIL RENEWAL	0.3	-	0.3	0.3	0.0	0.0	-	0.3
HELLGATE/EMPIRE TIE/TIMBER	0.5	-	0.5	0.5	0.0	0.0	-	0.5
HOLLY INTERLOCKING RENEWAL	0.5	-	0.5	0.5	0.0	0.0	-	0.5
INT SIGNALS - FUTURE DESIGN	0.3	-	0.3	0.2	0.0	0.0	-	0.3
KEARNY, NJ-PASSAIC RIV TRAN TWR REPLCMNT	0.0	-	0.0	0.0	0.0	0.0	-	0.0
KEARNY-SUB 41 RELOCATION DSN AND CONSTR	0.1	-	0.1	0.0	0.0	0.0	-	0.1
LAMOKIN SUB 11 TRANSFORMER INSTALLATION	1.0	-	1.0	0.9	0.0	0.0	-	1.0
LANDISVILLE SUB 69 TRANSFORMER INSTALL	1.8	-	1.8	1.7	0.0	0.1	-	1.8
LEVITTOWN PA STA-CATENARY MODIFICATIONS	-	0.0	0.0	0.0	0.0	0.0	-	0.0
LINCOLN-COUNTY CATENARY UPGR	0.1	-	0.1	0.0	0.0	0.0	-	0.1
MA206.42 COCASSETT ST BACKWALL UPGRADES	-	1.0	1.0	0.9	0.0	0.0	-	1.0
MAD - RETAINING WALL UPGRADES	1.5	-	1.5	1.4	0.0	0.1	-	1.5
MAD - TUNNEL CONSTRUCTION & UPGRADES	1.5	-	1.5	1.4	0.0	0.1	-	1.5
MAD - UNDERGRADE BRIDGE UPGRADES	3.9	-	3.9	3.7	0.1	0.2	-	3.9
MAD CONCRETE TIE REPLACEMENT	2.0	-	2.0	1.9	0.0	0.1	-	2.0
MAD DIV INSTALL SECURE MANHOLE COVERS	0.1	-	0.1	0.1	0.0	0.0	-	0.1
MAD DIV RENEW PADS CLIPS AND INSULATORS	0.3	-	0.3	0.2	0.0	0.0	-	0.3
MAD DIVISION BRIDGE TIMBER REP	0.5	-	0.5	0.5	0.0	0.0	-	0.5
MAD S SUBSTATION CNTL HSE UPGR	0.2	-	0.2	0.1	0.0	0.0	-	0.2
MAD SOUTH KOUPLER/FLURRY BREAKS UPGRS	0.1	-	0.1	0.1	0.0	0.0	-	0.1
MAD TURNOUT REPLACEMENT	3.0	-	3.0	2.8	0.1	0.1	-	3.0
MAGNOLIA INTERLOCKING TURNOUT RENEWAL	1.5	-	1.5	1.4	0.0	0.1	-	1.5
MASSACHUSETTS BRG CATENARY UPG	0.5	-	0.5	0.4	0.0	0.0	-	0.5
MD051.43 RT 272 CATENARY IMPROVEMENTS	-	1.6	1.6	1.5	0.0	0.1	-	1.6
METUCHEN SUB 38 AIR BREAK SWITCH REPL	0.2	-	0.2	0.2	0.0	0.0	-	0.2
MICHIGAN DIST CULVERTS UPGR	0.2	-	0.2	-	0.2	-	-	0.2
MICHIGAN DISTRICT MP192 TO MP2	0.8	-	0.8	-	0.8	-	-	0.8
MICHIGAN DISTRICT SURFACING	0.5	-	0.5	-	0.5	-	-	0.5
MICHIGAN LN REPL XING PANNELS	0.4	-	0.4	-	0.4	-	-	0.4
MID-ATLANTIC DIV COMM EQUIPMENT HOUSES	0.1	-	0.1	0.1	0.0	0.0	-	0.1
MID-ATLANTIC DIV DRAINAGE UPGR	2.0	-	2.0	1.9	0.0	0.1	-	2.0
MID-ATLANTIC DIV INSUL JOINTS	1.3	-	1.3	1.2	0.0	0.0	-	1.3
MID-ATLANTIC DIV MOVABLE BRIDGE UPGRADES	0.1	-	0.1	0.1	0.0	0.0	-	0.1
MID-ATLANTIC DIV-352 SIG PWR BREAKER	0.1	-	0.1	0.1	0.0	0.0	-	0.1
MID-ATLANTIC DIV-CONCRETE TIE REPLACEMNT	35.0	-	35.0	32.8	0.9	1.4	-	35.0
MID-ATLANTIC DIVISION SPOT UNDERCUTTING	3.2	-	3.2	3.0	0.1	0.1	-	3.2
MID-ATLANTIC I/L STEEL RENEWAL	3.5	-	3.5	3.3	0.1	0.1	-	3.5
MID-ATLANTIC JOINT ELIMINATION	3.5	-	3.5	3.3	0.1	0.1	-	3.5
MID-ATLANTIC TIE/TIMBER REPL	8.5	-	8.5	8.0	0.2	0.3	-	8.5
MORRIS-HOLMES CATENARY UPGR	0.1	-	0.1	0.0	0.0	0.0	-	0.1
MORRISVILLE SUB 34 IMPROVEMENT	0.1	-	0.1	0.0	0.0	0.0	-	0.1
MOVABLE BRG COMPONENT DSN	0.4	-	0.4	0.3	0.1	0.0	-	0.4
NEC MITRE RAIL EXPANSION JOINTS	1.0	-	1.0	0.8	0.2	0.0	-	1.0
NEC SUBSTATIONS CONTROL HOUSE DESIGN	0.6	-	0.6	0.5	0.1	0.0	-	0.6
NEC WAYSIDE DETECTOR COMM SYS	0.3	-	0.3	0.2	0.1	0.0	-	0.3
NED - UNDERGRADE BRIDGE IMPROVEMENTS	5.0	-	5.0	4.7	0.1	0.2	-	5.0
NED BRG ICILE MITIGATION CONSTRUCTION	0.3	-	0.3	0.3	0.0	0.0	-	0.3
NED CATENARY HARDWARE RENEWAL	0.2	-	0.2	0.1	0.0	0.0	-	0.2
NED CONCRETE TIE REPLACEMENT	1.5	-	1.5	1.4	0.0	0.1	-	1.5
NED I/L BATTERY BANK REPL	0.1	-	0.1	0.1	0.0	0.0	-	0.1

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NEW CARROLLTON STA-TK 1 PLATFORM DESIGN	-	0.0	0.0	0.0	0.0	0.0	-	0.0
NEW ENGLAND DIV BRG ICILE MITIGATION DSN	0.1	-	0.1	0.0	0.0	0.0	-	0.1
NEW ENGLAND DIV BRG TIMBERS	3.0	-	3.0	2.8	0.1	0.1	-	3.0
NEW ENGLAND DIV COMM EQUIPMENT HOUSES	0.1	-	0.1	0.1	0.0	0.0	-	0.1
NEW ENGLAND DIV CRV PATCH RAIL	0.8	-	0.8	0.7	0.0	0.0	-	0.8
NEW ENGLAND DIV CULVERT UPGR	2.0	-	2.0	1.9	0.0	0.1	-	2.0
NEW ENGLAND DIV DRAINAGE IMPV	0.7	-	0.7	0.7	0.0	0.0	-	0.7
NEW ENGLAND DIV HDBLOCK TIES	0.5	-	0.5	0.5	0.0	0.0	-	0.5
NEW ENGLAND DIV MOVABLE BRIDGE UPGRADES	0.1	-	0.1	0.1	0.0	0.0	-	0.1
NEW ENGLAND DIV SPOT U/C	3.0	-	3.0	2.8	0.1	0.1	-	3.0
NEW ENGLAND DIV SUB LIGHTING	0.1	-	0.1	0.1	0.0	0.0	-	0.1
NEW ENGLAND DIV SUB UPGRADES	0.1	-	0.1	0.1	0.0	0.0	-	0.1
NEW ENGLAND DIV SUBSTA SCADA-RTU UPGRS	0.7	-	0.7	0.6	0.0	0.0	-	0.7
NEW ENGLAND DIV WALL UPGRS	0.8	-	0.8	0.7	0.0	0.0	-	0.8
NEW ENGLAND DIVISION WD TIES	2.1	-	2.1	2.0	0.1	0.1	-	2.1
NEW ENGLAND DIVISION XING UPGR	0.8	-	0.8	0.7	0.0	0.0	-	0.8
NEW ENGLAND DIV-RETIRE WAYSIDE SWITCHES	0.2	-	0.2	0.2	0.0	0.0	-	0.2
NEW ENGLAND DV T/O REPLACEMENT	2.0	-	2.0	1.9	0.0	0.1	-	2.0
NEW ENGLAND INSULATED JOINTS	0.4	-	0.4	0.4	0.0	0.0	-	0.4
NEW ENGLAND JOINT ELIMINATION	1.4	-	1.4	1.3	0.0	0.1	-	1.4
NEW ORLEANS, LA WD TIE REPL	0.1	-	0.1	-	-	0.1	-	0.1
NEW ORLEANS-REPLACE STA TK RAIL AND TIES	0.2	-	0.2	-	-	0.2	-	0.2
NEW YORK DIV REPLACE COMM EQUIP HOUSES	0.1	-	0.1	0.1	0.0	0.0	-	0.1
NEW YORK DIV MOVABLE BRIDGE UPGRADES	0.5	-	0.5	0.5	0.0	0.0	-	0.5
NEW YORK DIV VACUUM TRAIN	0.6	-	0.6	0.6	0.0	0.0	-	0.6
NEW YORK DIVISION - DRAINAGE IMPROVEMENT	0.5	-	0.5	0.5	0.0	0.0	-	0.5
NEW YORK TUNNEL FLOOD GATES UP	0.5	-	0.5	0.5	0.0	0.0	-	0.5
NJ006.10 PORTAL BRG MITRE RAIL	1.3	-	1.3	1.2	0.0	0.0	-	1.3
NJ008.50 BRG CONTROL UPGRS	3.0	-	3.0	2.8	0.1	0.1	-	3.0
NORTH RIV TUN-REHAB PUMP STA DEWATER SYS	-	2.3	2.3	2.2	0.1	0.1	-	2.3
NORTH RIVER TUN BENCHWALL DIAMOND PLATE	1.2	-	1.2	1.1	0.0	0.0	-	1.2
NORTH RIVER TUN REHAB SCADA CTRL PANELS	-	0.3	0.3	0.2	0.0	0.0	-	0.3
NORTHEAST CORRIDOR RADIO VOTER UPGRADES	0.5	-	0.5	0.4	0.1	0.0	-	0.5
NY AREA RAIL REPLACEMENT	0.3	-	0.3	0.3	0.0	0.0	-	0.3
NY DIV CATENARY POLE UPGR	0.5	-	0.5	0.5	0.0	0.0	-	0.5
NY DIV CONCRETE TIE FASTENER HARDWARE	0.5	-	0.5	0.4	0.0	0.0	-	0.5
NY DIV CONCRETE TIE REPL-TLS	5.0	-	5.0	4.7	0.1	0.2	-	5.0
NY DIV EAST INTERLOCKING STEEL	2.3	-	2.3	2.1	0.1	0.1	-	2.3
NY DIV HOT BX DETECTOR REPLACE	0.2	-	0.2	0.2	0.0	0.0	-	0.2
NY DIV SECURE MANHOLE COVER INSTALLATION	0.1	-	0.1	0.1	0.0	0.0	-	0.1
NY DIV WEST INSULATED JOINTS	0.4	-	0.4	0.4	0.0	0.0	-	0.4
NY DIV WEST INTERLOCKING STL	0.9	-	0.9	0.8	0.0	0.0	-	0.9
NY DIV WEST JOINT ELIMINATION	0.8	-	0.8	0.7	0.0	0.0	-	0.8
NY DIV-CONCRETE TIES REPLACEMN	1.5	-	1.5	1.4	0.0	0.1	-	1.5
NY DIV-INTRLOCKING LIGHTING FIXTURE UPGR	0.5	-	0.5	0.5	0.0	0.0	-	0.5
NY EAST RIV TUN REHAB TUN LIGHT FIXTURES	-	0.6	0.6	0.5	0.0	0.0	-	0.6
NY EAST RIVER TUNNELS 3RD RAIL REHAB	-	0.0	0.0	0.0	0.0	0.0	-	0.0
NY EAST RVR TUN RAIL/TIE LN1/2	1.5	-	1.5	1.4	0.0	0.1	-	1.5
NY ERT - 1ST AVE VENTILATION DOOR DESIGN	1.0	-	1.0	0.9	0.0	0.0	-	1.0
NY LIC AND 11TH AVE-REHAB MECH EQUIP RM	-	1.0	1.0	0.9	0.0	0.0	-	1.0
NY NORTH RIV TUN REHAB TUN LIGHT FIXTURE	-	0.2	0.2	0.2	0.0	0.0	-	0.2
NY NRT TIE/TIMBER REPLACEMENT	2.0	-	2.0	1.9	0.0	0.1	-	2.0
NY TUN-REHAB 1ST AVE AND LIC VENT PLANTS	-	1.0	1.0	0.9	0.0	0.0	-	1.0
NY133.35 BALLAST DK CONVERSION	-	1.5	1.5	-	1.4	0.1	-	1.5
NY143.02 LAB - BRIDGE AND EMERG GEN UPGR	-	0.5	0.5	-	0.5	0.0	-	0.5
NYD - RETAINING WALL UPGRADES	2.0	-	2.0	1.9	0.0	0.1	-	2.0
NYD - UNDERGRADE BRIDGE UPGRADES	2.0	-	2.0	1.9	0.0	0.1	-	2.0
NYP SUBDIV-REPLACE TIES AND TIMBERS	0.4	-	0.4	0.4	0.0	0.0	-	0.4
P&H LINE TRANSMISSION LN SUB 40-41 UPGRS	1.4	-	1.4	1.3	0.0	0.1	-	1.4
PA002.88 41ST CATENARY IMPROVEMENTS	-	1.3	1.3	0.5	0.8	-	-	1.3
PA014.28 LLOYD ST-CATENARY IMPROVEMENTS	-	0.0	0.0	0.0	0.0	0.0	-	0.0
PERRYVILLE SUBDIV - CAT HARDWARE RENEWAL	0.5	-	0.5	0.5	0.0	0.0	-	0.5
PERRYVILLE SUBDIV INTERLOCKING SEC SW	0.2	-	0.2	0.1	0.0	0.0	-	0.2
PERRYVILLE SUBDIV SUBST IMPRV	0.2	-	0.2	0.1	0.0	0.0	-	0.2
PERRYVILLE SUBDIV SUBSTA BATTERY SYSTEM	0.2	-	0.2	0.2	0.0	0.0	-	0.2
PERRYVILLE SUBDIV TROLLEY BREAKER UPGR	0.2	-	0.2	0.2	0.0	0.0	-	0.2
PERRYVILLE SUBDIVISION-SIGNAL POWER UPGR	0.3	-	0.3	0.3	0.0	0.0	-	0.3
PERRYVILLE SUBDIV-SECTION BREAK UPGRADES	0.1	-	0.1	0.1	0.0	0.0	-	0.1
PHIL COMM CTRL CENTER-REPLACE BATTERYS	0.1	-	0.1	-	0.1	0.0	-	0.1
PHIL SUBDIV CATENARY POLE REPL	0.5	-	0.5	0.5	0.0	0.0	-	0.5
PHIL SUBDIV INTERLOCKING RTU R	0.3	-	0.3	0.2	0.0	0.0	-	0.3
PHILADELPHIA SUBDIV CATENARY UPGRADES	0.0	-	0.0	0.0	0.0	0.0	-	0.0
PHILADELPHIA SUBDIV INSTALL STATIC WIRE	0.1	-	0.1	0.1	0.0	0.0	-	0.1
PHILADELPHIA SUBDIV SUBSTATION UPGRADES	0.1	-	0.1	0.1	0.0	0.0	-	0.1
PHL-WIL CATENARY STRUCTURE REP	0.3	-	0.3	0.2	0.0	0.0	-	0.3
PRINCETON SUB 35 AIR BRK SW-CABLE TRENCH	0.2	-	0.2	0.1	0.0	0.0	-	0.2
PRY SUBDIV CATENARY POLE UPGRS	0.3	-	0.3	0.2	0.0	0.0	-	0.3
PSCC NEW YORK SYSTEM UPGRADES	0.5	-	0.5	0.5	0.0	0.0	-	0.5
PSNY RADIO SYSTEM UPGR DSN AND INSTL	0.5	-	0.5	0.5	0.0	0.0	-	0.5
PSNY SUB 43 31ST IMPROVEMENTS	0.1	-	0.1	0.1	0.0	0.0	-	0.1
PSNY SUB 43 7TH AVE IMPROVEMEN	0.1	-	0.1	0.0	0.0	0.0	-	0.1
PSNY WALKOVER 18 CONDUIT/CABLE	1.0	-	1.0	0.9	0.0	0.0	-	1.0

($s in Millions)	Federal & State Capital	Other Third Party	Total Capital	NEC	State Supported	Long Distance	Infrastructure & Investment Development	Total Capital
RADIO SITE BACKUP - EMERGENCY PWR UPGRS	0.2	-	0.2	-	0.2	0.0	-	0.2
REPL 3RD RAIL ERT/HAROLD	0.0	-	0.0	0.0	0.0	0.0	-	0.0
RHEEMS SUB 70 TRANSFORMER INSTALLATION	1.0	-	1.0	0.4	0.6	-	-	1.0
RIVER INTERLOCKING TURNOUT RENEWAL	3.5	-	3.5	3.3	0.1	0.1	-	3.5
SHAMPTON YD SUBSTA INTERFACE	0.4	-	0.4	0.4	0.0	0.0	-	0.4
SHARON SUBSTA REPLACE CIRCUIT BREAKERS	0.3	-	0.3	0.2	0.0	0.0	-	0.3
SHSY - SECTIONALIZING SWITCH REPLACEMENT	0.1	-	0.1	0.0	0.0	0.0	-	0.1
SOUTH PENN INTERLOCKING RENEWAL	3.0	-	3.0	2.8	0.1	0.1	-	3.0
SOUTH PENN INTERLOCKING-C&S UPGRS DSN	0.3	-	0.3	0.2	0.0	0.0	-	0.3
SOUTHAMPTON ST YD TURNOUTS	0.8	-	0.8	0.7	0.0	0.0	-	0.8
SPRINGFIELD LN I/L STL RENEWAL	1.3	-	1.3	1.2	0.0	0.0	-	1.3
SSYD SUB 44 IMPROVEMENTS	0.1	-	0.1	0.1	0.0	0.0	-	0.1
STATE INTERLOCKING RENEWAL	-	8.0	8.0	7.5	0.2	0.3	-	8.0
STRUCTURES - BRIDGE TIE DESIGN	0.2	-	0.2	0.1	0.0	0.0	-	0.2
SUB 32 TO SUB 34- SIGNAL PWR SYSTEM UPGR	0.1	-	0.1	0.1	0.0	0.0	-	0.1
SUB 34 TO SUB 42- SIGNAL PWR SYSTEM UPGR	0.1	-	0.1	0.1	0.0	0.0	-	0.1
SUNNYSIDE YARD - SUBSTATION UP	0.5	-	0.5	0.5	0.0	0.0	-	0.5
SUNNYSIDE YARD INST TIMBER	0.7	-	0.7	0.7	0.0	0.0	-	0.7
SUNNYSIDE YD DESIGN-CONSTRUCTION HSR FAC	-	17.0	17.0	15.9	0.4	0.7	-	17.0
SWIFT-HUDSON CATENARY HARDWARE RENEWAL	0.1	-	0.1	0.1	0.0	0.0	-	0.1
TIES MICHIGAN LINE - WOOD TIE PROGRAM	0.5	-	0.5	-	0.5	-	-	0.5
TOWER ONE TURNOUT REPLACEMENT	2.5	-	2.5	2.3	0.1	0.1	-	2.5
TRACK - FUTURE DESIGN	0.6	-	0.6	0.5	0.1	0.0	-	0.6
TUN NY ERT-LINES 1&3 SUMP PUMP AIR LINES	1.0	-	1.0	0.9	0.0	0.0	-	1.0
TURNOUT DEVELOPMENT/DESIGN	0.3	-	0.3	0.2	0.1	0.0	-	0.3
UNION SUB 25A PROTOTYPE TROLLEY BREAKER	0.1	-	0.1	0.0	0.0	0.0	-	0.1
UNION SUBSTATION RELOCATION	-	0.0	0.0	0.0	0.0	0.0	-	0.0
WAS STATION CONCOURSE A IMPROVEMENTS	-	0.5	0.5	0.5	0.0	0.0	-	0.5
WAS-BOS RAIL LUBICATOR REPLACE	0.5	-	0.5	0.4	0.1	0.0	-	0.5
WASHINGTON TERM & IVY CITY - UPGR TRACKS	3.0	-	3.0	2.8	0.1	0.1	-	3.0
WASH-NEW YORK CURVE PATCH RAIL	1.5	-	1.5	1.1	0.3	0.0	-	1.5
WASH-NEW YORK SYS UNDERCUTTING	25.0	-	25.0	23.4	0.6	1.0	-	25.0
WAS-NYP REDUNDANT COMM CABLE	1.0	-	1.0	0.8	0.2	0.0	-	1.0
WAVERLY SUB 40 SIGNAL MACHINE	0.2	-	0.2	0.2	0.0	0.0	-	0.2
WEST DIVISION - STATION TRACK	1.0	-	1.0	-	-	1.0	-	1.0
WEST DIVISION- STATION CONSTRUCTION UPGR	1.3	-	1.3	-	-	1.3	-	1.3
WILMINGTON SUBDIV CATENARY UPGRADES	0.1	-	0.1	0.0	0.0	0.0	-	0.1
WILMINGTON SUBDIV SUBSTATION UPGRADES	0.1	-	0.1	0.0	0.0	0.0	-	0.1
WIL-WAS INTERLOCKING RTU REPLA	0.3	-	0.3	0.2	0.0	0.0	-	0.3
ZOO-44TH ST I/L RECONFIGURATON	2.0	-	2.0	1.9	0.0	0.1	-	2.0
ZOO-PAOLI CATENARY POLE DESIGN	0.0	-	0.0	0.0	0.0	-	-	0.0
EMPIRE CORRIDOR BRG TIMBER REPLACEMENT	0.5	-	0.5	-	0.5	0.0	-	0.5
MID ATLANTIC DIV SIGNAL BRIDGE UPGR	1.0	-	1.0	0.9	0.0	0.0	-	1.0
CULV MD128.33 LANDOVER - CULVERT UPGRADE	0.1	-	0.1	0.1	0.0	0.0	-	0.1
MAD I/L LIGHTING UPGR	0.5	-	0.5	0.5	0.0	0.0	-	0.5
NEW YORK TUNNELS REHABILITATION DESIGN	-	3.0	3.0	2.8	0.1	0.1	-	3.0
INT KINGSTON INTERLOCKING-UPGRADE TO MI	2.0	-	2.0	1.9	0.0	0.1	-	2.0
NEC SIGNAL SYSTEM REMOTE DIAGNOSTIC SYS	0.1	-	0.1	-	0.1	0.0	-	0.1
HAM INTERLOCKING SW HEATER IMPROVEMENTS	0.1	-	0.1	0.1	0.0	0.0	-	0.1
MAD NORTH CATENARY POLE ATTACHMENT UPGRS	0.1	-	0.1	0.0	0.0	0.0	-	0.1
LD DISPATCHER-PWR DIR OFF OVERVIEW BRDS	0.9	-	0.9	0.6	0.2	0.0	-	0.9
ELECTRIC TRACTION FREQ CONVERTER UPGRS	3.5	-	3.5	2.6	0.7	0.1	-	3.5
FRANKFORD SUB 30 - TRANSFORMER INSTALL	1.0	-	1.0	0.9	0.0	0.0	-	1.0
NEW YORK DIV SUBSTATION RTU UPGRADES	0.3	-	0.3	0.2	0.0	0.0	-	0.3
ET EMPLOYEE ARC FLASH PROTECTION	1.2	-	1.2	0.9	0.3	0.0	-	1.2
NORTHEAST CORRIDOR INST IMPACT DETECTORS	1.3	-	1.3	1.2	0.0	0.0	-	1.3
NEW YORK DIV EAST JOINT ELIMINATION	0.5	-	0.5	0.4	0.0	0.0	-	0.5
NEW YORK DIV EAST INSULATED JOINTS	0.2	-	0.2	0.2	0.0	0.0	-	0.2
NEW YORK DIV WEST TIES/TIMBERS	2.5	-	2.5	2.3	0.1	0.1	-	2.5
NEW YORK DIV EAST TIES/TIMBERS	0.8	-	0.8	0.7	0.0	0.0	-	0.8
PENN STA NY ZERO DEFECT PRG TO RENEWAL	6.0	-	6.0	5.6	0.1	0.2	-	6.0
MID-ATLANTIC DIV SURFACING PROGRAM	8.6	-	8.6	8.1	0.2	0.3	-	8.6
NEW ENGLAND DIV SURFACING PROGRAM	3.5	-	3.5	3.3	0.1	0.1	-	3.5
NEW YORK DIV SURFACING PROGRAM	4.5	-	4.5	4.2	0.1	0.2	-	4.5
11TH AV VENT SHAFT AUTOMATIC TRANSFER SW	-	1.0	1.0	0.9	0.1	0.0	-	1.0
NY010.25 SPUYTEN DUYVIL-SANDY MECH-ELECT	-	0.6	0.6	0.6	0.0	0.0	-	0.6
PRIIA BASIC INFRA RECAPITAL CONTRIB	13.8	-	13.8	10.5	2.9	0.4	-	13.8
SEATTLE, WA STATION IMPROVEMENTS	-	4.0	4.0	-	-	4.0	-	4.0
Safety / Mandates	**33.8**	**12.8**	**46.6**	**28.9**	**15.9**	**1.9**	**-**	**46.6**
BAL SUBDIV INST SECURITY FENCE	4.5	-	4.5	4.2	0.1	0.2	-	4.5
BALT STATION INSTALL EMERGENCY GENERATOR	-	0.3	0.3	0.3	0.0	0.0	-	0.3
CETC NY SCADA PHASE II	5.2	-	5.2	5.2	0.0	-	-	5.2
EMPIRE CORRIDOR PTC INSTALLATION WAYSIDE	-	12.5	12.5	-	11.6	0.9	-	12.5
EMPIRE LINE OVERBUILD LIGHTING	0.3	-	0.3	0.3	-	-	-	0.3
ENG EMPLOYEE ARC FLASH PROTECT	1.0	-	1.0	0.8	0.2	0.0	-	1.0
MAD NORTH-SIGNAL BRG FALL PROTECTION	0.5	-	0.5	0.4	0.0	0.0	-	0.5
MAD SOUTH-SIGNAL BRG FALL PROTECTION	0.5	-	0.5	0.4	0.0	0.0	-	0.5
NEW ENGLAND DIVISION FENCING	0.2	-	0.2	0.2	0.0	0.0	-	0.2
NY DIV SIG BRG FALL PROTECTION	0.1	-	0.1	0.1	0.0	0.0	-	0.1
NY TUN EMERGENCY PWR DSN	0.5	-	0.5	0.5	0.0	-	-	0.5
NYD - SIGNAL BRIDGE SAFETY UPGRADES	0.5	-	0.5	0.5	0.0	0.0	-	0.5
Positive Train Control (PTC)	5.7	-	5.7	4.3	1.2	0.2	-	5.7

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PTC AMTRAK OWNED INSTALLATION	13.9	-	13.9	10.8	2.7	0.4	-	13.9
SEPTA STATIONS INTERTRACK FENCE UPGRADES	0.2	-	0.2	0.1	0.0	0.0	-	0.2
LIFE SAFETY - PROJECT MANAGEMENT	0.9	-	0.9	0.8	0.0	-	-	0.9
Major Projects	**15.6**	**178.1**	**193.6**	**145.8**	**41.4**	**6.4**	**-**	**193.6**
BRANDY-RAGAN SEC IMPROVEMENT	1.0	20.0	21.0	19.7	0.5	0.8	-	21.0
CENTRAL DIVISION MOVABLE BRIDGE UPGRADES	0.1	-	0.1	-	0.1	0.1	-	0.1
CT106.89 CONN RV REPL DESIGN	2.0	-	2.0	1.9	0.0	0.1	-	2.0
HBG LINE PRIVATE XING ELIM	0.5	-	0.5	0.2	0.3	-	-	0.5
KINGSTON RI CAPACITY AND PLATF	-	8.0	8.0	7.5	0.2	0.3	-	8.0
LANDOVER/HANSON I/L RENEWAL	4.0	1.5	5.5	5.2	0.1	0.2	-	5.5
MD060.07 SUSQUEHANNA BRIDGE REPLACEMENT	-	5.0	5.0	4.7	0.1	0.2	-	5.0
METUCHEN FREQ CONVERTER NJHSRIP	-	50.8	50.8	47.3	1.4	2.2	-	50.8
MICHIGAN LINE MP 238-INSTALL NEW SIDING	-	1.0	1.0	-	1.0	-	-	1.0
NEW BRUNSWICK-TRENTON NJHSRIP BRIDGES	-	1.2	1.2	1.1	0.0	0.0	-	1.2
NEW BRUNSWICK-TRENTON NJHSRIP CATENARY	-	30.7	30.7	28.6	0.8	1.3	-	30.7
NEW BRUNSWICK-TRENTON NJHSRIP PRG MGMNT	-	9.4	9.4	8.8	0.2	0.4	-	9.4
NEW BRUNSWICK-TRENTON NJHSRIP SIGNALS	-	0.5	0.5	0.4	0.0	0.0	-	0.5
NEW BRUNSWICK-TRENTON NJHSRIP TRACK	-	14.1	14.1	13.2	0.3	0.6	-	14.1
NY015.73 PELHAM BAY-BRDG REPLACEMENT DSN	0.8	-	0.8	0.7	0.0	0.0	-	0.8
SAFE HARBOR FREQ CONVERT UPGR	7.2	-	7.2	6.7	0.2	0.3	-	7.2
SPRINGFIELD LN DOUBLE TRACK	-	36.0	36.0	-	36.0	-	-	36.0
Support Equipment and Vehicles	**32.2**	**-**	**32.2**	**3.4**	**0.9**	**0.1**	**27.8**	**32.2**
ACELA TRAIN - REFURBISH ACCELE	0.3	-	0.3	0.2	0.1	0.0	-	0.3
ADVANCED TECHNLOGY TK INSP SYS	0.5	-	0.5	0.4	0.1	0.0	-	0.5
ENGINEERING - VEHICLE ACQUISITION	8.4	-	8.4	-	-	-	8.4	8.4
ENGINEERING ROLLING STOCK HEAVY OVERHAUL	1.8	-	1.8	1.4	0.4	0.1	-	1.8
ENGINEERING TRACK EQI PURCHASE	17.4	-	17.4	-	-	-	17.4	17.4
TRACK GAUGE RESTRAINT MEASURING SYSTEM	0.7	-	0.7	0.5	0.1	0.0	-	0.7
VEHICLE REPLACEMENT	1.0	-	1.0	0.7	0.2	0.0	-	1.0
NED CATENARY CAR HEAVY OVERHAULS	0.3	-	0.3	0.2	0.1	0.0	-	0.3
ELECTRIC TRACTION EQUIPMENT ACQUISITION	2.0	-	2.0	-	-	-	2.0	2.0
Amtrak Support	**5.0**	**-**	**5.0**	**3.8**	**1.0**	**0.2**	**-**	**5.0**
ENGINEERING CAPITAL PROGRAM-PROJECT MGT	5.0	-	5.0	3.8	1.0	0.2	-	5.0
Rolling Stock Acquisition	**59.5**	**-**	**59.5**	**13.3**	**3.6**	**42.5**	**-**	**59.5**
Special Programs	**51.6**	**-**	**51.6**	**7.3**	**2.0**	**42.3**	**-**	**51.6**
LONG DISTANCE SINGLE LEVEL REPLACMNT-CAF	42.0	-	42.0	-	-	42.0	-	42.0
ROLLING STOCK LIFE EXT FEASIBILITY STUDY	2.2	-	2.2	1.6	0.4	0.1	-	2.2
Next Gen Program Management	7.5	-	7.5	5.7	1.6	0.2	-	7.5
Amtrak Support	**7.9**	**-**	**7.9**	**6.0**	**1.6**	**0.3**	**-**	**7.9**
AMFLEET EQI - LIFE EXTENSION PROTOTYPE	3.0	-	3.0	2.3	0.6	0.1	-	3.0
P42 EQUIPMENT - LIFE EXTENSION PROTOTYPE	4.0	-	4.0	3.0	0.8	0.1	-	4.0
SUPERLINER EQI-LIFE EXTENSION PROTOTYPE	0.9	-	0.9	0.6	0.2	0.0	-	0.9
Stations and Facilities	**147.8**	**39.4**	**187.2**	**114.6**	**24.2**	**29.0**	**19.3**	**187.2**
Improvements	**57.4**	**25.7**	**83.1**	**37.4**	**12.0**	**26.0**	**7.7**	**83.1**
AMTRAK SYS DSN STA IMPV	1.5	-	1.5	1.1	0.3	0.0	-	1.5
AMTRAK SYSTEM 480 VOLT STANDBY POWER	1.5	-	1.5	1.1	0.3	0.0	-	1.5
CENTRAL DIVISION - FACILITY UPGRADES	2.5	-	2.5	-	1.3	1.3	-	2.5
CENTRAL DIVISION - MOFW BASE UPGRADES	0.2	-	0.2	-	0.1	0.1	-	0.2
Chicago Parking Garage Improvements	4.0	-	4.0	-	-	-	4.0	4.0
Contact Center Telephony System Next Gen	1.3	-	1.3	0.9	0.3	0.0	-	1.3
EMPIRE CORRIDOR - FACILITY UPGRADES	0.5	-	0.5	-	0.5	-	-	0.5
EMPIRE CORR-TRANSPORTATION FACILITY UPGR	0.9	-	0.9	-	0.9	-	-	0.9
FORT WORTH, TX-NEW MOFE CONSTRUCTION	0.8	-	0.8	-	-	0.8	-	0.8
INSTALL HGH EFF LIGHT-MECH FAC	2.0	-	2.0	1.5	0.4	0.1	-	2.0
KING ST YD- IMPROVEMENTS/SOUND TRANS DSN	16.0	-	16.0	-	-	16.0	-	16.0
MAD - TRANSPORTATION FACILITY UPGRADES	0.4	-	0.4	0.4	0.0	0.0	-	0.4
MID ATLANTIC DIVISION- FACILITY UPGRADES	2.0	-	2.0	1.9	0.0	0.1	-	2.0
MOYNIHAN STATION - STATION CONSTRUCTION	-	8.0	8.0	6.4	1.2	0.4	-	8.0
PAOLI PA NEW TRANS CENTER MP 20.0	-	2.6	2.6	0.7	1.9	-	-	2.6
Replace Wilm Maint Facility Heating Sys	-	9.2	9.2	8.3	0.5	0.4	-	9.2
ROCHESTER NY STATION IMPROVEMENTS	-	0.2	0.2	-	0.2	0.0	-	0.2
WEST DIVISION - FACILITY UPGRADES	1.3	-	1.3	-	-	1.3	-	1.3
Chief Operating Officer	4.0	-	4.0	-	-	4.0	-	4.0
CENTRAL DIVISION STATION UPGRADES	2.5	-	2.5	-	1.3	1.3	-	2.5
LEVITTOWN PA SUPPORT SEPTA STATION CONST	-	3.2	3.2	3.0	0.1	0.1	-	3.2
SPRINGFIELD MA STATION IMPROVEMENTS	-	2.5	2.5	-	2.5	-	-	2.5
30TH ST STA RETAIL GREASE-HEAT EXHAUST	2.0	-	2.0	1.8	0.1	0.1	-	2.0
NEC CAPITAL PLANNING - PROGRAM SUPPORT	0.4	-	0.4	0.3	0.1	0.0	-	0.4
KINGSTON RI STATION PROJECT-AMTRAK SHARE	9.0	-	9.0	9.0	-	-	-	9.0
Chicago Metropolitan Lounge Upgrades	3.8	-	3.8	-	-	-	3.8	3.8
WILMINGTON FACILITY IMPROVEMENTS	1.0	-	1.0	0.9	0.1	0.0	-	1.0
SOGR Base	**72.8**	**4.0**	**76.8**	**56.2**	**8.2**	**1.3**	**11.0**	**76.8**
30TH ST STA SOGR CONCOURSE & FAC UPGRS	1.2	-	1.2	1.1	0.1	0.0	-	1.2
30TH STA ELEVATOR REPLACEMENT	4.0	-	4.0	3.6	0.2	0.2	-	4.0
30TH STA HVAC CTRL UPGR	1.0	-	1.0	0.9	0.0	0.1	-	1.0
BALTIMORE STA MASTER PLAN IMPLEMENTATION	1.9	-	1.9	1.8	0.1	0.1	-	1.9
BEAR FACILITY IMPROVEMENTS	1.0	-	1.0	0.9	0.1	0.0	-	1.0
CHICAGO STATION SOGR IMPROVEMENTS	10.0	-	10.0	-	-	-	10.0	10.0
EMPIRE CORRIDOR - MOFW BASE UPGRADES	0.1	-	0.1	-	0.1	0.0	-	0.1
HARRISBURG LN STATION UPGRS	3.0	-	3.0	-	3.0	-	-	3.0
MAD - STATION CONSTRUCTION UPGRADES	5.0	-	5.0	3.9	1.0	0.2	-	5.0
Material Management Facilities SOGR	1.4	-	1.4	1.0	0.3	0.0	-	1.4
MID ATLANTIC DIVISION-MOFW BASE UPGRADES	3.0	-	3.0	2.8	0.1	0.1	-	3.0

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MOFW BASES INVENTORY SECURITY	0.5	-	0.5	0.4	0.1	0.0	-	0.5
MOUNT JOY, PA STATION IMPROVEM	-	0.8	0.8	-	0.8	-	-	0.8
NED - STATION CONSTRUCTION UPGRADES	2.5	-	2.5	1.9	0.5	0.1	-	2.5
NEW ENGLAND DIVISION MOFW BASE UPGRADES	2.0	-	2.0	1.9	0.0	0.1	-	2.0
NEW YORK DIVISION - MOFW BASE UPGRADES	0.4	-	0.4	0.4	0.0	0.0	-	0.4
NYD - STATION CONSTRUCTION UPGRADES	2.5	-	2.5	1.9	0.5	0.1	-	2.5
PSNY ESCALATOR REPLACEMENT	4.0	-	4.0	4.0	0.0	-	-	4.0
PSNY FACILITIES UPGRADES	1.0	-	1.0	1.0	0.0	-	-	1.0
ROUTE 128 STA MA-PLATFORM LIGHTING UPGR	0.3	-	0.3	0.3	-	-	-	0.3
STRUCTURES FAC FUTURE DESIGN	2.0	-	2.0	1.5	0.4	0.1	-	2.0
WAS & IVY CITY ELECTRICAL UPGR	0.5	-	0.5	0.5	0.0	0.0	-	0.5
WASH PLATFORM RENEWAL-MARC	-	3.0	3.0	3.0	-	-	-	3.0
WASH UNION-STA PLATFORM CANOPY ROOF UPGR	-	0.2	0.2	0.2	0.0	0.0	-	0.2
AMTRAK STATIONS ASDP SOGR IMPROVEMENTS	3.5	-	3.5	2.7	0.7	0.1	-	3.5
BEECH GROVE SHOPS FACILITY IMPROVEMENTS	1.0	-	1.0	-	-	-	1.0	1.0
MAT HANDLING EQUP FACILITIES SGR	1.0	-	1.0	0.8	0.2	0.0	-	1.0
30TH STREET STATION - FACADE REPLACE	20.0	-	20.0	19.9	0.1	-	-	20.0
Safety / Mandates	**0.8**	**7.7**	**8.5**	**6.0**	**1.7**	**0.2**	**0.6**	**8.5**
EXTON PA NEW HIGH LEVEL PLATFORM STATION	-	1.0	1.0	0.7	0.3	-	-	1.0
STA MIDDLETOWN, PA STATION - NEW STATION	-	0.0	0.0	0.0	0.0	-	-	0.0
2015 EMERGENCY MGT OPERATIONAL PACKAGES	-	6.3	6.3	4.8	1.3	0.2	-	6.3
2015 EMERGENCY MANAGEMENT - RAILSAFE	-	0.4	0.4	0.3	0.1	0.0	-	0.4
LANCASTER PA-SEATTLE WA-ACCESS CTRL SYS	0.1	-	0.1	0.1	0.0	0.0	-	0.1
NEC CASH HOLDING FAC INTRUSION DETECTION	0.1	-	0.1	0.1	0.0	0.0	-	0.1
CHI STA INST RIVER RD HYDRAULIC BARRIERS	0.6	-	0.6	-	-	-	0.6	0.6
Major Projects	**-**	**0.5**	**0.5**	**0.0**	**0.0**	**0.5**	**-**	**0.5**
BRANFORD-GUILFORD CT STATION IMPROVEMENT	-	0.0	0.0	0.0	0.0	0.0	-	0.0
SAVANNAH GA STATION PROPERTY PURCHASE	-	0.5	0.5	-	-	0.5	-	0.5
Support Equipment and Vehicles	**5.8**	**0.5**	**6.3**	**4.8**	**1.3**	**0.2**	**-**	**6.3**
EQUIPMENT POOL COMMITTEE	-	0.5	0.5	0.4	0.1	0.0	-	0.5
EQUIPMENT-VEHICLES CAMERA INSTALLATION	2.0	-	2.0	1.5	0.4	0.1	-	2.0
TRACK EQUIP HEAVY OVERHAULS	3.5	-	3.5	2.7	0.7	0.1	-	3.5
AMTRAK POLICE DEPARTMNT VEHICLE PURCHASE	0.3	-	0.3	0.2	0.1	0.0	-	0.3
NEC Master Planning	**9.0**	**-**	**9.0**	**8.2**	**0.2**	**0.5**	**-**	**9.0**
WA Union Term Master Plan Implementation	9.0	-	9.0	8.2	0.2	0.5	-	9.0
Amtrak Support	**2.0**	**1.1**	**3.1**	**2.0**	**0.8**	**0.3**	**-**	**3.1**
SECURITY CANINE PROCURMNT/TRNG	-	1.1	1.1	0.8	0.2	0.0	-	1.1
Fast Act Studies - Gulf Coast Working Group	0.5		0.5	-	0.3	0.3	-	0.5
Fast Act Studies - Small Business Participation Study	1.5		1.5	1.1	0.3	0.0	-	1.5
Technology Systems	**103.8**	**1.0**	**104.8**	**81.6**	**20.1**	**3.2**	**-**	**104.8**
Software	**47.8**	**-**	**47.8**	**36.3**	**9.9**	**1.6**	**-**	**47.8**
AUTOMATED CUSTOMER NOTIFICATION UPGRS	0.5	-	0.5	0.4	0.1	0.0	-	0.5
CUSTOMER EXPERIENCE PROGRAMS	0.4	-	0.4	0.3	0.1	0.0	-	0.4
FY04 ENG AMM DEVELELOPMENT	0.9	-	0.9	0.7	0.2	0.0	-	0.9
FY05 ENG AMM DEVELELOPMENT	3.0	-	3.0	2.3	0.6	0.1	-	3.0
HCM Foundations	2.5	-	2.5	1.9	0.5	0.1	-	2.5
IT Strategic Technology Program	15.8	-	15.8	12.0	3.3	0.5	-	15.8
IT Technology Upgrade Program	7.7	-	7.7	5.8	1.6	0.2	-	7.7
Mobile Infrastructure Enhancement Program	2.1	-	2.1	1.6	0.4	0.1	-	2.1
PERSONAL CMPTR/FIELD DEPLOYED	8.0	-	8.0	6.1	1.7	0.3	-	8.0
REAL PROPERTY INVENTORY MGMT INFORM SYS	0.2	-	0.2	0.1	0.0	0.0	-	0.2
WMS NETWORK REDESIGN/UPGRADE	2.9	-	2.9	2.2	0.6	0.1	-	2.9
WORK MANAGEMENT SYSTEM	1.0	-	1.0	0.8	0.2	0.0	-	1.0
RESERVATION SYS TECH INFRASTRUCTURE SOGR	3.0	-	3.0	2.3	0.6	0.1	-	3.0
Hardware	**12.8**	**-**	**12.8**	**11.7**	**0.9**	**0.2**	**-**	**12.8**
AMTRAK PASS RIDER DATABASE REPLATFORM	0.8	-	0.8	0.6	0.2	0.0	-	0.8
Fuel Management and Monitoring Systems	1.3	-	1.3	1.0	0.3	0.0	-	1.3
NEC TRACKSIDE WIRELESS BROADBAND NETWORK	5.3	-	5.3	5.3	-	-	-	5.3
ACELA WIFI UPGRADES	2.0	-	2.0	2.0	-	-	-	2.0
WASHINGTON UNION STA PIDS REPLACEMENT	0.4	-	0.4	0.3	0.0	0.0	-	0.4
AMTRAK SYS POLICE RADIO REPEATER UPGRS	0.3	-	0.3	0.3	0.1	0.0	-	0.3
WASHINGTON DC TERMINAL DISPATCH REDUNDA	1.0	-	1.0	0.9	0.1	0.0	-	1.0
Amfleet Wi-Fi Upgrades SOGR	1.7	-	1.7	1.3	0.3	0.1	-	1.7
Back Office Support	**0.1**	**1.0**	**1.1**	**0.8**	**0.2**	**0.0**	**-**	**1.1**
AMTK GUEST REWARDS COBRANDED CREDIT CARD	-	1.0	1.0	0.8	0.2	0.0	-	1.0
CORPORATE FORMS SMART-WEBFORM INITIATIVE	0.1	-	0.1	0.1	0.0	0.0	-	0.1
Operations Foundation	**43.1**	**-**	**43.1**	**32.7**	**9.0**	**1.4**	**-**	**43.1**
Operations Foundation	43.1	-	43.1	32.7	9.0	1.4	-	43.1
Hold Back for Operating	**50.0**		**50.0**	**38.0**	**10.4**	**1.6**	**-**	**50.0**
Hold Back for Operating	**50.0**		**50.0**	**38.0**	**10.4**	**1.6**	**-**	**50.0**
Hold Back for Operating	50.0		50.0	38.0	10.4	1.6	-	50.0
Future Capital Allocations	**(26.2)**		**(26.2)**	**(19.9)**	**(5.4)**	**(0.9)**	**-**	**(26.2)**
Future Capital Allocations	**(26.2)**		**(26.2)**	**(19.9)**	**(5.4)**	**(0.9)**	**-**	**(26.2)**
Future Capital Allocations	(26.2)		(26.2)	(19.9)	(5.4)	(0.9)	-	(26.2)
Total	**$1,133.9**	**$336.2**	**$1,470.2**	**$929.5**	**$225.8**	**$264.6**	**$50.3**	**$1,470.2**

Federal Discretionary Grant Programs (Authorized by FAST Act)	-
NEC Commuter Match (excl Gateway)	-
State Contributions to Equipment Capital (PRIIA 209)	(67.0)
Commuter payments (PRIIA 212)	(134.2)
Amtrak Operating Profits - NEC	(261.7)
Amtrak Operating Profits -Infrastructure & Investment Development	(76.6)
General Capital	**$594.5**

FY 2017 CAPITAL PROJECT LIST

($s in Millions)	Total Federal & State Capital	Other Third Party	Total Capital	NEC	State Supported	Long Distance	Infrastructure & Investment Development	Total Capital
ADA Compliance	**50.0**	**-**	**50.0**	**4.6**	**12.2**	**33.2**	**-**	**50.0**
Safety / Mandates	**6.0**	**-**	**6.0**	**4.6**	**1.2**	**0.2**	**-**	**6.0**
Passenger Information Display SYS (PIDS)	6.0	-	6.0	4.6	1.2	0.2	-	6.0
ADA Stations	**44.0**	**-**	**44.0**	**-**	**11.0**	**33.0**	**-**	**44.0**
ADA COMPLIANCE PROJECTS	44.0	-	44.0	-	11.0	33.0	-	44.0
Environmental Remediation	**17.6**	**-**	**17.6**	**10.4**	**0.8**	**1.2**	**5.2**	**17.6**
Safety / Mandates	**17.6**	**-**	**17.6**	**10.4**	**0.8**	**1.2**	**5.2**	**17.6**
AMTK TRAIN ONBOARD RECYCLING RECEPTACLES	0.3	-	0.3	0.2	0.1	0.0	-	0.3
Asbestos, Lead Paint and Mold	0.5	-	0.5	0.4	0.1	0.0	-	0.5
BEECH GROVE FACILITY - WASTEWA	0.2	-	0.2	-	-	-	0.2	0.2
CEDAR HILL REMEDATION	2.0	-	2.0	1.8	0.1	0.1	-	2.0
HIALEAH FL PAHS REMEDIATION	0.1	-	0.1	-	-	0.1	-	0.1
LA WASTEWATER/STORMWATER UPGR	0.1	-	0.1	-	-	0.1	-	0.1
LANCASTER PA MAIL TUN PREVENT GRND WATER	0.1	-	0.1	-	0.1	-	-	0.1
NEW BRUNSWICK COMMUTER YARD REMEDIATION	0.8	-	0.8	0.7	0.0	0.0	-	0.8
NEW ORLEANS DAF UPGRADES	0.2	-	0.2	-	-	0.2	-	0.2
NEW ORLEANS FUELING FACILITY UPGRS	0.3	-	0.3	-	-	0.3	-	0.3
PENN COACH YD FUELING SITE SPILL PREVENT	3.1	-	3.1	2.8	0.2	0.1	-	3.1
Prevention of Groundwater Cont	0.1	-	0.1	0.1	0.0	0.0	-	0.1
SUNNYSIDE YARD OIL/PCB REMED	0.7	-	0.7	0.7	0.0	-	-	0.7
SUNNYSIDE YD WASTEWATER SYSTEM UPGRADE	0.2	-	0.2	0.2	0.0	-	-	0.2
TRENTON NJ - COMMUTER YARD REMEDIATION	1.0	-	1.0	0.9	0.1	0.0	-	1.0
Wilmington Maintenance Facility	0.5	-	0.5	0.5	0.0	0.0	-	0.5
WILMINGTON MOFE FACILITY-PCB/O	5.0	-	5.0	-	-	-	5.0	5.0
Wilmington West Yard	0.5	-	0.5	0.5	0.0	0.0	-	0.5
SUNNYSIDE YARD ASBESTOS WRAP ABATEMENT	1.8	-	1.8	1.6	0.1	0.1	-	1.8
SEATTLE MAINT FAC LEAD CONTM REMEDIATION	0.1	-	0.1	-	-	0.1	-	0.1
PENN STATION - TRACK REMEDIATION	0.2	-	0.2	0.1	0.0	-	-	0.2
Fleet Overhauls	**240.8**	**-**	**240.8**	**71.7**	**57.6**	**111.5**	**-**	**240.8**
Acela Programs	**15.0**	**-**	**15.0**	**15.0**	**-**	**-**	**-**	**15.0**
ACELA OVERHAUL	15.0	-	15.0	15.0	-	-	-	15.0
Amfleet Programs	**80.4**	**-**	**80.4**	**32.4**	**28.5**	**19.5**	**-**	**80.4**
AMFLEET I COACH LEVEL 2 OVERHAUL	14.5	-	14.5	8.5	5.8	0.2	-	14.5
Amfleet II Coach Overhaul Level 2	17.4	-	17.4	-	2.6	14.8	-	17.4
Cab Car Overhauls - Level 2	4.2	-	4.2	1.3	2.9	-	-	4.2
AMFLEET I COACH OVERHAUL LEVEL 1	30.5	-	30.5	17.9	12.2	0.4	-	30.5
AMFLEET I CAFE/CLUB OVERHAUL LEVEL 1	10.2	-	10.2	4.8	5.0	0.4	-	10.2
AMFLEET II DINER OVERHAUL LEVEL 2	3.6	-	3.6	-	-	3.6	-	3.6
General Safety & Reliability	**9.0**	**-**	**9.0**	**5.7**	**1.6**	**1.7**	**-**	**9.0**
AUTO CARRIER MODIFICATION	1.5	-	1.5	1.1	0.3	0.0	-	1.5
ENGINEERING MODIFICATION PROJECT	5.0	-	5.0	3.8	1.0	0.2	-	5.0
LONG DIST SINGLE LEVEL BAGGAGE CAR IMPV	1.5	-	1.5	-	-	1.5	-	1.5
Wayside Defect Detection	1.0	-	1.0	0.8	0.2	0.0	-	1.0
Horizon/Surfliner Programs	**15.4**	**-**	**15.4**	**6.0**	**9.1**	**0.3**	**-**	**15.4**
Horizon Cafe Overhaul	2.8	-	2.8	2.1	0.6	0.1	-	2.8
HORIZON COACH OVERHAUL - LEVEL 2	7.5	-	7.5	-	7.4	0.1	-	7.5
SURFLINER CAB CAR OVERHAUL	1.2	-	1.2	0.9	0.2	0.0	-	1.2
SURFLINER COACH OVERHAUL	1.5	-	1.5	1.1	0.3	0.0	-	1.5
SURFLINER CUSTOM COACH OVERHAUL	1.3	-	1.3	1.0	0.3	0.0	-	1.3
Surfliner Cafe Overhaul	1.1	-	1.1	0.9	0.2	0.0	-	1.1
Locomotives	**43.0**	**-**	**43.0**	**5.1**	**13.5**	**24.4**	**-**	**43.0**
DIESEL LOCOMOTIVE LCPM	30.8	-	30.8	0.1	12.2	18.4	-	30.8
F59 Locomotive Overhaul	2.4	-	2.4	1.9	0.5	0.1	-	2.4
Non-Powered Control Units(NPCU)-Overhaul	4.1	-	4.1	3.1	0.8	0.1	-	4.1
P-32-ED Locomotive Overhaul	5.7	-	5.7	-	-	5.7	-	5.7
Mandatory Projects	**5.0**	**-**	**5.0**	**3.8**	**1.0**	**0.2**	**-**	**5.0**
CAR MANDATORY PROGRAMS	2.0	-	2.0	1.5	0.4	0.1	-	2.0
LOCOMOTIVE MANDATORY PROGRAMS	3.0	-	3.0	2.3	0.6	0.1	-	3.0
Superliners	**59.8**	**-**	**59.8**	**-**	**2.8**	**57.0**	**-**	**59.8**
SL I SLEEPER OVERHAUL	12.2	-	12.2	-	-	12.2	-	12.2
SUPERLINER I COACH OVERHAULS	17.4	-	17.4	-	2.8	14.6	-	17.4
SUPERLINER I LOUNGE OVERHAULS	4.4	-	4.4	-	-	4.4	-	4.4
SUPERLINER II COACH OVERHAUL	1.1	-	1.1	-	-	1.1	-	1.1
SUPERLINER II DINER OVERHAUL	4.9	-	4.9	-	-	4.9	-	4.9
SUPERLINER II LOUNGE OVERHAUL	3.7	-	3.7	-	-	3.7	-	3.7
SUPERLINER II SLEEPER OVERHAUL	9.0	-	9.0	-	-	9.0	-	9.0
SUPERLINER II TRNS SLEEPER/DORM OVERHAUL	5.0	-	5.0	-	-	5.0	-	5.0
SUPERLINER I DINER OVERHAULS	2.1	-	2.1	-	-	2.1	-	2.1
Viewliner Programs	**8.2**	**-**	**8.2**	**-**	**-**	**8.2**	**-**	**8.2**
VIEWLINER SLEEPER - OVERHAUL	8.2	-	8.2	-	-	8.2	-	8.2
Wrecks	**5.0**	**-**	**5.0**	**3.8**	**1.0**	**0.2**	**-**	**5.0**
Car Wreck Rehabilitation Program	2.0	-	2.0	1.5	0.4	0.1	-	2.0
Locomotive Wreck Program	3.0	-	3.0	2.3	0.6	0.1	-	3.0

($s in Millions)	Federal & State Capital	Other Third Party	Total Capital	NEC	State Supported	Long Distance	Infrastructure & Investment Development	Total Capital
Gateway Program	**151.4**	**605.6**	**757.0**	**719.3**	**15.2**	**22.5**	**-**	**757.0**
Special Programs	**151.4**	**605.6**	**757.0**	**719.3**	**15.2**	**22.5**	**-**	**757.0**
LIRR HUDSON YD CONSTRUCT TUN BOX PHASE 2	21.0	84.0	105.0	101.2	1.6	2.1	-	105.0
NJ006.10 NEW PORTAL NORTH BR CONSTR	69.4	277.6	347.0	324.8	8.6	13.6	-	347.0
NJ007.80&NJ007.96-BRDG CAPACITY UPGR DSN	2.0	8.0	10.0	9.5	0.2	0.3	-	10.0
HUDSON RIVER-CONSTRUCT NEW TUNNELS DSN	9.0	36.0	45.0	44.9	0.1	-	-	45.0
Property Acquisition Process - Allied to A Yard	39.0	156.0	195.0	186.4	3.7	5.0	-	195.0
EIS / Design - Penn South	4.4	17.6	22.0	21.0	0.4	0.6	-	22.0
Design -Portal South/ Secaucus South	0.8	3.2	4.0	3.8	0.1	0.1	-	4.0
Design - Highline Renewal & SOGR & Signal Upgrades - Dock To Bei	2.6	10.4	13.0	12.4	0.2	0.3	-	13.0
GATEWAY PROGRAM MANAGEMENT	1.2	4.8	6.0	5.6	0.1	0.2	-	6.0
HUDSON RIVER CONSTRUCT NEW TUNNELS NEPA	2.0	8.0	10.0	9.6	0.2	0.2	-	10.0
Infrastructure Renewal	**626.7**	**242.2**	**868.9**	**615.4**	**185.1**	**35.8**	**32.6**	**868.9**
Improvements	**25.1**	**20.0**	**45.1**	**37.3**	**5.8**	**2.1**	**-**	**45.1**
B&P TUNNEL REPLACMENT DSN	-	20.0	20.0	18.7	0.5	0.8	-	20.0
BAY INTERLOCKING C&S INTERLOCKING UPGRS	0.4	-	0.4	0.4	0.0	0.0	-	0.4
CENTRAL DIV - UNDERGRADE BRIDGE UPGRADES	1.0	-	1.0	-	0.5	0.5	-	1.0
CLINTON CT(CLINTON) NEW I/L CONSTRUCTION	1.0	-	1.0	0.9	0.0	0.0	-	1.0
HOOK INTERLOCKING UPGRADE TO MICROLOK 2	1.5	-	1.5	1.4	0.0	0.1	-	1.5
MAD DIV RIDE QUALITY IMPROVEMENTS	10.5	-	10.5	9.8	0.3	0.4	-	10.5
MICHIGAN LINE - RAIL LUBRICATOR INSTALL	0.1	-	0.1	-	0.1	-	-	0.1
MID-ATLANTIC DIV EVENT RECORDERS UPGRS	0.1	-	0.1	0.1	0.0	0.0	-	0.1
MID-ATLANTIC NORTH C&S CABLE REPLACEMENT	0.2	-	0.2	0.2	0.0	0.0	-	0.2
MID-ATLANTIC SOUTH C&S CABLE REPLACEMENT	0.2	-	0.2	0.2	0.0	0.0	-	0.2
NEW YORK DIV EAST C&S CABLE REPLACEMENT	0.2	-	0.2	0.1	0.0	0.0	-	0.2
NEW YORK DIV RIDE QUALITY IMPRV PROGRAM	2.0	-	2.0	1.9	0.0	0.1	-	2.0
NEW YORK DIV WEST C&S CABLE REPLACEMENT	0.2	-	0.2	0.1	0.0	0.0	-	0.2
PHIL NEW CETC CTRL CENTER	1.5	-	1.5	1.2	0.3	0.0	-	1.5
PORTER-KALAMAZOO ITCS SERVERS BACKUP PWR	0.9	-	0.9	-	0.9	-	-	0.9
RENSSELAER, NY-M/W DIRECT FIX TRACK UPGR	0.1	-	0.1	-	0.1	0.0	-	0.1
WIL MOFE FACILITY TIE/TIMBER	0.1	-	0.1	0.1	0.0	0.0	-	0.1
CT122.65 SHAWS COVE FENDER SYS UPGRADES	1.0	-	1.0	0.9	0.0	0.0	-	1.0
PA058.03 WASHINGTON ST BRG REPLACEMENT	1.0	-	1.0	0.9	0.0	0.0	-	1.0
MICHIGAN LINE MP152-MP208 SIGNAL SYS UPG	3.0	-	3.0	-	3.0	-	-	3.0
CABF NEW ENGLAND DIVISION - INSTALL INTE	0.2	-	0.2	0.1	0.0	0.0	-	0.2
NY DIV UPGR INTERLOCKING EVENT RECORDERS	0.1	-	0.1	0.1	0.0	0.0	-	0.1
SOGR Base	**436.0**	**55.4**	**491.4**	**409.1**	**53.2**	**29.2**	**-**	**491.4**
30TH ST STA BLOCK TIES	0.9	-	0.9	0.9	0.0	0.0	-	0.9
ABERDEEN-WAS INNER TK PLTFRM-XINGS UPGRS	-	0.4	0.4	0.4	0.0	0.0	-	0.4
ADAMS SUBDIV CULVERT UPGR	0.4	-	0.4	0.4	0.0	0.0	-	0.4
ALBANY LINE - CULVERTS UPGRADE	-	0.2	0.2	-	0.2	0.0	-	0.2
ALBANY LINE - TIMBER PROGRAM	1.8	3.8	5.6	-	5.1	0.4	-	5.6
ALBANY LINE CURVE & TRAIL TK RAIL REPL	-	0.3	0.3	-	0.3	0.0	-	0.3
ALBANY LN INSULATED JNT RENEW	-	0.1	0.1	-	0.1	0.0	-	0.1
AMT SYS ROADBED STABILITY UPGR	7.0	-	7.0	5.3	1.5	0.2	-	7.0
AMTK SY SURFACING PRG DEVELOP	0.5	-	0.5	0.3	0.1	0.0	-	0.5
B&P TUN BLOCK TIE/RAIL RENEWAL	2.6	-	2.6	2.4	0.1	0.1	-	2.6
B&P TUNNEL - CATENARY BRACKET UPGRADES	0.2	-	0.2	0.2	0.0	0.0	-	0.2
BAL SUBDIV CATENARY POLE UPGRS	0.5	-	0.5	0.5	0.0	0.0	-	0.5
BAL SUBDIV SERVICE&POTENTIAL TRANS UPGR	0.2	-	0.2	0.2	0.0	0.0	-	0.2
BAL SUBDIV-INSTL TRACK AND CODE RELAYS	0.2	-	0.2	0.1	0.0	0.0	-	0.2
BAL SUBDIV-PHASE SELECTIVE UNIT UPGR	0.2	-	0.2	0.2	0.0	0.0	-	0.2
BALTIMORE STA PLATFORM 2 LIGHTING UPGRS	-	0.3	0.3	0.2	0.0	0.0	-	0.3
BALTIMORE SUBDIV - CAT HARDWARE RENEWAL	0.5	-	0.5	0.5	0.0	0.0	-	0.5
BALTIMORE SUBDIV AIRBREAK SW REPLACEMENT	0.3	-	0.3	0.3	0.0	0.0	-	0.3
BALTIMORE SUBDIV CATENARY UPGRADES	0.8	-	0.8	0.7	0.0	0.0	-	0.8
BALTIMORE SUBDIV INTERLOCKING SEC SWITCH	0.3	-	0.3	0.3	0.0	0.0	-	0.3
BALTIMORE SUBDIV KOUPLER UPGR	0.1	-	0.1	0.1	0.0	0.0	-	0.1
BALTIMORE SUBDIV SUBSTA BATTERY SYS UPGR	0.4	-	0.4	0.4	0.0	0.0	-	0.4
BALTIMORE SUBDIV TROLLEY BREAKER UPGR	0.5	-	0.5	0.5	0.0	0.0	-	0.5
BALTIMORE SUBDIVISION-SIGNAL POWER UPGR	0.2	-	0.2	0.2	0.0	0.0	-	0.2
BALTIMORE TUNNEL IMPROVEMENTS	-	1.0	1.0	0.9	0.0	0.0	-	1.0
BALTIMORE-TRANS LINE AND HARDWARE UPGR	0.3	-	0.3	0.2	0.0	0.0	-	0.3
BERGEN-SWIFT CATENARY HARDWARE RENEWAL	0.1	-	0.1	0.1	0.0	0.0	-	0.1
BIDDLE INTERLOCKING TURNOUT RENEWAL	1.0	-	1.0	0.9	0.0	0.0	-	1.0
BOSTON SUBDIV TIE/TIMBERS	1.6	-	1.6	1.5	0.0	0.1	-	1.6
BOSTON SUBDIV-CIRCUIT BREAKER INSTALL	0.2	-	0.2	0.2	0.0	0.0	-	0.2
BRG/TUNNEL/WALL FUTURE DESIGN	3.0	-	3.0	2.3	0.6	0.1	-	3.0
C&S LANCASTER SHOP EQI UPGR	0.2	-	0.2	0.2	0.0	0.0	-	0.2
C&S SYSTEM - NETWORK UPGRADES	0.1	-	0.1	0.0	0.0	0.0	-	0.1
CAT ET TRANING FACILITY UPGR	0.3	-	0.3	0.2	0.1	0.0	-	0.3
CENTRAL DIV TK REHABILITATION	6.2	-	6.2	-	3.1	3.1	-	6.2
CENTRAL DIV-SECURITY FENCE INSTALLATIONS	0.3	-	0.3	-	0.1	0.1	-	0.3
CETC FACILITIES-SOFTWARE AND UPS UPGRS	0.7	-	0.7	0.5	0.1	0.0	-	0.7
CHARLES INTERLOCKING - TURNOUT RENEWAL	1.0	-	1.0	0.9	0.0	0.0	-	1.0
CHICAGO-ST. LOUIS LOCOMOTIVE PTC UPGRADE	-	0.7	0.7	-	-	0.7	-	0.7
CONCRETE TIE REDESIGN	1.0	-	1.0	0.8	0.2	0.0	-	1.0
CONESTOGA STEPUP YD REPLACE TRANSFORMER	8.3	-	8.3	7.7	0.2	0.4	-	8.3
DAVIS INTERLOCKING RENEWAL	0.5	-	0.5	0.5	0.0	0.0	-	0.5
DAVISVILLE I/L MICROLOK 2 UPGR	1.5	-	1.5	1.4	0.0	0.1	-	1.5
DOCK BRIDGE RTU-SECTIONALIZING SW UPGRS	0.5	-	0.5	0.5	0.0	0.0	-	0.5
EAST RIV TUN-REHAB PUMP STA DEWATER SYS	-	0.5	0.5	0.5	0.0	0.0	-	0.5
EAST RIVER TUN BENCHWALL-DIAMOND PLATE	1.0	-	1.0	0.9	0.0	0.0	-	1.0

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EAST RIVER TUN REHAB SCADA CTRL PANELS	-	0.2	0.2	0.1	0.0	0.0	-	0.2
ELECTRIC TRACTION DSN REVIEW	0.5	-	0.5	0.4	0.1	0.0	-	0.5
ELMORA-UNION CATENARY UPGR	0.4	-	0.4	0.3	0.0	0.0	-	0.4
EMPIRE CORRIDOR REPLACE HOT BOX DETECTOR	-	0.3	0.3	-	0.2	0.0	-	0.3
EMPIRE CORRIDOR RIDE QUALITY IMPROVEMENT	1.0	-	1.0	-	0.9	0.1	-	1.0
EMPIRE CORRIDOR UNDERGRADE BRG UPGRADES	-	3.0	3.0	-	2.8	0.2	-	3.0
EMPIRE LINE CATENARY HARDWARE RENEWAL	0.1	-	0.1	-	0.1	0.0	-	0.1
ERT LINE 3/4 RAIL/TIES	7.5	-	7.5	7.0	0.2	0.3	-	7.5
ET SUBSTATION RELAY UPGRADES	0.1	-	0.1	0.1	0.0	0.0	-	0.1
FAIR I/L RELOCATE C&S EQI ABOVE FLOOD LN	1.0	-	1.0	0.9	0.0	0.0	-	1.0
GROVE INTERLOCKING TURNOUT RENEWAL	0.5	-	0.5	0.5	0.0	0.0	-	0.5
GULIFORD I/L MICROLOK 2 UPGR	0.3	-	0.3	0.2	0.0	0.0	-	0.3
HAR LINE MANHOLE COVER UPGRS	0.1	-	0.1	0.0	0.1	-	-	0.1
HARRISBURG LINE - SUBSTATION UPGRADES	0.2	-	0.2	0.1	0.0	0.0	-	0.2
HARRISBURG LINE CULVERTS UPGRS	0.3	-	0.3	0.1	0.2	-	-	0.3
HARRISBURG LINE SIG PWR UPGRS	0.2	-	0.2	0.1	0.1	-	-	0.2
HARRISBURG LINE STATIC WIRE INSTALLATION	0.2	-	0.2	0.1	0.1	-	-	0.2
HARRISBURG LINE TRANSMISSION LINE UPGRS	0.1	-	0.1	0.0	0.1	-	-	0.1
HARRISBURG LINE-CATENARY POLE REPLACMENT	0.5	-	0.5	0.2	0.3	-	-	0.5
HARRISBURG LN CATENARY HARDWARE RENEWAL	1.0	-	1.0	0.9	0.0	0.0	-	1.0
HARRISBURG SUB 72 TRANSFORMER INSTALL	1.0	-	1.0	0.9	0.0	0.0	-	1.0
HBG LINE 12KV SUBSTATION BRKS	0.5	-	0.5	0.2	0.3	-	-	0.5
HBG LINE COMM SHELTER BACKUP PWR UPGRS	0.2	-	0.2	0.1	0.1	-	-	0.2
HELLGATE LINE - C&S CABLE RENEWAL	0.2	-	0.2	0.1	0.0	0.0	-	0.2
HELLGATE/EMPIRE I/L STEEL	0.4	-	0.4	0.4	0.0	0.0	-	0.4
HELLGATE/EMPIRE RAIL RENEWAL	0.3	-	0.3	0.3	0.0	0.0	-	0.3
HELLGATE/EMPIRE TIE/TIMBER	0.5	-	0.5	0.5	0.0	0.0	-	0.5
HOLLY INTERLOCKING RENEWAL	3.1	-	3.1	2.9	0.1	0.1	-	3.1
HUDSON TO DOCK CATENARY HARDWARE RENEWAL	0.0	-	0.0	0.0	0.0	0.0	-	0.0
INT SIGNALS - FUTURE DESIGN	0.3	-	0.3	0.2	0.0	0.0	-	0.3
IT-POLICE VIDEO BANDWIDTH AUGMENTATION	0.7	-	0.7	0.5	0.1	0.0	-	0.7
KEARNY-SUB 41 RELOCATION DSN AND CONSTR	1.0	-	1.0	0.9	0.0	0.0	-	1.0
KINZER SUB 67 - TRANSFORMER INSTALLATION	1.0	-	1.0	0.4	0.6	-	-	1.0
LANE INTERLOCKING - INTERLOCKI	1.0	-	1.0	0.9	0.0	0.0	-	1.0
LINCOLN-COUNTY CATENARY UPGR	0.0	-	0.0	0.0	0.0	0.0	-	0.0
MAD - RETAINING WALL UPGRADES	2.0	-	2.0	1.9	0.0	0.1	-	2.0
MAD - TUNNEL CONSTRUCTION & UPGRADES	1.0	-	1.0	0.9	0.0	0.0	-	1.0
MAD - UNDERGRADE BRIDGE UPGRADES	6.0	-	6.0	5.6	0.1	0.2	-	6.0
MAD COMM SHELTER ALARM SYSTEM UPGRS	0.2	-	0.2	0.1	0.0	0.0	-	0.2
MAD CONCRETE TIE REPLACEMENT	2.1	-	2.1	1.9	0.1	0.1	-	2.1
MAD DIV INSTALL SECURE MANHOLE COVERS	0.1	-	0.1	0.1	0.0	0.0	-	0.1
MAD DIV RENEW PADS CLIPS AND INSULATORS	0.3	-	0.3	0.2	0.0	0.0	-	0.3
MAD DIVISION BRIDGE TIMBER REP	1.0	-	1.0	0.9	0.0	0.0	-	1.0
MAD DIVISION SOUTH INSTALL LED SIGNALS	0.2	-	0.2	0.1	0.0	0.0	-	0.2
MAD S SUBSTATION CNTL HSE UPGR	0.2	-	0.2	0.1	0.0	0.0	-	0.2
MAD SOUTH KOUPLER/FLURRY BREAKS UPGRS	0.4	-	0.4	0.3	0.0	0.0	-	0.4
MAD TRANSMISSION BRKER DESIGN	0.3	-	0.3	0.3	0.0	0.0	-	0.3
MAD TURNOUT REPLACEMENT	3.1	-	3.1	2.9	0.1	0.1	-	3.1
MAGNOLIA INTERLOCKING TURNOUT RENEWAL	1.5	-	1.5	1.4	0.0	0.1	-	1.5
MASSACHUSETTS BRG CATENARY UPG	0.5	-	0.5	0.4	0.0	0.0	-	0.5
MI192.33 PIN REHABILITATION	1.0	-	1.0	-	-	1.0	-	1.0
MICHIGAN DIST CULVERTS UPGR	0.2	-	0.2	-	0.2	-	-	0.2
MICHIGAN DISTRICT MP192 TO MP2	1.5	-	1.5	-	1.5	-	-	1.5
MICHIGAN DISTRICT SURFACING	0.5	-	0.5	-	0.5	-	-	0.5
MICHIGAN LN REPL XING PANNELS	0.4	-	0.4	-	0.4	-	-	0.4
MID-ATLANTIC DIV COMM EQUIPMENT HOUSES	0.1	-	0.1	0.1	0.0	0.0	-	0.1
MID-ATLANTIC DIV DRAINAGE UPGR	2.1	-	2.1	1.9	0.1	0.1	-	2.1
MID-ATLANTIC DIV INSUL JOINTS	1.3	-	1.3	1.2	0.0	0.1	-	1.3
MID-ATLANTIC DIV MOVABLE BRIDGE UPGRADES	0.1	-	0.1	0.1	0.0	0.0	-	0.1
MID-ATLANTIC DIV-CONCRETE TIE REPLACEMNT	36.1	-	36.1	33.8	0.9	1.4	-	36.1
MID-ATLANTIC DIVISION SPOT UNDERCUTTING	3.3	-	3.3	3.1	0.1	0.1	-	3.3
MID-ATLANTIC I/L STEEL RENEWAL	3.6	-	3.6	3.4	0.1	0.1	-	3.6
MID-ATLANTIC JOINT ELIMINATION	3.6	-	3.6	3.4	0.1	0.1	-	3.6
MID-ATLANTIC TIE/TIMBER REPL	11.4	-	11.4	10.7	0.3	0.4	-	11.4
MORRIS-HOLMES CATENARY UPGR	0.0	-	0.0	0.0	0.0	0.0	-	0.0
MOVABLE BRG COMPONENT DSN	0.4	-	0.4	0.3	0.1	0.0	-	0.4
NEC MITRE RAIL EXPANSION JOINTS	1.0	-	1.0	0.8	0.2	0.0	-	1.0
NEC SUBSTATIONS CONTROL HOUSE DESIGN	0.6	-	0.6	0.5	0.1	0.0	-	0.6
NEC WAYSIDE DETECTOR COMM SYS	0.1	-	0.1	0.1	0.0	0.0	-	0.1
NED - TUNNEL CONSTRUCTION & UPGRADES	0.3	-	0.3	0.2	0.0	0.0	-	0.3
NED - UNDERGRADE BRIDGE IMPROVEMENTS	4.0	-	4.0	3.7	0.1	0.2	-	4.0
NED BRG ICILE MITIGATION CONSTRUCTION	0.5	-	0.5	0.5	0.0	0.0	-	0.5
NED CATENARY HARDWARE RENEWAL	0.2	-	0.2	0.2	0.0	0.0	-	0.2
NED CONCRETE TIE REPLACEMENT	1.5	-	1.5	1.4	0.0	0.1	-	1.5
NED I/L BATTERY BANK REPL	0.1	-	0.1	0.1	0.0	0.0	-	0.1
NED INTERLOCKING RTU UPGR	0.3	-	0.3	0.2	0.0	0.0	-	0.3
NED SPRINGFIELD LINE-BRIDGE TIMB REPLACE	1.0	-	1.0	-	1.0	-	-	1.0
NEW CARROLLTON STA-TK 1 PLATFORM DESIGN	0.5	0.0	0.5	0.5	0.0	0.0	-	0.5
NEW ENGLAND DIV BRG TIMBERS	3.5	-	3.5	3.3	0.1	0.1	-	3.5
NEW ENGLAND DIV COMM EQUIPMENT HOUSES	0.1	-	0.1	0.1	0.0	0.0	-	0.1
NEW ENGLAND DIV CRV PATCH RAIL	0.8	-	0.8	0.7	0.0	0.0	-	0.8
NEW ENGLAND DIV CULVERT UPGR	2.0	-	2.0	1.9	0.0	0.1	-	2.0
NEW ENGLAND DIV DRAINAGE IMPV	1.0	-	1.0	0.9	0.0	0.0	-	1.0

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NEW ENGLAND DIV HDBLOCK TIES	0.5	-	0.5	0.5	0.0	0.0	-	0.5
NEW ENGLAND DIV MOVABLE BRIDGE UPGRADES	8.0	-	8.0	7.5	0.2	0.3	-	8.0
NEW ENGLAND DIV RIDE QUALITY IMPROVEMENT	2.5	-	2.5	2.3	0.1	0.1	-	2.5
NEW ENGLAND DIV SPOT U/C	3.1	-	3.1	2.9	0.1	0.1	-	3.1
NEW ENGLAND DIV SUB LIGHTING	0.1	-	0.1	0.1	0.0	0.0	-	0.1
NEW ENGLAND DIV SUB UPGRADES	0.1	-	0.1	0.1	0.0	0.0	-	0.1
NEW ENGLAND DIV SUBSTA SCADA-RTU UPGRS	0.7	-	0.7	0.6	0.0	0.0	-	0.7
NEW ENGLAND DIV WALL UPGRS	2.0	-	2.0	1.9	0.0	0.1	-	2.0
NEW ENGLAND DIVISION WD TIES	2.2	-	2.2	2.0	0.1	0.1	-	2.2
NEW ENGLAND DIVISION XING UPGR	0.8	-	0.8	0.8	0.0	0.0	-	0.8
NEW ENGLAND DIV-RETIRE WAYSIDE SWITCHES	0.2	-	0.2	0.2	0.0	0.0	-	0.2
NEW ENGLAND DV T/O REPLACEMENT	3.6	-	3.6	3.4	0.1	0.1	-	3.6
NEW ENGLAND INSULATED JOINTS	0.5	-	0.5	0.4	0.0	0.0	-	0.5
NEW ENGLAND JOINT ELIMINATION	1.7	-	1.7	1.6	0.0	0.1	-	1.7
NEW ORLEANS, LA WD TIE REPL	0.1	-	0.1	-	-	0.1	-	0.1
NEW ORLEANS-REPLACE STA TK RAIL AND TIES	0.2	-	0.2	-	-	0.2	-	0.2
NEW YORK DIV REPLACE COMM EQUIP HOUSES	0.1	-	0.1	0.1	0.0	0.0	-	0.1
NEW YORK DIV MOVABLE BRIDGE UPGRADES	8.0	-	8.0	7.5	0.2	0.3	-	8.0
NEW YORK DIV VACUUM TRAIN	0.8	-	0.8	0.8	0.0	0.0	-	0.8
NEW YORK DIVISION - DRAINAGE IMPROVEMENT	0.5	-	0.5	0.5	0.0	0.0	-	0.5
NEW YORK TUNNEL FLOOD GATES UP	0.5	-	0.5	0.5	0.0	0.0	-	0.5
NJ008.50 BRG CONTROL UPGRS	5.0	-	5.0	4.7	0.1	0.2	-	5.0
NORTH RIV TUN-REHAB PUMP STA DEWATER SYS	-	0.5	0.5	0.5	0.0	0.0	-	0.5
NORTH RIVER TUN BENCHWALL DIAMOND PLATE	1.0	-	1.0	0.9	0.0	0.0	-	1.0
NORTH RIVER TUN REHAB SCADA CTRL PANELS	-	0.2	0.2	0.1	0.0	0.0	-	0.2
NY AREA RAIL REPLACEMENT	0.3	-	0.3	0.3	0.0	0.0	-	0.3
NY DIV CATENARY POLE UPGR	0.5	-	0.5	0.5	0.0	0.0	-	0.5
NY DIV CONCRETE TIE FASTENER HARDWARE	0.3	-	0.3	0.2	0.0	0.0	-	0.3
NY DIV EAST INTERLOCKING STEEL	2.3	-	2.3	2.2	0.1	0.1	-	2.3
NY DIV SECURE MANHOLE COVER INSTALLATION	0.1	-	0.1	0.1	0.0	0.0	-	0.1
NY DIV WEST INSULATED JOINTS	0.4	-	0.4	0.4	0.0	0.0	-	0.4
NY DIV WEST INTERLOCKING STL	0.9	-	0.9	0.9	0.0	0.0	-	0.9
NY DIV WEST JOINT ELIMINATION	1.0	-	1.0	0.9	0.0	0.0	-	1.0
NY DIV-CONCRETE TIES REPLACEMN	2.0	-	2.0	1.9	0.0	0.1	-	2.0
NY DIV-INTRLOCKING LIGHTING FIXTURE UPGR	0.5	-	0.5	0.5	0.0	0.0	-	0.5
NY EAST RIV TUN REHAB TUN LIGHT FIXTURES	-	1.0	1.0	0.9	0.0	0.0	-	1.0
NY EAST RIVER TUNNELS 3RD RAIL REHAB	-	0.1	0.1	0.0	0.0	0.0	-	0.1
NY EAST RVR TUN RAIL/TIE LN1/2	7.5	-	7.5	7.0	0.2	0.3	-	7.5
NY ERT - 1ST AVE VENTILATION DOOR DESIGN	0.3	-	0.3	0.2	0.0	0.0	-	0.3
NY NORTH RIV TUN REHAB TUN LIGHT FIXTURE	-	0.5	0.5	0.5	0.0	0.0	-	0.5
NY NRT TIE/TIMBER REPLACEMENT	2.1	-	2.1	1.9	0.1	0.1	-	2.1
NY TUN-REHAB 1ST AVE AND LIC VENT PLANTS	-	0.5	0.5	0.5	0.0	0.0	-	0.5
NY010.20 SPUYTEN DUYVIL-EAST FENDER UPGR	1.0	-	1.0	0.9	0.0	0.0	-	1.0
NY143.02 LAB - BRIDGE AND EMERG GEN UPGR	-	2.0	2.0	-	1.9	0.1	-	2.0
NYD - RETAINING WALL UPGRADES	2.0	-	2.0	1.9	0.0	0.1	-	2.0
NYD - UNDERGRADE BRIDGE UPGRADES	6.0	-	6.0	5.6	0.1	0.2	-	6.0
NYD-SPOT RENEW PADS CLIPS AND INSULATORS	0.2	-	0.2	0.2	0.0	0.0	-	0.2
NYP SUBDIV-REPLACE TIES AND TIMBERS	0.4	-	0.4	0.4	0.0	0.0	-	0.4
PENN STATION NY - INSTALL LED SIGNALS	0.2	-	0.2	0.1	0.0	0.0	-	0.2
PERRYVILLE SUBDIV - CAT HARDWARE RENEWAL	0.5	-	0.5	0.5	0.0	0.0	-	0.5
PERRYVILLE SUBDIV SUBST IMPRV	0.3	-	0.3	0.3	0.0	0.0	-	0.3
PERRYVILLE SUBDIV TRANSMISSION LN UPGRS	0.1	-	0.1	0.1	0.0	0.0	-	0.1
PERRYVILLE SUBDIV TROLLEY BREAKER UPGR	0.4	-	0.4	0.4	0.0	0.0	-	0.4
PERRYVILLE SUBDIVISION-SIGNAL POWER UPGR	0.2	-	0.2	0.2	0.0	0.0	-	0.2
PERRYVILLE SUBDIV-SECTION BREAK UPGRADES	0.1	-	0.1	0.1	0.0	0.0	-	0.1
PHIL SUBDIV CATENARY POLE REPL	0.5	-	0.5	0.5	0.0	0.0	-	0.5
PHILADELPHIA SUBDIV CATENARY UPGRADES	0.2	-	0.2	0.1	0.0	0.0	-	0.2
PHILADELPHIA SUBDIV INSTALL STATIC WIRE	0.1	-	0.1	0.1	0.0	0.0	-	0.1
PHILADELPHIA SUBDIV SUBSTATION UPGRADES	0.5	-	0.5	0.4	0.0	0.0	-	0.5
PHILADELPHIA SUBDIV TRANSMISSION LN UPGR	0.1	-	0.1	0.0	0.0	0.0	-	0.1
PHL-WIL CATENARY STRUCTURE REP	0.5	-	0.5	0.5	0.0	0.0	-	0.5
PRY SUBDIV CATENARY POLE UPGRS	0.5	-	0.5	0.5	0.0	0.0	-	0.5
PRY SUBDIV SERVICE&POTENTIAL TRANS UPGR	0.1	-	0.1	0.1	0.0	0.0	-	0.1
PSCC NEW YORK SYSTEM UPGRADES	0.4	-	0.4	0.4	0.0	0.0	-	0.4
PSNY WALKOVER 18 CONDUIT/CABLE	10.0	-	10.0	9.3	0.3	0.4	-	10.0
RADIO SITE BACKUP - EMERGENCY PWR UPGRS	0.3	-	0.3	-	0.2	0.0	-	0.3
REPL 3RD RAIL ERT/HAROLD	0.0	-	0.0	0.0	0.0	0.0	-	0.0
RHEEMS SUB 70 TRANSFORMER INSTALLATION	1.0	-	1.0	0.4	0.6	-	-	1.0
SHARON SUBSTA REPLACE CIRCUIT BREAKERS	0.3	-	0.3	0.2	0.0	0.0	-	0.3
SHELL-GATE TRACK CIRCUITS UPGRS	0.3	-	0.3	0.2	0.0	0.0	-	0.3
SOUTH PENN INTERLOCKING C&S UPGRS	2.0	-	2.0	1.9	0.0	0.1	-	2.0
SOUTH PENN INTERLOCKING RENEWAL	3.1	-	3.1	2.9	0.1	0.1	-	3.1
SOUTHAMPTON ST YD TURNOUTS	0.8	-	0.8	0.7	0.0	0.0	-	0.8
SPG LINE - UNDERGRADE BRIDGE UPGRADES	1.0	-	1.0	-	1.0	-	-	1.0
SPRINGFIELD LINE - CULVERT UPGRADES	0.5	-	0.5	0.5	0.0	0.0	-	0.5
SPRINGFIELD LN I/L STL RENEWAL	1.3	-	1.3	1.2	0.0	0.1	-	1.3
STATE INTERLOCKING RENEWAL	-	3.0	3.0	2.8	0.1	0.1	-	3.0
STRUCTURES - BRIDGE TIE DESIGN	0.4	-	0.4	0.3	0.1	0.0	-	0.4
SUB 32 TO SUB 34- SIGNAL PWR SYSTEM UPGR	0.2	-	0.2	0.1	0.0	0.0	-	0.2
SUB 34 TO SUB 42- SIGNAL PWR SYSTEM UPGR	0.1	-	0.1	0.1	0.0	0.0	-	0.1
SUNNYSIDE YARD - SUBSTATION UP	1.0	-	1.0	0.9	0.0	0.0	-	1.0
SUNNYSIDE YARD INST TIMBER	0.7	-	0.7	0.7	0.0	0.0	-	0.7
SUNNYSIDE YD DESIGN-CONSTRUCTION HSR FAC	-	35.0	35.0	32.8	0.9	1.4	-	35.0

($s in Millions)	Federal & State Capital	Other Third Party	Total Capital	NEC	State Supported	Long Distance	Infrastructure & Investment Development	Total Capital
SWIFT-HUDSON CATENARY HARDWARE RENEWAL	0.1	-	0.1	0.1	0.0	0.0	-	0.1
TIES MICHIGAN LINE - WOOD TIE PROGRAM	0.1	-	0.1	-	0.1	-	-	0.1
TOWER ONE TURNOUT REPLACEMENT	2.6	-	2.6	2.4	0.1	0.1	-	2.6
TRACK - FUTURE DESIGN	0.4	-	0.4	0.3	0.1	0.0	-	0.4
TUN NY ERT-LINES 1&3 SUMP PUMP AIR LINES	1.0	-	1.0	0.9	0.0	0.0	-	1.0
TURNOUT DEVELOPMENT/DESIGN	0.3	-	0.3	0.2	0.1	0.0	-	0.3
UNION SUB 25A PROTOTYPE TROLLEY BREAKER	0.4	-	0.4	0.4	0.0	0.0	-	0.4
UNION SUBSTATION RELOCATION	0.0	0.0	0.1	0.0	0.0	0.0	-	0.1
WAS STATION CONCOURSE A IMPROVEMENTS	-	0.5	0.5	0.5	0.0	0.0	-	0.5
WAS-BOS RAIL LUBICATOR REPLACE	0.5	-	0.5	0.4	0.1	0.0	-	0.5
WASHINGTON TERM & IVY CITY - UPGR TRACKS	3.1	-	3.1	2.9	0.1	0.1	-	3.1
WASH-NEW YORK CURVE PATCH RAIL	5.0	-	5.0	3.8	1.0	0.2	-	5.0
WASH-NEW YORK SYS UNDERCUTTING	25.8	-	25.8	24.1	0.6	1.0	-	25.8
WAS-NYP REDUNDANT COMM CABLE	1.0	-	1.0	0.8	0.2	0.0	-	1.0
WEST DIVISION - STATION TRACK	1.0	-	1.0	-	-	1.0	-	1.0
WEST DIVISION- STATION CONSTRUCTION UPGR	2.0	-	2.0	-	-	2.0	-	2.0
WILMINGTON SUBDIV CATENARY POLE UPGRS	0.3	-	0.3	0.2	0.0	0.0	-	0.3
WILMINGTON SUBDIV CATENARY UPGRADES	0.2	-	0.2	0.1	0.0	0.0	-	0.2
WILMINGTON SUBDIV SUBSTATION UPGRADES	0.2	-	0.2	0.1	0.0	0.0	-	0.2
ZOO-44TH ST I/L RECONFIGURATON	2.0	-	2.0	1.9	0.0	0.1	-	2.0
ZOO-PAOLI CATENARY POLE DESIGN	0.5	-	0.5	0.2	0.3	-	-	0.5
EMPIRE CORRIDOR BRG TIMBER REPLACEMENT	1.0	-	1.0	-	0.9	0.1	-	1.0
MID ATLANTIC DIV SIGNAL BRIDGE UPGR	1.5	-	1.5	1.4	0.0	0.1	-	1.5
CULV MD128.33 LANDOVER - CULVERT UPGRADE	2.0	-	2.0	1.9	0.0	0.1	-	2.0
MAD I/L LIGHTING UPGR	0.5	-	0.5	0.5	0.0	0.0	-	0.5
NEC SIGNAL SYSTEM REMOTE DIAGNOSTIC SYS	0.1	-	0.1	-	0.1	0.0	-	0.1
MAD NORTH CATENARY POLE ATTACHMENT UPGRS	0.1	-	0.1	0.1	0.0	0.0	-	0.1
ELECTRIC TRACTION FREQ CONVERTER UPGRS	9.0	-	9.0	6.8	1.9	0.3	-	9.0
NEW YORK DIV SUBSTATION 43-47 UPGRADES	0.5	-	0.5	0.5	0.0	0.0	-	0.5
NEW YORK DIV SUBSTATION 32-33 UPGRADES	0.2	-	0.2	0.1	0.0	0.0	-	0.2
NEW YORK DIV SUBSTATION 34-37 UPGRADES	0.3	-	0.3	0.3	0.0	0.0	-	0.3
NEW YORK DIV SUBSTATION 38-42 UPGRADES	0.6	-	0.6	0.6	0.0	0.0	-	0.6
NEW YORK DIV SUBSTATION RTU UPGRADES	0.5	-	0.5	0.5	0.0	0.0	-	0.5
ADAMS NJ NEW SUBSTATION CONSTRUCTION	1.0	-	1.0	0.9	0.0	0.0	-	1.0
HELLGATE LINE SUB 45-47 REPLACEMENT DSN	1.0	-	1.0	0.9	0.0	0.0	-	1.0
NEW ENGLAND DIV SHOULDER CLEANING PRGM	0.5	-	0.5	0.5	0.0	0.0	-	0.5
NEW YORK DIV SHOULDER CLEANING PROGRAM	0.3	-	0.3	0.2	0.0	0.0	-	0.3
CENTRAL DIV SHOULDER CLEANING PROGRAM	0.3	-	0.3	-	-	0.3	-	0.3
MID-ATLANTIC DIV SHOULDER CLEANING PRG	1.0	-	1.0	0.9	0.0	0.0	-	1.0
NEW ENGLAND DIV PADS-CLIPS-INSULATORS	0.3	-	0.3	0.2	0.0	0.0	-	0.3
NORTHEAST CORRIDOR INST IMPACT DETECTORS	1.0	-	1.0	0.9	0.0	0.0	-	1.0
MICHIGAN LINE WEST RAIL RENEWAL	4.0	-	4.0	-	4.0	-	-	4.0
NEW YORK DIV EAST JOINT ELIMINATION	0.2	-	0.2	0.2	0.0	0.0	-	0.2
NEW YORK DIV EAST INSULATED JOINTS	0.9	-	0.9	0.8	0.0	0.0	-	0.9
NEWARK NJ STATION REPLACE BLOCK TIES	1.0	-	1.0	0.9	0.0	0.0	-	1.0
NEW YORK DIV WEST TIES/TIMBERS	2.6	-	2.6	2.4	0.1	0.1	-	2.6
NEW YORK DIV EAST TIES/TIMBERS	1.3	-	1.3	1.2	0.0	0.0	-	1.3
NEW YORK DIV SUP FACILITIES TK REHAB	1.0	-	1.0	0.9	0.0	0.0	-	1.0
NEW ENGLAND DIV SUP FACILITIES TK REHAB	1.0	-	1.0	0.9	0.0	0.0	-	1.0
CENTRAL DIV SUPPORT FACILITIES TK REHAB	2.5	-	2.5	-	-	2.5	-	2.5
PENN STA NY ZERO DEFECT PRG TO RENEWAL	6.2	-	6.2	5.8	0.2	0.2	-	6.2
WASHINGTON-BOSTON INTERLOCKING SURFACING	2.0	-	2.0	1.5	0.4	0.1	-	2.0
MID-ATLANTIC DIV SURFACING PROGRAM	9.8	-	9.8	9.2	0.2	0.4	-	9.8
NEW ENGLAND DIV SURFACING PROGRAM	3.7	-	3.7	3.5	0.1	0.1	-	3.7
NEW YORK DIV SURFACING PROGRAM	3.6	-	3.6	3.4	0.1	0.1	-	3.6
ELMORA I/L INTERLOCKING RENEWAL	0.5	-	0.5	0.5	0.0	0.0	-	0.5
CP94 EMPIRE LINE INTERLOCKING RENEWAL	1.0	-	1.0	-	0.9	0.1	-	1.0
PAOLI I/L INTERLOCKING RENEWAL	1.0	-	1.0	0.4	0.6	-	-	1.0
DAVISVILLE I/L INTERLOCKING RENEWAL	3.1	-	3.1	2.9	0.1	0.1	-	3.1
SWIFT INTERLOCKING- INTERLOCKING RENEWAL	3.5	-	3.5	3.3	0.1	0.1	-	3.5
ZOO D1 TO STILES INTERLOCKING RENEWAL	5.0	-	5.0	1.9	3.1	-	-	5.0
11TH AV VENT SHAFT AUTOMATIC TRANSFER SW	-	0.5	0.5	0.5	0.0	0.0	-	0.5
NY010.25 SPUYTEN DUYVIL-SANDY MECH-ELECT	-	1.0	1.0	0.9	0.0	0.0	-	1.0
PRIIA BASIC INFRA RECAPITAL CONTRIB	14.0	-	14.0	10.7	2.9	0.4	-	14.0
Amtrak 212 Other Payments to Non-Amtrak Operated NEC	33.1	-	33.1	29.9	1.9	1.3	-	33.1
Safety / Mandates	**16.3**	**12.5**	**28.8**	**15.1**	**12.3**	**1.3**	**-**	**28.8**
BAL SUBDIV INST SECURITY FENCE	5.0	-	5.0	4.7	0.1	0.2	-	5.0
CETC NY SCADA PHASE II	5.0	-	5.0	5.0	0.0	-	-	5.0
EMPIRE CORRIDOR PTC INSTALLATION WAYSIDE	-	12.5	12.5	-	11.6	0.9	-	12.5
EMPIRE LINE OVERBUILD LIGHTING	0.3	-	0.3	0.3	-	-	-	0.3
ENG EMPLOYEE ARC FLASH PROTECT	0.8	-	0.8	0.6	0.2	0.0	-	0.8
MAD NORTH-SIGNAL BRG FALL PROTECTION	0.5	-	0.5	0.5	0.0	0.0	-	0.5
MAD SOUTH-SIGNAL BRG FALL PROTECTION	0.5	-	0.5	0.5	0.0	0.0	-	0.5
NED - SIGNAL BRIDGE SAFETY UPGRADES	0.3	-	0.3	0.2	0.0	0.0	-	0.3
NEW ENGLAND DIVISION FENCING	0.3	-	0.3	0.3	0.0	0.0	-	0.3
NY DIV SIG BRG FALL PROTECTION	0.1	-	0.1	0.1	0.0	0.0	-	0.1
NY DIV SIG BRIDGE FALL PROTECTION UPGRS	0.1	-	0.1	0.1	0.0	0.0	-	0.1
NYD - SIGNAL BRIDGE SAFETY UPGRADES	0.5	-	0.5	0.5	0.0	0.0	-	0.5
PTC AMTRAK OWNED INSTALLATION	2.0	-	2.0	1.5	0.4	0.1	-	2.0
SEPTA STATIONS INTERTRACK FENCE UPGRADES	0.1	-	0.1	0.1	0.0	0.0	-	0.1
LIFE SAFETY - PROJECT MANAGEMENT	0.9	-	0.9	0.8	0.0	-	-	0.9
Major Projects	**113.5**	**154.3**	**267.9**	**147.7**	**112.1**	**3.0**	**5.0**	**267.9**
BRANDY-RAGAN SEC IMPROVEMENT	0.7	14.3	15.0	14.0	0.4	0.6	-	15.0

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CENTRAL DIVISION MOVABLE BRIDGE UPGRADES	0.1	-	0.1	-	0.1	0.1	-	0.1
CHI 14TH ST YD RETAINING WALL	5.0	-	5.0	-	-	-	5.0	5.0
CT106.89 CONN RV REPL DESIGN	3.0	-	3.0	2.8	0.1	0.1	-	3.0
KINGSTON RI CAPACITY AND PLATF	-	4.0	4.0	3.7	0.1	0.2	-	4.0
LANDOVER/HANSON I/L RENEWAL	6.8	1.2	8.0	7.5	0.2	0.3	-	8.0
MD060.07 SUSQUEHANNA BRIDGE REPLACEMENT	-	5.0	5.0	4.7	0.1	0.2	-	5.0
MD072.14 BUSH RIVER BR REPLACEMENT DSN	1.0	-	1.0	0.9	0.0	0.0	-	1.0
MD078.86 GUNPOWDER RIVER BR REPLACE DSN	1.0	-	1.0	0.9	0.0	0.0	-	1.0
METUCHEN FREQ CONVERTER NJHSRIP	-	11.7	11.7	10.8	0.3	0.5	-	11.7
NEW BRUNSWICK-TRENTON NJHSRIP BRIDGES	-	0.9	0.9	0.8	0.0	0.0	-	0.9
NEW BRUNSWICK-TRENTON NJHSRIP CATENARY	6.0	3.8	9.8	9.1	0.3	0.4	-	9.8
NEW BRUNSWICK-TRENTON NJHSRIP PRG MGMNT	-	2.3	2.3	2.1	0.1	0.1	-	2.3
NEW BRUNSWICK-TRENTON NJHSRIP SIGNALS	-	1.2	1.2	1.2	0.0	0.0	-	1.2
NEW YORK TUNNELS STRUCTURE REHAB-CONST	80.0	-	80.0	79.8	0.2	-	-	80.0
NY015.73 PELHAM BAY-BRDG REPLACEMENT DSN	3.0	-	3.0	2.8	0.1	0.1	-	3.0
SAFE HARBOR FREQ CONVERT UPGR	6.9	-	6.9	6.4	0.2	0.3	-	6.9
SPRINGFIELD LN DOUBLE TRACK	-	110.0	110.0	-	110.0	-	-	110.0
Support Equipment and Vehicles	**35.8**	**-**	**35.8**	**6.2**	**1.7**	**0.3**	**27.6**	**35.8**
ACELA TRAIN - REFURBISH ACCELE	0.1	-	0.1	0.1	0.0	0.0	-	0.1
ADVANCED TECHNLOGY TK INSP SYS	1.0	-	1.0	0.8	0.2	0.0	-	1.0
ENGINEERING - VEHICLE ACQUISITION	8.6	-	8.6	-	-	-	8.6	8.6
ENGINEERING ROLLING STOCK HEAVY OVERHAUL	1.9	-	1.9	1.4	0.4	0.1	-	1.9
ENGINEERING TRACK EQI PURCHASE	17.0	-	17.0	-	-	-	17.0	17.0
TRACK GAUGE RESTRAINT MEASURING SYSTEM	0.5	-	0.5	0.4	0.1	0.0	-	0.5
VEHICLE REPLACEMENT	1.7	-	1.7	1.3	0.3	0.1	-	1.7
GEOMETRY CAR - REPLACEMENT FOR 10003	2.8	-	2.8	2.1	0.6	0.1	-	2.8
NED CATENARY CAR HEAVY OVERHAULS	0.3	-	0.3	0.2	0.1	0.0	-	0.3
ELECTRIC TRACTION EQUIPMENT ACQUISITION	2.0	-	2.0	-	-	-	2.0	2.0
Rolling Stock Acquisition	**65.2**	**-**	**65.2**	**1.0**	**0.3**	**63.9**	**-**	**65.2**
Special Programs	**63.8**	**-**	**63.8**	**-**	**-**	**63.8**	**-**	**63.8**
LONG DISTANCE SINGLE LEVEL REPLACMNT-CAF	63.8	-	63.8	-	-	63.8	-	63.8
Amtrak Support	**1.3**	**-**	**1.3**	**1.0**	**0.3**	**0.0**	**-**	**1.3**
DUAL MODE LOCO PROTOTYPE EVALUATION	1.3	-	1.3	1.0	0.3	0.0	-	1.3
Stations and Facilities	**326.8**	**35.8**	**362.6**	**213.1**	**61.3**	**29.2**	**59.0**	**362.6**
Improvements	**98.6**	**10.6**	**109.1**	**33.6**	**21.6**	**17.0**	**37.0**	**109.1**
AMTRAK SYS DSN STA IMPV	3.0	-	3.0	2.2	0.7	0.1	-	3.0
AMTRAK SYSTEM 480 VOLT STANDBY POWER	3.0	-	3.0	2.2	0.7	0.1	-	3.0
CENTRAL DIVISION - FACILITY UPGRADES	3.0	-	3.0	-	1.5	1.5	-	3.0
CENTRAL DIVISION - MOFW BASE UPGRADES	0.5	-	0.5	-	0.3	0.3	-	0.5
CHICAGO UNION STA MASTER PLAN PHASE I	1.2	-	1.2	-	-	-	1.2	1.2
CHICAGO YARD - MASTER PLAN DEV	30.0	-	30.0	-	-	-	30.0	30.0
Contact Center Telephony System Next Gen	1.8	-	1.8	1.3	0.4	0.1	-	1.8
EMPIRE CORRIDOR - FACILITY UPGRADES	0.5	-	0.5	-	0.5	-	-	0.5
FORT WORTH, TX-NEW MOFE CONSTRUCTION	1.0	-	1.0	-	-	1.0	-	1.0
HARRISBURG LINE - FACILITY UPGRADES	8.0	-	8.0	2.3	5.7	-	-	8.0
HUNTER YARD NJ - MOFW BASE UPGRADES	15.0	-	15.0	14.0	0.4	0.6	-	15.0
INSTALL HGH EFF LIGHT-MECH FAC	2.0	-	2.0	1.5	0.4	0.1	-	2.0
KING ST YD- IMPROVEMENTS/SOUND TRANS DSN	9.0	-	9.0	-	-	9.0	-	9.0
MAD - TRANSPORTATION FACILITY UPGRADES	0.3	-	0.3	0.2	0.0	0.0	-	0.3
MID ATLANTIC DIVISION- FACILITY UPGRADES	2.0	-	2.0	1.9	0.0	0.1	-	2.0
MOYNIHAN STATION - STATION CONSTRUCTION	-	0.2	0.2	0.1	0.0	0.0	-	0.2
NEW ENGLAND DIVISION - FACILITY UPGRADES	0.5	-	0.5	0.5	0.0	0.0	-	0.5
PAOLI PA NEW TRANS CENTER MP 20.0	-	4.4	4.4	1.3	3.1	-	-	4.4
ROCHESTER NY STATION IMPROVEMENTS	-	6.0	6.0	-	5.6	0.4	-	6.0
WEST DIVISION - FACILITY UPGRADES	1.5	-	1.5	-	-	1.5	-	1.5
WEST DIVISION - MOFW BASE UPGRADES	0.5	-	0.5	-	-	0.5	-	0.5
CENTRAL DIVISION STATION UPGRADES	3.0	-	3.0	-	1.5	1.5	-	3.0
NEC CATENARY CAR STORAGE FACILITIES	1.8	-	1.8	1.4	0.4	0.1	-	1.8
HARRISBURG LINE SUBSTA CTRL HOUSE UPGRS	0.3	-	0.3	0.1	0.2	-	-	0.3
MID-ATLANTIC YARDS-FACILITIES TK UPGRS	1.0	-	1.0	0.9	0.0	0.0	-	1.0
WILMINGTON FACILITY IMPROVEMENTS	2.0	-	2.0	1.8	0.1	0.1	-	2.0
30TH ST STATION 8TH FLR ROOF REPLACEMENT	0.8	-	0.8	0.7	0.0	0.0	-	0.8
WILMINGTON STA POLICE OFFICE UPGRS	0.8	-	0.8	0.7	0.0	0.0	-	0.8
NEC CAPITAL PLANNING - PROGRAM SUPPORT	0.4	-	0.4	0.3	0.1	0.0	-	0.4
CHICAGO UNION STA DISTRICT MASTER PLAN	1.3	-	1.3	-	-	-	1.3	1.3
CHICAGO UNION STA HEAD HOUSE DORM ROOMS	4.5	-	4.5	-	-	-	4.5	4.5
SOGR Base	**167.5**	**17.5**	**185.0**	**123.4**	**35.6**	**4.0**	**22.0**	**185.0**
30TH ST STA FIRE ALARM SYS	2.0	-	2.0	1.8	0.1	0.1	-	2.0
30TH ST STA SOGR CONCOURSE & FAC UPGRS	3.5	-	3.5	3.2	0.2	0.1	-	3.5
30TH STA ELEVATOR REPLACEMENT	4.0	-	4.0	3.6	0.2	0.2	-	4.0
30TH STA HVAC CTRL UPGR	1.5	-	1.5	1.4	0.1	0.1	-	1.5
BALTIMORE STA MASTER PLAN IMPLEMENTATION	5.0	-	5.0	4.5	0.2	0.3	-	5.0
BEAR FACILITY IMPROVEMENTS	2.0	-	2.0	1.8	0.1	0.1	-	2.0
CHICAGO STATION SOGR IMPROVEMENTS	10.0	-	10.0	-	-	-	10.0	10.0
EMPIRE CORRIDOR - MOFW BASE UPGRADES	0.1	-	0.1	-	0.1	0.0	-	0.1
HARRISBURG LN STATION UPGRS	3.0	-	3.0	-	3.0	-	-	3.0
MAD - STATION CONSTRUCTION UPGRADES	7.0	-	7.0	5.4	1.4	0.2	-	7.0
Material Management Facilities SOGR	0.9	-	0.9	0.6	0.2	0.0	-	0.9
MID ATLANTIC DIVISION-MOFW BASE UPGRADES	3.0	-	3.0	2.8	0.1	0.1	-	3.0
MOFW BASES INVENTORY SECURITY	1.0	-	1.0	0.7	0.2	0.0	-	1.0
MOUNT JOY, PA STATION IMPROVEM	-	14.0	14.0	-	14.0	-	-	14.0
NED - STATION CONSTRUCTION UPGRADES	5.0	-	5.0	3.9	1.0	0.2	-	5.0
NEW ENGLAND DIVISION MOFW BASE UPGRADES	2.0	-	2.0	1.9	0.0	0.1	-	2.0

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NEW YORK DIVISION - MOFW BASE UPGRADES	1.0	-	1.0	0.9	0.0	0.0	-	1.0
NYD - STATION CONSTRUCTION UPGRADES	5.0	-	5.0	3.9	1.0	0.2	-	5.0
PSNY ESCALATOR REPLACEMENT	4.0	-	4.0	4.0	0.0	-	-	4.0
PSNY FACILITIES UPGRADES	3.0	-	3.0	3.0	0.0	-	-	3.0
STRUCTURES FAC FUTURE DESIGN	2.5	-	2.5	1.9	0.5	0.1	-	2.5
WAS & IVY CITY ELECTRICAL UPGR	1.0	-	1.0	0.9	0.0	0.1	-	1.0
WASH PLATFORM RENEWAL-MARC	-	3.0	3.0	3.0	-	-	-	3.0
WASH UNION-STA PLATFORM CANOPY ROOF UPGR	-	0.5	0.5	0.5	0.0	0.0	-	0.5
WILM - CONSTRUCTION MOFE BUILDINGS 1 & 2	10.0	-	10.0	-	-	-	10.0	10.0
30TH STREET STATION - FACADE REPLACE	25.0	-	25.0	24.8	0.2	-	-	25.0
AMTRAK STATIONS ASDP SOGR IMPROVEMENTS	3.5	-	3.5	2.7	0.7	0.1	-	3.5
BEECH GROVE SHOPS FACILITY IMPROVEMENTS	2.0	-	2.0	-	-	-	2.0	2.0
MAT HANDLING EQUP FACILITIES SGR	0.9	-	0.9	0.6	0.2	0.0	-	0.9
SOUTHAMPTON ST YD EXHAUST SYS MECH FAC	1.5	-	1.5	1.4	0.1	0.1	-	1.5
STATIONS-FACILITIES IMPROVEMENTS-REHABS	57.8	-	57.8	43.9	12.0	1.9	-	57.8
STATION SIGNAGE	0.5	-	0.5	0.4	0.1	0.0	-	0.5
Safety / Mandates	**0.5**	**4.9**	**5.5**	**4.2**	**1.1**	**0.2**	**-**	**5.5**
BAL STA POLICE OFFICE-LOCKER ROOM UPGRS	0.5	-	0.5	0.5	0.0	0.0	-	0.5
EXTON PA NEW HIGH LEVEL PLATFORM STATION	-	1.0	1.0	0.7	0.3	-	-	1.0
2015 EMERGENCY MGT OPERATIONAL PACKAGES	-	3.7	3.7	2.8	0.8	0.1	-	3.7
2015 EMERGENCY MANAGEMENT - RAILSAFE	-	0.2	0.2	0.2	0.0	0.0	-	0.2
Major Projects	**20.0**	**0.1**	**20.1**	**14.1**	**0.4**	**5.6**	**-**	**20.1**
BRANFORD-GUILFORD CT STATION IMPROVEMENT	-	0.1	0.1	0.0	0.0	0.0	-	0.1
IVY CITY-TRAIN TRAFFIC UPGR MASTER PLN	10.0	-	10.0	9.4	0.2	0.4	-	10.0
HACKENSACK SUB 42 NEW CONTROL HOUSE	3.0	-	3.0	2.8	0.1	0.1	-	3.0
PENN COACH YD WELDING TRAINING FACILITY	2.0	-	2.0	1.9	0.0	0.1	-	2.0
LOS ANGELES WHEEL TRUING FACILITY	3.0	-	3.0	-	-	3.0	-	3.0
DALLAS-FT WORTH NEW MECH BLDING-COMSY	2.0	-	2.0	-	-	2.0	-	2.0
Support Equipment and Vehicles	**3.6**	**2.0**	**5.6**	**4.2**	**1.2**	**0.2**	**-**	**5.6**
EQUIPMENT POOL COMMITTEE	-	2.0	2.0	1.5	0.4	0.1	-	2.0
TRACK EQUIP HEAVY OVERHAULS	2.5	-	2.5	1.9	0.5	0.1	-	2.5
AMTRAK POLICE DEPARTMNT VEHICLE PURCHASE	0.4	-	0.4	0.3	0.1	0.0	-	0.4
AMT POLICE DEPT HIGH MILEAGE VEHICLES	0.8	-	0.8	0.6	0.2	0.0	-	0.8
NEC Master Planning	**34.4**	**-**	**34.4**	**31.6**	**0.8**	**2.0**	**-**	**34.4**
WA Union Term Master Plan Implementation	34.4	-	34.4	31.6	0.8	2.0	-	34.4
Amtrak Support	**2.2**	**0.8**	**2.9**	**1.8**	**0.8**	**0.3**	**-**	**2.9**
SECURITY CANINE PROCURMNT/TRNG	-	0.8	0.8	0.6	0.2	0.0	-	0.8
WILMINGTON TRAINING FACILITY UPS UPGRADE	0.2	-	0.2	0.1	0.0	0.0	-	0.2
Fast Act Studies - Gulf Coast Working Group	0.5	-	0.5	-	0.3	0.3	-	0.5
Fast Act Studies - Small Business Participation Study	1.5	-	1.5	1.1	0.3	0.0	-	1.5
Technology Systems	**192.3**	**5.0**	**197.3**	**158.8**	**33.0**	**5.5**	**-**	**197.3**
Software	**75.5**	**-**	**75.5**	**57.4**	**15.7**	**2.4**	**-**	**75.5**
AMTRAK E-TICKETING INITIATIVE	1.5	-	1.5	1.1	0.3	0.0	-	1.5
Amtrak Foundation - Train Operations Tec	0.5	-	0.5	0.4	0.1	0.0	-	0.5
AMTRAK NATIONAL OBIS PROGRAM	3.0	-	3.0	2.3	0.6	0.1	-	3.0
AUTOMATED CUSTOMER NOTIFICATION UPGRS	0.5	-	0.5	0.4	0.1	0.0	-	0.5
CUSTOMER EXPERIENCE PROGRAMS	7.0	-	7.0	5.3	1.5	0.2	-	7.0
FY05 ENG AMM DEVELELOPMENT	4.0	-	4.0	3.0	0.8	0.1	-	4.0
HCM Foundations	1.2	-	1.2	0.9	0.3	0.0	-	1.2
IT Strategic Technology Program	17.9	-	17.9	13.6	3.7	0.6	-	17.9
IT Technology Upgrade Program	8.2	-	8.2	6.2	1.7	0.3	-	8.2
Mobile Infrastructure Enhancement Program	3.0	-	3.0	2.3	0.6	0.1	-	3.0
PERSONAL CMPTR/FIELD DEPLOYED	10.0	-	10.0	7.6	2.1	0.3	-	10.0
TRANSPORTATION - TRAINING COMPUTERS	0.5	-	0.5	0.3	0.1	0.0	-	0.5
WMS NETWORK REDESIGN/UPGRADE	4.0	-	4.0	3.0	0.8	0.1	-	4.0
WORK MANAGEMENT SYSTEM	1.5	-	1.5	1.1	0.3	0.0	-	1.5
TAX REPORTING APPLICATION SYS UPGRADES	0.4	-	0.4	0.3	0.1	0.0	-	0.4
LEGAL GOV CORP COMMS TECH INFRAST SOGR	2.0	-	2.0	1.5	0.4	0.1	-	2.0
Cyber Information Security	2.3	-	2.3	1.7	0.5	0.1	-	2.3
RESERVATION SYS TECH INFRASTRUCTURE SOGR	3.1	-	3.1	2.3	0.6	0.1	-	3.1
CUSTOMER EXPERIENCE PROGRAMS PHASE 2	5.0	-	5.0	3.8	1.0	0.2	-	5.0
Hardware	**58.8**	**4.5**	**63.3**	**56.1**	**6.1**	**1.1**	**-**	**63.3**
AUDIO VISUAL ON BOARD ENTERTAINMENT	1.8	-	1.8	1.4	0.4	0.1	-	1.8
NEC TRACKSIDE WIRELESS BROADBAND NETWORK	25.4	-	25.4	25.4	-	-	-	25.4
POLICE-EMCS TECH INFRASTRUCTURE SOGR	1.4	-	1.4	1.1	0.3	0.0	-	1.4
Amfleet Wi-Fi Upgrades SOGR	5.7	-	5.7	4.3	1.2	0.2	-	5.7
Long Distance Train WiFi Installation	6.0	-	6.0	4.6	1.2	0.2	-	6.0
ACELA DIGITAL TRAIN COMMUNICATION LINE	3.0	-	3.0	2.3	0.6	0.1	-	3.0
AMFLEET DIGITAL TRAIN COMMUNICATION LINE	7.0	-	7.0	5.3	1.5	0.2	-	7.0
ACELA WIFI UPGRADES	4.0	-	4.0	4.0	-	-	-	4.0
AMTRAK EAST COAST NOC TECHNOLOGY REFRESH	0.8	-	0.8	0.6	0.2	0.0	-	0.8
AMTRAK INSTATION WIFI REFRESH	0.3	-	0.3	0.2	0.1	0.0	-	0.3
AMTRAK SYS POLICE RADIO REPEATER UPGRS	0.7	-	0.7	0.5	0.1	0.0	-	0.7
AMT POLICE MOTOROLA APX 8000 RADIO PURCH	0.8	-	0.8	0.6	0.2	0.0	-	0.8
WASHINGTON DC TERMINAL DISPATCH REDUNDA	-	4.5	4.5	4.1	0.3	0.2	-	4.5
WIL DE CNOC COMPUTER-TECHNOLOGY UPGR	0.2	-	0.2	0.1	0.0	0.0	-	0.2
NED STA TRAIN APPROACH MESSAGE SYSTEM	1.9	-	1.9	1.7	0.1	0.1	-	1.9
Back Office Support	**13.3**	**0.5**	**13.8**	**11.3**	**2.0**	**0.5**	**-**	**13.8**
PHILA CALL CNTR FAC IMPROV	0.2	-	0.2	0.2	0.0	0.0	-	0.2
RIVERSIDE CALL CNTR FAC IMPROV	0.2	-	0.2	0.2	0.0	0.0	-	0.2
HUMAN CAPITAL SHARED SVC CASE MGT SYS	2.0	-	2.0	1.5	0.4	0.1	-	2.0
INTEG PRE-HIRE ASMT TESTING-CANDIDATE DB	0.8	-	0.8	0.6	0.2	0.0	-	0.8
HUMAN CAPITAL-WELDING TRAINING SIMULATOR	0.2	-	0.2	0.1	0.0	0.0	-	0.2

($s in Millions)	Total Federal & State Capital	Other Third Party	Total Capital	NEC	State Supported	Long Distance	Infrastructure & Investment Development	Total Capital
HUMAN CAPITAL-VIRTUAL TRAINING SYSTEM	0.7	-	0.7	0.5	0.1	0.0	-	0.7
HUMAN CAPITAL-DOCUMENT MANAGEMENT SYSTEM	0.5	-	0.5	0.3	0.1	0.0	-	0.5
HUMAN CAPITAL-SAP ADD-ON REGLEARN SYSTEM	1.1	-	1.1	0.8	0.2	0.0	-	1.1
HUMAN CAPITAL-POST-HIRE ASMT TESTING SYS	0.8	-	0.8	0.6	0.2	0.0	-	0.8
AMTK GUEST REWARDS COBRANDED CREDIT CARD	-	0.5	0.5	0.4	0.1	0.0	-	0.5
PSNY EXTERIOR CANOPY ENTRANCE DSN-BRAND	5.8	-	5.8	5.2	0.3	0.2	-	5.8
CALL CENTER TECHNOLOGY EFFICI	1.0	-	1.0	0.8	0.2	0.0	-	1.0
CORPORATE FORMS SMART-WEBFORM INITIATIVE	0.1	-	0.1	0.1	0.0	0.0	-	0.1
Operations Foundation	**44.7**	**-**	**44.7**	**34.0**	**9.3**	**1.5**	**-**	**44.7**
Operations Foundation	44.7	-	44.7	34.0	9.3	1.5	-	44.7
Total	**$1,670.8**	**$888.6**	**$2,559.4**	**$1,794.2**	**$365.6**	**$302.8**	**$96.8**	**$2,559.4**
Federal Discretionary Grant Programs (Authorized by FAST Act)	(263.7)							
NEC Commuter Match (excl Gateway)	(134.4)							
State Contributions to Equipment Capital (PRIIA 209)	(65.2)							
Commuter payments (PRIIA 212)	(143.2)							
Amtrak Operating Profits - NEC	(276.0)							
Amtrak Operating Profits -Infrastructure & Investment Development	(83.0)							
General Capital	**$705.4**							

FY 2016 CAPITAL PROGRAM DESCRIPTIONS

Infrastructure Renewal Projects

State of Good Repair Base

Bridges, Culverts and Tunnels

- Movable Bridges – funding to progress Amtrak's movable bridges towards a state of good repair. Some of the bridges will be brought to a state of good repair through selective component replacement while others require complete replacement of movable structure, mechanical and electrical systems.
- Fixed Bridges Under-grade – this program is to address under-grade bridges currently not in a state of good repair including conversion of open deck under-grade bridges to ballast deck for improved train performance. Some of the under-grade bridges can be brought to a state of good repair through selective component replacement and others will require complete replacement.
- Tunnels – to progress tunnels towards a state of good repair. This will be accomplished primarily through component replacement or through complete replacement of the tunnel under extreme circumstances.

Signal and Communications Systems

- Automatic Block Signal (ABS) – to progress ABS assets towards a state of good repair. ABS component failures have been identified as a major contributor to train delay. Upgrading of outdated components will result in increased reliability, improved on-time performance and railroad safety.
- Advanced Civil Speed Enforcement System (ACSES) – ACSES is the Positive Train Control (PTC) system used on the NEC. This program includes upgrades to Central Instrument House (CIH), radio transmission equipment, and wayside interface units. For interoperability with freight carriers operating on the NEC, Amtrak will install an Interoperable Electronics Train Management System (I-ETMS) overlay that will allow freight trains and some commuter trains to operate on the NEC without ACSES equipment. See the Positive Train Control section of this document for additional detail. The ACSES system was mandated by the FRA for high speed operation.
- Interlocking – Communications & Signals – this program is to address interlocking signal system components not currently in a state of good repair. Upgrade signal systems at interlockings to eliminate equipment failures and reduce maintenance costs. This program involves conversion of air switch machines to electric machines, automation of manual towers and replacement of obsolete interlocking signal system components.
- Crossings – upgrade highway crossing detection devices for more reliable operation of warning systems and enhance grade crossing system safety while reducing maintenance costs. Examples of work included under this program include the renewal of ties, rail, and crossing material at road crossings as well as concrete tie installation at grade crossings.
- Centralized Traffic Control (CETC) – replace centralized traffic control equipment in CETC locations with modern server-based systems. The three existing locations do not have back-up capability. Server-based systems will allow for simplified back up in case of a disaster.

- Communications Systems - the renewal and replacement of radio assets to bring Amtrak in compliance with Federal Communications Commission requirements. Work performed under this program includes the renewal of battery back-up systems at radio locations and the replacement of analog radio equipment with digital narrowband equipment.

Electric Traction

- Catenary – the replacement and renewal of catenary wire, insulators and hardware currently not in a state of good repair. Elements of this program include not only replacement of components that are beyond their useful life, but also the replacement of wire that is beyond the allowable wear percentages.
- Catenary Pole – many of the catenary poles are over 90 years old and are beyond their designed service life. Replacement of the poles will provide physical support to the power transmission and catenary systems.
- Transmission – the replacement of traction power transmission cable and associated hardware currently not in a state of good repair. Much of the existing cable has been in service for over 70 years and has far exceeded its useful life. Examples of work performed under this program include the design, purchase and installation of new solid dielectric cable, replacement of transmission lines, demolition of the existing duct bank and construction of a new duct bank, terminations, and splices and testing of the new cable.
- Substations and Frequency Converters - improvements made to the electric traction and substations along the NEC. Some examples of work performed under this program are: replacement of rotary traction power frequency converters, replacement or renewal of existing power machine, and renewal of substation components such as power transformers, circuit breakers and control cables. The reliable operation of these assets is critical to on-time performance.

Track

- Track Ballast – perform work to progress the ballast assets towards a state of good repair. Examples of work performed under the program are replacement through spot undercutting and shoulder cleaning where total replacements are not needed.
- Track Drainage – renew and replace track drainage assets currently not in a state of good repair. If not corrected, poor drainage will result in slow orders and higher maintenance costs associated with the accelerated degradation of track geometry. Examples of work performed under this program include the utilization of the slot-train, the Badger ditcher, and conventional earth moving equipment to re-profile existing drainage ditches and establish new ones.
- Track Rail Replacement – replacement of rail that is currently not in a state of good repair. Amtrak replaces an average of 35 miles of rail per year. Useful service life of rail has been exceeded once horizontal or vertical wear limits, internal defect rates, or surface conditions are approaching safety limits. This program will help to reduce maintenance costs and slow orders.
- Crosstie / Timber – replace crosstie and track timber along the NEC which will reduce train delays, track geometry degradation, FRA track defects, and switch failures.

Examples of work performed under this program include the installation of timber underneath turnouts in yards and block tie replacement at specific locations.

- Track Laying System (TLS) – utilization of TLS for the complete replacement of wood tie track with concrete cross ties including replacement of concrete ties that have been found to be defective. This replacement program will reduce maintenance costs and potential slow orders, and provide for an increase in on-time performance.
- Track Turnouts – replacement of standard wood turnouts and associated components not currently in a state of good repair. Associated components include frogs, switch points, and wood and concrete switch timbers and other track turnout material.
- Track Geometry – surfacing, realignment and re-profiling of track surface as required to meet FRA Track Safety Standards, to maintain ride quality standards and to extend the life of track components.
- Interlocking Renewal - total renewal of the existing track structure within interlocking limits with new advanced technology; updates include repair or replacement of turnouts, concrete switch ties, moveable point frogs, and switches. These interlocking renewal projects will move the railroad towards a state of good repair by eliminating failures and reducing maintenance costs.

Major Projects

Major Bridge Special Projects

Address major bridges currently not in a state of good repair for improved train performance, eliminating slow orders that Amtrak must impose when bridge components fail and disrupt the train traffic. Continuous maintenance costs due to temporary repairs will also be avoided. While some of the major bridges can be brought to a state of good repair through selective component replacement, most will require complete replacement.

Special Programs

New Jersey High-Speed Rail Improvement Program

Upgrade and improve the catenary, power, track and signal systems on the NEC primarily between New Brunswick, NJ and Trenton, NJ in order to facilitate increased speeds and improved reliability for all users and eventual higher levels of service. The program will also support the goals of increased service capacity, helping Amtrak to meet near-term rising demand for high-speed service on the NEC by operating additional trains in the 2018 to 2023 timeframe and beyond.

Safety and Mandates

Safety and Security

This program will provide emergency access/egress in the New York City area tunnels and provide proper ventilation for removing smoke from the affected areas. The system will provide responding local Fire Department with access to the fire suppression system within the tunnels and provide Amtrak passengers with a better opportunity to survive a catastrophic event in the New York Tunnels and Penn Station.

Life Safety – CETC NY SCADA Phase II Project

The SCADA Phase 2.0 system will better integrate and update hardware and software of the Long Island City and 1st Avenue ventilation equipment and the tunnel standpipe systems.

The system also integrates various control systems into one application accessible from Penn Station, adds monitoring of the floodgates, compressed air, the Empire Line overbuild ventilation systems, and CCTV monitoring on a separate server and software package.

Life Safety – Miscellaneous Design & Construction Project

Under the "miscellaneous" category two construction projects are planned to improve communications: one will provide radio coverage in all tunnels for local Fire Department personnel, while the other (emergency tunnel phones) will provide redundant communication capability. Other construction projects involve Emergency Power systems in station and tunnels, fire alarm system installation and SCADA system for standpipe and ventilation fans.

Positive Train Control

Positive Train Control (PTC) is an information and communication system that improves traditional collision prevention measures and adds an entirely new layer of automated protection by enforcing permanent and temporary speed restrictions. On January 15, 2010 the FRA issued its PTC Rule which, pursuant to the Rail Safety Improvement Act of 2008, requires Class I railroads (on lines where toxic materials are hauled) and each railroad hosting intercity or commuter rail passenger service to have a PTC system installed and operating by December 31, 2015 on their main lines. In October, 2015 legislation was signed to extend the compliance deadline to December 31, 2018. A main line is defined as having 5 million or more gross tons of railroad traffic per year, or used for regularly scheduled intercity or commuter rail passenger service. The PTC Rule provides for exceptions to PTC requirements, which are subject to FRA approval, on rail lines hosting passenger trains on which freight traffic volumes, and the number of passenger trains operated, do not exceed limits specified in the rule.

Continued use of a number of existing PTC systems will be allowed. These systems include:

- Advanced Civil Speed Enforcement System (ACSES) and Incremental Train Control System (ITCS)
- Burlington Northern Santa Fe (BNSF) Railway system's Electronic Train Management System (ETMS)
- Interoperable Electronic Train Management System (I-ETMS)

Amtrak presently uses two of these PTC systems. ACSES was installed on portions of the Northeast Corridor (NEC) in the beginning of 2000 with the startup of *Acela* services, and ITCS is used on the Amtrak owned Michigan Line between Porter, IN and Kalamazoo, MI and on the Chicago-St. Louis line. Amtrak's PTC efforts include installation of ACSES on the remainder of the NEC and its tributary routes and installation of ITCS on the state-owned portion of the Michigan Line. In addition, Amtrak will work with Federal, state, and local authorities and commuter and freight railroads to ensure Amtrak trains are compliant with PTC systems adopted for use by host railroads. Compliance with I-ETMS will be a significant element of the PTC efforts. Amtrak will equip its diesel locomotives with I-ETMS which will operate in I-ETMS territory on host railroads. I-ETMS will be implemented in Chicago Union Terminal and New Orleans Union Passenger Terminal.

Additional funding to fully comply with PTC requirements is necessary. It is important to note that compliance with PTC requirements on the host railroads outside of the NEC could drive significant costs to Amtrak. Amtrak's contribution to PTC installation and maintenance on host railroad property will be based on the Federal statute governing "incremental costs", which are costs incurred by hosts solely as a result of Amtrak's presence. Changes in freight and passenger traffic on Class I host railroad lines could cause changes to PTC requirements. If those incremental costs can be attributed solely to Amtrak's operations on the property, the company could be responsible for significant costs outside of its own infrastructure.

Support Equipment and Vehicles

Track Equipment

The program will replace existing track equipment at the end of its useful service life. This program includes the acquisition of track roadway equipment used for track surfacing, wood tie replacement, switch exchange, and other rubber-tired railroad maintenance equipment. This will allow us to take advantage of technological advances within the industry, to replace existing equipment at the end of their useful service life and to increase the operating efficiency, utility, and production capacity of the equipment.

Stations and Facilities

State of Good Repair Base

Maintenance of Equipment Facilities

Upgrades to equipment maintenance facilities, including replacement and major overhaul of plant structures, machinery, equipment and improvements to the premises.

Station Upgrades

Upgrades to stations to include HVAC, roofing, lighting, elevators and escalators replacement, replacement of support equipment and other interior improvements.

Maintenance of Way Base

Various system upgrades to maintenance of way facilities such as HVAC replacement, roof replacement, electrical upgrades, and lighting improvements.

Transportation Department Facilities

Renewal of interlocking control towers such as the "K" tower and Dock interlocking tower.

Washington Union Terminal

- **SOGR Passenger Concourse and Facilities Phase I** - focuses on state of good repair and initiates 100% design and construction documents for the first round of the Passenger Concourse reconstruction including tasks such as the provision for adequate egress capacity including corridors, stairs, and doors to meet the large passenger loads that have developed over recent years.

- **Major Improvements Concourse and Facilities Phase I** - will advance major improvements for reconstruction of the concourse and terminal facilities including tasks such as renovation and expansion of Club Acela, Police, ticketing and baggage handling spaces, as well as station management offices and other station support spaces.
- **Major Improvements Concourse and Facilities Phase II** - prepare final design and construction documents for Phase II including track realignments and platform improvements, improved pedestrian access between Amtrak, Metro, commuter rail, bus, taxi and parking facilities, and upgraded passenger amenities.
- **SOGR Terminal Facilities Phase I** – design phase of the Washington crew base state of good repair project as well as design of the rail infrastructure for west side tracks, rail facilities, and the satellite commissary.
- **Major Improvements East Side Program Phase II** – reconstruction of tracks and platforms 21 through 30, as well as construction of new boarding Concourses B and C, and the Central Concourse. Four new high level platforms providing level boarding with 48 inch platforms will be provided serving seven new tracks, as well as a single new 15 inch platform providing level boarding for Superliner and VRE equipment serving two new tracks. Also switches, signals, and controls will be completely reconstructed as part of the project.

Major Projects

Ivy City Master Plan

Amtrak plans to significantly increase high speed train frequency between New York and Washington in 2020. This will require additional high speed service & inspection tracks as well as additional crew quarters and material storage. The recently completed Union Station Master Plan did not include a detailed analysis of Ivy City.

King Street Facility Construction

Phase 3 and 4 of the construction of a Service and Inspection Facility and Locomotive Shop at King Street in Seattle, WA.

Moynihan Station Construction

The first phase of the project is the expansion of the West End concourse, which will be followed by the installation of fan plants over E and C Yards and the expansion of the 33rd Street Connector.

Sunnyside Yard New Mechanical Facility

Plan and begin construction on a new consolidated Mechanical, Engineering, and Transportation maintenance facility and warehouse at Sunnyside Yard outside of New York Penn Station. The program is pending completion of the Sunnyside Yard master plan.

Branford – Guilford Connecticut Station Improvements

Funded by the State of Connecticut the scope includes the construction of a new north-side high-level platform and pedestrian bridge that will connect to the existing south-side

platform at the Branford Railroad Station and the construction of an extension of the existing north-side high-level platform at the Guilford Railroad Station.

High Speed Facility

Replacement and major overhaul of plant structures, machinery, equipment and improvements to the premises of the three high speed rail facilities to support operations and improve the ability to maintain the Acela fleet in a state-of-good-repair.

Safety and Mandates

Safety or mandated related improvements to Amtrak's facilities such as:

- Installation of Security facilities and equipment along the right-of-way, at stations and at critical locations
- Design of the new Middletown, PA Station facilities funded by the Pennsylvania Department of Transportation
- Improvements to Exton, PA Station on Amtrak's Harrisburg Line funded by SEPTA
- Development of emergency operation plans and integrated evacuation plans

Improvements

Energy Efficiency

Continuation of the successful program to install high efficiency fluorescent lighting at Amtrak facilities including mechanical locations, maintenance of way bases and stations.

Hardware Upgrades

Existing Quik-Trak kiosks, which date from 2007, will be out of PCI compliance in April 2016. Refresh of current kiosks will permit Amtrak top replace obsolete hardware. The new Quik-Trak kiosks will use state-of-the-art technology to provide continued high levels of customer service with a full range of transactions such as eTicket document issuance, remote agent capabilities, reservations purchase, and support of customers' needs to exchange, refund and upgrade reservations and permit checked baggage in the self-serve environment. These kiosks will continue to meet requirements for accessibility to passengers with disabilities in compliance with section 508 of the Americans with Disabilities Act ("ADA") and California state law requirements.

Infrastructure Protection

This program will allow Amtrak make security improvements to new or existing rail infrastructure, and to purchase and install equipment necessary to enhance security at stations and rail facilities identified in the Department of Homeland (DHS) funded risk and needs assessments as key intercity rail transportation assets. These infrastructure protection measures, such as access control card readers and intrusion detection devices, CCTV, bollards, fixed and/or retractable barriers, planters, gate checkpoints, lighting and fencing, will prevent or mitigate the effectiveness of terrorist attacks, especially from Vehicle Bourne Improvised Explosive Devices. These measures will protect Amtrak passengers, employees and critical infrastructure assets integral to the safety and stability of the national passenger rail system.

Planning and Assessments

DHS funds will be used to hire a vendor to conduct an update to the risk and needs assessments. It also includes continuing deployment of Station Action Team Toolkits to Amtrak's top priority facilities.

Exercises

Development of the Amtrak's Homeland Security Exercise and Training (HSET) program will create an environment where standardized training, exercise, evaluation and improvements are institutionalized within the plans, procedures and protocols at Amtrak. Successfully implementing a multi-year exercise and training program will allow Amtrak to coordinate training and exercises based on a regional approach with our Federal, State, and local partners and utilize the Homeland Security Exercise and Evaluation Program (HSEEP) to coordinate our efforts.

Station Improvements

Improvements to stations include restroom renovations, escalator replacements, replacement of support equipment and other interior improvements.

Maintenance of Equipment Facilities

Upgrades to equipment maintenance facilities including replacement and major overhaul, of plant structures, machinery, equipment and improvements to the premises.

Maintenance of Way Base

Various upgrades to maintenance of way facilities such as HVAC replacement, roof replacement, electrical upgrades, and lighting improvements.

Transportation Department Facilities

Upgrades, replacements and construction at transportation department facilities throughout the country.

Amtrak Support

Safety & Security

DHS funds to support the operational and equipment needs of the Amtrak Police Department.

NEC Master Planning

MARC Joint Benefit

Maryland Transit Administration will fund $7.0M annually for capital projects that benefit both Amtrak intercity passenger service and MARC commuter service. Actual projects are determined on an annual basis.

Baltimore Station Area Infrastructure Improvements

Funds the SOGR study which will perform a full evaluation of the station's current condition and will provide recommended improvements. In addition, Amtrak will fund the Master Plan to create a long-term vision for integrating Amtrak's future transportation and infrastructure requirements with commercial development.

Transmission Line Concept Design

This project will conduct an overall environmental assessment and develop a concept design for the replacement of the current 138 kV Passaic & Harsimus Transmission Line in the vicinity of Newark, NJ, between Substation #40 (Waverly) and Substation #41 (Kearny).

Clinton Interlocking Design

Design of a new universal interlocking at Clinton, CT to provide operating connectivity between the two NEC main line tracks.

New York Penn Station

Design for way finding signage and preliminary design for interim corridor widening within the station. In addition funds the design and fabrication of exterior street level signage.

New Carrolton Station

This project will provide additional track and platform capacity at New Carrollton, including realignment of existing freight track, new gauntlet track, and new northbound side platform.

Support Equipment and Vehicles

Communications & Situational Awareness

This is a DHS funded program and will increase the capacity for Amtrak to detect, prevent and respond to security threats by providing resources such as interoperable communications equipment, analytic CCTV systems for surveillance and alarm monitoring, and various technical solutions. These investments will increase situational awareness and capacity to monitor areas in and around various Amtrak facilities.

Equipment and Security Operations

This is DHS funded program. The scope includes Canine Officers refresher advanced training, canine vehicles, surge operations, etc.

Fleet Overhauls

Amfleet Overhauls

Funding for the various levels of overhauls that range from mandatory maintenance to complete equipment overhauls, reconfigurations and conversions of equipment, and modifications

required by statutes and the Federal Railroad Administration (FRA). Configurations include passenger coach, café/club, lounge, and cab cars. These passenger car programs will enable Amtrak to maintain equipment in a state of good repair, to return the assets to current Amtrak standards, improve reliability and availability of equipment, enhance overall customer experience, comply with applicable Federal regulations and mitigate equipment failures which result in customer discomfort and inconvenience.

Acela Overhauls

Continuation of the multi-year *Acela* Overhaul Program addressing the system overhaul needs of the *Acela* train sets. Overhaul requirements are identified by major system condition assessments, fatigue life calculations, and reliability data trends. This program will enable Amtrak to maintain equipment in a state of good repair, to return the assets to current Amtrak standards, improve reliability and availability of equipment, enhance overall customer experience, comply with applicable Federal regulations and mitigate equipment failures which result in customer discomfort and inconvenience.

Superliners

Funding for the various levels of overhauls that range from mandatory maintenance to complete equipment overhauls, reconfigurations and conversions of equipment, and modifications required by statutes and the FRA. Configurations include passenger coach, diner, sleeper, lounge, and transition sleeper cars. These passenger car programs will enable Amtrak to maintain equipment in a state of good repair, to return the assets to current Amtrak standards, improve reliability and availability of equipment, enhance overall customer experience, comply with applicable Federal regulations and mitigate equipment failures which result in customer discomfort and inconvenience.

Locomotive Overhauls and Life Cycle Maintenance Program

Amtrak diesel locomotive programs will involve the various levels and modifications required by Federal agencies including the Transportation Safety Administration (TSA), Environmental Protection Agency (EPA) and FRA. This program enables Amtrak to bring the locomotive fleet to a state of good repair, increase locomotive reliability and availability, extend the useful life of the locomotive, comply with applicable Federal rules and regulations, and mitigate future expenses associated with an aging fleet.

Horizon

Funding for the various levels of overhauls that range from mandatory maintenance to complete equipment overhauls, reconfigurations and conversions of equipment, and modifications required by statutes and the FRA. Configurations include passenger coach and food service cars. These passenger car programs will enable Amtrak to maintain equipment in a state of good repair, to return the assets to current Amtrak standards, improve reliability and availability of equipment, enhance overall customer experience, comply with applicable Federal regulations and mitigate equipment failures which result in customer discomfort and inconvenience.

Surfliner Programs

Funding for the various levels of overhauls that range from mandatory maintenance to complete equipment overhauls, reconfigurations and conversions of equipment, and modifications required by statutes and the FRA. Configurations include business class, coach and cab cars. These passenger car programs will enable Amtrak to maintain equipment in a state of good

repair, to return the assets to current Amtrak standards, improve reliability and availability of equipment, enhance overall customer experience, comply with applicable Federal regulations and mitigate equipment failures which result in customer discomfort and inconvenience.

Viewliner I Programs

Funding for the various levels of sleeper overhauls that range from mandatory maintenance to complete equipment overhauls, reconfigurations and conversions of equipment, and modifications required by statutes and the FRA. These passenger car programs will enable Amtrak to maintain equipment in a state of good repair, to return the assets to current Amtrak standards, improve reliability and availability of equipment, enhance overall customer experience, comply with applicable Federal regulations and mitigate equipment failures which result in customer discomfort and inconvenience.

General Safety and Reliability

Projects include design, specification, engineering and blueprinting of future improvements to existing rolling stock, design of new rolling stock, and deployment of Positive Train Control technology upgrades on the locomotive fleets.

Mandatory Revisions

Required modifications to existing fleet resulting from changes in regulations required by Federal agencies including the TSA, EPA and FRA. These revisions vary annually.

Talgo Programs

Funding for the various levels of overhauls that range from mandatory maintenance to complete equipment overhauls, reconfigurations and conversions of equipment, and modifications required by statutes and the FRA. Configurations include passenger coach, business and food service cars. These passenger car programs will enable Amtrak to maintain equipment in a state of good repair, to return the assets to current Amtrak standards, improve reliability and availability of equipment, enhance overall customer experience, comply with applicable Federal regulations and mitigate equipment failures which result in customer discomfort and inconvenience.

Wrecks

Repair of passenger cars and locomotives place out of service due to accidents or incidents.

Technology Systems

Software & Hardware

Customer Experience Programs

The Customer Experience Programs interact with Amtrak's reservation systems to deliver customer-facing functionality through our distribution channels. In FY2016 - FY2020, the Customer Experience Program will modernize the interface to the reservations system which will improve customer service capabilities for call center and station ticket agents; enable access to "Fare Family" functionality in all distribution channels, thereby allowing customers to select from products and fare choices that best suit their needs; and allow all distribution channels to access customer profile information from the reservations system, which will provide customers more personalized travel options.

eTicketing

The initial phase of eTicketing was launched on July 30, 2012. This solution delivers "print anywhere" capability to approximately 90% of Amtrak customers. Customers now have the ability to purchase and print tickets at home, or to be paperless by using a smartphone application, greatly simplifying the customer ticketing process. Furthermore, conductors and accounting personnel no longer have to use paper tickets to capture revenue, and conductors have access to real-time passenger information and greatly improved passenger manifest lists. The technology also enables on-board conductors to electronically report equipment issues to facilitate proper maintenance. The eTicketing solution has proven to be very successful with conductors and customers alike. The FY2016 eTicketing program will focus on extending the complete eTicketing solution to Amtrak's intermodal partners (e.g. bus, airline, etc.) as well as adding enhancements for conductors, customers and state partners through the addition of enhanced reporting and accounting controls. The eTicketing Expansion project will eliminate the use of paper value tickets and greatly reduce the number of paper certificates and vouchers. This will enable Amtrak to realize increased cost efficiencies and an improved customer experience by allowing all to enjoy the benefits of eTicketing. This project includes the purchase of replacements for aged mobile devices.

National Passenger Information Systems (OPIS)

The Onboard Passenger Information System (OPIS) will provide passengers riding Amtrak trains with reliable visual and audible information such as the train destination, current station, next station, pre-recorded messages, and visual graphics. OPIS will include at its core a control unit that directs audio messages to new and/or existing Amtrak Public Address (PA) systems, and visual information to new and/or existing LED signs and video displays, will deliver on-board media and entertainment purchase options such as movies, music and games, creating new passenger revenue opportunities.

Revenue Management System (RMS)

A multi-year project that will automatically and accurately forecast demand by city pair and by price point for each of Amtrak's train departures, optimizing ticket revenue. RMS will provide price point inventory authorizations to Arrow, Amtrak's reservation system, and passenger demand forecasting to Capacity Management Systems. The result for Amtrak will be incremental ticket revenues from a more efficiently revenue-managed system.

Marketing eCRM Platform Upgrade

Due to IBM's product discontinuation Amtrak will not be able to perform email and online eCommerce marketing using existing systems. This project will complete the software and data integration of the Digital Marketing Center (DMC) Email platform and the Web Site Personalization (WSP) platform to support targeted and customized messaging to visitors on Amtrak.com.

Human Emulation Technology

This technology allows users to ask an automated system to answer questions and provide issue resolution. It engages users through natural language dialogue, and has intelligence to understand a question and determine the correct answer with a high degree of accuracy. Provides enhanced customer experience via natural language processing, advanced computing, intuitive knowledge bases, and state of the art user interface technology. Assists and guides customers towards resolution of their specific issues in an efficient and engaging manner.

Credit Card System Upgrade

Payments Platform Program is to extract payment card functionality from the heritage systems, place them in an up-to-date third party electronic Payments Platform, and use the resulting functionality to access "best practices" today and in the future. This will permit Amtrak to improve the customer interface (including access to PIN debit and possibly a payments wallet like PayPal), to reduce the costs of processing (including interchange screening), to reduce fraud (including 3D Secure, American Express Enhanced Authorization, and other transaction filters), and to give ready access to catastrophic fraud prevention (including "tokenization" should Amtrak decide to use such a service).

Amtrak Foundation

Improves train operation efficiency by introducing and integrating mobile devices into work flows and consolidating Enterprise Asset Management to a single system for managing facility assets and warranties on assets and asset components.

Enterprise Resource Planning (ERP) Foundation

Increases the operating efficiency of the enterprise SAP system by integrating the Logistics Warehouse Management system and adding SAP licenses. It improves management reporting with emphasis on Food & Beverage information aimed at reducing costs and increasing revenue.

Mechanical Technology

Ongoing investment into the Work Management, Mobile Data Management, and Locomotive Health Monitoring & Analysis applications to improve the ability to schedule and monitor mandatory rolling stock maintenance, reduce manual processes and improve reliability and performance of rolling stock.

Next Generation Reservations System

Modernize, streamline and significantly reduce business and technical risks from Amtrak's sales, reservation and ticketing system. The current foundation for Amtrak's sales, ticketing, and operational processes - including customer service and train operations - is over 30 years old and is based on outdated technology. The potential failure of this outdated infrastructure presents a critical business risk that must be addressed.

IT Strategic Technology Program

The program is designed to organize and prioritize key strategic initiatives to be developed in the Information Technology area that are assessed as critical to providing world class IT services, assessing and responding correctly and quickly to emerging and evolving technologies, meeting threats to information confidentiality, availability and integrity, and meeting corporate strategic goals and priorities.

Mobile Applications Enhancements

Improve performance, availability, and maintainability of Amtrak's deployment and utilization of all categories of mobile device used in eTicketing and in conductor mobile device initiatives, including supporting network infrastructure, applications and upgrading platform technology to latest supported version.

Amtrak.com

This project intends to deliver an enhanced customer experience and increase sales opportunities by providing accurate and reliable travel information in an interactive and simple interface. Develop a strategic plan for creating and delivering destination and enroute content for major markets.

Cyber Information Security

Continuation of a multi-year program that enhances and refreshes Amtrak's information security technology. This program ensures compliance with regulatory and legal requirements, improves the ability to ensure the confidentiality, integrity, and availability of Amtrak's critical infrastructure systems, safeguards customer transaction information, and enables quick response to vulnerabilities in the information technology infrastructure.

Engineering Technology

The scope of this program includes the development of the Maximo Work Management System (MWMS) for the Engineering Department, development of an infrastructure asset library, development of the Engineering Personnel System (EPS), and development of an Enterprise Project Management System (EPM). It also builds on earlier investments in Timberline estimating, Primavera scheduling and document management with the integration of the EAM systems with the EPM and EPS system. These systems will continue to be developed and integrated to provide for a seamless flow of information that will assist

field and management personnel in the project management of the Engineering Capital Program.

Customer Service

Passengers have become more and more reliant upon Amtrak's train status information. Consistency across channels is vital for Amtrak to improve its customer service. This program aims to complete several sub-projects with the ultimate goal of improving train status from a customer perspective. In addition the program will fund the technical efforts necessary to support the new Amtrak Guest Rewards travel redemption model, and to activate the model in self-service reservations and ticketing for members. These new capabilities will expand the current availability of self-service travel redemptions beyond simple one-way trips. The member experience will be vastly improved, allowing members to utilize preferred electronic channels to price and confirm their redemption travel. Furthermore, Amtrak will reduce costs of servicing travel redemptions by eliminating dependency on contact center agents for routine tasks.

Operation Business Application Improvement

Implement technology to modernize operations and help to drive efficiencies. This includes improvements to interactions with the customer and back office support. It will increase Amtrak's effectiveness and ability to track compliance with FRA regulations and customer transactions.

Operations Foundation

Operations Foundation Program

This is a multi-year program that first looks to build a consolidated framework and roadmap for the Operations department investments. This program will enable enterprise wide process change with fully integrated tools and accurate and accountable data repositories that are fully integrated and able to consolidate important operational data. The program will be implemented in a series of phases that are prioritized by the Operations Steering Committee and stakeholders. Projects will include: the integrated Labor Management System (iLMS) which will replace and enhance the existing Labor Management System, a service management system that integrates the timetable, equipment, crew and passengers across the planning time continuum, and the delivery of consolidated detailed reporting and analytical capabilities.

Hardware

Mobile Infrastructure Enhancements

Improve performance, availability, and maintainability of Amtrak's deployment and utilization of all categories of mobile device used in eTicketing and in conductor mobile device initiatives, including supporting network infrastructure, applications and upgrading platform technology to latest supported version.

IT Infrastructure

This is a multi-year effort to realize cost-savings in the data center, by optimizing its infrastructure footprint in areas where it might be over-investing in or under-utilized data center assets and resource categories. The objective of the program is to create a business continuity development model that can avoid outages and provide near zero down for maintenance.

Wi-Fi Program Expansion

This project builds on that success of Wi-Fi in the NEC by extending the installation of Wi-Fi networks to the remaining trains system-wide, beginning with the Long Distance fleet. In addition to providing Internet access, the network will serve as a platform for other passenger services (e.g. movies, news, and games) and business services (e.g., on board system communications with Amtrak's corporate network).

Mobile Application Enhancements

Improve the user experience on tablet computers. Move towards a mobile logic where users operate more with Apps rather than Browsers. The current Rider application is designed to help customers plan their trips, book reservations and initiate travel. It does not provide the next step of enhancing the actual journey once on board the train.

On Board Enhancements (OPIS)

The Onboard Passenger Information System (OPIS) will provide passengers riding Amtrak trains with reliable visual and audible information such as the train destination, current station, next station, pre-recorded messages, and visual graphics. OPIS will include at its core a control unit that directs audio messages to new and/or existing Amtrak Public Address (PA) systems and visual information to new and/or existing LED signs and video displays, and will deliver on-board media and entertainment purchase options such as movies, music and games, creating new passenger revenue opportunities.

Locomotive Monitoring and Fuel Management

Utilizes trip optimizer software that controls optimum speed to achieve minimum fuel use. The trip optimizer monitors locomotive performance and integrates GPS tracking along the route, evaluates the route for savings opportunities and plots the optimal speed for fuel savings. Renovate or replace fuel management system hardware at the storage tank locations in order to be able monitor fueling activities remotely via computer network.

Back Office Support

Call Centers

The program is to maintain a state of good repair at the Philadelphia and Riverside call centers. The facility projects include improving both interior and the exterior of the centers. The objective is to maintain safe and functional working environment for Amtrak's contact centers.

Gateway Program

The Gateway Program is a proposed set of strategic rail infrastructure improvements designed to improve current services and create new capacity that will allow the doubling of passenger trains running under the Hudson River. The program will increase track, tunnel, bridge, and station capacity, eventually creating four main line tracks between Newark, NJ, and Penn Station, New York, including a new, two-track Hudson River tunnel.

The program also includes updates to, and modernization of, existing infrastructure, such as the electrical system that supplies power to the roughly 450 weekday trains using this segment of the Northeast Corridor, and rebuilding and replacing the damaged components of the existing, century-old Hudson River tunnel, which was inundated with sea water during Super Storm Sandy. By eliminating the bottleneck in New York and creating additional tunnel, track, and station capacity in the most congested segment of the NEC, the Gateway Program will provide greater levels of service, increased redundancy, added reliability for shared operations, and additional capacity for the future increases in commuter and intercity rail service.

Project in progress or anticipated in FY16:

- **Gateway System Level Design Study** (18 mos.): This study, now underway, defines functionality and utility of the infrastructure built under the Gateway Program, including use by different operators. It is developing and evaluating minimum operating segments with independent utility. As part of this study, Amtrak is seeking to collaborate with NJ Transit, LIRR and Metro-North to assess and determine future service plans and Program functionality.
- **Gateway Program Development Study** (26 mos.): Started in May 2014, this study focuses on development of overall Program delivery and management, including implementation strategies partnerships, funding and financing, schedule, and risks.
- **Final Design and Construction of Hudson Yards Concrete Casing Extension**: Procurement of final design underway and NEPA review anticipated to be complete in FY2015.
- **Penn Station NY Train Capacity Modeling**: Train capacity modeling and service development plans, including evaluation of potential Metro-North service over Hell Gate Line and additional Empire Service.
- **Begin Preliminary Engineering and NEPA work on new Hudson River Tunnels:** Begin early engineering work and environmental reviews for new tunnels serving Penn Station under the Hudson River.
- **NY & NJ Real Estate Acquisition:** Begin Property Acquisition for Hudson Tunnel Project in the area of Allied Junction (Secaucus, NJ) to A Yard (Manhattan)
- **Preliminary Engineering of "Sawtooth" Bridges U.G. Bridge 7.80 (NJ Transit) and Bridge 7.96 (PATH):** Replacement of these seriously distressed bridges must take into account expansion from two to four tracks for the Gateway Program.
- **Harrison 4th Track l Design and Initiation:** Property has been acquired for a 4th track in Harrison. This project is necessary for creating a full four track Gateway Program alignment from Newark to Penn Station, NY.

- **Concept Design of Penn South Station Expansion:** Advancing concept design for Penn Station South and integrating it with the Penn Vision Study and Moynihan Phase II. Includes pedestrian analysis.

Projects planned over next 5 years:

- **Construction of Hudson Tunnels (Allied to A Yard) –** Following the NEPA and Preliminary Engineering phases of The Hudson Tunnel Project, begin D/B procurement, final design and construction of the project.
- **Renewal Program of NRT 1&2 –** Preliminary Engineering and Final Design for complete renewal of existing Hudson River Tubes (1&2)
- **Portal Bridge North –** Construction.
- **Sawtooth Bridge –** Construction.
- **Penn South Station** – Begin EIS, Preliminary Engineering and Property Acquisition.
- **Portal Bridge South and Secaucus South Improvement**: Begin Preliminary Engineering for new Portal Bridge South as well as the improvements necessary at Secaucus Station as a result of the additional capacity introduced by Portal Bridge South.
- **Highline Renewal, SOGR, Signal Upgrades (Dock to Bergen):** Begin Design.

Environmental Remediation Projects

Amtrak acquired many existing railroad facilities in 1976 that had significant environmental contamination from past practices by the prior railroad owners. As stricter pollution control laws were passed in the late 1970s and with passage of the Superfund Act in 1980, remediation processes and cleanup standards were set by Federal and state environmental agencies. Amtrak currently operates at several older facilities that have been identified as requiring environmental remediation.

- **Wilmington Facility Remediation** – Amtrak has signed a Voluntary Cleanup Agreement with the Delaware Department of Natural Resources and Environmental Control (DNREC) to remediate PCB and petroleum soil contamination at the Wilmington maintenance facility. We are awaiting approval of a revised South Yard RI/FFS Phase II plan that was submitted to DNREC and EPA Region III TSCA. Additional work includes sampling; field trials for sediment stabilization; sampling, demolition planning, and cleaning associated with Car Shop rebuild and pole barn construction; and TCE plume management.

- **Wilmington West Yard Remediation** – DNREC performed an investigation of the Wilmington West Yard as part of a regional study in November 2001. Low levels of contaminants were found throughout the site from Mill Creek (southern end) to Beech Street (northern border). Amtrak entered this site into the DNREC Voluntary Cleanup Program in November 2013. A draft Remedial Investigation Plan was submitted to DNREC in early FY15 and site work in support of the RI plan is pending final DNREC approval. The Army Corps of Engineers compliance group identified potential wetlands violations for illegal fill/encroachment and visited the site several times in late FY13. The wetlands

restoration work was completed and approved by ACE in Jan 2015. Final approval of the wetlands site work including final approval of jurisdictional boundary with ACOE should be completed in FY16-Q1.

- **Sunnyside Yard Oil/PCB Remediation** - By order of the New York State Department of Environmental Conservation, Amtrak and NJ Transit are involved in a multi-year effort to remove PCB-contaminated soil and clean-up of ground water at New York's Sunnyside Yard. A Dual Phase Vacuum Extraction system has been operating to recover oil, and will be supplemented by soil excavation and disposal to remediate remaining contaminants. Excavation work is commencing in 2016.

- **Sunnyside Yard Asbestos Wrap Abatement** - The utility trenches at Sunnyside Yard where NJ Transit trains are stored have old steam lines with asbestos wrap on them. The steam lines are no longer in service. Prior to the new water service pipes being installed in these trenches, the old pipes and trenches need to be abated of asbestos.

- **New Brunswick/County Yard Environmental Remediation** - Commuter yard in New Brunswick, NJ is owned by Amtrak but has never been operated by Amtrak; rather NJ Transit operates the facility under an operating agreement for commuter operations. The State of New Jersey has been notified of PCB contamination at the site and directed remediation. As owner Amtrak is responsible for ensuring remediation.

- **Trenton/East Barracks Yard Remediation** - Commuter yard in Trenton, NJ is owned by Amtrak but has never been operated by Amtrak; rather NJ Transit operates the facility under an operating agreement for commuter operations. The State of New Jersey has been notified of PCB contamination at the site and directed remediation. As owner Amtrak is responsible for ensuring remediation.

- **Penn Station Track Remediation** - Mandatory multi-year project to properly disposing of soil contaminated with Polychlorinated Biphenyls (PCBs) soil during track work. Extensive PCB contamination exists at Penn Station and remediation has occurred since 2003. Work schedule is dependent upon Engineering's plans for track work each year.

- **Cedar Hill Remediation** – Maintenance of Way facility in Connecticut has PCB soil contamination soil that must be remediated by direction of the Connecticut Department of Environmental Protection. In addition to MofW sampling, Amtrak's Environmental Engineering consultant Stantec also developed a work plan to collect soil samples on the adjacent CSX-owned property to determine whether the PCB contamination extends offsite. Amtrak will seek authorization from CSX to conduct soil sampling on its adjacent property in accordance with that plan. Based on the findings of the high-density soil sampling and any sampling performed on CSX property, Stantec will develop a comprehensive remedial action plan that is expected to be submitted to DEEP and EPA in FY16.

- **Hialeah FL PAHS Remediation** - During construction activities in Hialeah Yard, FL, soil contamination (polyaromatic hydrocarbons) was discovered by the contractor. Amtrak

must continue remedial investigations as required by Miami-Dade Department of Regulatory and Economic Resources. A Site Assessment Report (SAR) is pending completion and submission/approval by Miami DERM. The SAR is anticipated to require some limited remediation. A new consultant (AECOM) has been brought onboard to address reporting activities. Interface with the Florida Department of Transportation (FDOT) in FY16 for agreement upon path forward.

- **Seattle Lead Contamination** – The purpose of this project is to investigate and remediate lead-contaminated soil at the Seattle Maintenance Facility in Seattle, Washington. Extensive construction has been ongoing at the Seattle Maintenance Facility since 2010. During the 2015 soil investigation to support soil management planning for Phases 3 and 4 of the construction, lead contamination was discovered and reported to the Washington State Department of Ecology (Ecology). Ecology has followed Amtrak's initial release report with a request for the analytical reports, and it is expected that Ecology will require the additional investigation and reporting. Additionally, the project will provide better documentation of lead contamination and other contaminants encountered during other, previous construction projects (e.g., Phases 1/2) to facilitate proper management of contaminated soils.

- **Future Remediation** – The project serves as a place holder for remediation projects that are not yet identified at the individual site level. Amtrak may become aware of a liability due to visible signs of contamination, from property transfer due diligence, or Amtrak may receive notification from the EPA or state regulatory agency stating that Amtrak may be liable for environmental remediation costs (an "Administrative Order").

Environmental Risk Reduction Projects

This capital program is designed to meet mandatory pollution control or prevention requirements set by U.S. Environmental Protection (EPA) and state or local environmental laws and regulations. These requirements apply at Amtrak facilities which: store or handle hazardous materials or hazardous waste; release storm water or waste water to the environment or to publicly owned sewer systems, or require air controls or permits.

- **Wilmington Maintenance Facility Stormwater System Upgrade** – This project is mandatory based on requirements of the City of Wilmington for wastewater discharge. Currently storm water from the Locomotive Yard is conveyed either directly to Outfall 002 or to the Industrial Wastewater pretreatment system. The yard collection system needs to be reconfigured so that drainage of the yard, yard pits, and containment areas (fueling pad, offloading pad) flow through an oil/water separator and then discharges to Outfall 002.

- **Beech Grove Facility Wastewater Treatment System Upgrades** – This project replaces and upgrades the existing wastewater treatment system that is 60 years old and which has the potential to contaminate ground water. Once results of sewer line mapping and flow characterization are in, the sewer lining project can be completed and designs to refurbish the wastewater treatment system can be created.

- **Asbestos, Lead Paint and Mold Abatements** - Multi-year initiative to remove or remediate asbestos, mold and lead paint as encountered during construction projects throughout Amtrak facilities. This project is expected to be ongoing for multiple years in the future.

- **Los Angeles Facility Wastewater Treatment System Upgrades** - Covers the potential elimination or reduction in use of 80 year old wastewater treatment ponds at Los Angeles Yards that have considerable potential for non-compliant discharges. This project anticipates design of subsurface storm water diversion features and construction of storm water diversion devices such as containment curbs, canopies or other enclosures in order to eliminate prohibited discharge of storm water into wastewater system.

- **Midway, CT Storm Water Treatment System** – This project will involve the design and installation of a storm water treatment system capable of preventing a release of fuel or oil from reaching the nearby Poquonock River.

- **Amtrak Train Onboard Recycling Receptacles** – This project, covering installation of permanent recycling containers on Amtrak equipment, is designed to address multiple issues related to trash and recycling on our trains.

- **Lancaster, PA Station Mail Tunnel Groundwater Infiltration Upgrades** – Upgrades to Lancaster, PA Station Mail Tunnel to prevent groundwater infiltration resulting in remediation.

- **New Orleans DAF Upgrades** - The existing wastewater treatment system (Dissolved Air Flotation) is nearly 30 years old and replacement parts can no longer be obtained. Therefore, the wastewater treatment system must be replaced. The initial design was received in September 2015 and a final design is expected in January 2016, with construction in future years.

- **New Orleans Fueling Facility Upgrades** - This project involves upgrading two areas at the facility with the potential for significant contamination. The areas are the fueling area and the used oil tank, including associated 500 feet of underground line. The fueling area currently has fiberglass pans for containment. These pans are worn and cracked and are often shift out of place, leading to leaks and spills onto the ballast. We will also design and construct a concrete secondary containment system with roofing for the fueling area. Designs for the fueling station are about 60% complete and construction is expected to begin in FY 2016.

- **Prevention of Groundwater Contamination** - Amtrak has a number of above and underground storage tanks used mostly for petroleum storage across the country of various sizes and ages. Several have deteriorated or are approaching the end of their useful lives and will need significant upgrade or replacement. This project is for removal and replacement of these deteriorating underground storage tanks.

- **Sanford, FL Storm Water System Upgrade** - Several sections of the storm water system at Sanford, FL may have collapsed and are currently allowing the inflow of groundwater. This creates a higher potential for contamination. This project covers the investigation, design

and replacement of deteriorated storm water system at Sanford, FL Facility. Project is currently scheduled to begin in FY18 to allow for scope development and facility coordination

- **Sanford FL Wastewater System Upgrade** - The existing oil/water separator is unable to handle and properly treat wastewater being generated in the diesel shop, which has resulted in violation notices from the City of Sanford. Additionally, wastewater volume is anticipated to double under the SunRail contract. This project includes design and construction of an appropriate and properly sized wastewater treatment system for the facility. The Treatment Building is complete, but the project has been delayed and had cost overruns due to rerouting of force main due to future work and storage tracks at Sanford facility.

- **Oakland Storm Water Treatment System** - This project covers design and installation of a storm water treatment system capable of preventing a significant diesel or oil release into a storm water discharge system. Tankers fill bulk engine oil aboveground storage tanks adjacent to several storm water inlets. As the Oakland Maintenance Facility is very close to the sensitive ecological, and recreational uses of the San Francisco Bay, we are contemplating additional protections in the form of an in-line oil water separator to prevent spills from reaching the San Francisco Bay. Project has been designed and construction is targeted for later in FY16 or early FY17.

- **Penn Coach Yard (Philadelphia) Fueling Site Spill Prevention** – The project covers the installation of a fueling system that properly protects the surrounding environment, meets industry standards and tracks fuel usage more precisely. The current fueling system is over 50 years old and is inefficient and ineffective. This upgrade of the fueling system will prevent spills from reaching the ground, as well as provide better control of fuel dispensing and management. Federal, state and local laws require that spills be captured. This project includes reviewing and revising the previous design to integrate the project into the PCY remediation project. This will likely involve some soil borings and sampling, as well as design activities. Our goal is to complete design review and procurement in FY16, with construction occurring in FY17.

- **Sunnyside Yard Wastewater System Upgrade** – This project covers the design and construction of a new wastewater system to consolidate and treat wastewater generated at the Sunnyside Yard Conventional Mechanical Facilities. The wastewater treatment system in the Diesel Shop is presently not operational and needs to be replaced. In order to discharge to the New York City sewer system, a treatment system needs to be constructed.

- **Future Pollution Prevention** – This project serves as a place holder for pollution prevention projects (pollution control systems, tank upgrades, etc.) that are not yet identified at the individual site level. These can be replacements/upgrades of systems that have reached their useful life.

Rolling Stock Acquisitions

New Electric Locomotives

All of the seventy new electric locomotives being manufactured by Siemens are expected to be received by the end of 2016. The new locomotives allow Amtrak to retire the existing electric locomotive fleet and standardize the fleet to include only the new Siemens units and the Acela power cars. This purchase is being funded by a Railroad Rehabilitation and Improvement Financing (RRIF) loan and will be repaid by Amtrak out of fare box receipts.

Long Distance Single Level Equipment

Completing the acquisition of 130 single level long distance passenger cars pursuant to a contract entered into with CAF USA in August 2010. The total project cost will be $342.8 million. The payment for acquisition of these cars and related spare parts is being requested as part of the Federal capital appropriation request.

Switcher Locomotives

Acquisition of up to eight low emission switcher locomotives. Amtrak has previously taken delivery of four such switch locomotives – two funded by a grant by the EPA and two funded by grants from the Illinois Environmental Protection Agency and Illinois Department of Transportation.

Exhibits 96-108 redacted

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EXHIBIT 109

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Office of Inspector General

ANALYSIS OF THE CAUSES OF AMTRAK TRAIN DELAYS

Federal Railroad Administration

Report Number: CR-2012-148
Date Issued: July 10, 2012



ATK0000029851

Memorandum

U.S. Department of Transportation
Office of the Secretary of Transportation
Office of Inspector General

Subject: INFORMATION: Analysis of the Causes of Amtrak Train Delays
Federal Railroad Administration
Report No. CR-2012-148

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Reply to Attn. of: JA-50

To: Federal Railroad Administrator

Amtrak train delays outside the Northeast Corridor (NEC) reduce the value of Amtrak service as an option for travelers and increase the railroad's need for subsidies. Consequently, they have long been the subject of congressional concern and industry debate. Amtrak points to freight railroads' dispatching practices as the cause with the greatest impact on Amtrak train delays, while the freight railroads contend that capacity limitations, or insufficient infrastructure[1] for rail traffic levels, contribute more heavily.

In 2008, we issued two audit reports on Amtrak delays in response to requests from the Surface Transportation Subcommittee of the Senate Committee on Commerce, Science, and Transportation, and the Senate Appropriations Subcommittee on Transportation, Housing and Urban Development, and Related Agencies. In the first report, we concluded that delays outside the NEC substantially reduced Amtrak's net earnings.[2] In the second report, we identified causes of these delays but did not assess their relative importance.[3]

The impact of Amtrak delays took on a new significance with the passage of the Passenger Rail Investment and Improvement Act of 2008,[4] and the American Recovery and Reinvestment Act of 2009.[5] Together, these acts provided

[1] Rail infrastructure includes track, sidings, signals, switches, and yards.
[2] OIG Report Number CR-2008-047, "The Effects of Amtrak's Poor On-Time Performance," March 28, 2008. OIG reports are available on our Web site: www.oig.dot.gov.
[3] OIG Report Number CR-2008-076, "Root Causes of Amtrak Train Delays," September 8, 2008.
[4] P.L. No.110-432, Div. B.
[5] P.L. No. 111-5.

$12 billion to create and sustain a High Speed Intercity Passenger Rail (HSIPR) program. A substantial portion of the HSIPR program is geared towards improving the speed and reliability of existing Amtrak services. The Administration's current budget proposal would add $47 billion more to the HSIPR program over the next 6 years. Stakeholders responsible for determining the distribution of these funds need information on the causes of Amtrak service delays.

We conducted this analysis to determine significant causes of Amtrak delays and to quantify their relative impacts. In our analysis, we (1) identified statistically significant causes of delays—those whose impacts were greater than would be expected to occur by chance—outside the NEC and under the control of either Amtrak or a freight railroad; (2) assessed the degree of influence each cause had on Amtrak delays system-wide[6] and by individual route; and (3) examined delay determinants at locations of consistent, substantial delay.

To conduct our work, we constructed statistical models of Amtrak delays using data from Amtrak, the Surface Transportation Board's Carload Waybill Sample, and Oak Ridge National Laboratory's national rail network model.[7] Our sample covered fiscal years 2002 through 2007.[8] Since the marked reductions in freight traffic caused by the economic recession that began in late 2008 resulted in different usage patterns, we did not include post-fiscal year 2007 data in our analysis. However, our findings remain relevant given freight rail traffic's recent strong growth.[9] We analyzed on-track delays, which are the delays incurred by a train between the time it leaves one station and arrives at another, and did not analyze delays occurring in stations.[10] Furthermore, we analyzed delays with respect to pure runtime—the time it takes a train to travel between two stations in the absence of interruptions—rather than delays with respect to schedule. Schedule delays differ from delays with respect to pure runtime by the amount of schedule padding negotiated between Amtrak and the freight railroads, which can differ for reasons unrelated to underlying delay causes. Additional information on our scope and methodology is provided in Exhibits A and B.

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[6] System-wide delays were calculated as the average delays across all non-NEC routes.

[7] We also used data from the National Climatic Center to control for some causes beyond stakeholder control.

[8] Amtrak's fiscal year begins October 1.

[9] The numerical estimates of different causes' delay contributions are specific to the sample period, but the results concerning the relative importance of different categories of causes remain relevant. For example, the estimated seconds of delay attributable to each host railroad holds only for the sample period, while the findings concerning the relative importance of host railroad effects to delays remains relevant.

[10] On-track delays accounted for 77 percent of total delays in our sample, and in-station delays for the rest.

BACKGROUND

The Passenger Rail Investment and Improvement Act of 2008 directed the Secretary to establish a HSIPR program, and authorized approximately $4 billion over a 5-year period for HSIPR investments. Four months after that act's passage, the American Recovery and Reinvestment Act of 2009 appropriated another $8 billion for HSIPR to be allocated over a much shorter time span. Under its current budget proposal, the Administration would allocate $47 billion to HSIPR over the next 6 years. Responsibility for implementing the HSIPR program has been delegated to the Federal Railroad Administration (FRA). Under the program, State transportation departments, often in collaboration with freight railroads and Amtrak, apply to FRA for investment funds.

Outside the NEC, Amtrak trains operate almost exclusively on infrastructure owned and dispatched by freight railroads. Freight railroads' dispatchers are required by law[11] to give Amtrak's trains preference when freight trains and passenger trains operate on the same routes. However, Amtrak and the freight railroads disagree over whether preference is actually always given to Amtrak. Further, the relative importance of freight train interference in Amtrak delays is a particularly controversial issue for Amtrak and the freight railroads. In our 2008 study, we found that freight train interference was one of the primary causes of Amtrak delays, but that study relied entirely on data constructed from Amtrak conductors' observations. Amtrak's conductors have limited abilities to separate freight train interference from other delay causes. Hypothetically, if a conductor observes a freight train blocking his Amtrak train but cannot determine the reason for the freight train's failure to move, the conductor may record the cause of the train's delay as freight train interference, even though something else may be impeding the freight train's movement.

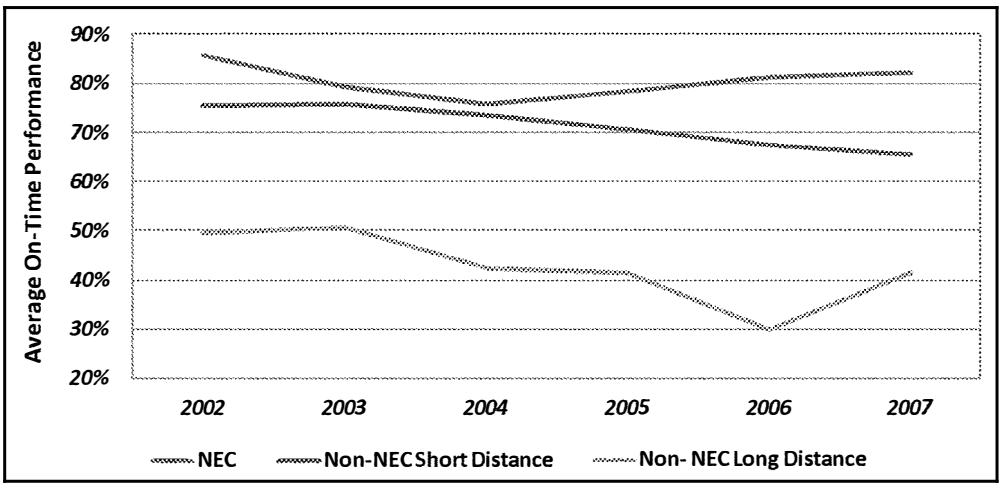
Amtrak services on routes outside the NEC generally exhibit worse on-time performance (OTP)[12] than Amtrak services on the NEC—where Amtrak largely owns the tracks and dispatches rail traffic. OTP on non-NEC long-distance routes is particularly poor. During the study period for this analysis, OTP on the NEC ranged between 75 and 90 percent, while on the 15 long-distance routes outside the NEC, it was consistently below 55 percent. During the same period, OTP on

[11] 49 U.S.C. § 24308(c)

[12] An Amtrak train is considered on time if it arrives at its endpoint, or final destination, within a fixed number of minutes of its scheduled arrival time. The fixed number of minutes depends upon trip length as follows: arrival at an endpoint 10 minutes or less late of the scheduled arrival time is considered on time on trips of less than 250 miles; 15 minutes or less late is on time on trips between 250 and 350 miles; 20 minutes or less late is on time on routes between 350 and 450 miles; 25 minutes or less late is on time on routes between 450 and 550 miles; 30 minutes or less late is on time on routes of more than 550 miles. Trip length is the total distance traveled by a train from its origin to its final destination. Acela is held to a stricter standard. Even though its trip length exceeds 450 miles, Amtrak considers Acela on time only if it arrives at its endpoint within 10 minutes of its scheduled arrival.

Amtrak's 13 non-NEC short-distance routes varied from 65 to 76 percent. Figure 1 depicts OTP on the NEC, and on non-NEC long- and short-distance services.

Figure 1. Amtrak's Average Annual OTP for Fiscal Year 2002-Fiscal Year 2007



Source: Amtrak data

Delays also differ across routes, which differ in host railroad, congestion, track configuration, and terrain. For example, the average OTP for two long-distance routes, the Sunset Limited and the Empire Builder, is 14 percent and 72 percent, respectively.[13] Two short-distance routes, the Carolinian and the Hiawatha, show a similar range of average OTP at 30 percent and 92 percent, respectively. However, long-distance routes tend to exhibit greater variation in OTP than short-distance routes.

In the current study, we analyzed delays at the station-pair level to capture the causes of delays at their origins. We defined a station-pair as two Amtrak stations on a route—the first station being the origin and the second station being the destination—with no Amtrak stations in between.[14] On average, there were 30 station-pairs on each long-distance route and 20 station-pairs on each short-distance route.

[13] For the locations of Amtrak routes, see Exhibit D.

[14] In our analysis, we also differentiated between station-pairs by direction of travel and by Amtrak service.

RESULTS IN BRIEF

We identified six statistically significant causes of Amtrak delays:

- slow orders, which are speed restrictions imposed by host railroads along track segments in poor condition or undergoing repairs or improvement;[15]
- capacity utilization, which is a measure of congestion;
- host effects, or the effects of operating on track owned and dispatched by a particular host railroad or group of host railroads;[16]
- turn points, where Amtrak changes crews;
- late arrivals, or Amtrak trains operating well outside their scheduled time slot; and
- Amtrak mechanical problems.

Virtually the same causes were significant for both long-distance and short-distance services.[17]

The chief causes of delays system-wide were host effects and slow orders. However, delays caused by host effects differed considerably by host. For example, the difference between the largest and the smallest host railroad contributions to delays along a long-distance route, averaged across the Amtrak system, was 38 minutes and 30 seconds. Only slow orders may have produced sufficiently large delays to exceed the delays caused by the largest host effects.[18] Other factors, such as capacity utilization and activities at turn points, contributed significantly to delays system-wide, but considerably less than either host effects or slow orders. On most individual routes, as opposed to system-wide, slow orders caused the largest delays of any factors other than host effects.[19] Delays caused by different hosts varied even more widely across individual routes than they did on a system-wide basis.

At the locations with the highest average delays, slow orders, capacity utilization, and late arrivals were generally well above their system-wide averages. This suggests that all three causes contributed notably to delays at these locations.[20]

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[15] Slow orders can also be imposed because of adverse weather conditions. However, we analyzed weather effects separately (see Exhibit B), and our results on slow orders relate only to infrastructure issues.

[16] These effects are broken out by specific host railroad or host railroad group in the body of the report.

[17] As defined by Amtrak, long-distance routes extend 550 miles or more and short-distance routes cover less than 550 miles.

[18] We could determine only minimum values for the delays caused by host effects system-wide. The delays caused by slow orders exceeded the minimum host effect values, but we could not determine how they would compare to the average values of host effects.

[19] On individual routes, we were unable to compare the size of delays caused by host effects versus other factors.

[20] We cannot test this hypothesis because our models, which were estimated on a system-wide basis, cannot generate meaningful delay impact estimates for individual station-pairs.

Host effects may have also played a role, but we cannot measure them at the individual station-pair level. Further analysis found that locations with the highest levels of slow orders also had some of the highest average delays, while locations with the highest levels of either capacity utilization or late arrivals did not have particularly large delays. This suggests that slow orders may have contributed more to delays at these station-pairs than either capacity utilization or late arrivals.

OUR MODELING PROCESS IDENTIFIED SIX STATISTICALLY SIGNIFICANT CAUSES OF DELAYS

In our modeling process, we identified six statistically significant causes of Amtrak train delays under stakeholder control. Four of these causes were under the control of a specific stakeholder: host railroads' effects, slow orders, Amtrak mechanical failures, and activities at Amtrak turn points. The other two—capacity utilization and late arrivals—were not. Capacity utilization is, in part, a function of capital investment, which can be carried out by the freight railroads alone or in partnership with the public sector. Late arrivals—or trains that arrive significantly late at their stations of departure—are out of their scheduled time slots and cause dispatching problems further down their routes. Whether or not an Amtrak train is out of its scheduled time slot arguably depends on the actions of both Amtrak and the host railroad. Virtually the same causes were significant on both long- and short-distance services. Table 1 details these causes.

Table 1. Statistically Significant Causes of Amtrak Train Delays

Cause [a]	Definition
Capacity Utilization	The amount of rail traffic divided by infrastructure capacity, which is the maximum amount of cars that can travel on a track segment based on the segment's characteristics. Congestion increases as capacity utilization increases.
Slow Orders	Speed restrictions imposed by the host railroad; we considered only those slow orders due to poor infrastructure conditions, and infrastructure repair and improvement work.
Amtrak Mechanical	Mechanical failures of Amtrak's locomotives and rolling stock.[b]
Late Arrival	The percentage of trains that arrived at least two hours late at the origin station.
Turn Point	A location at which a train's crew changes.
Host Effects	Host effects capture the impacts of such host railroad factors as dispatching practices, management capability, and business model.
BNSF Host Effect	The effect of operating on infrastructure owned and dispatched by Burlington Northern Santa Fe Railroad (BNSF).
CSXT Host Effect	The effect of operating on infrastructure owned and dispatched by CSX Transportation (CSXT).
NS Host Effect	The effect of operating on infrastructure owned and dispatched by Norfolk Southern Railroad (NS).
UP Host Effect	The effect of operating on infrastructure owned and dispatched by Union Pacific Railroad (UP).
CN Host Effect	The effect of operating on infrastructure owned and dispatched by Canadian National Railroad (CN).
Multiple Host Effect	The effect of operating on infrastructure owned and dispatched by multiple railroads between two stations.

[a] All causes were measured on a monthly basis at the station-pair level.

[b] Rolling stock includes all rail cars other than locomotives.

Unlike other causes in our model, we measured host effects relative to a baseline. Measurement of total host effects would require comparison with operations in the absence of any host effect, but this is impossible since trains always operate on some entity's infrastructure. Consequently, we measured delay caused by a host effect relative to a baseline of delay associated with operation on infrastructure owned and dispatched primarily by short-line and regional railroads.[21] Therefore, a host effect is the difference in delays attributed to operating on infrastructure

[21] Generally, Class III carriers are referred to as short lines, and Class II carriers are referred to as regional railroads. The four host railroads whose effects we traced are Class I railroads, which have annual revenues in excess of $250 million adjusted to 1991 dollars.

owned and dispatched by the particular host and delays from operating on infrastructure primarily owned and dispatched by regional and short-line railroads.

HOST EFFECTS AND SLOW ORDERS CAUSED THE LARGEST DELAYS SYSTEM-WIDE AND CONTRIBUTED SUBSTANTIALLY TO ROUTE LEVEL DELAYS

Host effects and slow orders were the chief causes of delays system-wide. However, delays caused by host effects varied considerably from one host railroad to another, for both long- and short-distance services system-wide. Only slow orders may have caused delays greater than those caused by the largest host effects. Capacity utilization and the activities at turn points also contributed notably to delays on both types of services, but capacity utilization had a relatively greater impact on short-distance services than on long-distance services. Amtrak mechanical problems contributed little to delays on either type of service. Delays caused by different hosts varied even more widely across individual routes than they did system-wide. Slow orders dominated other non-host effect causes in their contributions to individual route delays.

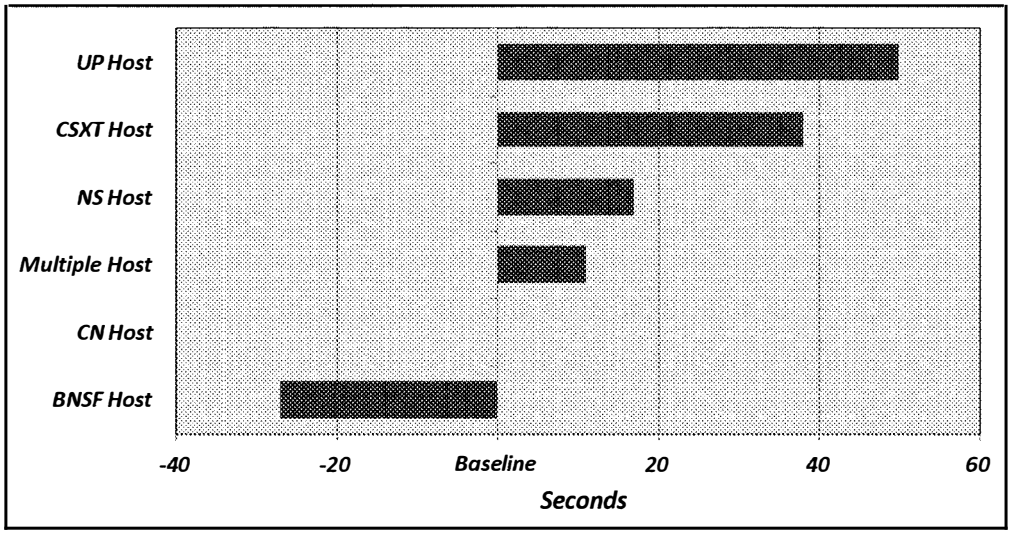
Delays Caused by Host Effects Differed Markedly Across Freight Railroads for Long-Distance Services System-wide

Delays differed substantially depending on which freight railroad owned and dispatched traffic over the infrastructure on which an Amtrak train operated. On average, the UP host effect caused 50 seconds more delay between each station-pair than the baseline railroad group.[22] In contrast, long-distance services on BNSF's rails experienced 27 seconds less delay between each station-pair on average than those operating on the baseline group's infrastructure. Over an entire long-distance route, the UP host effect added an average 25 minutes of delay more than the baseline (50 seconds times 30 stations), while the BNSF host effect reduced delays 13 minutes 30 seconds below the baseline. Figure 2 depicts the contributions of individual host effects to station-pair delays on long-distance services.[23] No bar appears for the CN host effect because it was statistically indistinguishable from the baseline host effect.

[22] We calculated each causal factor's contributions to delays as the product of the average value of the factor and its estimated effect. For example, to calculate slow orders' contribution to system-wide long-distance delays, we multiplied the system-wide average level of slow orders on long-distance routes times slow orders' average effect on delays between a station-pair on a long-distance service.

[23] Exhibit C shows the estimates underlying Figures 2-5, along with their confidence intervals.

Figure 2: Host Effects' Contributions to Station-Pair Delay on Long-Distance Services System-wide



Source: OIG

A minimum value for the baseline host effect can be determined for long-distance services system-wide. Host effect contributions to delays cannot be negative, since trains cannot travel faster than pure runtime. So the baseline host effect must be at least as large and positive as BNSF's host effect in relation to it is negative. At a minimum,[24] the baseline host effect causes 27 seconds of delay at each station-pair. Consequently, UP's host effect caused a minimum of 1 minute 17 seconds of delay (27 seconds minimum baseline value plus 50 seconds UP host delay relative to the baseline) between station-pairs. This translates into an average 38 minutes 30 seconds of delay over an entire long-distance route from traveling on UP controlled infrastructure. Similarly, CSXT, NS, and multi-host effects generated delays equal to the value of their impacts relative to the baseline plus at least 27 seconds, for total minimum contributions to station-pair delays of 65, 44, and 38 seconds, respectively.

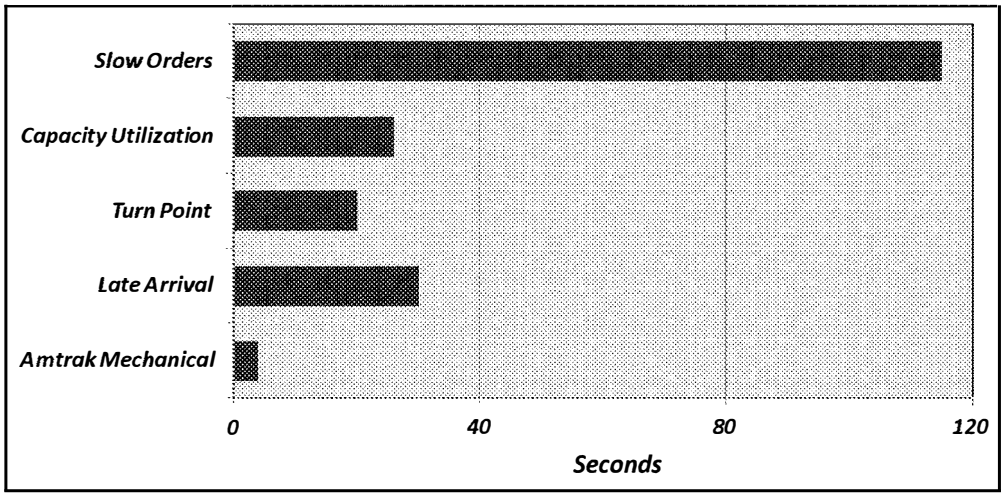
Only Slow Orders May Have Caused Longer Delays Than the Largest Host Effects Caused on Long-Distance Services System-wide

Slow orders caused the greatest delays among factors other than host effects on the long-distance services system-wide—1 minute 55 seconds on average between each station-pair—which represents 23 percent of the average long-distance

[24] This minimum assumes BNSF does not cause any increase in delays.

service station-pair delay of 8 minutes and 25 seconds. Over the entire length of a long-distance route, slow orders contributed 57 minutes 30 seconds of delay on average. No other cause contributed delays greater than the minimum values of most host effects. Figure 3 shows the contributions of all causes other than host effects. After slow orders, late arrivals made the next largest contributions to delays. On average, they added 30 seconds of delay between each station-pair, while capacity utilization and turn points contributed 26 seconds and 20 seconds, respectively. Amtrak mechanical problems contributed little to delays.

Figure 3: Non-Host Effect Causes' Contributions to Station-Pair Delay on Long-Distance Services System-wide

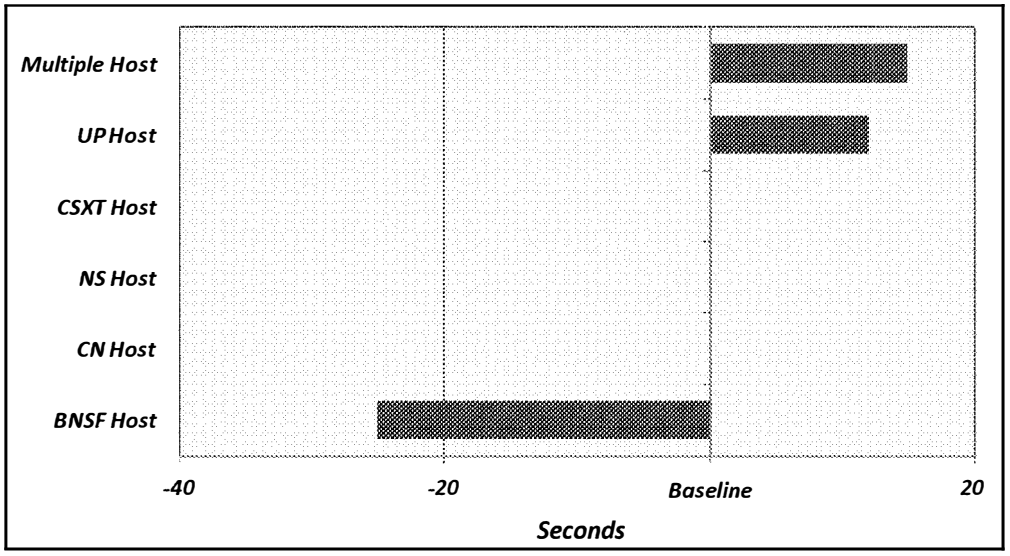


Source: OIG

Two Host Effects and Slow Orders Caused the Largest Delays on Short-Distance Services System-wide

Host effects on short-distance services system-wide also varied widely. As Figure 4 illustrates, the multiple host effect generated the largest delay above the baseline—15 seconds. The UP host effect added 12 seconds, the second largest delay contribution. CN, CSXT, and NS host effects were statistically indistinguishable from the baseline host effect. As with long-distance services, short-distance services operating on BNSF's rails experienced less delay than those operating on the baseline group's infrastructure—24 seconds less on average.

Figure 4: Host Effects' Contributions to Station-Pair Delay on Short-Distance Services System-wide

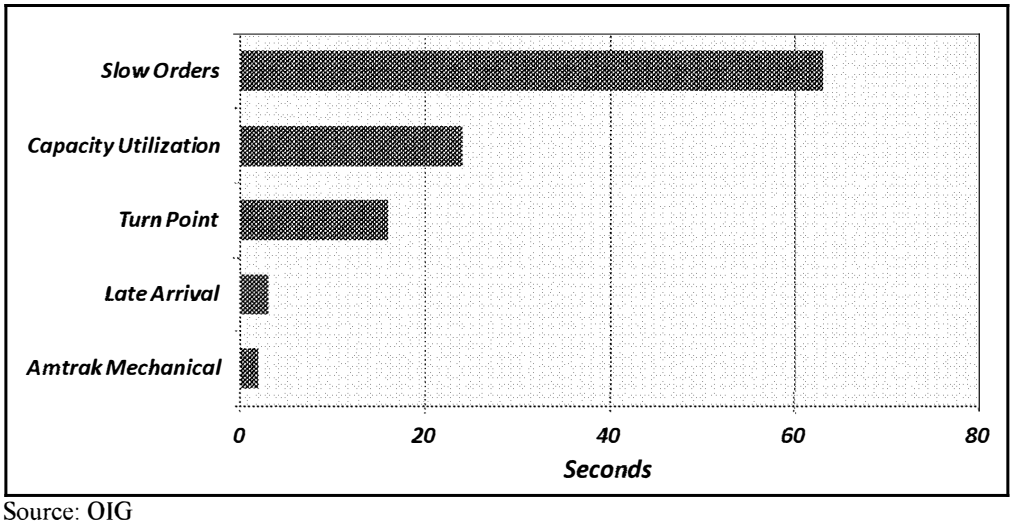


Source: OIG

Again, the baseline delay must be at least as large and positive as the BNSF host effect is large and negative. At a minimum then, the multiple host effect between a station-pair added 39 seconds to delay (24 seconds minimum baseline value plus 15 seconds multiple host delay relative to the baseline), and the UP host effect added 36 seconds. The minimum values of these two host effects exceeded the contributions of all non-host effect causes except slow orders.

Slow orders contributed 1 minute 3 seconds to the average total delay on short-distance services of 5 minutes 10 seconds, or approximately 20 percent. Figure 5 shows the contributions of non-host effect causes to delays on short-distance services system-wide. Capacity utilization played a relatively more prominent role in delays on short-distance services than on long-distance services, contributing 24 seconds between each station-pair, or 8 percent of the average total. Turn points increased delays between station-pairs by 16 seconds. Few trains arrived at their departure stations over two hours late on short-distance services, so late arrivals did not have a major impact on short-distance delays. As on long-distance services, Amtrak mechanical problems contributed little to delays on short-distances services.

Figure 5: Non-Host Effect Causes' Contributions to Station-Pair Delay on Short-Distance Services System-wide

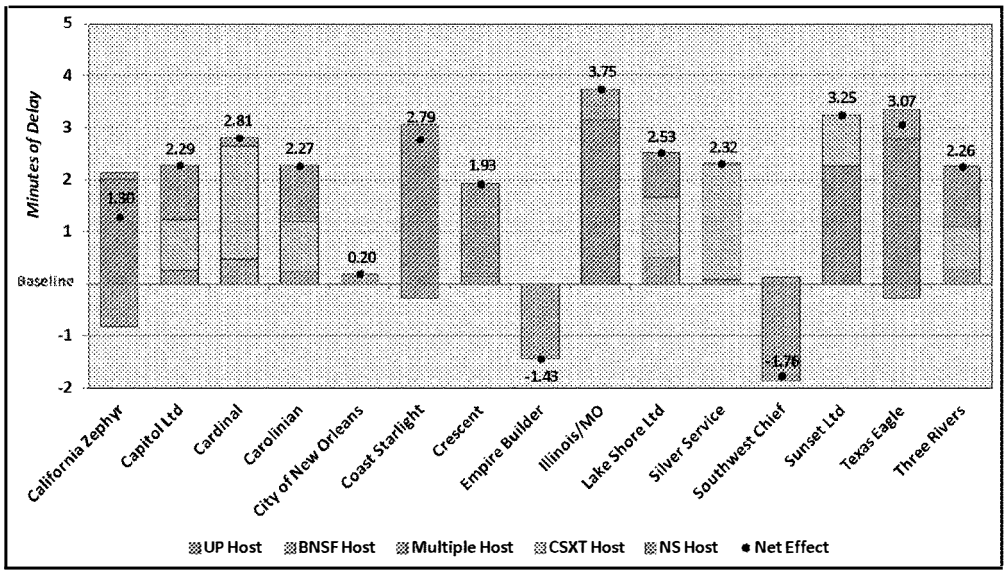


Source: OIG

Host Effects Had Widely Varying Impacts and Slow Orders Caused Substantial Delays Across Individual Long-Distance Routes

Host effects on individual long-distance routes varied greatly from one route to another, as Figure 6 shows.[25] The impact of host effects on individual routes depends on the proportion of the infrastructure owned by the host on that route. For example, the Illinois/Missouri Service travels on UP infrastructure for the majority of its length, and the UP host effect contributes 3 minutes 11 seconds to station-pair delays on that route. In contrast, the UP host effect's contribution to long-distance service delays system-wide captures UP's impact only on UP's portion of the entire long-distance system's infrastructure. Because we generated route level results using the system-wide model, we cannot determine a minimum value for the baseline for individual routes.

Figure 6: Host Effects' Contributions to Station-Pair Delay on Individual Long-Distance Routes

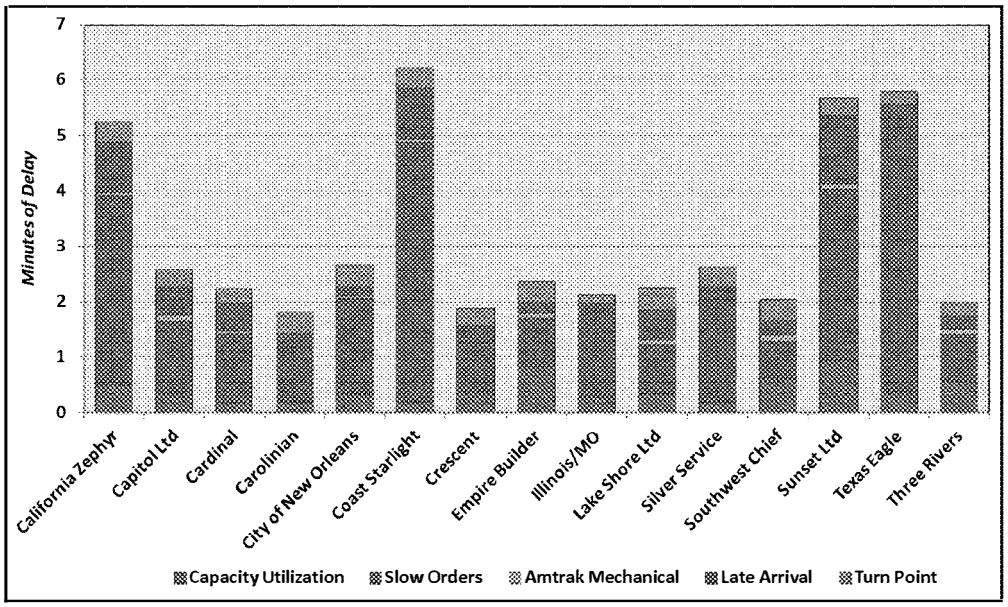


Source: OIG

[25] Exhibit E shows the estimates underlying Figures 6-7.

Among non-host effect causes, slow orders produced the largest delays on most individual long-distance routes. However, the amount of delay due to slow orders varied considerably across routes. For example, slow orders added 4 minutes 34 seconds to station-pair delays on the Texas Eagle, but only 39 seconds on the Southwest Chief. Figure 7 depicts the causes' relative contributions. Late arrivals increased delays on many of the long-distance routes, but most notably on the Sunset Limited, Coast Starlight, and California Zephyr.

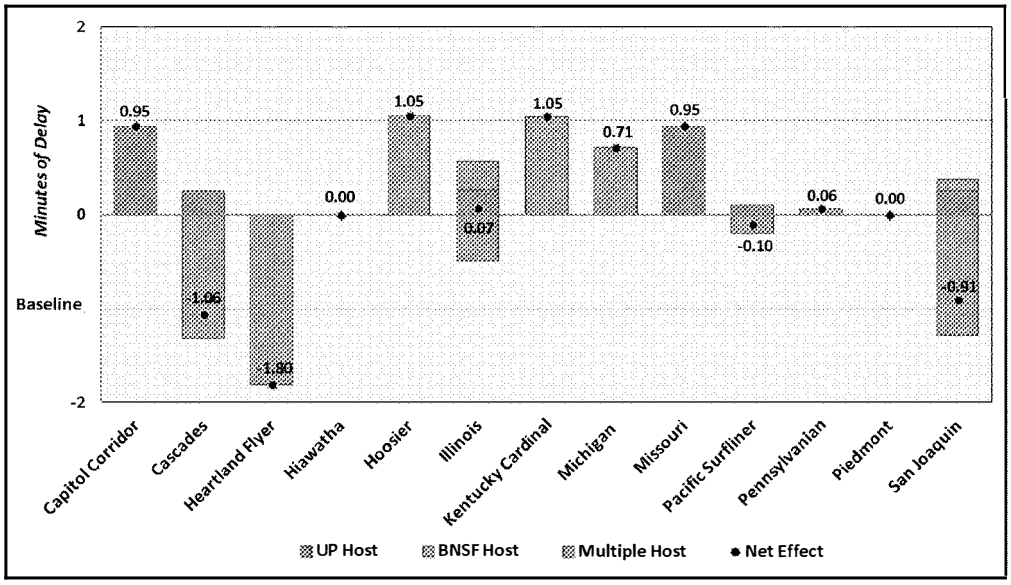
Figure 7: Non-Host Effect Causes' Contributions to Station-Pair Delay on Individual Long-Distance Routes



Source: OIG

As depicted in Figure 8, the multiple host effect caused sizable delays on several individual short-distance routes, while the UP host effect caused substantial delays on the Capitol Corridor and Missouri routes.[26] Short-distance routes hosted at least in part by BNSF experienced reductions in delays relative to the baseline system-wide host effect. Among these routes, the Cascades, Heartland Flyer, and San Joaquin experienced particularly substantial reductions in relation to the baseline.

Figure 8: Host Effects' Contributions to Station-Pair Delay on Individual Short-Distance Routes

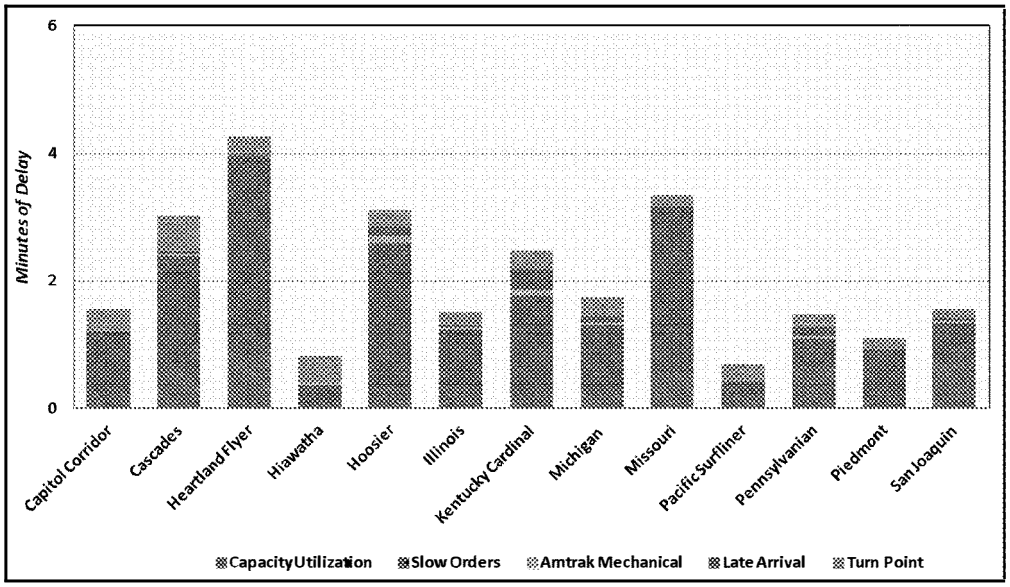


Source: OIG

[26] Exhibit F shows the estimates underlying Figures 8-9.

Slow orders caused large delays, but not always the largest of non-host effect causes on individual short-distance routes. For example, capacity utilization contributed more to delays on the Pacific Surfliner, Pennsylvanian and San Joaquin routes than slow orders, as Figure 9 indicates. Late arrivals had less impact on short-distance routes than on long-distance routes because far fewer trains ran so far outside of their scheduled time slots over the shorter distances.

Figure 9: Non-Host Effect Causes' Contributions to Station-Pair Delay on Individual Short-Distance Routes



Source: OIG

SEVERAL DELAY CAUSES HAD ELEVATED VALUES AT STATION-PAIRS WITH THE HIGHEST AVERAGE DELAYS, BUT SLOW ORDERS MAY HAVE BEEN THE MOST IMPORTANT

Slow orders, capacity utilization, and late arrivals at the locations with the highest average delays were all generally above their system-wide averages—suggesting that all three causes contributed notably to these delays. We cannot test this hypothesis, however, because our system-wide models cannot generate delay impact estimates at individual station-pairs.[27] Furthermore, without using our models, we cannot measure host effects. However, further analysis of the raw data reveals that locations with the highest levels of slow orders also had some of the highest average delays, while locations with the highest levels of either capacity

[27] Use of a system-wide model at the station-pair level would involve errors beyond acceptable levels.

utilization or late arrivals did not have particularly large delays. These data suggest that slow orders may have primarily driven the largest station-pair delays.

Slow orders, capacity utilization, and late arrivals were all generally above their system-wide averages at the station-pairs with the highest average delays, as illustrated in Table 2 for a selection of those station-pairs.[28] This fact suggests that these causes all contributed notably to delays at these locations.

Table 2. Delay Causes' Average Values at Selected Station-Pairs with High Average Delay

Station-Pair	Route	Average Delay (minutes)	Slow Orders (minutes)	Capacity Utilization (%)	Late Arrival (%)
Long-Distance Services					
San Antonio – Houston	Sunset Ltd.	48.4	15.3	52.5	42.6
Alpine-El Paso	Sunset Ltd.	46.0	14.0	49.3	44.6
St. Louis-Poplar Bluff	Texas Eagle	43.2	37.9	2.8	3.6
Winnemucca-Sparks	California Zephyr	41.1	28.0	41.4	53.7
Salt Lake City-Elko	California Zephyr	40.0	19.6	7.9	22.0
System-wide		***8.4***	***2.1***	***15.2***	***17.5***
Short-Distance Services					
Vancouver-Bellingham	Cascades	29.4	5.5	6.8	0.0
Springfield-Alton	Illinois	25.6	6.0	6.4	1.7
Sedalia-Jefferson City	Missouri	24.4	1.9	14.7	3.0
Lee's Summit-Warrensburg	Missouri	21.1	1.5	12.7	1.1
Pittsburgh-Alliance	Pennsylvanian	19.1	3.3	12.2	2.2
System-wide		***5.2***	***0.9***	***10.1***	***1.5***

Source: OIG

[28] We chose to display a selection from among the station-pairs with the highest average delays to avoid primarily showing data for station-pairs that differed only in direction, and to provide a sampling from different routes. Similar concerns determined our selections of station-pairs for Tables 3-4.

We examined average delays at the station-pairs with the highest levels of slow orders. Delays at these station-pairs matched the magnitudes of the delays at the station-pairs with the highest average delays. Table 3 illustrates this for selected station-pairs.

Table 3. Delay Causes' Average Values at Selected Station-Pairs with High Average Slow Orders

Station-Pair	Route	Average Delay (minutes)	Slow Orders (minutes)	Capacity Utilization (%)	Late Arrival (%)
Long-Distance Services					
St. Louis- Poplar Bluff	Texas Eagle	43.2	37.9	2.8	3.6
Elko-Winnemucca	California Zephyr	41.0	33.9	34.5	31.0
Salt Lake City-Elko	California Zephyr	40.0	19.6	7.9	22.0
Chico-Sacramento	Coast Starlight	27.9	19.4	6.5	44.3
Klamath Falls-Dunsmuir	Coast Starlight	31.9	17.8	10.9	25.9
System-wide		***8.4***	***2.1***	***15.2***	***17.5***
Short-Distance Services					
Hermann-Jefferson City	Missouri	16.1	6.1	24.2	4.2
Springfield-Alton	Illinois	25.6	6.0	6.4	1.7
Gainesville-Fort Worth	Heartland Flyer	18.8	5.7	40.6	0.8
Vancouver-Bellingham	Cascades	29.4	5.5	6.8	0.0
Rensselaer-Dyer	Hoosier	10.4	5.1	2.9	3.7
System-wide		***5.2***	***0.9***	***10.1***	***1.5***

Source: OIG

By comparison, we did not find an association between the highest values of capacity utilization and late arrival and the highest station-pair delays. Table 4 illustrates this with the average delays at station-pairs selected from among those with the highest levels of capacity utilization. Taken together, these results suggest that slow orders alone could have driven the bulk of the delays at the station-pairs with the highest average delays

Table 4. Delay Causes' Average Values at Selected Station-Pairs with High Average Capacity Utilization

Station-Pair	Route	Average Delay (minutes)	Slow Orders (minutes)	Capacity Utilization (%)	Late Arrival (%)
Long-Distance Services					
Pomona-Ontario	Sunset Ltd.	4.7	0.2	95.0	5.5
Deming-Lordsburg	Sunset Ltd.	12.0	0.6	87.7	51.1
Tucson-Maricopa	Sunset Ltd.	18.1	0.3	81.0	49.5
Yuma-North Palm Springs	Sunset Ltd.	28.4	2.9	77.0	59.7
Glasgow-Wolf Point	Empire Builder	2.2	0.6	62.7	8.4
System-wide		***8.4***	***2.1***	***15.2***	***17.5***
Short-Distance Services					
Martinez-Antioch	San Joaquin	1.3	1.2	68.5	0.2
Gainesville-Fort Worth	Heartland Flyer	18.8	5.7	40.6	0.8
Wasco-Corcoran	San Joaquin	3.5	0.5	33.7	0.2
Fresno-Madera	San Joaquin	1.9	0.6	29.8	0.5
Seattle-Edmonds	Cascades	1.2	0.4	28.3	0.3
System-wide		***5.2***	***0.9***	***10.1***	***1.5***

Source: OIG

CONCLUDING OBSERVATIONS

Train delays substantially increase Amtrak's need for subsidies and reduce the value of intercity passenger rail as an option for travelers. Under the HSIPR program, substantial investment funds have been made available to improve passenger rail's speed and reliability. Stakeholders making and overseeing investments in rail infrastructure involving public funds need to be aware of causes of the delays that they are intending to reduce as part of the decision making process. Of key concern is the need to differentiate those factors in passenger train delays that may not require capital investment to address, such as host effects and slow orders, from those factors that require investment. Making this distinction is critical to ensure publically funded rail investments are targeted to locations where capacity constraints are the primary cause of delays, and not expended on locations where other delay causes predominate.

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cc: Audit Liaison, OST, M-1
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EXHIBIT A. SCOPE AND METHODOLOGY

We conducted this analysis to identify the primary causes of delays and determine their relative impacts. In our analysis, we: (1) identified statistically significant causes of delay—those whose impacts were greater than would be expected to occur by chance—outside the NEC and under the control of a stakeholder, either Amtrak or a freight railroad; (2) assessed the degree of influence each cause had on Amtrak's delays system-wide and by individual route; and (3) examined delay determinants at locations of consistent, substantial delay.

We built our sample from Amtrak's 28 non-NEC passenger routes, 15 of which were long-distance routes—or longer than 550 miles—and 13 of which were short-distance. The sample period included fiscal years 2002 through 2007. We compiled 1,117 unique, non-overlapping Amtrak origin and destination station-pairs. The station-pairs differed by direction and route because delay times can differ according to these parameters. The unit of observation in our data was a unique combination of origin station, destination station, route, and month.

We designed and estimated delay models to explain the variations in delay of Amtrak's trains. The dependent variable—the one we wished to explain—was the average minutes of on-track delay at the station-pair level. The independent variables—those used to explain the variations in delays—included precipitation; temperature; capacity utilization; slow orders; mechanical delays; late arrivals; turn points—locations at which crews changed; distance between stations; host effects; meetings between Amtrak and various freights to address delay issues; and fiscal year dummy variables.

We divided our sample into long-distance and short-distance routes when estimating our delay models. The models for these two types of routes were the same except that we excluded the meeting variables from the short-distance model because these meetings were unrelated to short-distance routes. The decision to estimate separate models was based upon the different characteristics associated with these services as well as test results. For example, outside of the NEC, short-distance routes are served by shorter, lighter trains that can travel at higher speeds than those on long-distance routes.

We generated our measure of delay with respect to pure runtime (PRT). PRT is the time required to make a trip in the absence of any interference. Our delay variable was the difference between the time a train departed an origin station and the time it arrived at its destination station minus PRT. PRT delays differ from delays with respect to scheduled travel time, which incorporates schedule padding introduced

to accommodate expected delays and as a result of negotiations between Amtrak and the host railroads.

Capacity utilization is traffic volume divided by railroad infrastructure capacity. We used the maximum value of the calculated capacity utilization rate across all track segments between a station-pair. Oak Ridge National Lab (ORNL) developed the capacity values for each infrastructure segment based on four different factors: number of tracks, type of signal system, frequency of passing sidings, and terrain grade.

Traffic volume is defined as the total number of rail cars—locomotives, Amtrak rail cars, commuter rail cars, and freight rail cars—that pass over a segment of track in a given month. We obtained raw data on daily freight traffic from the Surface Transportation Board's Carload Waybill Sample.[1] ORNL used the Transportation Routing Analysis Geographical Information System (TRAGIS), a national railroad routing simulation program, to assign routes to all freight traffic identified in the Waybill Sample. We determined Amtrak train frequency using Amtrak timetables and the number of cars on each train from Amtrak's consist books.[2] We obtained information on commuter train frequency and number of cars per train from 10 commuter agencies.

We captured host effects using dummy variables for the host railroads that own and dispatch the associated infrastructure. The host railroads for each of our 1,117 station-pairs remained constant in our sample.[3] Amtrak provided the data on freight railroad infrastructure ownership. We created seven host railroad categories for the station-pairs in our sample: one category for each of five Class I railroads—BSNF, UP, CSXT, NS, and CN; one category for multiple hosts between a single station-pair; and one category for other, largely short-line and regional, railroads.

We chose the Hausman-Taylor estimator for our sample after a series of tests. The Hausman-Taylor estimator allowed us to address potential measurement error associated with the capacity utilization variable and to obtain coefficients for our time-invariant variables, such as host effects. The measurement error with capacity utilization arises because of the assumptions we had to make during the construction of the variable. These assumptions include no change in capacity along Amtrak routes during our study period and the use of the maximum capacity utilization value for each station-pair.

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[1] The Waybill Sample provided origin, destination, and, in some cases, intermediate points for each trip sampled.
[2] Amtrak's consist books detail the numbers and types of rail cars making up each train on each Amtrak route.
[3] Station-pairs which changed host railroad accounted for less than three percent of our total observations, and we excluded them from our analysis.

EXHIBIT B. DETAILED SCOPE AND METHODOLOGY

This exhibit provides a detailed discussion of our scope and methodology broken into the following sections: data, model, estimation, and sensitivity analyses.

DATA

Our sample includes nearly all of Amtrak's non-NEC corridor passenger routes from Amtrak fiscal year 2002 through 2007.[1] The data covers 28 Amtrak long-distance—defined as longer than 550 miles—and short-distance routes.[2] We compiled 1,117 unique, non-overlapping Amtrak origin and destination station-pairs from these routes. The unit of observation was a unique combination of origin station, destination station, route, and month.[3] Altogether, we had 64,684 unique observations.

Station-pairs serviced by different routes were treated as separate observations. Many instances in which multiple routes served the same station-pair involved both short- and long-distance routes. Our treating these instances separately allowed for the possibility that short-distance and long-distance trains were affected differently by factors such as host railroad dispatching practices. Ninety-three percent of the 1,117 station-pairs were served by a single route. Approximately six percent were shared by two routes. The remaining station-pairs were served by three to six routes.

The station-pairs in our model also differed by direction. We used directional markets because delay times can differ according to travel direction. For example, on the Texas Eagle, which runs between Chicago, Illinois and San Antonio, Texas, northbound trains consistently take 100 minutes longer, on average, than southbound trains to reach their final destination.

[1] We excluded the following NEC routes from our sample: Acela Express, Metroliner, Regional, Empire Service, Keystone, Vermonter and Downeaster. We also excluded one non-NEC service, the Auto Train, which travels from Lorton, Virginia to Sanford, Florida with no intermediate station stops.

[2] Long distance routes include the California Zephyr, City of New Orleans, Coast Starlight, Empire Builder, Cardinal, Lake Shore Limited, Silver Service, Southwest Chief, Sunset Limited, Texas Eagle, Capitol Limited, Crescent, Three Rivers and Illinois/Missouri. Short-distance routes include the Heartland Flyer, Hoosier State, Illinois, Pacific Surfliner, San Joaquin, Capitol Corridor, Carolinian, Cascades, Hiawatha, Michigan, Missouri, Pennsylvanian, Piedmont, and Kentucky Cardinal.

[3] We have unbalanced panel data in that we did not have the full 72 months worth of data for all 1,117 station-pairs. The minimum number of observations for any station-pair included in the sample was 12 months. At least 68 months of data was available for half of the station-pairs.

Measure of Delay

We generated our measure of delay with respect to pure runtime (PRT).[4] PRT is the time required to make a trip in the absence of any interference. Our delay measure is the difference between the time a train departs an origin station and the time it arrives at its destination station minus PRT. Note that PRT delays differ from delays with respect to scheduled travel time. Scheduled travel time incorporates schedule padding, which may be introduced to accommodate expected delays or as a consequence of negotiations with the host railroad. We initially analyzed delays with respect to scheduled travel time but found that padding hid important determinants of delay. In addition, current year padding appeared to be related to previous year delays, and consequently introduced endogeneity issues. The remainder of this report solely considers delays with respect to PRT.

Though we do not present the results here, we also examined delays occurring in stations. We found that on average, on-track delays accounted for 77 percent of total delay minutes, while station delays accounted for 23 percent. However, while there are scheduled terminal wait times, there is no analogue for PRT that would correspond to time spent in a terminal. Consequently, we could not construct a model for station delays analogous to our model of on-track delays with respect to PRT. All delays discussed in this report are on-track delays.

Daily delays were aggregated into monthly averages by station-pair. To avoid unrepresentative monthly averages, we eliminated station-pairs that were missing more than two-thirds of their expected observations.[5] In addition, we eliminated outliers that were obviously the result of data entry error. Some delays were long enough to have compelled the cancellation of the associated trains, but did not, and others were sufficiently negative so as to be physically impossible. Both types of extreme delays fell within the top and bottom one percent of daily delay data, which we removed from our sample. Figure B1 displays a histogram for average minutes of delay for the data used in the analysis. The distribution has a longer tail on the right, but the tail thins out dramatically as delays increase.[6] We calculated the skewness and kurtosis to compare the degree of deviation from a normal

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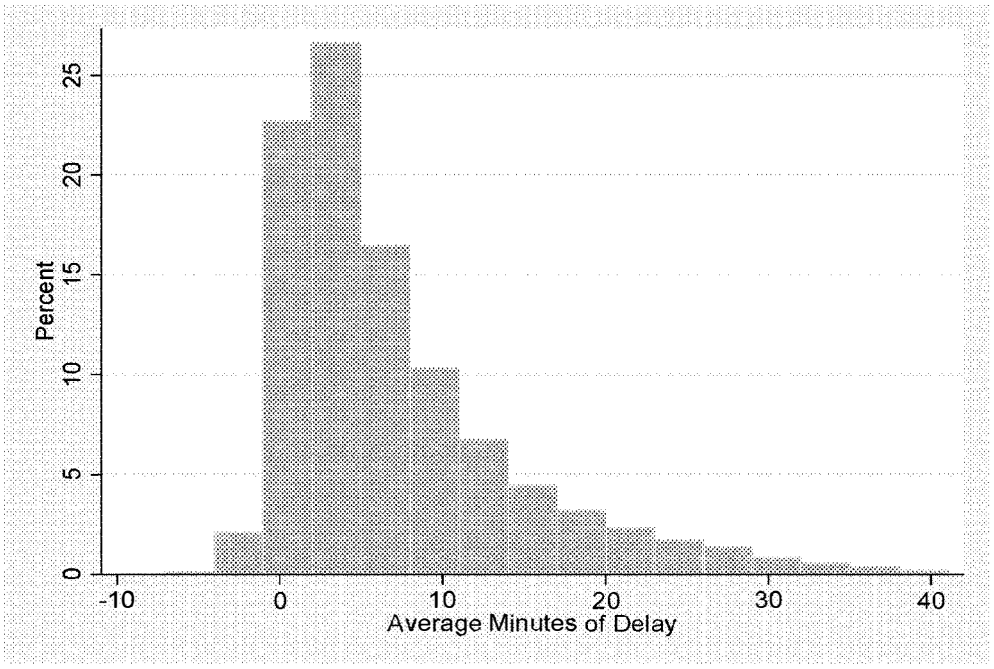
[4] Amtrak provided PRT data and data on arrival and departure times for each station at a daily frequency at the individual train level. We removed data on temporary trains—those operating less than once a week. Nearly all routes are serviced at least once a day.

[5] According to Amtrak, missing observations most likely occur as the result of station staff's failure to record trains' entry and exit times. Amtrak is currently automating the recording process for all stations.

[6] The method used to measure PRT creates considerable opportunity for noise around zero minutes of delay. Specifically, PRT represents a time agreed upon by representatives of both Amtrak and the relevant host railroad as they ride a route and gauge the minimum possible travel time. In addition, PRT changes infrequently; short-term travel time adjustments are usually made only in scheduled recovery time and miscellaneous adjustments rather than in PRT itself.

distribution. The skewness was 2 and kurtosis 10, as compared with 0 and 3 for the normal distribution.

Figure B1: Minutes of Delay Histogram



Note: Figure B1 captures 99 percent of observations; the remainder have delays in excess of 40 minutes.
Source: OIG

Host Effects

We captured host railroad effects—host effects—using dummy variables for the individual host railroads who own and dispatch the associated infrastructure. Amtrak provided the data on railroad infrastructure ownership. We identified seven host railroad categories associated with the station-pairs in our sample: one category for each of five Class I railroads—Burlington Northern and Santa Fe (BSNF), Union Pacific (UP), CSX Transportation (CSXT), Norfolk Southern (NS) and the Canadian National Railway Company (CN); one category for multiple hosts between a single station-pair; and one category for other, primarily short-line and regional, railroads.

The host railroads for our 1,117 station-pairs remained constant throughout the sample period. Three host railroads divided ownership of roughly three-fourths of the track miles fairly evenly among them. Track miles owned by multiple hosts

accounted for 2 percent of total track miles, and those owned by the "other" railroad group accounted for 4 percent. We eliminated the station-pairs between which Amtrak hosts the tracks because there were so few of them.

Capacity Utilization Rate

Our capacity utilization measure has four components: the capacity of the railroad infrastructure, freight traffic, Amtrak traffic, and commuter rail traffic. Traffic is defined as the total number of cars—locomotives, passenger cars, and freight cars—that pass over a segment of track in a given month. The Transportation Routing Analysis Geographical Information System (TRAGIS), a national railroad system model and routing simulation program developed by Oak Ridge National Laboratories (ORNL), provides information on track characteristics (number of tracks, type of signal system, frequency of passing sidings) for each segment of intermediate track between each station-pair. ORNL used this information in combination with data on terrain grade to develop capacity values for each segment based on a method designed by Clark (1995). ORNL determined it was reasonable to assume that capacity did not change along Amtrak routes over our sample period.

We obtained raw data on daily freight traffic from the Surface Transportation Board's Carload Waybill Sample.[7] ORNL used TRAGIS to assign routes to all freight traffic identified in the Waybill Sample, and translated daily traffic levels into monthly averages for each track segment. We determined Amtrak train frequency using Amtrak timetables, and the number of cars on each train from Amtrak consist books. We obtained information on commuter train frequency and number of cars per train from the 10 relevant commuter agencies.

Monthly freight, Amtrak, and commuter traffic estimates were divided by the number of days in each month to get average daily traffic to match daily capacity. We calculated the capacity utilization rate for each segment of track by totaling the daily averages of freight, Amtrak, and commuter rail traffic and dividing the sum by segment capacity. The maximum value of the calculated capacity utilization rate across all track segments between a station-pair was used to represent segment capacity in the analysis.

MODEL

We constructed the following model to measure delays on long-distance routes. The dependent variable is ON-TRACK DELAY$_{ijt}$. It is the average on-track

[7] The Waybill Sample provided origin, destination, and, in some cases, some intermediate points for each trip sampled.

minutes of delay with respect to PRT for all trains that operate at station-pair *i*, route *j*, in month *t*. The rest of the model is as follows:

$$\begin{aligned}\text{ON-TRACK DELAY}_{ijt} = \; & \alpha_0 + \beta_1 \text{ PRECIP}_{ijt} + \beta_2 \text{ TEMP}_{ijt} + \gamma_1 \text{ CAP UTIL}_{ijt} \\ & + \gamma_2 \text{ SLOW ORDER}_{ijt} + \gamma_3 \text{ MECH}_{ijt} + \gamma_4 \text{ LATE ARR}_{ijt} \\ & + \delta_1 \text{ DISTANCE}_i + \delta_2 \text{ TURN}_i + \eta_1 \text{ MEET UP}_{jt} \\ & + \eta_2 \text{ MEET NS}_{jt} + \theta_1 \text{ BNSF}_i + \theta_2 \text{CN}_i + \theta_3 \text{ CSXT}_i \\ & + \theta_4 \text{ NS}_i + \theta_5 \text{ UP}_i + \theta_6 \text{ MULTI HOST}_i \\ & + \sum_{l=2}^{7} \lambda_l \text{ FISCAL YEAR}_{lt}\end{aligned}$$

where *i* indexes the station-pair, *j* the route, and *t* the month. The Greek letters represent the coefficients which quantify the effect of each variable on Amtrak delays. β's control for weather related delays. γ's represent non-weather related delay determinants with both cross-sectional and time series variation. δ's are associated with time invariant variables. η's represent the effects of meetings between Amtrak and host railroads to address delays, θ's are dummy variables for individual host railroads, and λ's capture fiscal year-specific effects.

This model was also used for short-distance routes with MEET UP_{jt} and MEET NS_{jt} excluded, because the meetings were unrelated to short-distance routes. MEET UP_{jt} equals one if route *j* is California Zephyr and if *t* is later than April 2007, the date UP and Amtrak met to discuss addressing delays on that route. MEET NS_{jt} equals one if route *j* is either Capitol Limited or Lake Shore Limited and *t* is later than June of 2007, marking a meeting between NS and Amtrak to address delays on those routes.

We generated seven host railroad dummy variables to capture the effects of individual railroads and groups of railroads: UP_i, $BNSF_i$, $CSXT_i$, NS_i, CN_i, MULTI $HOST_i$, and Other RR_i. UP_i takes the value 1 if Union Pacific is the host railroad for the O&D station-pair *i* and 0 otherwise. The rest of the individual host dummies are defined in the same fashion. The definitions for MULTI $HOST_i$ and Other RR_i are slightly different. MULTI $HOST_i$ takes the value 1 if there is more than a single host railroad for a given station-pair. Other RR_i represents the group of other, primarily short line and regional, freight railroads.

Other RR_i is the reference group and its dummy is deleted from the estimation. The coefficients on the remaining host dummies measure the difference in delays relative to Other RR_i. These dummy variables capture the time invariant characteristics specific to each host railroad. They can include, but are not limited to, host business model, managerial ability, and dispatching practices.

Exhibit B. Detailed Scope and Methodology

CAP UTIL$_{ijt}$ is the maximum monthly level of the capacity utilization rate between station-pair *i*, on route *j*, in month *t*. It is the maximum ratio of traffic volume to capacity, both measured in carloads, observed between the station-pair. An increase in the level of capacity utilization is expected to result in an increase in train delays. Therefore, we expect a positive coefficient on CAP UTIL$_{ijt}$.

To capture variation in minutes of delay due to weather, we include precipitation (PRECIP$_{ijt}$) and temperature (TEMP$_{ijt}$).[8] PRECIP$_{ijt}$ is the percent of days during which at least one inch of rain fell at station-pair *i* in month *t*. TEMP$_{ijt}$ is the percentage of days with temperatures exceeding 90 degrees for station-pair *i* in month *t*. The weather variable for each station-pair was measured at the weather station closest to the mid-point between the station-pair. Trains operate at reduced speed during heavy rains. Also, most freight railroads have heat order policies that reduce train speeds when the temperature exceeds certain thresholds.[9]

SLOW ORDER$_{ijt}$ is the average minutes of slow order delays from all the trains in our sample operating at station-pair *i*, on route *j*, in month *t*. A slow order is a local speed restriction issued by a host railroad that requires trains to travel at less than a track segment's normal speed limit. Several triggers can result in slow orders: poor infrastructure conditions, infrastructure maintenance or improvement, and weather-related issues.[10] Our data includes all except weather-related slow orders, and came from Amtrak's conductor delay reports.

MECH$_{ijt}$ is the average minutes of delays resulting from mechanical problems with all the Amtrak trains in our sample operating between station-pair *i*, on route *j*, in month *t*. The data for this measure was also taken from Amtrak conductor delay reports.

LATE ARR$_{ijt}$ was used to capture delays induced by trains running well outside their scheduled time slot. It is defined as the percent of trains that arrive more than two hours late at the origin station of station-pair *i*, on route *j*, in month *t*. LATE ARR$_{ijt}$ could be endogenous because factors not captured in our model could be expected to cause late arrivals. We use the percentage of trains that arrive late rather than the actual minutes of delay to minimize this potentiality.

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[8] We obtained our weather data from the National Climatic Data Center.

[9] Amtrak provided data on the freights' heat-order policies. Different freights have different thresholds for imposing heat-related speed restrictions. We use 90 degrees since it is the minimum threshold across the various freight railroads' heat-order policies.

[10] Rail infrastructure includes, but is not limited to, track, ballast, signal systems, and sidings.

$DISTANCE_i$ is the weighted average distance between station-pair *i*, with the weights being the percentages of train and date combinations.[11] An increase in distance increases the probability of a delay event occurring, including as a result of factors not otherwise captured. Among these factors are delay-inducing track configurations, such as crossovers.

$TURN_i$ takes the value 1 if the origin station of the station-pair *i* on route *j* is an Amtrak crew base. A crew base is a location at which Amtrak changes crews.

Finally, we include fiscal year dummy variables to control for delay changes due to time trends that affect the whole system. These could include changes in Amtrak or host railroad practices, Amtrak ridership, and overall network congestion. FISCAL $YEAR_{2t}$ takes the value 1 if month *t* belongs to fiscal year 2002 and 0 otherwise. FISCAL $YEAR_{3t}$ through FISCAL $YEAR_{7t}$ are generated in a similar fashion.

ESTIMATION

We chose the Hausman-Taylor estimator for our panel data after a series of tests.[12] The tests showed fixed effects estimators to be preferable and the variable CAP $UTIL_{ijt}$ to be endogenous. The Hausman-Taylor estimator allowed us to address the endogeneity issue and to obtain coefficients for our time-invariant variables, such as host effects. We also tested the equality of coefficients across the two samples for long- and short-distance routes. The difference in coefficients confirmed our expectation that we need to estimate separate models for the two groups. Table B1 summarizes the estimation results. The reported bootstrapped standard errors are cluster-robust.[13]

There are several reasons to expect that CAP $UTIL_{ijt}$ has some degree of measurement error. It was constructed using data from multiple sources and several assumptions. Most notably, translating the Carload Waybill data into freight traffic by station-pair required the use of a routing algorithm, in our case the one underlying TRAGIS. Use of the Waybill data also required assumptions about the percentage of actual freight traffic the Waybill sample represented. It

[11] We obtained the distance information from Amtrak. It is weighted because of the slight changes in distance over time in approximately 40 percent of the station-pairs. We suspect that this difference in reported mileage occurs because of small changes in the methodology used in recording it.

[12] We performed an F-test on the significance of station-pair effects. The rejection of the null hypothesis of no station-pair effects indicated that the Fixed Effects (FE) estimator is preferable to the OLS estimator. To compare Random Effects (RE) and OLS estimators, we ran the Breusch-Pagan LM test and rejected the null hypothesis of no station-pair effects. This led to the RE estimator being preferred to the OLS estimator. We ran a bootstrapping Hausman test on each time-varying variable to compare FE and RE estimators. The results suggest that the variable CAP $UTIL_{ijt}$ is endogenous in our long-distance model.

[13] We compared OLS and cluster-robust standard errors. The significant differences between them on most of the variables in our model indicate the existence of clusters in the independent variables.

was further assumed that capacity did not change during the sample period along Amtrak routes. Lastly, we summarized the information on capacity utilization levels for all the track segments between each station-pair using a single measure, the maximum. All these considerations could be expected to have greater impact on the long-distance model as long-distance routes have many more track segments because of having almost twice as much distance between station-pairs on average as the short-distance routes. Consequently, we were not surprised that tests showed CAP UTIL$_{ijt}$ to be endogenous.

SENSITIVITY ANALYSES

We performed a series of sensitivity analyses to check the robustness of our findings. To test for the possibility of a nonlinear conditional expected value for the dependent variable resulting from the truncation of delays near zero, we re-estimated our model using a Tobit procedure.[14] The results deviated very little, if at all, from those reported above. To investigate the possibility of a nonlinear relationship between minutes of delay and the level of capacity utilization, we tested the significance of various thresholds for capacity utilization--the 50th, 60th, 70th, 80th, and 90th percentiles-in our models. [15] The results did not suggest a nonlinear relationship in our data.

We also experimented with augmenting capacity utilization by adding a traffic heterogeneity variable. An increase in traffic heterogeneity, or traffic mix, has been shown to increase train delays (Dingler *et al*, 2009). This occurs because different types of traffic travel at different speeds. The more diverse the speeds of the trains on a track segment, the more complicated the task facing a dispatcher trying to coordinate their movements.

We generated two variables to capture traffic heterogeneity: HET1$_{ijt}$ and HET2$_{ijt}$. HET1$_{ijt}$ is similar to the Herfindahl-Hirschman index. It is the sum of squares of service frequencies of different types of traffic, measured by the number of cars, for all the traffic at station-pair *i*, on route *j*, in month *t*.[16] HET2$_{ijt}$ is defined in the same fashion except that we weighted the components of the sum by the average speed of each type of traffic. We chose the minimum value of the index across all track segments between a station-pair for HET1$_{ijt}$ and HET2$_{ijt}$, because the segment with the minimum heterogeneity index has the most diverse traffic.[17] In both the long- and short-distance models, neither HET1$_{ijt}$ nor HET2$_{ijt}$ was

[14] Only 0.26 percent of delays were recorded as zero.
[15] Krueger (1999) found that the relationship between train delay and traffic volume can be expressed as an exponential equation. Since traffic volume is the numerator for our congestion variable, this led us to consider the possibility of a nonlinear relationship between the level of congestion and the average on-track delays.
[16] The types of traffic considered were passenger, commuter, and four types of freight trains.
[17] We also experimented with defining HET1$_{ijt}$ and HET2$_{ijt}$ as the average value of all the links in any given station-pair. The results did not change.

statistically significant, nor did they notably change the estimated coefficients on CAP $UTIL_{ijt}$.

We tried redefining LATE ARR_{ijt} to indicate that a train arrived either three or four hours later than scheduled. On long-distance routes, the estimated coefficient on LATE ARR_{ijt} increased by 9 percent using the three-hour definition and by 12 percent using the four-hour definition. On short-distance routes, the estimated coefficient on LATE ARR_{ijt} indicating a three-hour late arrival was not significant and a four-hour late arrival was marginally significant at the 10 percent level. The remaining coefficients change very little with the various definitions of LATE ARR_{ijt} in both the long- and short-distance route models. We expected the impact of late arrivals on delays to increase with the degree of lateness, and such results were observed in long-distance routes. However, trains rarely arrived more than two hours late in our short-distance route sample.

Alternative thresholds were also tested for the weather variables. $PRECIP_{ijt}$ is defined to be the percentage of days having greater than or equal to an accumulation of one inch of precipitation, which represents the 97.5th percentile in our sample. Cut-offs at the 85th, 90th, 95th percentiles, and average precipitation, were tested. The estimated coefficients in the long-distance model were 26 percent to 56 percent smaller than those on the precipitation variable as first defined, but were still significant at the one percent level. Similarly, in the short-distance model the estimated coefficients on the alternative measures were 48 percent to 64 percent smaller than with the initial definition.

For $TEMP_{ijt}$, which is currently defined as the percentage of days on which temperatures greater than or equal to 90 degrees are registered, we tested thresholds of 95, 100, and 110 degrees. The results showed that the higher the threshold, the greater the effect on delays on long-distance routes. However, the effect was insignificant using a 110 degree threshold, as temperatures above 110 degrees rarely occur. On short-distance routes, the coefficient on the temperature variable increases by 28 percent using a 95-degree threshold, and is significant at the 5 percent level. It becomes insignificant with a 100-degree definition. The coefficient becomes negative with an increase in absolute size of 116 percent when using a threshold of 110 degrees, and is significant at the one percent level.

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Exhibit B. Detailed Scope and Methodology

Table B1: Hausman-Taylor Estimators for Long-Distance and Short-Distance Samples

Variable	Long-Distance Routes	Short-Distance Routes
Precipitation	2.836***	3.108***
	(0.614)	(0.774)
Temperature	0.804***	0.457***
	(0.161)	(0.159)
Capacity Utilization	1.869***	2.544**
	(0.692)	(1.041)
Slow Order	0.896***	1.128***
	(0.0322)	(0.0438)
Amtrak Mechanical Failure	0.156***	0.200***
	(0.0570)	(0.0694)
Late Arrival	2.843***	3.648**
	(0.304)	(1.557)
Meet UP	0.682	
	(0.649)	
Meet NS	0.158	
	(2.185)	
Distance	0.781***	1.895***
	(0.0575)	(0.131)
Turn Point	1.447***	1.457**
	(0.451)	(0.586)
UP	3.669***	0.945*
	(0.583)	(0.527)
BNSF	-1.902***	-1.805***
	(0.583)	(0.598)
CSXT	2.575***	-0.572
	(0.507)	(0.924)
NS	1.812***	-0.485
	(0.555)	(0.602)
CN	0.707	1.010
	(0.548)	(0.708)
Multiple Hosts	7.078***	5.233***
	(1.466)	(1.236)
FY 2002	-0.0956	-0.804***
	(0.203)	(0.173)
FY 2003	-0.294	-0.681***
	(0.187)	(0.176)
FY 2004	-0.136	-0.600***
	(0.162)	(0.150)
FY 2005	-0.0365	-0.655***
	(0.137)	(0.124)
FY 2006	0.568***	-0.228*
	(0.110)	(0.121)
Observations	48649	16035
Number of Station-Pairs	810	307

Notes: *Significant at the 10 percent level. **Significant at the 5 percent level.
***Significant at the 1 percent level.

EXHIBIT C. CONFIDENCE INTERVALS ON SYSTEM-WIDE DELAY ESTIMATES, IN SECONDS, BY CAUSE

Long-Distance Services

Variable	Estimate	95% CI Lower Bound	95% CI Upper Bound
Slow Orders	115	107	123
UP Host Effect	50	34	66
CSXT Host Effect	38	23	53
Late Arrival	30	24	36
Capacity Utilization	26	7	45
Turn Point	20	8	33
NS Host Effect	17	7	28
Multiple Host Effect	11	7	16
Amtrak Mechanical	4	1	7
BNSF Host Effect	-27	-44	-11

Short-Distance Services

Variable	Estimate	95% CI Lower Bound	95% CI Upper Bound
Slow Orders	63	58	67
Capacity Utilization	24	5	44
Turn Point	16	3	29
Multiple Host Effect	15	8	22
UP Host Effect	12	-1	25
Late Arrival	3	1	6
Amtrak Mechanical	2	1	4
BNSF Host Effect	-24	-39	-8

Note: The confidence interval for each estimate provides a range that the true value of the variable would be expected to fall within 95 percent of the time in the sample period.

Exhibit C. Confidence Intervals on System-wide Delay Estimates, in Seconds, by Cause

EXHIBIT D. AMTRAK ROUTES

ROUTE	ENDPOINTS	
California Zephyr	Chicago, IL	Emeryville, CA
Capitol Corridor	Auburn, CA	San Jose, CA
Capitol Ltd	Washington, DC	Chicago, IL
Cardinal	Chicago, IL	New York, NY
Carolinian	New York, NY	Charlotte, NC
Cascades	Eugene, OR	Vancouver, BC
City of New Orleans	Chicago, IL	New Orleans, LA
Coast Starlight	Seattle, WA	Los Angeles, CA
Crescent	New York, NY	New Orleans, LA
Empire Builder	Chicago, IL	Seattle, WA
Heartland Flyer	Oklahoma City, OK	Fort Worth, TX
Hiawatha	Chicago, IL	Milwaukee, WI
Hoosier	Chicago, IL	Indianapolis, IN
Illinois (a)	Chicago, IL	Carbondale, IL
(b)	Chicago, IL	Quincy, IL
(c)	Chicago, IL	St. Louis, MO
Illinois/MO	Chicago, IL	Kansas City, MO
Kentucky Cardinal	Chicago, IL	Indianapolis, IN
Lake Shore Ltd	Chicago, IL	New York, NY
Michigan	Chicago, IL	Pontiac, MI
Missouri	Kansas City, MO	St. Louis, MO
Pacific Surfliner	San Luis Obispo, CA	San Diego, CA
Pennsylvanian	New York, NY	Pittsburgh, PA
Piedmont	Charlotte, NC	Raleigh, NC
San Joaquin	Sacramento, CA	Bakersfield, CA
Silver Service (a)	New York, NY	Savannah, GA
(b)	New York, NY	Miami, FL
Southwest Chief	Chicago, IL	Los Angeles, CA
Sunset Ltd (a)[a]	Orlando, FL	Los Angeles, CA
(b)[b]	New Orleans, LA	Los Angeles, CA
Texas Eagle	Chicago, IL	Los Angeles, CA
Three Rivers	Chicago, IL	New York, NY

[a] October 2001 to October 2005
[b] October 2005 to Present

EXHIBIT E. CONTRIBUTIONS TO AVERAGE STATION-PAIR DELAYS, IN MINUTES, ON INDIVIDUAL LONG-DISTANCE ROUTES BY CAUSE

Services	Capacity Utilization	Slow Orders	Amtrak Mechanical	Late Arrival	Turn Point	UP Host	BNSF Host	Multiple Host	CSXT Host	NS Host	Net Effect
California Zephyr	0.48	3.43	0.07	0.88	0.38	2.02	-0.83	0.11	0	0	6.55
Capitol Ltd	0.36	1.29	0.11	0.51	0.31	0	0	0.25	0.98	1.06	4.87
Cardinal	0.17	1.26	0.07	0.46	0.26	0	0	0.48	2.16	0.17	5.03
Carolinian	0.20	0.97	0.02	0.23	0.39	0	0	0.23	0.96	1.07	4.09
City of New Orleans	0.33	1.73	0.05	0.16	0.40	0	0	0.20	0	0	2.86
Coast Starlight	0.21	4.67	0.06	0.91	0.37	3.07	-0.28	0	0	0	9.01
Crescent	0.37	0.84	0.04	0.31	0.32	0	0	0.13	0.05	1.74	3.81
Empire Builder	0.83	0.89	0.07	0.20	0.38	0	-1.43	0	0	0	0.93
Illinois/MO	0.28	1.53	0.02	0.13	0.15	3.17	0	0.58	0	0	5.86
Lake Shore Ltd	0.33	0.90	0.07	0.54	0.41	0	0	0.50	1.16	0.87	4.78
Silver Service	0.20	1.48	0.04	0.55	0.35	0	0	0.08	2.21	0.03	4.93
Southwest Chief	0.62	0.65	0.13	0.26	0.36	0	-1.87	0.11	0	0	0.27
Sunset Ltd	0.94	3.08	0.12	1.23	0.33	2.25	0	0	0.99	0	8.94
Texas Eagle	0.37	4.57	0.05	0.57	0.22	2.78	-0.27	0.56	0	0	8.85
Three Rivers	0.56	0.83	0.12	0.25	0.23	0	0	0.28	0.80	1.17	4.24

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Exhibit E. Contributions to Average Station-Pair Delays, in Minutes, on Individual Long-Distance Routes by Cause

EXHIBIT F. CONTRIBUTIONS TO AVERAGE STATION-PAIR DELAYS, IN MINUTES, ON INDIVIDUAL SHORT-DISTANCE ROUTES BY CAUSE

Services	Capacity Utilization	Slow Orders	Amtrak Mechanical	Late Arrival	Turn Point	UP Host	BNSF Host	Multiple Host	Net Effect
Capitol Corridor	0.27	0.95	0.02	0.01	0.31	0.95	0	0	2.50
Cascades	0.60	1.78	0.05	0.03	0.56	0.26	-1.32	0	1.96
Heartland Flyer	0.85	3.11	0.01	0.04	0.24	0	-1.80	0	2.45
Hiawatha	0.08	0.29	0.03	0	0.42	0	0	0	0.82
Hoosier	0.30	2.28	0.12	0.13	0.29	0	0	1.05	4.17
Illinois	0.37	0.87	0.04	0.03	0.20	0.26	-0.49	0.30	1.58
Kentucky Cardinal	0.26	1.51	0.08	0.33	0.29	0	0	1.05	3.52
Michigan	0.27	1.04	0.03	0.09	0.31	0	0	0.71	2.45
Missouri	0.57	2.36	0.01	0.22	0.17	0.95	0	0	4.29
Pacific Surfliner	0.24	0.17	0.03	0.01	0.24	0.10	-0.21	0	0.58
Pennsylvanian	0.65	0.42	0.07	0.13	0.21	0	0	0.06	1.55
Piedmont	0.27	0.63	0.01	0.01	0.19	0	0	0	1.10
San Joaquin	0.75	0.58	0.04	0.04	0.15	0.25	-1.28	0.13	0.65

Exhibit F. Contributions to Average Station-Pair Delays, in Minutes, on Individual Short-Distance Routes by Cause

EXHIBIT G. MAJOR CONTRIBUTORS TO THIS REPORT

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Kang Hua Cao	Economist
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BRIEFING

Office of Inspector General

JANUARY 25, 2012

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- The substantial Amtrak delays occurring outside the Northeast Corridor (NEC) have long been the subject of congressional concern.
- In 2008, OIG issued two audit reports on Amtrak delays in response to requests from: the Surface Transportation Subcommittee of the Senate Committee on Commerce, Science, and Transportation; and the Senate Appropriations Subcommittee on Transportation, Housing and Urban Development, and Related Agencies.
- In one report, OIG concluded that delays outside the NEC substantially reduced Amtrak's net earnings.
- In the other, OIG identified causes of these delays, but did not assess their relative impacts.
- We conducted this analysis to determine the primary causes of Amtrak delays and to quantify their relative impacts.

Objectives

- Identify statistically significant determinants of Amtrak delays under the control of a stakeholder, either Amtrak or a freight railroad;
- Assess the degree of influence each determinant has on Amtrak delays system-wide and by individual route; and
- Identify locations of consistent, substantial delay and assess determinants of delay at those locations.

Methodology – Overview

- Many factors drive Amtrak delays, so we developed models that allow us to determine whether a factor is statistically significant and to generate an estimate of the separate impact of each significant factor.

$$
\begin{aligned}
&On-TrackDelay_{ijt} = \\
&\alpha_0 + \beta_1 Precip_{ijt} + \beta_2 Temp_{ijt} + \beta_3 CapUtil_{ijt} \\
&+ \beta_4 Dist_i + \beta_5 Slow\ Order_{ijt} + \beta_6 Mech_{ijt} \\
&+ \beta_7 LateArr_{ijt} + \beta_8 Turn_{ijt} + \beta_9 Meet1_{jt} + \beta_{10} Meet2_{jt} \\
&+ \sum_{l=1}^{6} \lambda_l Host\ \ Railroad_l \\
&+ \sum_{k=1}^{12} \gamma_k FiscalYear_k
\end{aligned}
$$

Methodology –Data Development

- Delay Measure:
  - The delay measure used in our analysis captures *on-track delays* with respect to *pure run time (PRT).*
  - On-track delays occur between the time a train leaves one station and arrives at the next.
    - On-track delays accounted for 77 percent of total delay minutes, while station delays accounted for 23 percent.
  - We examined delays at the station-pair level for each Amtrak service and direction of travel.
  - Our delay data covered all of Amtrak's non-NEC passenger routes.
  - Our analysis included data for Fiscal Years (FY) 2002 to 2007
    - The significant reductions in freight traffic caused by the recession that began in 2008 resulted in different usage patterns.
- An innovation of this effort was the development of a measure for capacity utilization – an indication of congestion– calculated as traffic volume divided by railroad infrastructure capacity.
  - Traffic volume was defined as the total number of locomotives, Amtrak rail cars, commuter rail cars, and freight rail cars that pass over a segment of track.
  - The capacity values for each track segment were developed based on four factors: number of tracks, type of signal system, frequency of passing sidings, and terrain grade.
  - Oak Ridge National Laboratory constructed the capacity data using information from the national railroad model underlying its Transportation Routing Analysis Geographical Information System.

Methodology – Variables

Variable Name	Definition
On-track Delay	Average on-track minutes of delay with respect to PRT for all trains operating between a station-pair.
Precipitation	The percent of days with at least 1 inch of rain for a station-pair.
Temperature	The percent of days above 90 degrees for a station pair.
Capacity Utilization	The maximum level of capacity utilization between a station-pair.
Distance	The weighted average distance between a station-pair.
Mechanical Delay	The average minutes of mechanical delays affecting all trains operating between a station-pair.
Late Arrival	The percent of trains that arrive more than two hours late at the origin station of a station-pair.
Slow Orders	The average minutes of slow order delays affecting all trains operating between a station-pair
Turn Point	Indicates whether the origin of a station-pair is a crew base or turn point

Methodology – Variables (cont'd)

Variable Name	Definition
Meeting with UP	Indicates whether the route is the California Zephyr and the date is after April 2007.
Meeting with NS	Indicates whether the route is either the Capitol Limited or the Lake Shore Limited and the date is after June 2007.
UP	Indicates whether UP is the host railroad between a station pair.
BNSF	Indicates whether BNSF is the host railroad between a station pair.
CSXT	Indicates whether CSXT is the host railroad between a station pair.
NS	Indicates whether NS is the host railroad between a station pair.
CN	Indicates whether CN is the host railroad between a station pair.
Multiple Hosts	Indicates whether there are multiple hosts between a station pair.
Fiscal Years	Indicates the Fiscal Year of the observation.

Methodology – Estimation

- The models were developed on a system-wide basis.
- One was estimated for long-distance services system-wide and another for short-distance services system-wide.
  - The two types of services have different characteristics.
    - Length of routes and of distances between stations.
    - Different train consists.
  - They also operate under different business models.
    - Daily vs. higher frequency.
    - Rural vs. urban areas.
  - May have different dispatching practices.
- Route level results were generated using either the long- or short-distance system-wide model in combination with route-specific values for the factors.

Discussion – General

- The remainder of this presentation focuses exclusively on the statistically significant factors under stakeholders' control:
  - Slow Orders
  - Capacity Utilization
  - Late Arrival
  - Turn Points
  - Amtrak Mechanical
  - Host Effects
- The discussion will be based on these factors' average effects over the specific time period examined.

Discussion – Host Effects

- Host effects results are reported separately from results for other factors.
- Host effects can only be measured relative to a baseline, rather than in absolute terms.
  - Measurement of absolute host effects would require comparison with operations in the absence of any host effects.
    - This is impossible since trains always operate on some entity's infrastructure.
- For the baseline, we chose the effects of operating on infrastructure owned by railroads other than those identified in the variables list.
  - The group of other railroads is largely composed of shortline railroads.
- The impact of factors other than host effects can be measured in absolute terms.

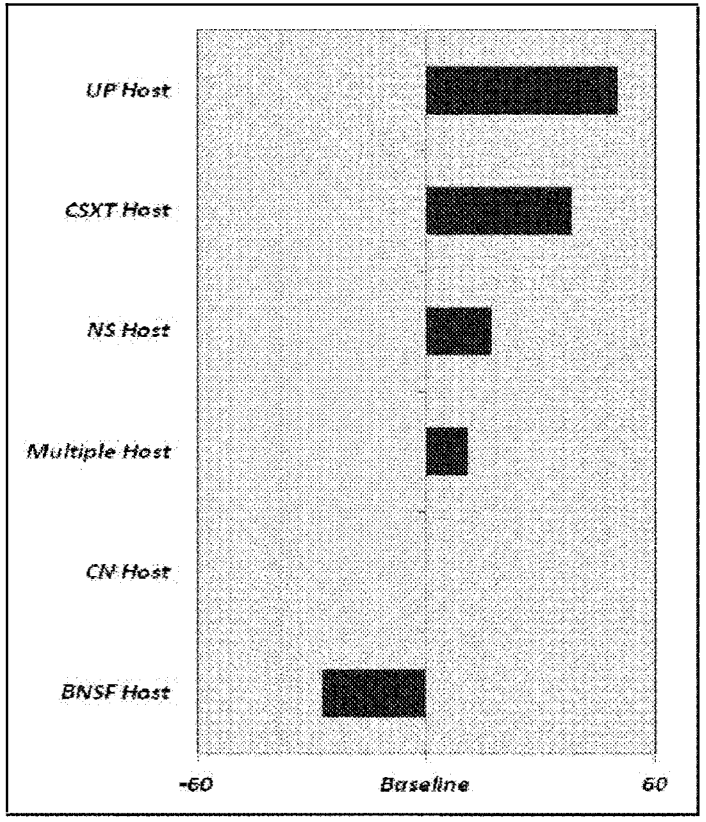
System-Wide Delays

- Host effects:
  - These ranged widely in value across hosts on both long- and short-distance services.
  - The effects of some host railroad practices exceed that of all factors except possibly slow orders.
- Other factors:
  - Slow orders had the largest impacts on delays among these factors on both long- and short-distance services system-wide.
  - Capacity utilization and activity at train turning points contributed notably to delays on both types of service.
  - Amtrak mechanical problems contributed little to delays on either long- or short-distance services.

Host Effects on System-Wide Long-Distance Services

- These ranged from 50 seconds above baseline levels, for UP, to 27 seconds below, for BNSF.
  - This means operations on UP infrastructure experienced 50 seconds more delay between each station-pair on average than operations on infrastructure hosted by the baseline railroad group.
  - CN host effects were statistically indistinguishable from baseline levels.
- The baseline impact on delays was at least 27 seconds, the amount that BNSF's host effects were below the baseline.
  - Trains cannot operate faster than PRT.
- Consequently, at a minimum, UP host effects averaged 77 seconds of delay at the station-pair level.

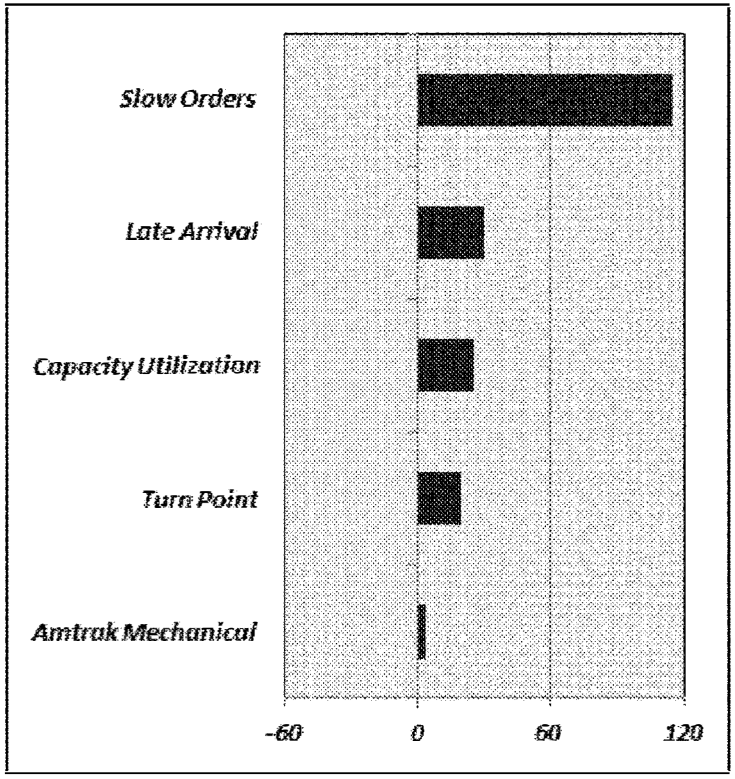
Contributions to Average Station-Pair Delays (in Seconds)



Other Factors in System-Wide Long-Distance Service Delays

- Slow Orders contributed 1 minute 55 seconds, or approximately 23 percent, to the average net delay between stations of 8 minutes, 25 seconds.
  - This average delay caused by slow orders cumulates to an average 58 minutes of delay over the length of each long-distance route.
- Trains arriving over two hours late at a station incurred an additional 30 seconds of delay on average when subsequently traveling on to the next stop.
- Capacity utilization and activities at turn points contributed 26 seconds and 20 seconds, respectively, to delays.

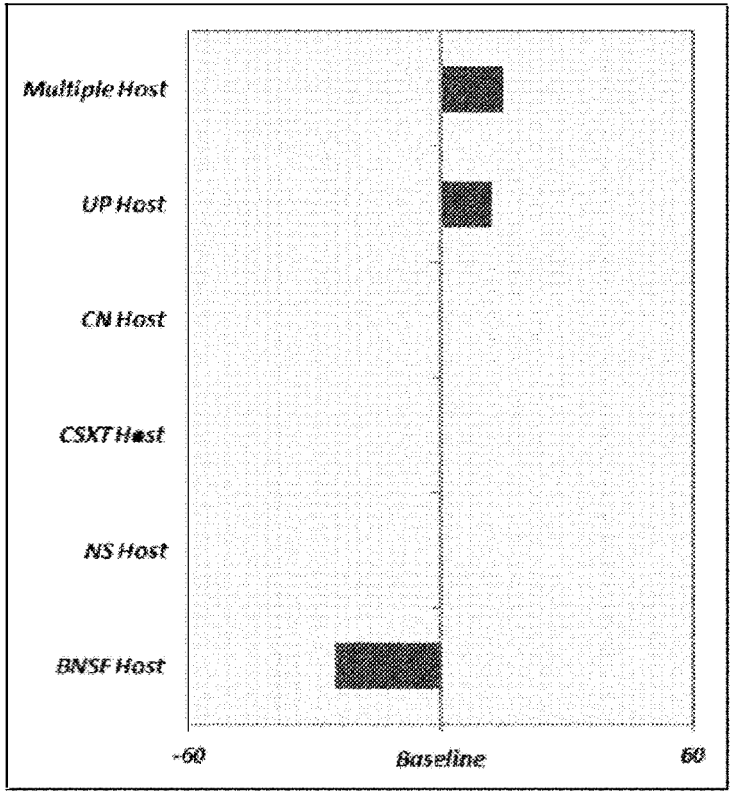
Contributions to Average Station-Pair Delays (in Seconds)



Host Effects on System-Wide Short-Distance Services

- Locations at which there were multiple hosts between a station-pair experienced the largest host effects, 15 seconds, on short-distance services.
- BNSF host effects were 24 seconds less than baseline host effects.
- CN, CSXT, and NS host effects were statistically indistinguishable from baseline host effects levels.
- At a minimum, the effect of having multiple hosts between a station-pair added 39 seconds to delays.

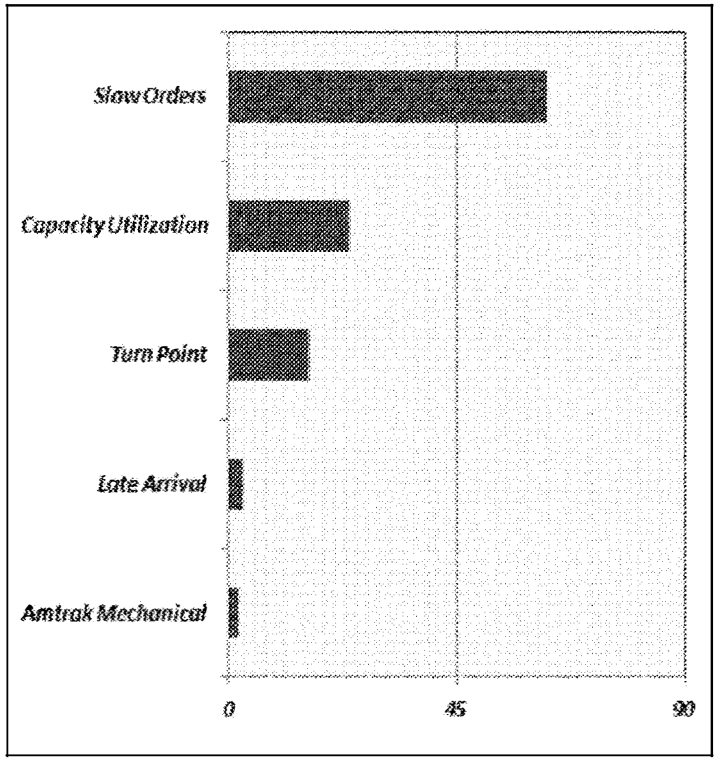
Contributions to Average Station-Pair Delays (in Seconds)



Other Factors in System-Wide Short-Distance Service Delays

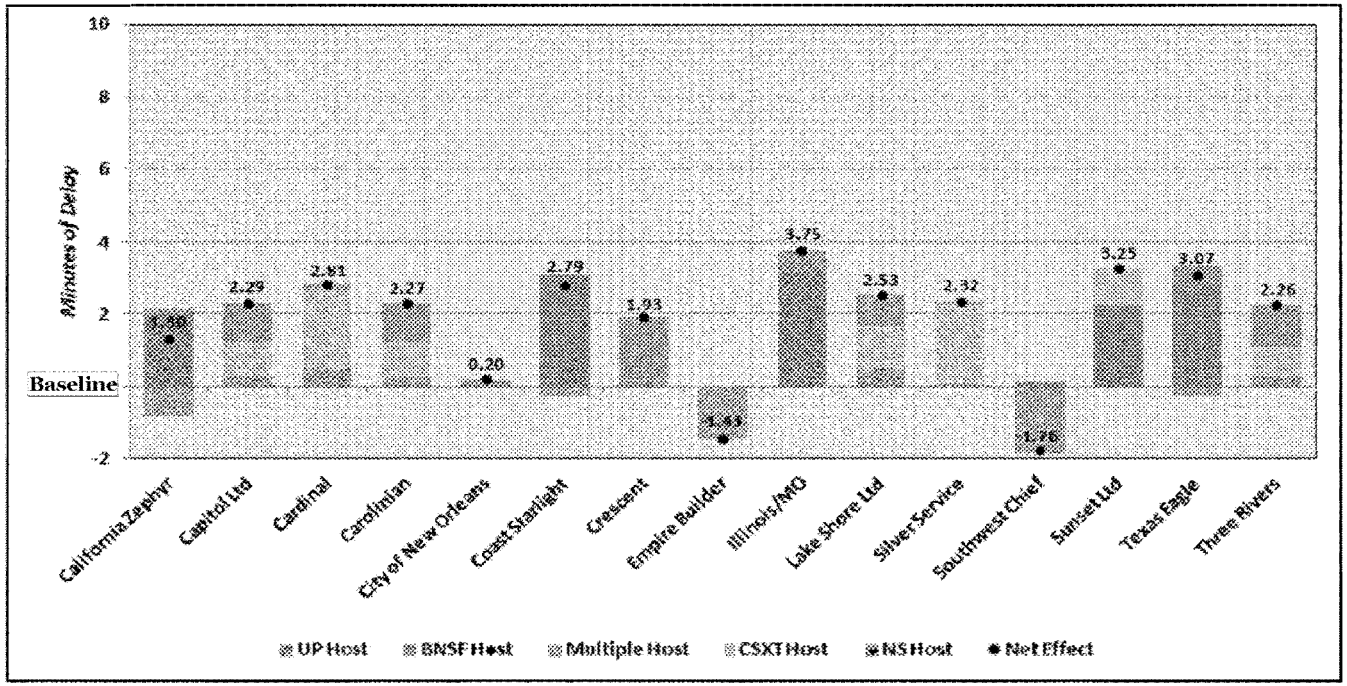
- Slow orders contributed 1 minute 3 seconds to the net average delay of 5 minutes, 10 seconds, or approximately 21 percent.
  - This delay time added up to an average 21 minutes of delays due to slow orders over each short-distance route.
- Capacity utilization played a relatively more prominent role in delays for short-distance services, contributing 24 seconds on average to delays at each station-pair.
- Few trains arrived at a station over two hours late on short distance services, so late arrivals did not have a major impact on delays.

Contributions to Average Station-Pair Delays (in Seconds)



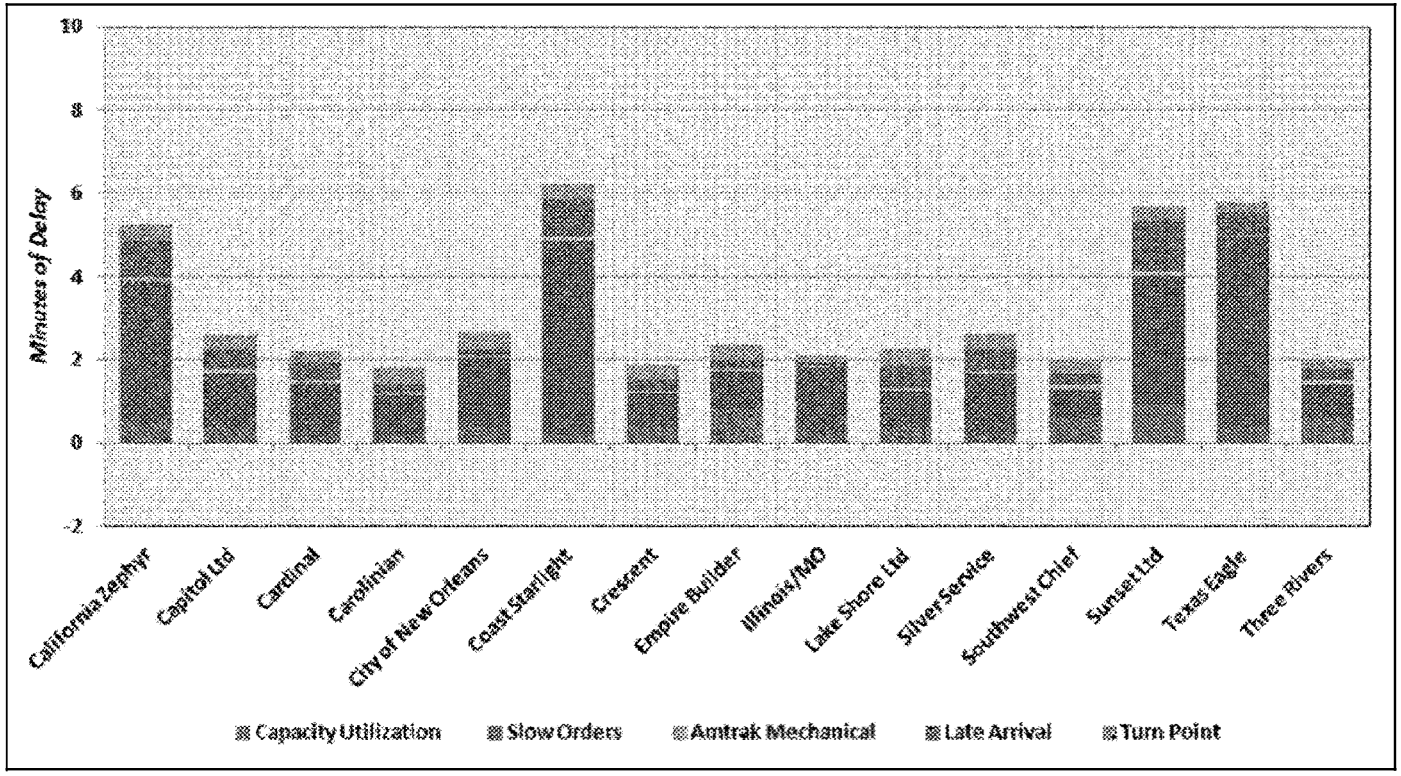
Host Effects on Individual Long-Distance Routes

- The impact of a host depends in part on the share of the infrastructure owned by the host. A long-distance route may have a single host for the majority of its length. By comparison, a host's system-wide effects depend on the host's share of system-wide infrastructure.
- Since the model was estimated on a system-wide basis, we cannot determine a minimum baseline value for host effects for individual routes.



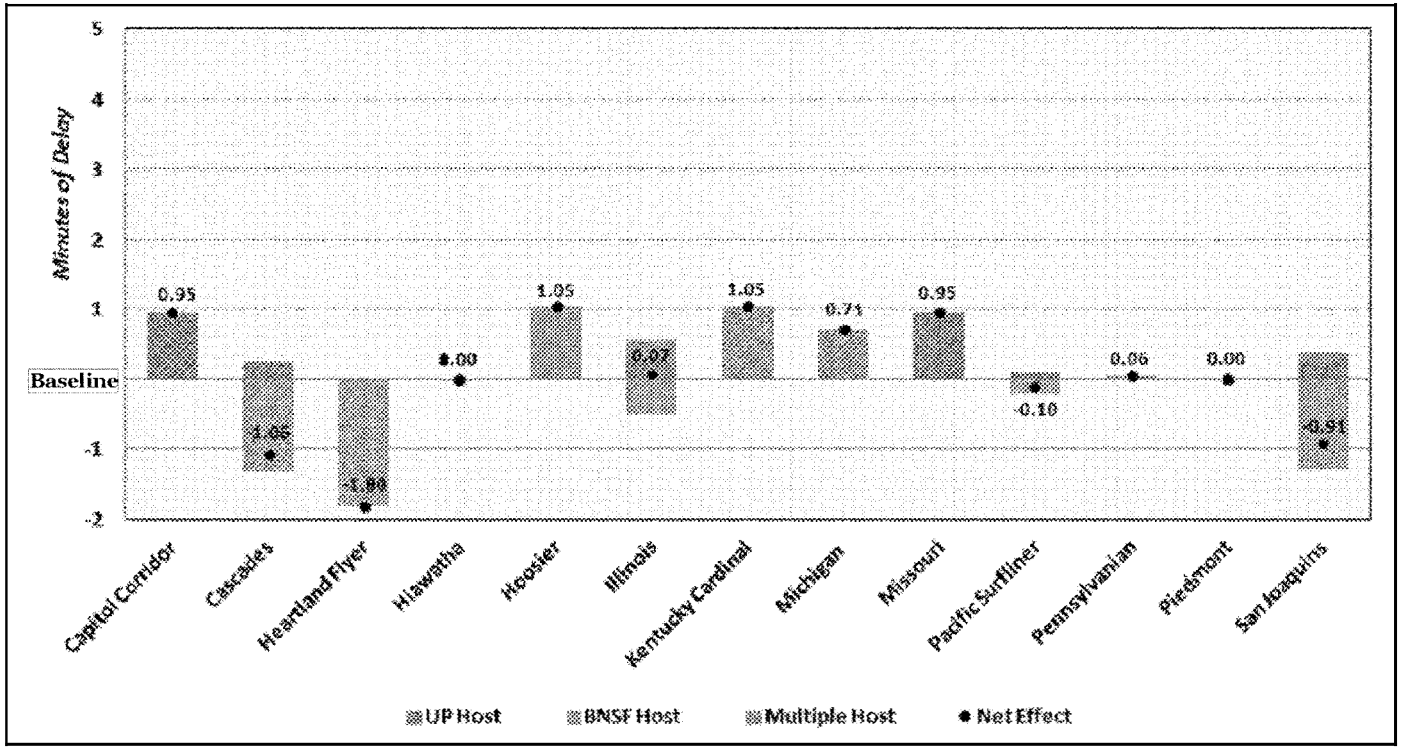
Other Factors in Delays on Individual Long-Distance Routes

- Slow orders' impacts dominated those of other factors.
- Late arrival had a substantial effect on several routes.



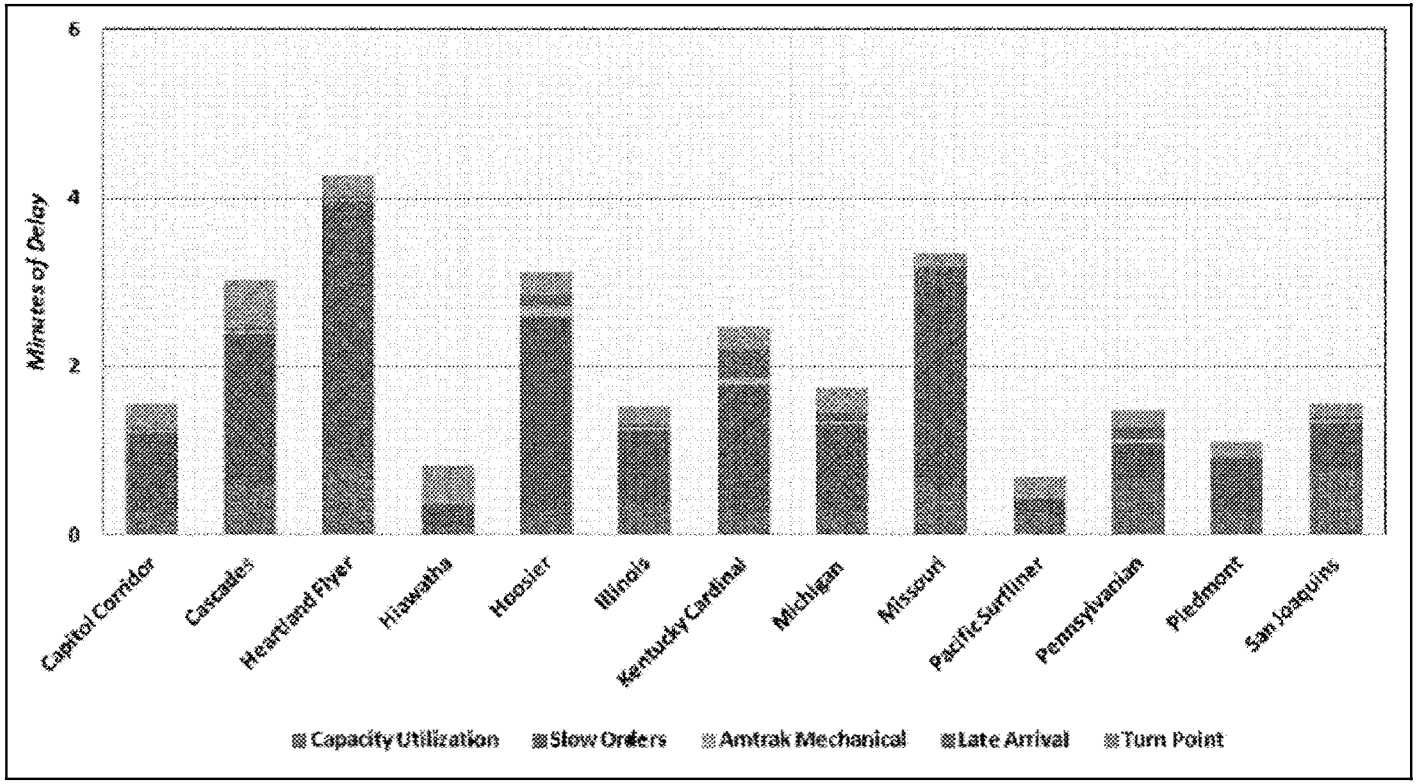
Hosts' Effects on Individual Short-Distance Routes

- Multiple hosts' effects accounted for sizeable portions of individual short-distance routes' delays.



Other Factors in Delays on Individual Short-Distance Routes

- Slow orders' impacts exceeded the effects of other, non-host, factors.
- Capacity utilization had notable effects on delays on several routes.



Station-Pair Delays

- Station-pairs with the highest average delays were not characterized by the highest levels of capacity utilization.
- Slow orders were sizeable at station-pairs on long-distance routes with the highest average delays.

Selected Station-Pairs with High Average Delays

Station Pairs	Service	Average Delay	Slow Orders	Capacity Utilization
Long-Distance Service				
SAS-HOS	Sunset Ltd.	48.4	15.8	52.5%
ALP-ELP	Sunset Ltd.	46.0	14.0	49.3%
STL-PBF	Texas Eagle	43.2	37.9	2.8%
WNN-SPR	California Zephyr	41.1	30.0	41.5%
ELK-WNN	California Zephyr	41.0	33.9	34.5%
Short-Distance Service				
VAC-BEL	Cascades	29.4	5.5	6.8%
SPI-ALN	Illinois	25.6	6.0	6.4%
SED-JEF	Missouri	24.4	1.9	14.7%
LEE-WAR	Missouri	21.1	1.5	12.7%
PGH-ALC	Pennsylvanian	19.1	3.3	12.2%

Note: Delays and slow orders are in minutes.

Station-Pair Delays (cont'd.)

- Locations with high capacity utilization levels were generally not among the locations with the highest average delays.
- These station-pairs had much shorter delays than the station-pairs with the highest average delays, particularly on long-distance routes.

Selected Station-Pairs with High Capacity Utilization

Station Pairs	Service	Average Delay	Capacity Utilization
Long-Distance Service			
POS-ONA	Sunset Ltd.	4.7	95%
DEM-LDB	Sunset Ltd.	12.0	88%
TUS-MRC	Sunset Ltd.	18.1	81%
YUM-PSN	Sunset Ltd.	28.4	77%
GGW-WPT	Empire Builder	2.2	63%
Short-Distance Service			
MTZ-ACA	San Joaquins	1.3	69%
GLE-FTW	Heartland Flyer	18.8	41%
WAC-COC	San Joaquins	3.5	34%
COC-HNF	San Joaquins	1.0	33%
SKN-ACA	San Joaquins	2.7	31%

Note: Delays are in minutes.

Concluding Observations

- Host effects' considerable contributions to delays, especially on long-distance services, indicate the importance of host railroad practices to Amtrak's on-time performance.
- Our findings also suggest an important role for capital investment in reducing Amtrak delays.
  - At every level of our analysis, we found slow orders to be a major cause of Amtrak train delays.
  - Capacity utilization added substantially to delays on short-distance services system-wide.

EXHIBIT 110

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Individual freight effects, capacity utilization, and Amtrak service quality

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ABSTRACT

This paper offers a new perspective on the post-deregulation rail industry. We hypothesize that a link exists between individual freight effects and Amtrak service quality. Specifically, we investigate the relationship between freight control of the infrastructure on which Amtrak trains operate and Amtrak train delays. Our sample consists of 1117 directional station-pairs for fiscal years 2002 through 2007 on 28 Amtrak non-Northeast Corridor passenger routes. We found that freight effects have a significant impact on Amtrak train delays after controlling for other important delay determinants such as the capacity utilization rate. The impact is higher on long-distance routes. We also observed significant differences between the effects of different freight railroads. For example, Amtrak operations on infrastructure controlled by several Class I railroads experienced significantly larger delays than baseline operations, while Amtrak train delays on Burlington Northern and Santa Fe's tracks actually fell below baseline levels.

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1. Introduction

In this paper, we offer a new perspective on the post-deregulation rail industry through an exploration of the relationships between individual freight effects, capacity utilization rates, and Amtrak[4] service quality. In particular, we hypothesize that a link exists between individual freight companies' control of the infrastructure on which Amtrak operates and Amtrak train delays, a topic that has received little previous attention.[5] We investigate this hypothesis in the context of addressing the research question, "What are the causes of Amtrak train delays?" This is the first study to perform a quantitative analysis of Amtrak on-time performance. Our results indicate that freights' control of the rail infrastructure is particularly important in explaining Amtrak delays.

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[4] Amtrak, formally the National Railroad Passenger Corporation, provides all intercity passenger rail service within the United States.
[5] In 2008, the United States Department of Transportation Office of Inspector General (DOT-OIG) pointed to a probable connection between individual freights' traffic management and Amtrak's on-time performance (DOT-OIG, 2008b).

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A large-amount of research has been published on the US rail industry since its deregulation by the Staggers Rail Act of 1980. Most of these studies examine the effect of freight company mergers on shipper rates, cost savings, and other efficiency measures (Wilson, 1994; Chapin and Schmidt, 1999; Ivaldi et al., 2002). Other studies investigate rail competition more generally. For example, MacDonald (1987) found that lower shipping rates were associated with increased competition among freight railroads as well as between railroads and other transportation modes. In a more recent paper, Burton and Wilson (2006) compared prices on competitive and monopoly origin–destination pairs. Their evidence suggests that freight railroads charge higher rates on rail links without barge competition.

The railroad infrastructure Amtrak owns is comprised solely of most of the Northeast Corridor (NEC) between Boston, MA and Washington, DC, and 90 miles of track outside of Chicago. Consequently, the majority of Amtrak services run on tracks owned and dispatched by freight railroads. Each freight railroad determines dispatching priorities on its system, and Amtrak's on-time performance can be significantly affected by dispatching practices.

Freight railroads are private companies whose profits largely derive from shipping charges. Amtrak, on the other hand, is a public entity seeking to maximize public benefits. In particular, good on-time performance attracts passengers, increases Amtrak's revenues, and decreases its reliance on Federal subsidies (DOT-OIG, 2008a).[6] Because of the conflict of interest between the freight railroads and Amtrak, Congress passed a law in 1973, requiring freights to give Amtrak trains priority when dispatching.[7] However, whether the freights comply with the statute is a matter of debate (DOT-OIG, 2008b). Our results suggest that which freight railroad controls the track on which an Amtrak train travels substantially affects that train's delays.

Our empirical model controls for important delay determinants, including the capacity utilization rate, an indicator of the degree of congestion on a rail network. Dingler et al. (2009) performed a simulation-based study and showed that increases in traffic volume increase rail delays. We constructed a capacity utilization variable based on traffic volume and capacity, using an approach similar to that of Cambridge Systematics (2007), and found that increases in capacity utilization add to Amtrak train delays.

The hypothesis of a link between individual freight effects and Amtrak service quality and controlling for capacity utilization are innovations of our research. Our study is unique in other aspects as well. For example, we analyze service quality from the perspective of Amtrak, whereas Harris and Winston (1983) used Winston's (1979) estimates of shippers' value of transit time to study rail network effects on service quality. In addition, unlike Martland (2008), we employ an econometric approach. Martland compared Amtrak's average train speed with the average speed of CSXT freight trains over different track segments, and found Amtrak's average speed consistently exceeded the freight trains' average speed. From this he concluded that Amtrak trains received dispatching priority. Our analysis does not directly consider dispatching priority, but instead examines the effects of individual host railroads on Amtrak delays while controlling for other factors.

2. Background

Amtrak's historical on-time performance (OTP) on routes outside the NEC has been a matter of concern for some time. From fiscal years (FY) 2002 through 2007, Amtrak's annual OTP on the NEC ranged between 74% and 88% while outside the NEC it consistently fell below 55% on long-distance routes.[8] During the same time period, annual OTP on Amtrak's non-NEC short-distance routes varied between 65% and 76%. These figures indicate a notable difference in Amtrak's NEC and non-NEC operations, particularly for long-distance services.

The dynamics of Amtrak train delays may differ between long- and short-distance routes for several reasons. Outside of the NEC, short-distance routes are served by shorter, lighter trains that can travel at higher speeds than those on long-distance routes. Further, some short-distance routes receive service several times a day, and substantial portions of them wind through densely-populated areas. By comparison, most stretches of long-distance routes run through lightly populated rural areas, and no long-distance route has service more than once a day.

Much of the literature on train delays focuses on delay-time estimates and capacity analyses for freight or passenger trains, using either simulation-based or optimization-based methodologies[9] (Higgins and Kozan, 1998; Huisman and Boucherie, 2001; Vromans et al., 2006; Harrod, 2008; Murali et al., 2010). Both types of research involve making a number of assumptions about dispatching rules and rail network structures (Gorman, 2009), that statistically-based research does not require.

Olsson and Haugland (2004) used statistical methods to analyze the effects of selected factors on train punctuality in Norway. More recently, Gorman (2009) conducted an empirical study focused on congestion-related freight rail delays. Gorman predicted total train run time using train and track characteristics, and a list of congestion-related factors such as meets and passes. Instead of including congestion-related factors to predict congestion delay, we generated a capacity utilization measure to assess the effect of congestion on train delays.

[6] Recent Transportation Part A literature has looked into the effect of delays on demand for other modes of transportation (Tu et al., 2012; Rojo, 2012; Zou et al., 2012).

[7] 39 U.S.C. §24308(c).

[8] Long-distance routes are those which exceed 550 miles. All other routes are considered short-distance.

[9] Some studies examine the issue of scheduling and delay propagation: Cacchiani and Toth (2012) and Cacchiani et al. (2010a,b). We focus primarily on the initial causes of delay.

3. Data

Our sample includes nearly all of Amtrak's non-NEC corridor passenger routes from Amtrak FY 2002 through 2007 (October 2001 through September 2007).[10] The data covers 28 Amtrak long-distance and short-distance routes.[11] We compiled 1117 unique, non-overlapping Amtrak origin and destination station-pairs from these routes. The unit of observation was a unique combination of origin station, destination station, route and month.[12] Altogether, we had 64,684 unique observations, three-quarters of which were on the long-distance routes.

Station-pairs serviced by different routes were treated as separate observations. Many instances in which multiple routes served the same station-pair involved both short and long-distance routes. Our treating these instances separately allowed for the possibility that short-distance and long-distance trains were affected differently by factors such as host railroad dispatching practices 93% of the 1117 station-pairs were served by a single route. Approximately 6% were shared by 2 routes. The remaining station-pairs were served by 3 to 6 routes.

The station-pairs in our model also differed by direction. We used directional markets because delay times can differ according to travel direction. For example, on the Texas Eagle, which runs between Chicago, Illinois and San Antonio, Texas, northbound trains consistently take 100 min longer, on average, than southbound trains to reach their final destination.

3.1. Measure of delay

We generated our measure of delay with respect to pure runtime (PRT).[13] Pure run time is calculated by representatives from Amtrak and the host railroad riding a train from one Amtrak station to another and reaching an agreement on the minimum amount of time required for the trip. On these journeys, the train is not subject to any interference and travels at the posted speed limits. Our delay measure is the difference between the time a train departs an origin station and the time it arrives at its destination station minus PRT.

Scheduled travel time, by comparison, incorporates schedule padding. Our data indicate that an increase in delays between two stations often preceded an increase in the time allotted in the schedule to travel between those two stations. Amtrak officials told us that such changes are negotiated between Amtrak and the host railroads, and that Amtrak has often agreed to add time to the schedule in exchange for a host railroad promising better on-time performance. Thus padding would be endogenous in a regression explaining delays with respect to schedule. Not controlling for padding, however, would make it impossible to determine if reductions in delays with respect to schedule were due to any other factors. The remainder of this paper solely considers delays with respect to PRT.

Though we do not present the results here, we also examined delays occurring in stations. We found that on average, on-track delays accounted for 77% of total delay minutes, while station delays accounted for 23%. However, while there are scheduled terminal wait times, there is no analogue for PRT that would correspond to time spent in a terminal. Consequently, we could not construct a model for station delays analogous to our model of on-track delays with respect to PRT. All delays discussed in this paper are on-track delays.

Daily delays were aggregated into monthly averages by station-pair. To avoid unrepresentative monthly averages, we eliminated station-pairs that were missing more than two-thirds of their expected observations.[14] In addition, we eliminated outliers that were obviously the result of data entry error (see Appendix A). Fig. 1 displays a histogram for average minutes of delay for the data used in the analysis. The distribution has a longer tail on the right, but the tail thins out dramatically as delays increase. We calculated the skewness and kurtosis to compare the degree of deviation from a normal distribution. The skewness was 2 and kurtosis 10, as compared with 0 and 3 for the normal distribution.

3.2. Freight effects

We captured individual host railroad effects—freight effects—using dummy variables for the host railroads who own and dispatch the associated infrastructure. Amtrak provided the data on freight railroad infrastructure ownership. We identified 7 host railroad categories associated with the station-pairs in our sample: one category for each of five Class I railroads—Burlington Northern and Santa Fe (BNSF), Union Pacific (UP), CSX Transportation (CSXT), Norfolk Southern (NS) and the

[10] We excluded the following NEC routes from our sample: Acela Express, Metroliner, Regional, Empire Service, Keystone, Vermonter and Downeaster. We also excluded one non-NEC service, the Auto Train, which travels from Lorton, Virginia to Sanford, Florida with no intermediate station stops.

[11] Long distance routes include the California Zephyr, City of New Orleans, Coast Starlight, Empire Builder, Cardinal, Lake Shore Limited, Silver Service, Southwest Chief, Sunset Limited, Texas Eagle, Capitol Limited, Crescent, Three Rivers and Illinois/Missouri. Short-distance routes include the Heartland Flyer, Hoosier State, Illinois, Pacific Surfliner, San Joaquin, Capitol Corridor, Carolinian, Cascades, Hiawatha, Michigan, Missouri, Pennsylvanian, Piedmont, and Kentucky Cardinal.

[12] We have unbalanced panel data in that we did not have the full 72-months worth of data for all 1117 station-pairs. The minimum number of observations for any station-pair included in the sample was 12 months. At least 68 months of data was available for half of the station-pairs.

[13] Amtrak provided PRT data and data on arrival and departure times for each station at a daily frequency at the individual train level. We removed data on temporary trains—those operating less than once a week. Nearly all routes are serviced at least once a day.

[14] According to Amtrak, missing observations most likely occur as the result of station staff's failure to record trains' entry and exit times. Amtrak is currently automating the recording process for all stations.

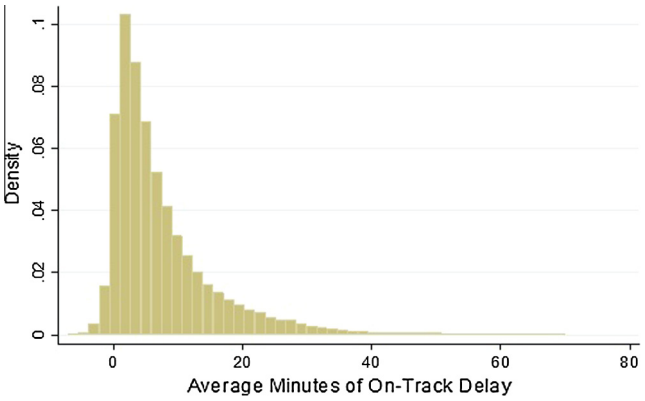


Fig. 1. On-track delay histogram (FY2002-FY2007).

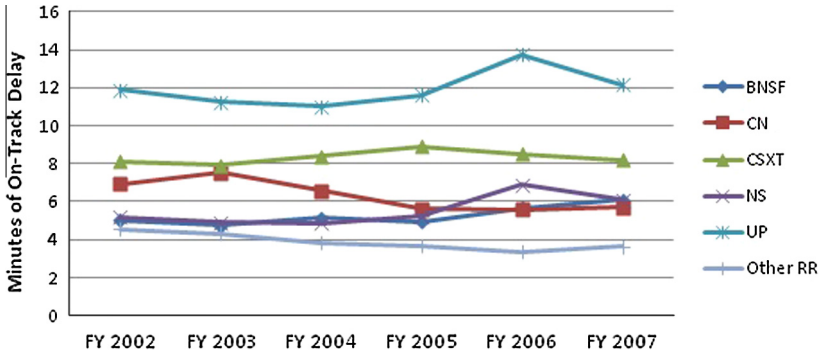


Fig. 2. Average minutes of Amtrak station-pair delay by host railroad.

Canadian National Railway Company (CN); one category for multiple hosts between a single station-pair; and one category for other, largely short-line, railroads.[15]

The host railroads for our 891 station-pairs remained constant throughout the sample period. Three host railroads divided ownership of roughly three-fourths of the track miles fairly evenly among them. Track miles shared between multiple hosts accounted for 2% of total track miles, and those owned by the "other" railroad group accounted for 4%. We eliminated the station-pairs between which Amtrak hosts the tracks because there were so few of them.

Fig. 2 presents the annual average minutes of Amtrak delays by host railroad. UP was consistently associated with the highest average Amtrak delays throughout our sample period, and CSXT the second highest. Amtrak delays averaged the least on the infrastructure hosted by the group labeled "other railroads."

3.3. Capacity utilization rate

Our capacity utilization measure has four components: the capacity of the railroad infrastructure,[16] freight traffic, Amtrak traffic, and commuter rail traffic. Traffic is defined as the total number of cars—locomotives, passenger cars, and freight cars—that pass over a segment of track in a given month. The Transportation Routing Analysis Geographical Information System (TRAGIS), a national railroad system model and routing simulation program developed by Oak Ridge National Laboratories (ORNL), provides information on track characteristics (number of tracks, type of signal system, frequency of passing sidings) for each segment of intermediate track between each station-pair. ORNL used this information in combination with data on terrain grade to develop capacity values for each segment based on a method designed by Clark (1995). Clark's method is similar to that used in Cambridge Systematics (2007). In both studies, the authors developed tables which assigned capacity levels to different combinations of the factors considered, based on simulation studies.[17]

We obtained raw data on daily freight traffic from the Surface Transportation Board's Carload Waybill Sample.[18] ORNL used TRAGIS to assign routes to all freight traffic identified in the Waybill Sample, and translated daily traffic levels into monthly averages for each track segment. We determined Amtrak train frequency using Amtrak timetables, and the number

[15] Short line railroads are Class II or Class III railroads, as defined by the Surface Transportation Board.
[16] We are defining capacity as the maximum number of cars that can pass over a segment of track in a month.
[17] Krueger (1999) studied capacity for Canadian National Railway using a parametric model.
[18] The Waybill Sample provided origin, destination, and, in some cases, some intermediate points for each trip sampled.

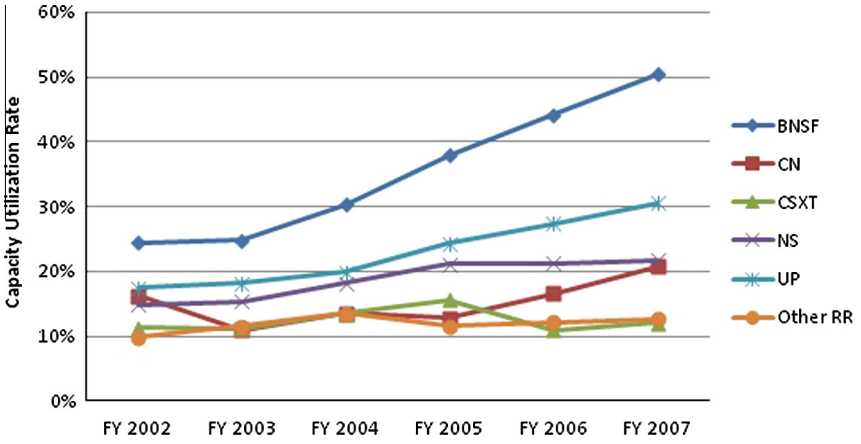


Fig. 3. Station-pair capacity utilization rate by host railroad.

of cars on each train from Amtrak consist books. We obtained information on commuter train frequency and number of cars per train from the 13 relevant commuter agencies.

We divided monthly freight, Amtrak, and commuter traffic estimates by the number of days in each month to get average daily traffic to match daily capacity. We calculated the capacity utilization rate for each segment of track by totaling the daily averages of freight, Amtrak, and commuter rail traffic and dividing the sum by segment capacity. The maximum value of the calculated capacity utilization rate across all track segments between a station-pair was used in the analysis.

Fig. 3 presents the average capacity utilization rate at the station-pair level by host railroad. An increasing trend is observed from fiscal year 2003 to fiscal year 2007 for BNSF, UP, NS, and CN. BNSF consistently had the highest capacity utilization rate at the station-pair level between fiscal years 2002 and 2007. UP had the second highest level throughout our sample periods. While the congestion level over BNSF's track was high relative to the other railroads in our sample, the average on-track delay associated with BNSF remained low as shown in Fig. 2.

4. Model

Using information obtained in interviews with freight railroads and Amtrak, as well as guidance from the simulation and optimization literature, we constructed the following model to measure delays on long-distance routes. The dependent variable is ON-TRACK DELAY_{ijt}. This is the average of the actual time on the track minus PRT for all trains that operate between station-pair i, route j, in month t. The rest of the model is as follows:

$$\begin{aligned}\text{ON-TRACK DELAY}_{ijt} = {} & \alpha_0 + \beta_1 \text{PRECIP}_{it} + \beta_2 \text{TEMP}_{it} + \gamma_1 \text{CAP UTIL}_{ijt} + \gamma_2 \text{SLOW ORDER}_{it} + \gamma_3 \text{MECH}_{ijt} + \gamma_4 \text{LATE ARR}_{ijt} \\ & + \delta_1 \text{DISTANCE}_i + \delta_2 \text{TURN}_{ij} + \eta_1 \text{MEET1}_{\text{jt}} + \eta_2 \text{MEET2}_{\text{jt}} + \theta_1 \text{BNSF}_i + \theta_2 \text{CN}_i + \theta_3 \text{CSXT}_i + \theta_4 \text{NS}_i \\ & + \theta_5 \text{UP}_i + \theta_6 \text{MULTI HOST}_i + \sum_{l=2}^{7} \lambda_l \text{FY}_{lt}\end{aligned}$$

where i indexes the station-pair, j the route, and t the month. The Greek letters represent the coefficients which quantify the effect of each variable on Amtrak delays. The β's control for weather related delays. γ's represent non-weather related delay determinants with both cross sectional and time series variation. δ's are associated with time invariant variables. η's represent the effects of meetings between Amtrak and the freights to address delays, θ's are dummy variables for individual host railroads, and λ's capture fiscal year-specific effects.

This model was also used for short-distance routes with MEET1_{jt} and MEET2_{jt} excluded, because the meetings were unrelated to short-distance routes.

MEET1_{jt} equals one if route j is California Zephyr and if t is later than April 2007, the date the relevant freight host and Amtrak met to discuss addressing delays on that route. MEET2_{jt} equals one if route j is either Capitol Limited or Lake Shore Limited and t is later than June of 2007, marking a meeting between a host railroad and Amtrak to address delays on those routes.

We generated seven host railroad dummy variables to capture the effects of individual host railroads and groups of host railroads: UP_i, BNSF_i, CSXT_i, NS_i, CN_i, MULTI HOST_i, and Other RR_i. UP_i takes the value one if Union Pacific is the host railroad for the station-pair i and zero otherwise. The rest of the individual host dummies are defined in similar fashion. The definitions for MULTI HOST_i and Other RR_i are slightly different. MULTI HOST_i takes the value one if there is more than one host railroad for a given station-pair. Other RR_i represents the group of other, largely short line, host freight railroads.

Other RR_i is the reference group and its dummy is deleted from the estimation. The coefficients on other host dummies measure the difference in delays relative to Other RR_i. These dummy variables capture the time-invariant characteristics

Table 1A
Variable definition and summary statistics (overall).

Variable name	Definition	Average	S.D.	Max	Min
ON-TRACK DELAY$_{ijt}$	Average on-track minutes of delay for all trains operating on station-pair i, route j, in month t.	7.61	8.68	70	−7
PRECIP$_{it}$	The percent of days with at least 1 inch of rain on station-pair i in month t	0.02	0.04	0.35	0
TEMP$_{it}$	The percent of days above 90° in station pair i in month t	0.11	0.22	1	0
CAP UTIL$_{ijt}$	The maximum level of capacity utilization between station-pair i, on route j, in month t	0.22	0.24	2.11	0
SLOW ORDER$_{it}$	The average minutes of slow order delays from all trains operating on station-pair i, in month t	1.84	4.25	97	0
MECH$_{ijt}$	The average minutes of mechanical delays from all trains operating on station-pair i, route j, in month t	0.37	2.08	103.18	0
LATE ARR$_{ijt}$	The percent of trains that arrive more than 2 h late at the origin of station-pair i, route j, in month t	0.14	0.21	1	0
DISTANCE$_i$	The weighted average distance in 10 mile units for station-pair i	4.83	3.56	26.47	0.14
TURN$_{ij}$	Takes the value 1 if the origin of station pair i on route j is a crew base or turn point	0.22	0.41	1	0
MEET1$_{jt}$	Equals one if route j is California Zephyr and if t is later than April 2007	0	0.06	1	0
MEET2$_{jt}$	Equals one if route j is either Capitol Limited or Lake Shore Limited and t is later than June 2007	0	0.04	1	0
UP$_i$	Takes the value 1 if UP is the host railroad for station-pair i and 0 otherwise	0.22	0.42	1	0
BNSF$_i$	Takes the value 1 if BNSF is the host railroad for station-pair i and 0 otherwise	0.23	0.42	1	0
CSXT$_i$	Takes the value 1 if CSXT is the host railroad for station-pair i and 0 otherwise	0.20	0.40	1	0
NS$_i$	Takes the value 1 if NS is the host railroad for station-pair i and 0 otherwise	0.17	0.38	1	0
CN$_i$	Takes the value 1 if CN is the host railroad for station-pair i and 0 otherwise	0.07	0.26	1	0
MULTI HOST$_i$	Takes the value 1 if there are multiple hosts between station-pair i and 0 otherwise	0.03	0.18	1	0

specific to each host railroad. They can include, but are not limited to, host business model, managerial ability, and dispatching practices.

CAP UTIL$_{ijt}$ is the maximum monthly level of the capacity utilization rate between station-pair i, on route j, in month t. It is the maximum ratio of traffic volume to capacity, both measured in carloads, observed between the station-pair. Drawing from results from the simulation-based literature, an increase in the level of capacity utilization is expected to result in an increase in train delays. Therefore, we expect a positive coefficient on CAP UTIL$_{ijt}$.

To capture variation in minutes of delay due to weather, we include precipitation (PRECIP$_{it}$) and temperature (TEMP$_{it}$).[19] PRECIP$_{it}$ is the percent of days during which at least 1 inch of rain fell at station-pair i in month t. TEMP$_{it}$ is the percentage of days with temperatures exceeding 90° for station-pair i in month t. The weather variable for each station-pair was measured at the weather station closest to the mid-point between the station-pair. A positive coefficient is expected on PRECIP$_{it}$ as trains operate at reduced speed during heavy rains. Similarly, a positive coefficient is expected on TEMP$_{it}$ as most freight railroads have heat order policies that reduce train speeds when the temperature exceeds certain thresholds.[20]

SLOW ORDER$_{it}$ is the average minutes of slow order delays from all the trains in our sample operating at station-pair i, in month t. A slow order is a local speed restriction issued by host railroads that requires trains to travel at less than a track's normal speed limit. Several triggers can result in slow orders: poor track conditions, track maintenance or improvement, and weather-related issues. Our data for this variable includes all except weather-related slow orders, and came from Amtrak's conductor delay reports. A positive coefficient on SLOW ORDER$_{it}$ is expected.

MECH$_{ijt}$ is the average minutes of delays resulting from mechanical problems with all the Amtrak trains in our sample operating between station-pair i, on route j, in month t. The data for this measure was also taken from Amtrak conductor delay reports. We expect the coefficient on this variable to be positive.

LATE ARR$_{ijt}$ was used to capture delays induced by trains running well outside their scheduled time slot. It is defined as the percent of trains that arrive more than 2 h late at the origin station of station-pair i, on route j, in month t. A positive coefficient is expected as late arrivals present a dispatching challenge. LATE ARR$_{ijt}$ could be endogenous because factors not captured in our model could be expected to cause late arrivals. We use the percentage of trains that arrive late rather than the actual minutes of delay to minimize this potentiality.

DISTANCE$_i$ is the weighted average distance between station-pair i, with the weights being the percentages of train and date combinations.[21] We expect a positive sign for the estimated coefficient on DISTANCE$_i$. An increase in distance increases the probability of a delay event occurring, including as a result of factors not otherwise captured. Among these factors are delay-inducing track configurations, such as crossovers.

[19] We obtained our weather data from the National Climatic Data Center.

[20] Amtrak provided data on the freights' heat-order policies. Different freights have different thresholds for imposing heat-related speed restrictions. One freight has three temperature thresholds—100, 105, and 110 °F; the higher the threshold, the greater the speed reduction. The minimum threshold affecting passenger train speeds is 105°. Another freight requires that one of two region-specific temperature thresholds—90° or 95°—be met, plus daily fluctuation of 40° or more. Another freight also has two region-specific thresholds: 90° and 100°. A fourth freight's threshold is 95°. The last freight has no specific threshold triggering heat-orders. We decided to use 90° as the threshold since 90° is the minimum threshold across the various heat-order policies.

[21] We obtained the distance information from Amtrak. It is weighted because of the slight changes in distance over time in approximately 40% of the station-pairs. We suspect that the difference in reported mileage over time occurs because of small changes in the methodology used in recording it.

Table 1B
Variable definition and summary statistics (long distance).

Variable name	Definition	Average	S.D.	Max	Min
ON-TRACK DELAY$_{ijt}$	Average on-track minutes of delay for all trains operating on station-pair i, route j, in month t.	8.42	9.28	70	−7
PRECIP$_{it}$	The percent of days with at least 1 inch of rain on station-pair i in month t	0.03	0.04	0.35	0
TEMP$_{it}$	The percent of days above 90° for station pair i in month t	0.12	0.23	1	0
CAP UTIL$_{ijt}$	The maximum level of capacity utilization between station-pair i, on route j, in month t	0.23	0.26	2.11	0
SLOW ORDER$_{it}$	The average minutes of slow order delays from all trains operating on station-pair i, in month t	2.14	4.76	97	0
MECH$_{ijt}$	The average minutes of mechanical delays from all trains operating on station-pair i, route j, in month t	0.44	2.33	103.18	0
LATE ARR$_{ijt}$	The percent of trains that arrive more than 2 h late on station-pair i, route j, in month t	0.18	0.23	1	0
DISTANCE$_i$	The weighted average distance in 10 mile units for station-pair i	5.49	3.77	26.47	0.33
TURN$_{ij}$	Takes the value 1 if the origin of station-pair i on route j is a crew base or turn point	0.23	0.42	1	0
MEET1$_{jt}$	Equals one if route j is California Zephyr and if t is later than April 2007	0	0.07	1	0
MEET2$_{jt}$	Equals one if route j is either Capitol Limited or Lake Shore Limited and t is later than June 2007	0	0.05	1	0
UP$_i$	Takes the value 1 if UP is the host railroad for station-pair i and 0 otherwise	0.23	0.42	1	0
BNSF$_i$	Takes the value 1 if BNSF is the host railroad for station-pair i and 0 otherwise	0.24	0.43	1	0
CSXT$_i$	Takes the value 1 if CSXT is the host railroad for station-pair i and 0 otherwise	0.25	0.43	1	0
NS$_i$	Takes the value 1 if NS is the host railroad for station-pair i and 0 otherwise	0.16	0.37	1	0
CN$_i$	Takes the value 1 if CN is the host railroad for station-pair i and 0 otherwise	0.05	0.22	1	0
MULTI HOST$_i$	Takes the value 1 if there are multiple hosts for station-pair i and 0 otherwise	0.03	0.16	1	0

Table 1C
Variable definition and summary statistics (short distance).

Variable name	Definition	Average	S.D.	Max	Min
ON-TRACK DELAY$_{ijt}$	Average on-track minutes of delay for all trains operating on station-pair i, route j, in month t.	5.16	5.88	60.5	−5.96
PRECIP$_{it}$	The percent of days with at least 1 inch of rain at station-pair i in month t	0.02	0.03	0.33	0
TEMP$_{it}$	The percent of days above 90° for station pair i in month t	0.08	0.17	1	0
CAP UTIL$_{ijt}$	The maximum level of capacity utilization between station-pair i, on route j, in month t	0.16	0.17	1.35	0
SLOW ORDER$_{it}$	The average minutes of slow order delays from all trains operating in station-pair i, in month t	0.92	1.67	18.57	0
MECH$_{ijt}$	The average minutes of mechanical delays from all trains operating in station-pair i, on route j, in month t	0.19	0.93	45.23	0
LATE ARR$_{ijt}$	The percent of trains that arrive more than 2 h late at the origin of station-pair i, on route j, in month t	0.02	0.04	0.83	0
DISTANCE$_i$	The weighted average distance in 10 mile units for station-pair i	2.8	1.64	13.78	0.14
TURN$_{ij}$	Takes the value 1 if the origin of station- pair i on route j is a crew base or turn point	0.18	0.39	1	0
UP$_i$	Takes the value 1 if UP is the host railroad for station-pair i and 0 otherwise	0.21	0.41	1	0
BNSF$_i$	Takes the value 1 if BNSF is the host railroad for station-pair i and 0 otherwise	0.22	0.41	1	0
CSXT$_i$	Takes the value 1 if CSXT is the host railroad for station-pair i and 0 otherwise	0.07	0.26	1	0
NS$_i$	Takes the value 1 if NS is the host railroad for station-pair i and 0 otherwise	0.22	0.41	1	0
CN$_i$	Takes the value 1 if CN is the host railroad for station-pair i and 0 otherwise	0.14	0.35	1	0
MULTI HOST$_i$	Takes the value 1 if there are multiple hosts between station-pair i and 0 otherwise	0.05	0.21	1	0

TURN$_{ij}$ takes the value 1 if the origin station of the station-pair i on route j is an Amtrak crew base or train turning point. A crew base or train turning point is a location at which Amtrak changes crews and/or services trains. A positive coefficient is expected on TURN$_i$ because any hold-up in changing crews or servicing trains may delay a train.

Finally, we include fiscal year dummy variables to control for delay changes due to time trends that affect the whole system. These could include changes in Amtrak or freight practices, Amtrak ridership, and overall network congestion. FY$_{2t}$ takes the value 1 if month t belongs to FY 2002 and 0 otherwise. FY$_{3t}$ through FY$_{7t}$ are generated in a similar fashion. Tables 1A, 1B, and 1C present descriptive statistics of all the variables used.

5. Results

We chose the Hausman-Taylor estimator for our panel data after a series of tests.[22] The tests showed fixed effects estimators to be preferable and the variable CAP UTIL$_{ijt}$ to be endogenous. There are several reasons to expect that CAP UTIL$_{ijt}$ has some degree of measurement error. It was constructed using data from multiple sources and important assumptions. Most notably,

[22] We performed an F-test on the significance of station-pair effects. The rejection of the null hypothesis of no station-pair effects indicated that the Fixed Effects (FE) estimator is preferable to the OLS estimator. To compare Random Effects (RE) and OLS estimators, we ran the Breusch-Pagan LM test and rejected the null hypothesis of no station-pair effects. This led to the RE estimator being preferred to the OLS estimator. We ran a bootstrapping Hausman test on each time-varying variable to compare FE and RE estimators. The results suggest that the variable CAP UTIL$_{ijt}$ is endogenous in our long-distance model, and are presented in Appendix B.

Table 2
Hausman–Taylor estimators for long-distance and random effects for short-distance samples.

Variable	Long-distance routes	Short-distance routes
Precipitation	2.836***	3.108***
	(0.614)	(0.774)
Temperature	0.804***	0.457***
	(0.161)	(0.159)
Capacity utilization	1.869***	2.544**
	(0.692)	(1.041)
Slow order	0.896***	1.128***
	(0.0322)	(0.0438)
Amtrak mechanical failure	0.156***	0.200***
	(0.0570)	(0.0694)
Late arrival	2.843***	3.648**
	(0.304)	(1.557)
Meet 1 with freight	0.682	
	(0.649)	
Meet 2 with freight	0.158	
	(2.185)	
Distance	0.781***	1.895***
	(0.0575)	(0.131)
Turn point	1.447***	1.457**
	(0.451)	(0.586)
UP	3.669***	0.945*
	(0.583)	(0.527)
BNSF	−1.902***	−1.805***
	(0.583)	(0.598)
CSXT	2.575***	−0.572
	(0.507)	(0.924)
NS	1.812***	−0.485
	(0.555)	(0.602)
CN	0.707	1.010
	(0.548)	(0.708)
Multiple hosts	7.078***	5.233***
	(1.466)	(1.236)
FY 2002	−0.0956	−0.804***
	(0.203)	(0.173)
FY 2003	−0.294	−0.681***
	(0.187)	(0.176)
FY 2004	−0.136	−0.600***
	(0.162)	(0.150)
FY 2005	−0.0365	−0.655***
	(0.137)	(0.124)
FY 2006	0.568***	−0.228*
	(0.110)	(0.121)
Observations	48,649	16,035
Number of station-pairs	810	307
R squared		0.602

* Significant at the 10% level.
** Significant at the 5% level.
*** Significant at the 1% level.

the Carload Waybill data could only be used for our purposes in combination with a routing algorithm, in our case the one underlying TRAGIS. Its use also required assumptions about the percentage of actual freight traffic the Waybill sample represented. It was further assumed that capacity did not change during the sample period along Amtrak routes. These issues could be expected to have greater impact for the long-distance routes which have many more track segments because of having almost twice the distance between station-pairs on average as the short-distance routes. Consequently, we were not surprised that tests showed CAP UTIL$_{ijt}$ to be endogenous in the long-distance model.

The Hausman-Taylor estimator allowed us to address the endogeneity issue and to obtain coefficients for our time-invariant variables, such as freight effects. We also tested the equality of coefficients across the two samples for long- and short-distance routes. The difference in coefficients confirmed our expectation that we need to estimate separate models for the two groups. Table 2 summarizes the estimation results. The reported bootstrapped standard errors are cluster-robust.[23]

The estimated coefficient on CAP UTIL$_{ijt}$ is positive and significant at the 1% level for both long- and short-distance routes. The coefficients of 1.869 on the long-distance routes and 2.544 on the short-distance routes suggest that a 10% increase in maximum capacity utilization increases average station-pair delays by about 11 s on long-distance routes and 15 s on

[23] We compared OLS and cluster-robust standard errors. The significant differences between them on most of the variables in our model indicate the existence of clusters in the independent variables.

short-distance routes. Given that the average delays[24] on long- and short-distance routes are 8 min and 25 s and 5 min and 10 s, respectively, these increases roughly equal 2% and 5% of average total station-pair delay.

The estimated coefficient on LATE ARR_{ijt} is 2.843 on long-distance routes and 3.648 on short-distance routes, both significant at the 1% level. These results indicate that trains that start off substantially late accrue significant additional delays when traveling on to the next station. A 10% increase in the number of trains that arrive at the origin station more than 2 h late is estimated to increase the average minutes of station-pair delay by 17 s and 22 s on long- and short-distance routes, respectively. These numbers correspond to increases of 3% and 7%.

The positive and significant estimated coefficient on SLOW $ORDER_{it}$ indicates that when a slow order is issued due to poor track conditions or track work, average delays will increase. Similarly, the coefficient on $MECH_{ijt}$ is positive and significant, which indicates that mechanical failures contribute to average delays. However, the contribution of slow orders to delays is much larger than that of mechanical failures. On long-distance routes, a one-minute increase in average monthly slow orders is estimated to increase average minutes of delays by 54 s, equivalent to an 11% increase. By comparison, a 1-min increase in mechanical delays is estimated to increase average minutes of delay by 9 s, about a 2% increase. For short-distance routes, the coefficient of 1.128 on SLOW $ORDER_{it}$ suggests that a 1-min increase in average slow order delay increases average minutes of delay by 1 min and 8 s, or equivalently, a 22%. A 1-min increase in mechanical delay, on the other hand, is estimated to equal about a 4% increase in average delays.

Weather variables—$PRECIP_{it}$ and $TEMP_{it}$—contribute relatively little to delays. Their estimated coefficients are positive and significant at the 1% level for both long- and short-distance routes. However, one additional day per month with 1 in. or more of rain, a 3.3% increase, is estimated to increase average minutes of delays by 1% on long-distance routes and 2% on short-distance routes. An additional day per month with a temperature of 90° or higher is estimated to increase average on-track delays by only 0.3% for both long- and short-distance routes.

5.1. Estimation results: host effects

Our findings suggest that certain individual host railroads and transfers between multiple host railroads notably affect delays. Areas hosted by more than one railroad had the largest delays. Table 2 shows that the coefficient on MULTI $HOST_i$ is 7.078 on the long-distance routes and 5.233 on the short-distance routes, both significant at the 1% level. The coefficients suggest that the effect of traveling through station-pairs hosted by multiple railroads rather than by the "other" railroad group increases average delays by 7 min and 5 s on long-distance routes and 5 min and 14 s on short-distance routes. Given that the average delay is 8 min and 25 s on long-distance routes, a 7-min-5-s increase would constitute an 84% increase. On the short-distance routes, a 5-min-14-s increase would constitute a 101% increase, based on the 5 min and 10 s average delay.

A significant impact on train delays from traveling through areas hosted by numerous railroads is expected because problems are more likely to occur in the transfer of dispatching responsibilities. Also, the vast majority of the locations hosted by multiple railroads are in the Chicago area. The Chicago area has an unusually large concentration of different types of freight and commuter traffic, which complicates dispatching, making delays more likely to occur.

Among the individual host railroads, train delays on UP's territory were the longest for long-distance routes. The positive coefficient on UP_i is 3.669 on long-distance routes at the 1% level. Travel through station-pairs hosted by UP, rather than by the "other" railroad group, experiences increases in average delays of 3 min and 40 s or, equivalently, 44% on long-distance routes. The coefficient on short-distance routes is 0.945 with only marginal statistical significance.

The host railroad on whose territories Amtrak delays showed the next largest increase on the long-distance routes was CSXT. The coefficient is 2.575 at the 1% level for the long-distance model, but is not significant in the short-distance model. The size of the coefficient indicates that the increase in delays is about 2 min and 35 s on tracks owned by CSXT, which represents a 31% increase in minutes of delay, based on the average total for long-distance routes. The freight rail with the third largest increase in train delays is NS with a coefficient of 1.812 at the 1% level on long-distance routes. The coefficient suggests that the increase in delay on tracks owned by NS is about 1 min and 49 s, equivalent to a 22% increase. NS host effects are not significant on short-distance routes. The insignificance of CSXT and NS host effects in the short-distance model is not surprising as short-distance routes overlap little with either railroad's territory.

Table 2 indicates that trains running on BNSF infrastructure experienced less delay than those operating on short line railroads. The estimated coefficient on $BNSF_i$ is negative and significant at the 1% level for both long- and short-distance routes. The effect from traveling through station-pairs hosted by BNSF rather than by short line railroads on average delays was to reduce them by about 1 min and 54 s, or 23%, on long-distance routes and 1 min and 48 s, or 35%, on short-distance routes.

5.2. Estimation results: other time-invariant variables and fiscal year dummies

The positive and significant coefficient on $TURN_{ij}$ suggests that train delays increase at crew stations and turning points, consistent with our expectation. The estimated coefficient is 1.447, significant at the 1% level, on the long-distance routes. It is 1.457, significant at the 5% level, on the short-distance routes. These numbers suggest that the expected minutes of delays

[24] These are the averages of the dependant variable, ON-TRACK-DELAY, calculated at the station-pair level, for long and short distance routes.

increase at the station-pair level at those points by 1 min and 27 s, or 17%, on long-distance routes, and 28% on short-distance routes.

The estimated coefficient on $DISTANCE_i$ is 0.781 on long-distance routes and 1.895 on short-distance routes, both significant at the 1% level. The coefficients suggest that a 10-mile increase in distance increases the average delay by 47 s on long-distance routes and 1 min and 54 s on short-distance routes. These are equivalent to increases of 9% and 37%, respectively.

The coefficients on fiscal year dummy variables explain a portion of delays that vary over time. In particular, they capture differences in Amtrak train delays over all the hosts' territories from one fiscal year to another. We exclude FY 2007 in the regression, making it our reference year.

The effects captured by fiscal year dummies are greatest for the short-distance routes; in the short-distance model all the estimated coefficients on fiscal year dummies are negative and significant at the 1% level. This indicates that the average minutes of delay for the earlier years of our sample were smaller than for FY 2007. However, their absolute values are generally decreasing from FY 2002 through FY 2006, suggesting that the difference was falling over time. In contrast, none of the estimated coefficients on the fiscal year dummies is significant in the long-distance model except for FY 2006, which is positive. Freight rail traffic grew dramatically over our sample period, and the short-distance model coefficients may be picking up network-level congestion effects. We have no interpretation of these results for the long-distance model.

5.3. Estimation results: comparative effects

One way to rank the importance of the factors analyzed in our model is to gauge each one's average contributions to delays over our sample period. This was done by calculating the product of the average value of each factor and its estimated coefficient. For example, slow orders' average contribution to system-wide long-distance delays was calculated by multiplying the system-wide average level of slow orders on long-distance routes by the coefficient on slow orders estimated in the model for long-distance services.

Slow orders caused the greatest average delays among factors other than host effects on the long-distance services—1 min 55 s between each station-pair—which represents 23% of the average long-distance service station-pair delay of 8 min and 25 s. Other non-host factors contributed considerably less. For example, late arrivals and capacity utilization added 30 and 26 s of delay between each station-pair, respectively.

Applying this method to host effects requires an additional step because, unlike other factors in our model, host effects were measured relative to the delays imposed by the baseline host railroad group, which cannot be quantified. For example, use of the method described above determined that the UP host effect caused 50 s more delay between each long-distance route station-pair than the baseline railroad group when averaged across the system over the sample period. At the other extreme, long-distance services on BNSF's rails experienced 27 s less delay between each station-pair on average than those operating on the baseline group's infrastructure.

This last finding can be used to determine a lower bound for the baseline host effects for long-distance services system-wide. Specifically, since trains cannot travel faster than pure runtime, host effect total contributions to delays cannot be negative. So the baseline host effect must be at least as large and positive as BNSF's host effect in relation to it is negative. At a minimum then, the baseline host effect causes 27 s of delay at each station-pair. Consequently, UP's host effect added a minimum of 1 min 17 s of delay (27 s minimum baseline value plus 50 s UP host delay relative to the baseline) on average between station-pairs on long-distance routes. Host effects for CSXT and NS contributed a minimum of 65 and 44 s, respectively, to delays.

The same methods were used to determine the factors' average contributions to delays on short-distance services system-wide. Slow orders contributed 1 min 3 s to the average short-distance system-wide delays of 5 min 10 s. Capacity utilization was the next largest non-host factor that contributed to delay with 24 s added to delay.

Short-distance services in BNSF territory averaged 24 s less delay between each station-pair, system-wide, than those operating on the baseline group's infrastructure, setting a lower bound for the baseline group's contributions to delays. At a minimum, the host effects on the short-distance services averaged 36 s for UP and 39 s for multiple hosts. The minimum values of these two host effects exceeded the contributions of all non-host effect causes except slow orders.

5.4. Sensitivity analyses

We performed a series of sensitivity analyses to check the robustness of our findings. One of our concerns was that there is a nonlinear relationship between minutes of delay and the level of capacity utilization. If there is a nonlinear relationship, the estimated coefficient for capacity utilization would depend on the level of capacity utilization. We tested the significance of various thresholds for capacity utilization–the 50th, 60th, 70th, 80th, and 90th percentiles–in our models.[25] The results did not suggest a nonlinear relationship in our data.

[25] Krueger (1999) finds that the relationship between train delay and traffic volume can be expressed as an exponential equation. Since traffic volume is the numerator for our congestion variable, this led us to consider the possibility of a nonlinear relationship between the level of congestion and the average on-track delays.

We also experimented with augmenting capacity utilization by adding a traffic heterogeneity variable. An increase in traffic heterogeneity, or traffic mix, has been shown to increase train delays (Dingler et al., 2009). This occurs because different types of traffic travel at different speeds. The more diverse the speeds of the trains on a track segment, the more complicated the task facing a dispatcher trying to coordinate their movements.

We generated two variables to capture traffic heterogeneity: $HET1_{ijt}$ and $HET2_{ijt}$. $HET1_{ijt}$ is similar to the Herfindahl–Hirschman index. It is the sum of squares of service frequencies of different types of traffic, measured by the number of cars, for all the traffic at station-pair i, route j, in month t.[26] $HET2_{ijt}$ is defined in the same fashion except that we weighted the components of the sum by the average speed of each type of traffic. We chose the minimum value of the index across all track segments between a station-pair for $HET1_{ijt}$ and $HET2_{ijt}$, because the segment with the minimum heterogeneity index is the area with the most diverse traffic.[27] In both the long- and short-distance models, neither $HET1_{ijt}$ nor $HET2_{ijt}$ was statistically significant, nor did they notably change the estimated coefficients on CAP $UTIL_{ijt}$.

We tried redefining LATE ARR_{ijt} to indicate that a train arrived either three or 4 h later than scheduled. On long-distance routes, the estimated coefficient on LATE ARR_{ijt} increased by 9% using the 3-h definition and by 12% using the 4-h definition. On short-distance routes, the estimated coefficient on LATE ARR_{ijt} indicating a 3-h late arrival was not significant and a 4-h late arrival was marginally significant at the 10% level. The remaining coefficients change very little with the various definitions of LATE ARR_{ijt} in both the long- and short-distance route models. We expected the impact of late arrivals on delays to increase with the degree of lateness, and such results were observed in long-distance routes. However, trains rarely arrived more than 2 h late in our short-distance route sample.

Alternative thresholds were also tested for the weather variables. $PRECIP_{it}$ is defined to be the percentage of days having greater than or equal to an accumulation of 1inch of precipitation, which represents the 97.5th percentile in our sample. Alternative thresholds, including 85th, 90th, 95th percentiles, and average precipitation, were tested. The estimated coefficients in the long-distance model were 26%–56% smaller than those on the precipitation variable as first defined, but were still significant at the 1% level. Similarly, in the short-distance model the estimated coefficients on the alternative measures were 48–64% smaller than on the first definition.

For $TEMP_{it}$, which is currently defined as the percentage of days on which temperatures greater than or equal to 90° are registered, we tested thresholds of 95°, 100°, and 110°. The results showed that the higher the threshold, the greater the effect on delays on long-distance routes. However, the effect was insignificant using a 110 degree threshold, as temperatures above 110° rarely occur. On short-distance routes, the coefficient on the temperature variable increases by 28% using a 95-degree threshold, and is significant at the 5% level. It becomes insignificant with 100-degree definition. The sign of the coefficient changes to negative with an increase in the absolute size by 116% when using a threshold of 110°, and is significant at the 1% level. We do not have an explanation for this result.

6. Conclusion

We hypothesized the existence of a link between individual freight effects and Amtrak's service quality in the post-deregulation rail industry. We tested the hypothesis with train delay models for long- and short-distance routes. Based on monthly panel data on 1117 directional Amtrak station-pairs for FY 2002 to 2007, we found that individual freight railroads had important effects on Amtrak delays. We also identified other significant delay causes. Among these, the capacity utilization rate, maintenance-related slow orders, and turn points are particularly important because of their potential to be improved upon through stakeholder actions.

These findings also have policy implications. Despite the statute giving Amtrak trains priority on freight infrastructure, delays still differ significantly depending on the host railroad. It could be beneficial to look for solutions that further address the potential conflict of interest between freight railroads and Amtrak. For example, there is probably room to increase the effectiveness of the structures for incentive payments by Amtrak to the freights to reduce Amtrak's train delays.

Acknowledgements

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Appendix A

A.1. Data outliers

The minutes of delay data was clearly affected by measurement error. This was made obvious by the fact that some delays were long enough to have compelled the cancellation of the associated trains, but did not, and others were sufficiently

[26] The types of traffic considered were passenger, commuter, and four types of freight.

[27] We also experimented with defining $HET1_{ijt}$ and $HET2_{ijt}$ as the average value of all the links in any given station-pair. The results did not change.

Table B.1
Comparison between fixed-effects and random-effects estimators.

Variable	Long-distance routes		Short-distance routes	
	Fixed-effects estimators	Random-effects estimators	Fixed-effects estimators	Random-effects estimators
Precipitation	2.796***	2.768***	3.130***	3.154***
	(0.619)	(0.621)	(0.745)	(0.743)
Temperature	0.808***	0.800***	0.482***	0.443***
	(0.153)	(0.153)	(0.158)	(0.158)
Capacity Utilization	1.831**	2.171***	2.540**	2.628**
	(0.713)	(0.693)	(1.064)	(1.045)
Slow Orders	0.896***	0.903***	1.126***	1.135***
	(0.0308)	(0.0305)	(0.0429)	(0.0429)
Amtrak Mechanical Failure	0.154***	0.155***	0.193***	0.201***
	(0.0531)	(0.0530)	(0.0676)	(0.0684)
Late Arrival	2.826***	2.897***	3.546**	3.703**
	(0.289)	(0.287)	(1.538)	(1.551)
Meet 1 with Freight	0.716	0.732		
	(0.620)	(0.625)		
Meet 2 with Freight	0.107	0.160		
	(2.048)	(2.051)		
FY 2002	−0.105	−0.0455	−0.810***	−0.793***
	(0.206)	(0.205)	(0.185)	(0.184)
FY 2003	−0.304*	−0.241	−0.687***	−0.672***
	(0.175)	(0.173)	(0.186)	(0.184)
FY 2004	−0.143	−0.0941	−0.601***	−0.596***
	(0.153)	(0.151)	(0.153)	(0.152)
FY 2005	−0.0404	−0.0127	−0.658***	−0.653***
	(0.133)	(0.132)	(0.129)	(0.129)
FY 2006	0.568***	0.579***	−0.231*	−0.227*
	(0.114)	(0.114)	(0.121)	(0.121)
Observations	48,649	48,649	16,035	16,035
Number of station-pairs	810	810	307	307

Notes: Standard errors are cluster-robust. Only time-varying variables in our model are used for this analysis.
* Significant at the 10% level.
** Significant at the 5% level.
*** Significant at the 1% level.

negative so as to be physically impossible. The daily on-track station-pair delay ranged from minus 6935 min to plus 4320 min. Amtrak personnel indicated that delays with respect to PRT of less than minus 10 min could be assumed to be the result of data entry error. In addition, we assumed that delays large enough to likely lead to cancellation were also probably in error. Both of these error ranges fell within the top and bottom 1% of daily on-track delay data, which we consequently decided to remove. The edited daily data ranged from minus 7 min to plus 71 min of delay.[28]

There was also considerable opportunity for noise around zero minutes of delay because of the method used to measure PRT. Specifically, PRT represents a time agreed upon by both Amtrak and the relevant host railroad, based on their representatives riding a route and gauging the minimum possible travel time. In addition, PRT changes infrequently for a given station-pair; short-term travel time adjustments are usually made only in scheduled recovery time and miscellaneous adjustments rather than in PRT itself.

Appendix B

See Table B.1.

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[28] We tested the model using both the unedited and edited data sets. The same variables were significant in both cases, but the coefficient estimates and their standard errors were smaller using the edited data.

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Exhibits 111-117 redacted

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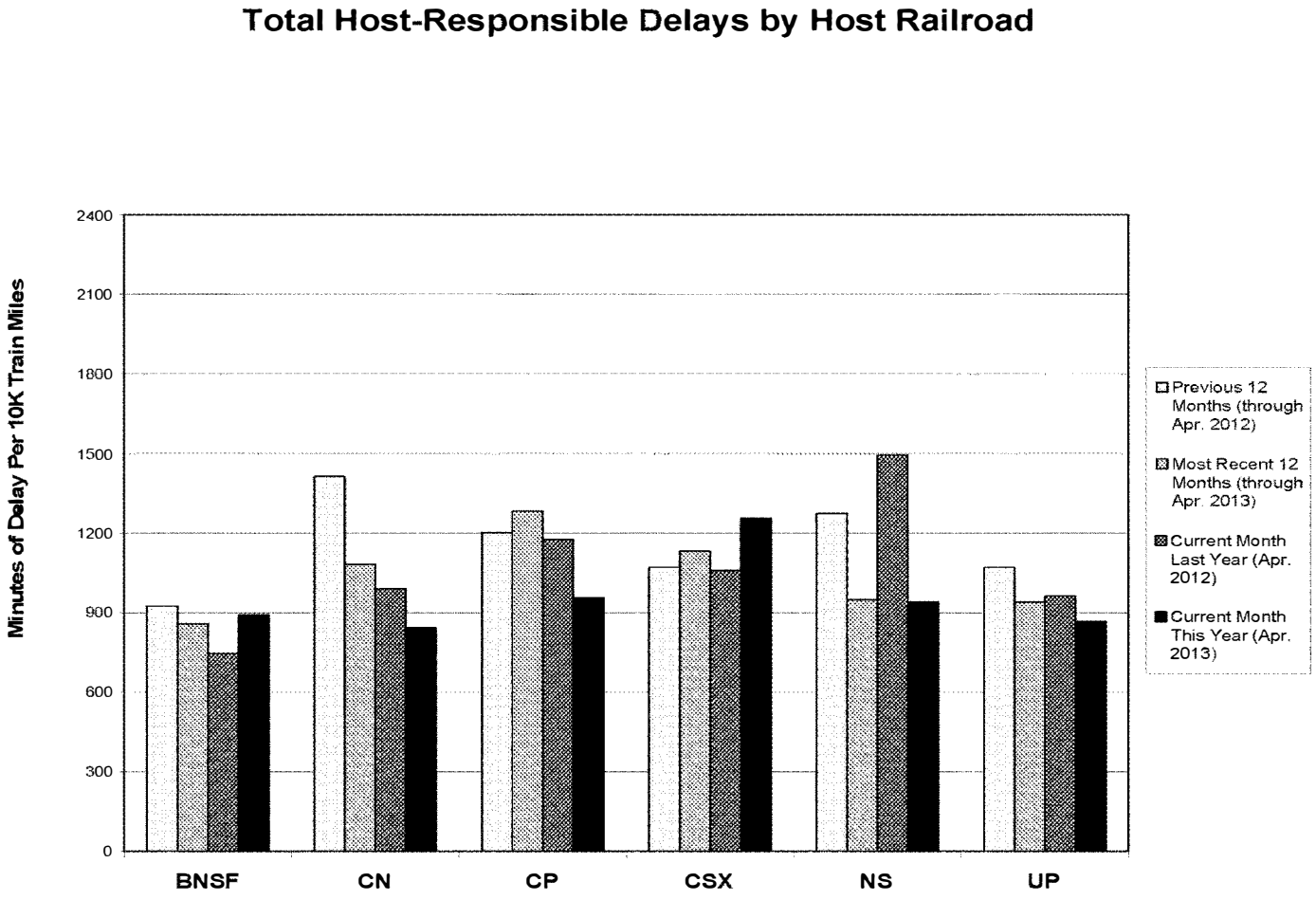
EXHIBIT 118

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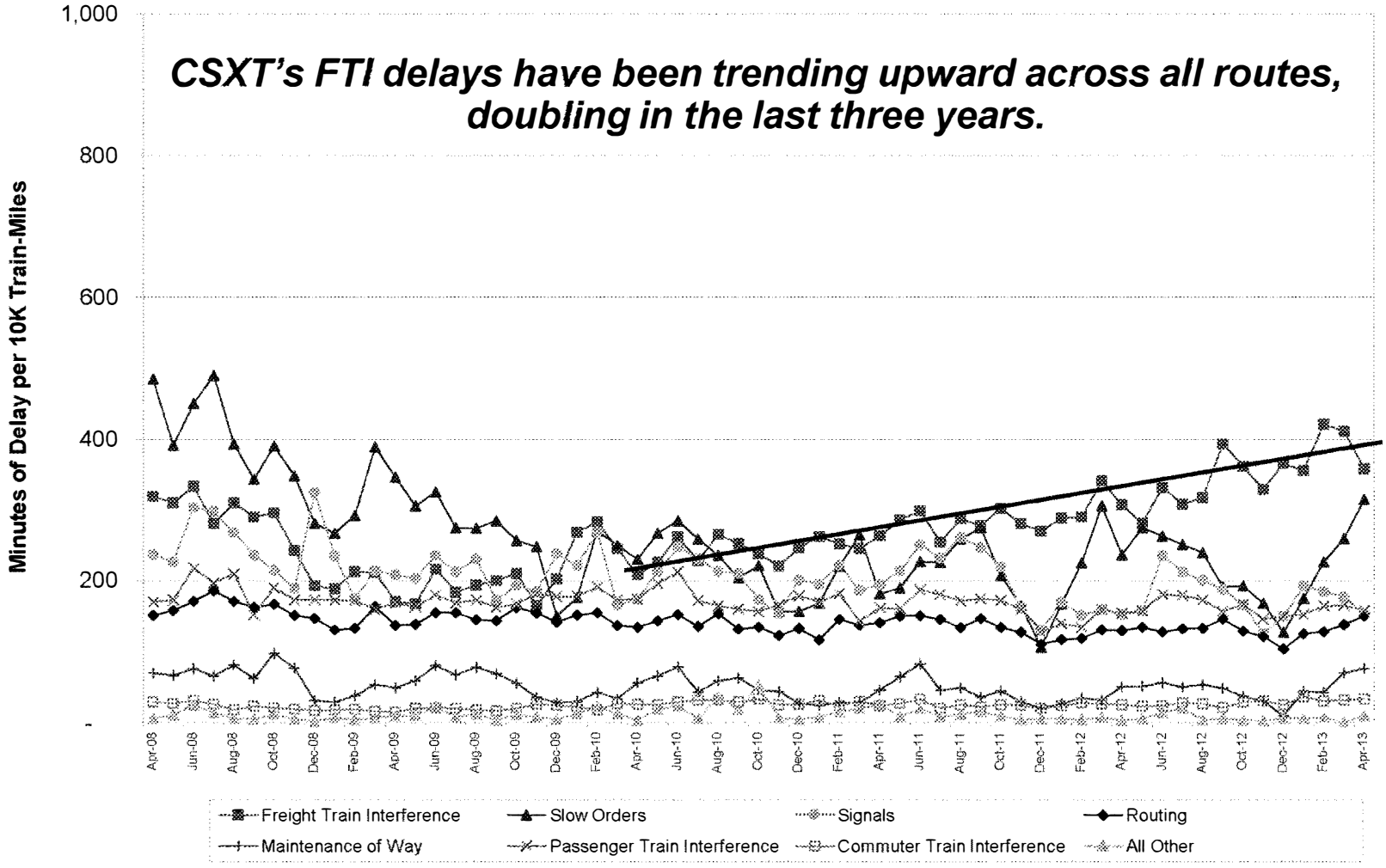
CSXT Performance on Amtrak Trains

Internal Briefing for Stadtler-Munoz June 6, 2013 Meeting

In April 2013, CSXT had the highest total host-responsible delays of any major host

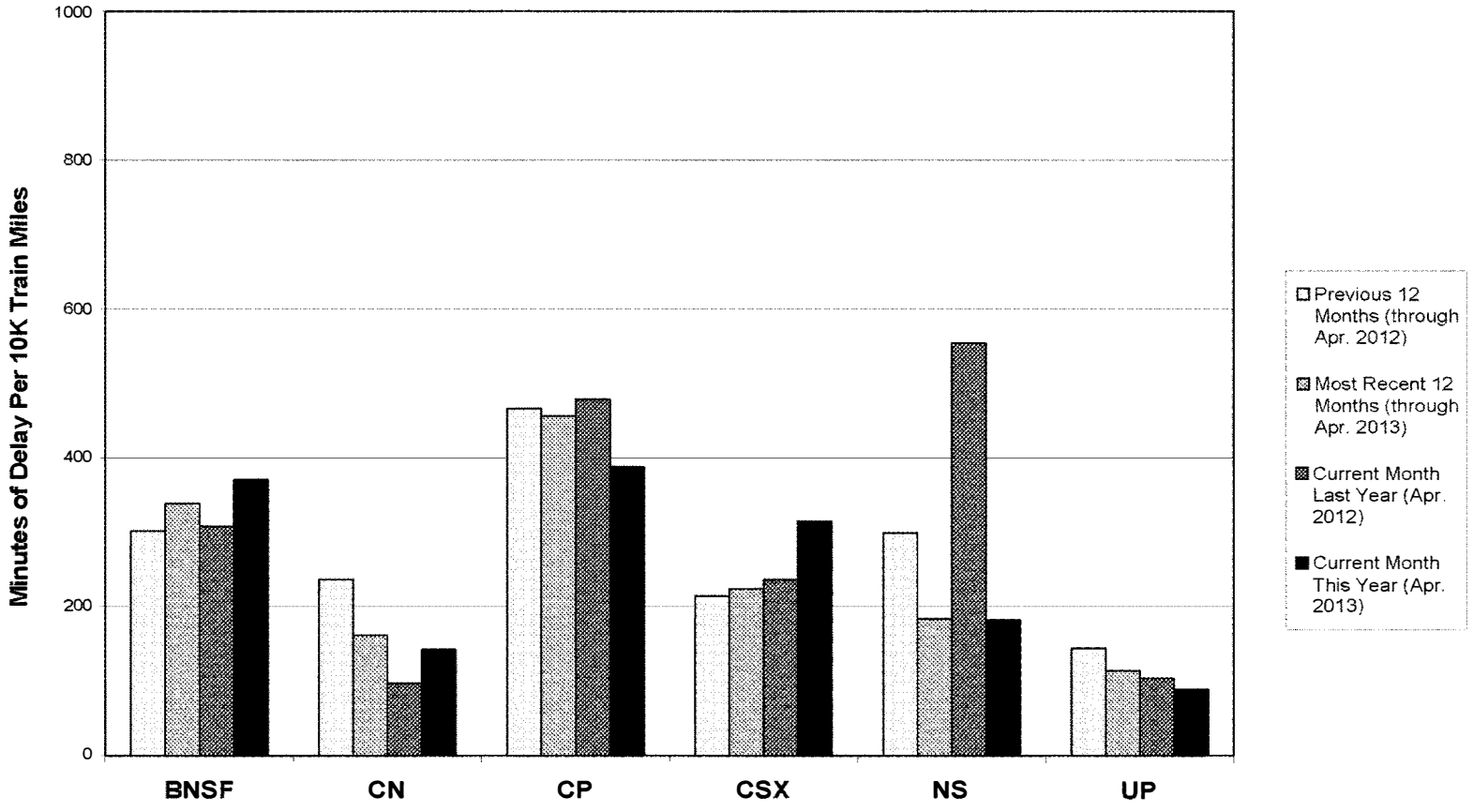


CSX Responsible Delay Trend by Type of Delay
April 2008 through April 2013



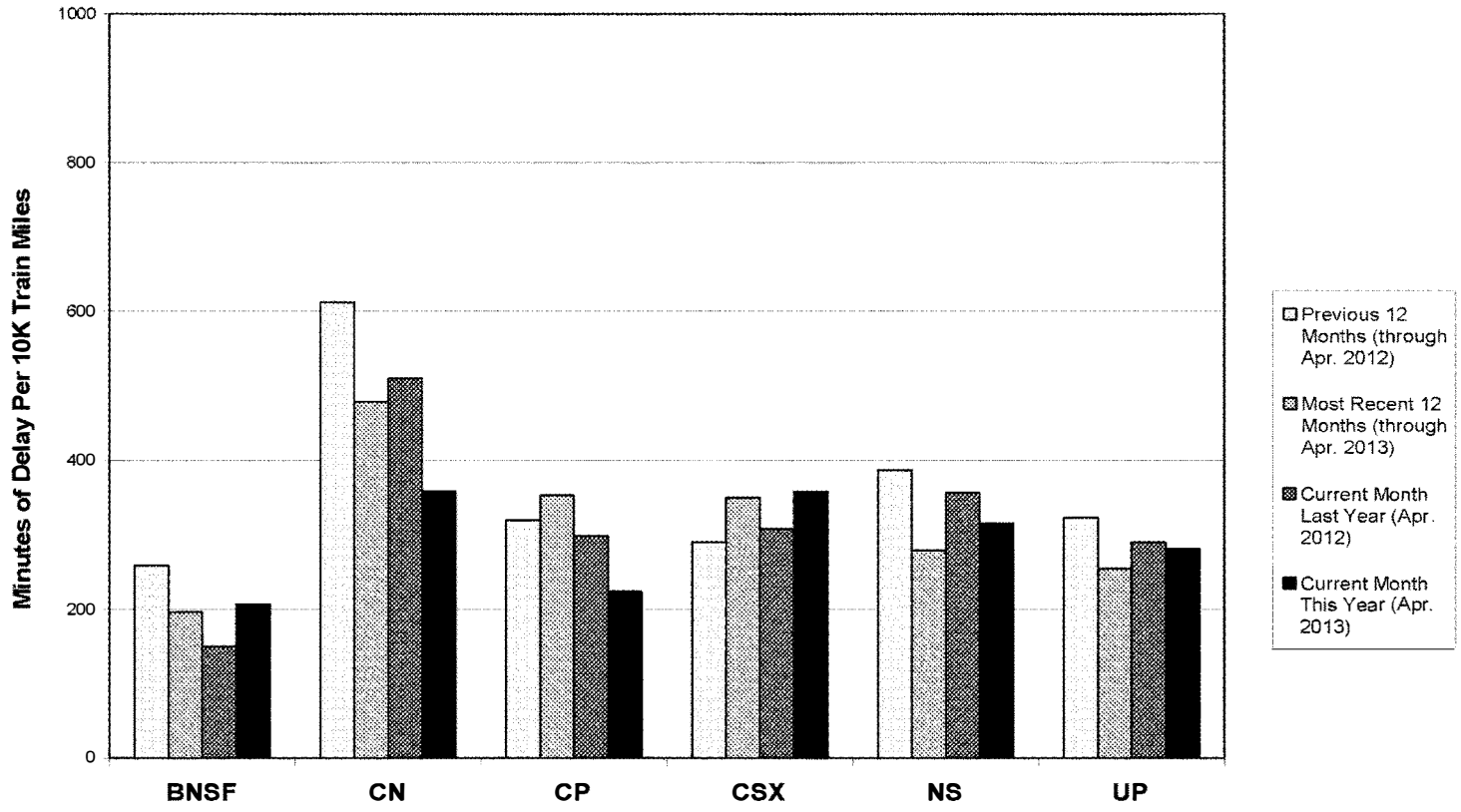
CSXT Slow Orders are Growing Year after Year

Slow Order Delays by Host Railroad



CSXT FTI Delays Are Now Tied for the Highest of Any Major Host

Freight Train Interference Delays by Host Railroad



Most Amtrak routes on CSXT now consistently do not meet the PRIIA host-responsible delay standard

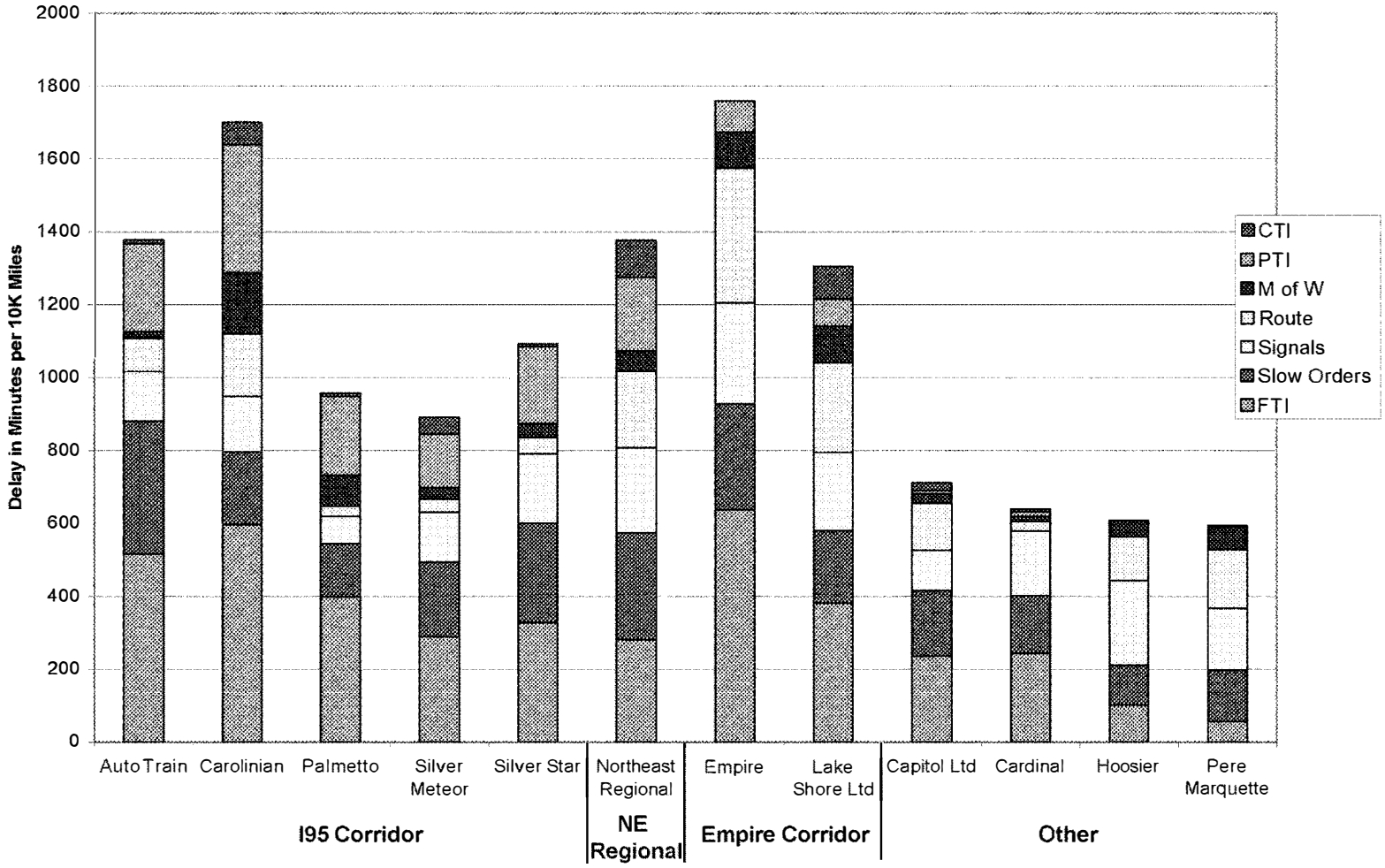
CSXT Responsible Delays by Service

	CSXT-Responsible Delays	
	Jan 2013 - Mar 2013	Apr-13
PRIIA Section 207 Standard	***900***	***900***
Auto Train	1415	1274
Capitol Limited	654	885
Cardinal	603	759
Carolinian	1694	1724
Hoosier State	700	365
Lake Shore Ltd	1219	1572
Maple Leaf	1857	2268
New York - Niagara Falls	1608	1934
Palmetto	965	942
Pere Marquette	578	660
Richomond/Newport News/ Norfolk	1303	1574
Silver Meteor	919	818
Silver Star	1117	1034

Major performance issues to discuss:

- ***Good performance on the Capitol Ltd., Cardinal/Hoosier, and Pere Marquette***
- ***Empire Corridor: FTI delays***
- ***I-95 Corridor: FTI delays***
- ***Northeast Regional: FTI delays, Richmond-Newport News slow orders***

CSXT Delays by Service, Jan – Apr, 2013



Lake Shore/Maple Leaf/Empire

- All Amtrak trains in this corridor are not meeting the PRIIA host-responsible delay standard, by a significant margin

- Top delay categories:
  - Lake Shore and Maple Leaf: FTI and DSR
  - New York-Niagara Falls: FTI and RTE

- Extensive MW work in April between Rochester and Buffalo
  - Track work is completed for now so we anticipate service improvements in this segment
  - Delays for the route as a whole have been increasing for many months, illustrating that they are not solely the result of April trackwork

- Schedules still include "temporary" time for a Summer 2011 trackwork project
  - CSX has refused to remove the temporary time during the incentive arbitration

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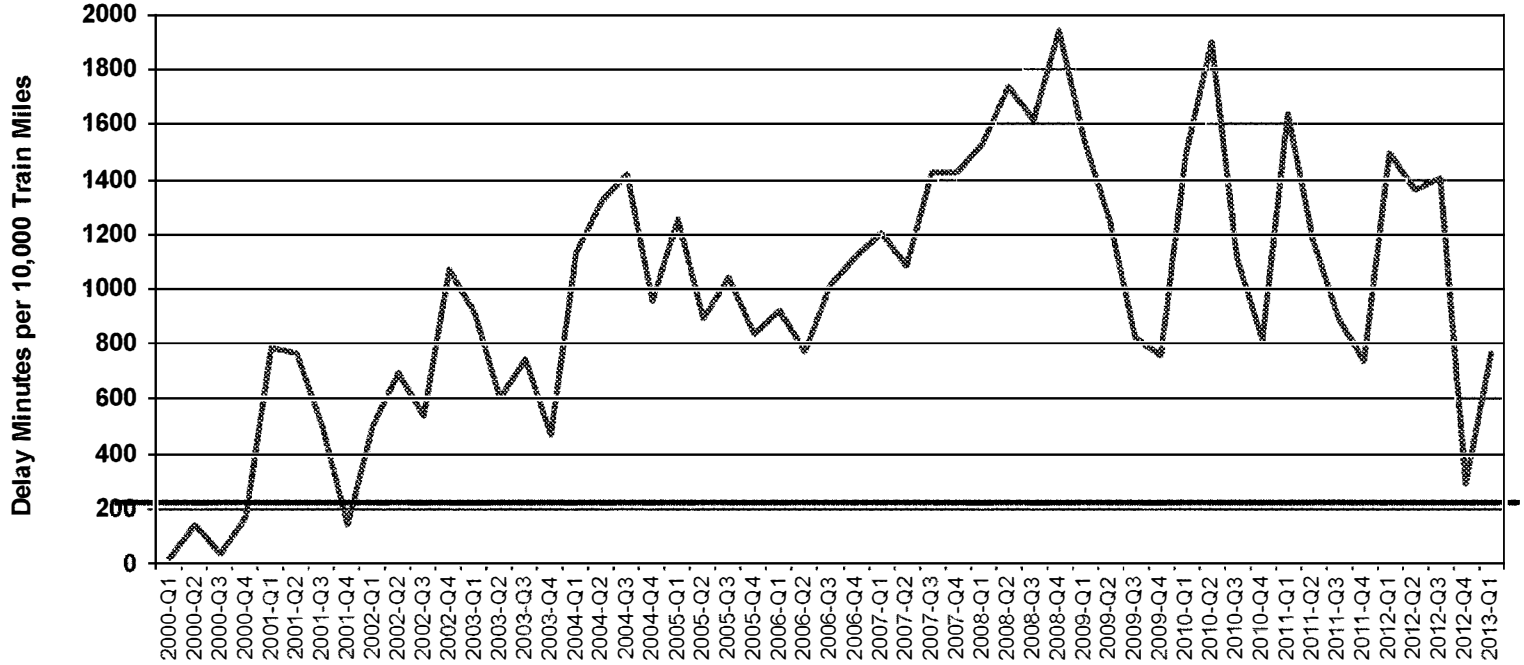
I-95 Corridor

- High FTI delays, especially on Auto Train and Carolinian
- Silver Meteor, Silver Star, and Palmetto are among the lowest-OTP long-distance services
  - Auto Train has high OTP despite high delays, due to extra hour temporarily added to the schedule in 2007. CSXT has to date refused to remove the temporary extra hour.
- Largest delays per train mile are on the CSXT Baltimore Division (Washington-Richmond)
  - Largest delay category in this segment is FTI
- STB has taken a significant interest in this corridor, focusing for now on the Sun Rail segment
  - Delays on Sun Rail even more severe than on CSXT (slow orders, signal delays, and PTI)
  - Sun Rail segment still dispatched by CSXT , expected to transfer to Sun Rail in July 2013
  - STB has brokered meetings between Sun Rail, CSXT, and Amtrak, and has tracked action items coming from these meetings. This process has started to improve performance on Sun Rail.
  - Improvements included CSXT re-routing one freight train off of the Sun Rail segment
  - Delays on CSXT have not improved significantly during the STB-brokered process

Following significant improvement in late 2012, Richmond-Newport News slow orders are increasing again

- Improvement followed a high-profile STB inspection trip on this route

Slow Order Delays: Richmond-Newport News



Delay minutes below the horizontal red line are correlated with OTPs above 80%; higher OTP would require lower levels of delay.

Other CSXT Issues

- Wyoming Yard – Southeast of Grand Rapids Station
  - Amtrak had previously been allowed 25 mph on this track. Now restricted to 10mph.
  - Speed restriction interferes with tight crew change and customer service.
  - CSXT has proposed a field check of Pure Running Times, to see if speed improvements elsewhere have offset the Wyoming Yard speed reductions.
  - Regardless of the results of this study, Amtrak still sees no reason why Wyoming Yard speeds can't be restored.

- Rochester and Buffalo, NY Pedestrian Crossings
  - Pedestrian crossings (3 at each location) removed by CSXT in April while performing routine track work.
  - Lack of crossings causes significant delays accessing single platforms
  - Amtrak's position is that CSXT replace these crossing with at least something reasonably equivalent in utility to the ones that were removed.
  - CSXT holds that Amtrak is responsible for the cost of replacing these crossings.

- Incentive Arbitration

Proposed Next Steps

- Thank CSX for good performance on the Capitol Limited, Cardinal/Hoosier, and Pere Marquette
- CSXT increase focus on dispatching to reduce FTI delays on all Amtrak routes
  - CSXT must manage itself to the PRIIA 900-minute standard
  - "Contract OTP" is not a meaningful measure for any purposes other than for calculating performance incentives. (Even for that purpose, the NAP recently found that CSXT's calculations were not correct.)
- CSXT commit to sustained reduction in slow orders system-wide, especially Richmond-Newport News
- CSXT restore 25mph speeds through Wyoming Yard
- CSXT replace Rochester and Buffalo pedestrian crossings
- Amtrak and CSXT continue discussions following arbitration ruling

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Exhibits 119-130 redacted

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EXHIBIT 131

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J.O.E.B.
Host Railroad On Time Performance
And Incentives
Executive Summary

Federal statute

- Permits payments above incremental cost for quality of service
- Calls for "a penalty for untimely performance"

"Checkpoint" incentive/penalty system evolved in 1970's prior to Conductor Delay Reports ("CDRs") and other computerized data collection

- Approximates host-responsible delays by looking at total trip time of each train and manually subtracting delays judged not to be the host's responsibility ("relief").

Advent of CDRs in early 2000's allowed tracking host-responsible delays directly

- CDRs are the primary tool used by Amtrak, host railroads, FRA, and other parties to identify the timing, location, magnitude, and causes of delay to Amtrak trains off the Amtrak-controlled portion of the NEC
- Amtrak OTP and delay corporate goals are directly aligned with the PRIIA Section 207 Metrics and Standards. The same data are used in all train performance reporting; i.e.; BOD Dashboard, corporate enterprise-wide OTP and Delay Minute reports, the Monthly Host Railroad Report, and the PRIIA Quarterly Metrics and Standards Report.

The Host Railroad Group has been converting host incentive/penalty contracts to alternate incentive/penalty systems that also use CDR data

- CP implemented in 2004
- NS implemented in 2006
- NECR implemented in 2010
- CSX and Metra under negotiation now

The Amtrak OIG recommended implementing incentives/penalties based on CDRs (Delay Avoidance Incentives, or "DAI"), defining roles and responsibilities and establishing invoice reconciliation processes in its 2008 audit findings

- Progress in converting to DAI incentives/penalties has been slow
    - NS and NECR implemented
    - CSX and Metra under negotiation now
- Other hosts' contracts haven't come up for renewal yet, or hosts are expressing reluctance to change
    - CDR data are used for many other purposes besides DAI, including the basis of the PRIIA Section 207 delay Metrics and Standards.
    - CDR data are reviewed by hosts and are basically sound, but hosts don't like Section 207 Metrics and Standards and Section 213 STB review, so they tend to disparage anything related to those Sections, including CDRs and DAI
- Roles and Responsibilities have been clearly defined

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- Invoice reconciliation group transferred from Transportation to Finance. Staffing has been adjusted and enhancements to the processes are on-going.

Amtrak paid about $50 million in net incentives/penalties to hosts in FY10

- State partners funded 48% of these payments

The Briefing Book provides details of the on time performance and incentive practices, along with the 2008 OIG audit findings on the host railroad management controls and the changes made to date. Since 2008, the OIG has issued several audits on various host railroads. The status of recoveries is included in the Briefing Book.

The J.O.E.B. scheduled for June 10 will summarize items in the Briefing Book with the main discussion focusing on the following items not covered in the briefing book:
We are at a convergence of many host issues, particularly compensation and performance

- Renegotiating/terminating incentives/penalties triggers renegotiation of ALL host compensation issues
    - Most host agreements except for UP can have compensation reopened now; UP can be reopened after January, 2012
    - Compensation disputes are resolved at the STB
- Amtrak must be prepared before we trigger the larger compensation debate
    - Hosts are seeking to be paid more for traditional incremental costs and for new categories of incremental costs
- This is an opportune time to review the incentives/penalties in the context of our overall payment structure to hosts
    - Do incentives/penalties motivate host behavior?
    - How can incentives/penalties be eliminated or modified in a way that assists Amtrak strategically, improves administration, and reduces audit exceptions?
    - What incentive/penalty options exist?
        - Seek to amend or terminate incentive/penalty provisions
        - Negotiate incentives/penalties based on PRIIA Sections 207 / 213
        - Implement OIG Recommendations (DAI or variation of DAI)
        - Other

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Exhibits 132-138 redacted

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EXHIBIT 139

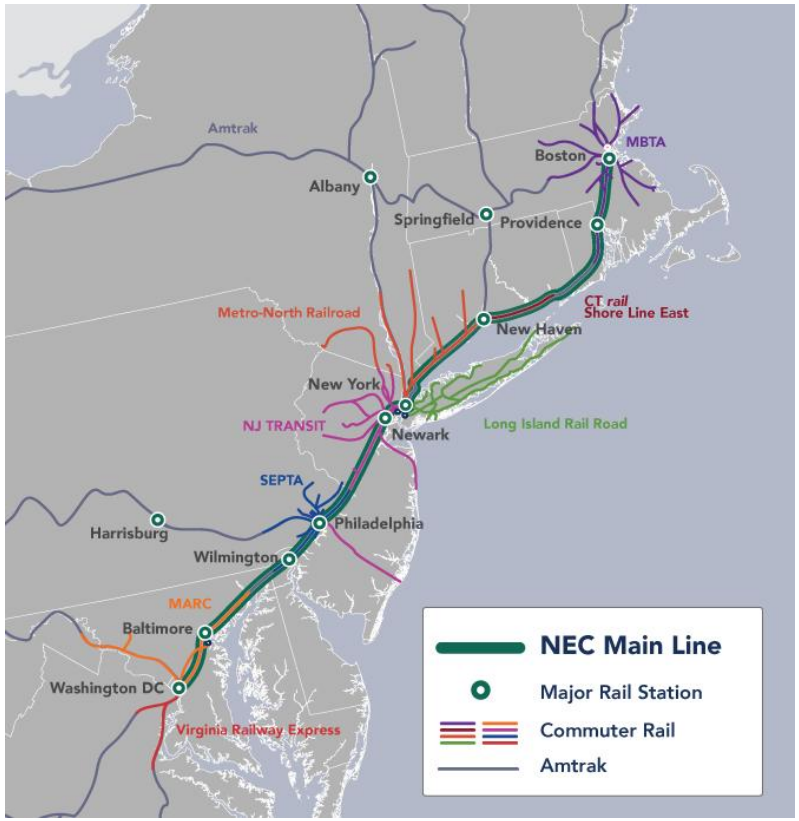
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Amtrak-MBTA Agreement

June 26, 2017

FMCB

Overview



- The FMCB is being asked to approve a contract to implement a settlement agreement reached by MBTA and Amtrak in December 2016.
    - The settlement concerned the MA portion of the Northeast Corridor (NEC).
- The Agreement establishes the terms under which the MBTA and Amtrak share costs and jointly use the Attleboro Line and related dispatch functions.
- This Agreement is pursuant to section 212 of the Passenger Rail Investment and Improvement Act of 2008 (PRIIA), which mandated a new approach to cost sharing on the NEC.

Background

- In 2003, MBTA and Amtrak entered into so-called “Attleboro Agreement” governing joint use of the Attleboro line, part of the Northeast Corridor (NEC). MBTA owns the right of way, including 2 of the 3 shared stations (South Station and Back Bay).
  - Amtrak used the line and had limited priority for its trains
  - Amtrak maintained the track and performed dispatching
  - No money changed hands

- In 2008, Federal legislation (PRIIA, section 212) required an “equitable cost allocation” among NEC users, including the MBTA and Amtrak.
  - PRIIA purported to supersede the Attleboro agreement
  - Amtrak demanded annual payments from the MBTA (approx. $29 million for FY16)
  - MBTA rejected and challenged PRIIA as unconstitutional

Outcome of Negotiations

- December 2016, Amtrak and the MBTA reached a settlement concerning payments and rights for the period ending September 2021.
  - Amtrak will continue to maintain and dispatch
  - No longer be a “barter” arrangement.
    - MBTA and Amtrak costs allocated per PRIIA

- Contract for which approval is being sought implements that settlement.

Settlement Terms

- Amtrak will continue to operate on, dispatch and maintain line.
- MBTA will accept PRIIA allocation until 2021.
  - MBTA reserves right to challenge thereafter.
- MBTA will pay allocated costs (operating and capital) per model.
  - MBTA will reduce costs by RI payment of share attributable to RI portion of MBTA service.
  - MBTA will continue to challenge some costs in Model (ex: Amtrak's Police costs).
- MBTA will decide capital program and control capital work.
  - Covers Amtrak's capital contribution per model and MBTA's capital contributions.
- Parties are to adopt tools to improve service.
  - Penalties for Amtrak caused delays.
  - More detailed maintenance requirements.

2017 Agreement Summary

- Term - Until September 30, 2021
- Access - Substantially the same access rights as 2013 Agreement for both parties
- Dispatching
  - – Amtrak to continue to provide dispatching services. Same protocols and number of Amtrak preferences as 2003 Agreement.
  - – Clarifies that MBTA has use of dispatch center (CETC) system post Agreement.
- Maintenance
  - – Similar scope of maintenance although MBTA commits to funding certain capital maintenance activities under capital budget.
  - – Tightens Amtrak obligation to provide dedicated Communications and signal personnel
- Compensation
  - – MBTA to make payments pursuant to PRIIA 212 for duration of term.
  - – Costs for operating and capital to be updated annually pursuant to PRIIA model.
  - – Payments to be made for SFY17
    - Costs for maintenance and operation: $4,666,667.
    - Costs for Capital: $5,166,667.
  - – SFY18 payments by MBTA estimated to be:
    - $12M for operating and $12.2 for capital
    - Amtrak will pay $5.8M+ for capital.
    - MBTA will be able to recover $1M+ from RI for service there.

    MBTA will continue to review data in model and actual costs.

2017 Agreement Summary (continued)

- Eliminates Amtrak's right to approve MBTA plans and construction on Right of Way
- Capital Planning
  - MBTA to manage capital spending on the Attleboro Line (both its allocated cost and Amtrak's)
  - Bulk of capital spending to be recapitalization of line
- Penalties
  - New penalty provisions added
    - For OTP:
      - Penalties for performance below certain OTP level; incentives for performance above certain OTP level
      - Go live after 3 months of confirmation of data
    - For Catastrophic failures:
      - 10k/day for every day MBTA service significantly compromised (service degraded below 50%)
      - Begin in 2018 at completion of certain capital improvements
    - For failure to comply with notification requirements:
      - Penalized for failure to abide by notification requirements to MBTA in event of service delays
  - All penalties/incentives capped at $1million/year
  - Established as one-year pilot to ensure all metrics are correct
- Indemnification
  - Reduces MBTA indemnification obligation from $75m to $20m for certain incidents
  - Tightens Amtrak's indemnification requirements in Massachusetts
  - Clarifies and potentially increases MBTA indemnification obligations in RI
  - All indemnification requirements capped at MBTA statutory limitation

Questions?

Requested Vote

"That the FMCB authorizes the General Manager to execute an agreement consistent with the terms of the December 2016 Settlement Agreement and in substantially the form that has been submitted to the Board for its approval."

2017 Agreement

- The 2017 Agreement is structured on the 2003 Attleboro Agreement and carries forward many of the same provisions.
- It includes the new terms of the settlement:
  - MBTA to pay allocated share of operating costs and make capital contribution annually per modified PRIIA model;
  - Amtrak also to make capital contribution annually;
  - MBTA to have right to manage both MBTA's and Amtrak's capital contributions and use both to improve shared line/stations in MA;
  - Parties adopt pilot penalty/incentive system linked to increase/decrease in MBTA trains delayed by Amtrak and penalties for significant disruption caused by Amtrak.

2017 Agreement (continued)

- It also improves upon terms of the 2003 Agreement:
  - Gives MBTA continuing right to use dispatch system even if Amtrak does not provide dispatch services after 2021.
  - Creates more favorable indemnification provisions.
  - Clarifies that detailed staffing requirement for Amtrak's maintenance work includes full coverage for signal system.
  - Provides that Amtrak approval is not needed for MBTA capital projects in the Right of Way.
  - Establishes system by which MBTA and Amtrak will annually allocate a portion of joint capital commitment to capital maintenance

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EXHIBIT 140

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No. 13-1080

In the Supreme Court of the United States

DEPARTMENT OF TRANSPORTATION, ET AL.,
PETITIONERS

v.

ASSOCIATION OF AMERICAN RAILROADS

ON WRIT OF CERTIORARI
TO THE UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT

REPLY BRIEF FOR THE PETITIONERS

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In the Supreme Court of the United States

No. 13-1080

DEPARTMENT OF TRANSPORTATION, ET AL.,
PETITIONERS

v.

ASSOCIATION OF AMERICAN RAILROADS

ON WRIT OF CERTIORARI
TO THE UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT

REPLY BRIEF FOR THE PETITIONERS

In Section 207(a) of the Passenger Rail Investment and Improvement Act of 2008 (PRIIA), Congress required the Federal Railroad Administration (FRA) to work "jointly" with Amtrak in developing or improving the metrics and standards that would be used to evaluate Amtrak's own performance and trigger investigations by the Surface Transportation Board (STB). 49 U.S.C. 24101 note. Repeating the court of appeals' principal errors, respondent contends (Br. 13) that Section 207 impermissibly delegated "rulemaking power" to a "private corporation." But the authority here was not "rulemaking power," and Amtrak is not a "private" entity for nondelegation purposes. Moreover, this Court has sustained the constitutionality of statutes that gave private entities an effective veto power over agency proposals. The Court should therefore reverse the court of appeals' nondelegation

decision. If the Court chooses to address, in the first instance, a constitutional question outside the scope of the question presented, it should also reject respondent's due-process claim.

A. Section 207 Did Not Delegate "Rulemaking" Power To Amtrak

As explained in our opening brief (at 19-37), the government retained sufficient control over the development, adoption, and application of the Amtrak-performance metrics and standards. Section 207 therefore avoids nondelegation concerns. Respondent's repeated assertions that Amtrak exercised "rulemaking" authority (Resp. Br. 1, 13, 14, 18, 19, 22, 24, 33, 38, 39, 40, 41) do not make it so. Nor was Section 207 rendered unconstitutional, as respondent contends (Br. 26-30), by its never-invoked provision for using a government-appointed arbitrator to resolve any impasse between the FRA and Amtrak.

1. Amtrak's effective veto authority over the metrics and standards did not constitute an impermissible delegation

a. Echoing the court of appeals, respondent contends that Section 207 was fatally flawed because it made the FRA "powerless to issue a regulation that Amtrak opposed." Resp. Br. 19; see also Pet. App. 10a ("§207 leaves [the FRA] impotent to choose its version without Amtrak's permission"). But, as explained in our opening brief (at 21-24), even assuming *arguendo* that the metrics and standards were tantamount to regulations, this Court has previously approved statutory schemes under which true regulatory standards were subject to private parties' veto powers.

Respondent does not even attempt to distinguish *St. Louis, Iron Mountain & Southern Railway* v. *Taylor*, 210 U.S. 281 (1908), which sustained a statute that authorized a private railway association to establish standard heights for drawbars on railroad cars. See *id.* at 286-287; Gov't Br. 20 n.5.[1] And respondent no longer seeks to distinguish *United States* v. *Rock Royal Co-operative, Inc.*, 307 U.S. 533 (1939), and *Currin* v. *Wallace*, 306 U.S. 1 (1939), on the ground that they involved only the power to "*opt out* of the exercise of coercive state power." Gov't Br. 23 (quoting Br. in Opp. 17). But the distinction respondent now advances is no more persuasive. *Currin* explained that Congress could condition the effectiveness of its "own regulation" on the approval of private parties. 306 U.S. at 15; see also *id.* at 16 ("[I]t is Congress that exercises its legislative authority in making the regulation and in prescribing the conditions of its application."). In respondent's view (Br. 20-21), the Court was distinguishing between an instance in which a governmental agency drafts a proposed regulation subject to a private party's veto and one in which the private party has both a final veto authority and the ability to participate in the earlier drafting process. In either case, however, a private entity has

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[1] In *A.L.A. Schechter Poultry Corp.* v. *United States*, 295 U.S. 495 (1935), the Court did not cast doubt on that decision. Instead, the Court treated it as involving a permissible delegation involving a matter "of a more or less technical nature." *Id.* at 537. The same is true of Section 207. As explained below, the metrics and standards primarily serve to provide information about Amtrak's operations and to describe (and limit) the occasions on which the STB may or will investigate whether a host railroad has failed to comply with the statute requiring Amtrak's trains to receive a preference over freight transportation. See pp. 5-7, *infra*.

the power to decide whether a regulation that the government desires can be "foist[ed]" on "unwilling companies in the same industry." Resp. Br. 21. Whether or not a private party formally shares the pen at the drafting stage, its power to withhold ultimate approval can influence what the agency proposes.

b. Thus, respondent is ultimately forced to contend (Br. 19) that "Section 207 closely resembles the statute struck down in" *Carter* v. *Carter Coal Co.*, 298 U.S. 238 (1936). It is true that the minimum-wage and maximum-hour regulations that the Court invalidated in *Carter Coal* were written by private industry. *Id.* at 283-284, 310-312. The critical flaw there, however, was not public–private co-authorship. Instead, the government had no participation in the process at all; it could not even prevent the industry's proposals from going into effect. *Id.* at 284. Here, by contrast, the metrics and standards could not take effect without both the active participation (during the drafting process) and the independent assent (at the end) of a governmental entity, the FRA. In that regard, Section 207 of PRIIA is materially different from the statutory scheme invalidated in *Carter Coal*.

Section 207 is also more like the co-authorship regime that the Court sustained in *Sunshine Anthracite Coal Co.* v. *Adkins*, 310 U.S. 381 (1940), in which a governmental entity retained the power to approve, disapprove, or modify prices proposed by coal producers. *Id.* at 399 (citing *Currin* in support of the proposition that industry's role was "unquestionably valid"). While PRIIA is not identical to the arrangement at issue in *Sunshine Anthracite*, that decision's reliance on *Currin*—which sustained a statute conferring a

private veto power over the government's proposals—shows that respondent over-reads *Sunshine Anthracite* by suggesting that it supports only statutes in which a private entity is wholly "subordinate[d]" to the government. Resp. Br. 18-19 (quoting *Sunshine Anthracite*, 310 U.S. at 399).

2. The metrics and standards do not reflect "rulemaking" authority or impose "regulatory" effects on host railroads

Amtrak's role in the development of the Amtrak-performance metrics and standards also poses no non-delegation problem because the metrics and standards do not reflect the exercise of "rulemaking" authority (Resp. Br. 1) or permit Amtrak to "regulate other private entities" (Pet. App. 6a).

a. As explained in our opening brief (at 7-9, 30-37), the metrics and standards serve primarily as tools to measure Amtrak's own performance and to establish in part the circumstances under which the STB may investigate whether a host railroad has violated the independent and long-standing statutory requirement that Amtrak's passenger trains receive "preference over freight transportation in using a rail line, junction, or crossing." 49 U.S.C. 24308(c) and (f).

There can be no doubt that Congress may authorize private parties to play a role in triggering a government investigation or adjudicatory proceeding. See Gov't Br. 32-34. As the district court concluded, "[m]erely granting a private party the power of referral * * * does not pose a constitutional problem." Pet. App. 48a. Here, in response to concerns that host railroads were failing to honor the statutory preference requirement, Congress created a mechanism by which Amtrak could seek to have that preference

requirement enforced (or by which others, such as host railroads, could seek a determination that certain delays had *not* been caused by a violation of the statutory preference requirement). That mechanism is an administrative proceeding before an independent governmental entity, the STB. 49 U.S.C. 24308(f). Congress could have given Amtrak the ability to initiate such a proceeding whenever it believed the statutory requirement had been violated. Instead, it provided that the metrics and standards would, in addition to providing useful information to Congress and the public, help determine when Amtrak could—*and when it could not*—trigger a governmental investigation. In the course of any resulting investigation, the actual regulatory (and adjudicatory) authority will be wielded by the STB, not Amtrak. And any sanctions against a host railroad will turn on violations of the long-established statutory preference requirement, not the metrics and standards. See 49 U.S.C. 24308(f)(2). By the same token, any actions that the host railroads might choose to take to avoid potential sanctions—such as "modifying their operations and further delaying freight traffic," Resp. Br. 23—are also attributable to that statutory preference.

The permissibility of that arrangement follows *a fortiori* from *National Railroad Passenger Corp.* v. *Boston & Maine Corp.*, 503 U.S. 407 (1992), a case that respondent simply ignores. There, the Court found that Congress had not delegated eminent-domain power to Amtrak by authorizing it to initiate a proceeding before the Interstate Commerce Commission (the STB's predecessor) to condemn another railroad's property, even though the statute in question "create[d] a *presumption* in favor of conveyance

to Amtrak." *Id.* at 421 (emphasis added); Gov't Br. 33-34.

b. For similar reasons, respondent is misguided in suggesting (Br. 24) that the metrics and standards impermissibly allow Amtrak to "create[] and suppl[y] the evidence" that will be used in the STB's investigation. In fact, the statute directs the STB to receive information from "all parties" and authorizes the STB to "review the accuracy of the train performance data" to determine what causes actually "contribute[d]" to the underlying "delays" (49 U.S.C. 24308(f)(1)), notwithstanding what the reports of Amtrak's conductors say. See Gov't Br. 34-35 & n.13; see also J.A. 120 (response to comment on proposed metrics and standards, noting that "individual host railroads can use their own data, when practicable following reporting of the delay, to help resolve discrepancies with Amtrak and help identify the incidents that may have contributed to delays"). Indeed, respondent itself has explained that host railroads are creating their own evidence for defensive use in such investigations. J.A. 182, 183, 190, 197, 205. But they cannot claim to have any constitutional immunity from the costs associated with a governmental investigation into their potential statutory violations, whether or not that investigation was triggered by someone they consider a business competitor.

c. Respondent also pins (Br. 24, 31) its attempt to locate a regulatory effect on the requirement in Section 207(c) of PRIIA that the metrics and standards be incorporated, "[t]o the extent practicable," into the "access and service agreements" between Amtrak and host railroads. 49 U.S.C. 24101 note. But those operating agreements are individual contracts that are

subject to the give-and-take of bargaining between Amtrak and the host railroads. Amtrak did not need statutory authority to make demands in the course of those negotiations, and the host railroads are free to reject those demands or, in return for agreeing to incorporate some or all of the metrics and standards, to demand changes to compensation and other terms and conditions that Amtrak might decide are impracticable. Significantly, moreover, any failure by Amtrak and a host railroad to negotiate a contract will be resolved by an independent governmental entity (the STB), which is not required to give any deference to the metrics and standards when it "prescribe[s] reasonable terms and compensation." 49 U.S.C. 24308(a)(2)(A)(ii).

There is accordingly no basis for respondent's contention (Br. 23) that Amtrak's role in developing the metrics and standards permitted it to "use regulatory power to [its] own commercial advantage."

d. Respondent similarly errs in contending (Br. 24-26) that Amtrak's participation in developing the metrics and standards permitted the federal government to evade political accountability for their effects. Even setting aside the extensive governmental control over and ties with Amtrak (see pp. 13-15, *infra*), Section 207 plainly prevents the government from disclaiming responsibility for the metrics and standards, because the FRA itself had to approve them. Moreover, the FRA did so in a transparent process that involved solicitation of, and response to, comments from various stakeholders. See J.A. 11-158 (reprinting proposed metrics and standards, *Federal Register* notices, and published responses to comments). And we have already explained that, to the extent that the

metrics and standards themselves were somehow to become the basis for a future STB order to pay damages, they could be subject to judicial review under the Administrative Procedure Act, 5 U.S.C. 701 *et seq*. See Gov't Br. 37 n.15.

e. Finally, Section 207 is not rendered unconstitutional, as respondent suggests (Br. 21-22), because Congress has not used the same mechanism in other contexts or because the government has failed to show that joint development of the metrics and standards was the "only" way to achieve Congress's goals. Congress understandably gave Amtrak a greater role than other stakeholders in preparing the metrics and standards that would be used primarily to measure Amtrak's own performance. See Gov't Br. 7-8; cf. *A.L.A. Schechter Poultry Corp.* v. *United States*, 295 U.S. 495, 552 (1935) (Cardozo, J., concurring) ("When the task that is set before one is that of cleaning house, it is prudent as well as usual to take counsel of the dwellers."). But the question for this Court is not whether Congress took the only possible course. As in most constitutional contexts, a successful defense of the statute does not require the government "to demonstrate that its [actions] are 'necessary' or the least restrictive means of furthering its interests." *NASA* v. *Nelson*, 131 S. Ct. 746, 760 (2011).

In any event, whether or not it made manifestly better sense at the outset to require joint development rather than mere consultation with Amtrak, it is now obvious that PRIIA's purposes would be much better served if the metrics and standards could be put back into effect without requiring Congress to amend the statute to provide for their adoption through some different mechanism.

3. The potential for a government-appointed arbitrator avoided any nondelegation problem

As discussed above, Section 207(a) of PRIIA provided that the FRA and Amtrak would "jointly * * * develop" the Amtrak-performance metrics and standards. 49 U.S.C. 24101 note. Section 207(d) further provided that, if there were an impasse in promulgating the metrics and standards, *any* party involved in their development could "petition the [STB] to appoint an arbitrator to assist the parties in resolving their disputes through binding arbitration." *Ibid.* If that provision is construed as referring to a governmental arbitrator, then there would have been no doubt that the last word about the metrics and standards would come from a governmental entity (and not Amtrak). See Gov't Br. 27-29. Respondent, however, contends (Br. 26) that the arbitrator "provision, in and of itself, renders Section 207 unconstitutional," because it must be read as contemplating the appointment of a *private* arbitrator. Respondent's reading is not supported by the statutory text, the context, or applicable principles of statutory construction.

a. Respondent asserts (Br. 27) that "the ordinary meaning of the word 'arbitrator' refers to a *nongovernmental* actor." But the definition in *Black's Law Dictionary* 120 (9th ed. 2009), includes no such limitation, and, with one exception, none of the sources respondent cites even involved a statutory reference to an arbitrator.[2] The exception shows that Congress

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[2] In *Gordon* v. *United States*, 74 U.S. (7 Wall.) 188 (1868), the Court concluded that the Secretary of War had not been an arbitrator because he had not been invested with authority to make a final decision binding on the parties—not, as respondent suggests, because he was not "a private extraordinary judge." *Id.* at 194

can indeed provide for arbitration by a government official. See 7 U.S.C. 1359ff(a)(2)(A) (arbitration by the Secretary of Agriculture of disputes about sugar marketing allotments). And respondent does not deny that PRIIA and other statutes already contemplate that other disputes involving Amtrak will be resolved by the STB rather than a private entity. See Gov't Br. 28. There is therefore no reason to conclude that Section 207(d)'s reference to an "arbitrator" appointed by the STB means a non-governmental actor—especially in light of the presumption against "subdelegations to outside parties," *United States Telecom Ass'n* v. *FCC*, 359 F.3d 554, 565 (D.C. Cir.), cert. denied, 543 U.S. 925 (2004), which respondent does not contest.

(citation omitted). The joint resolution at issue in *Gordon* did not use any form of the term "arbitrator." Res. of June 1, 1860, 12 Stat. 873. Respondent also cites (Br. 27) two opinions of the Office of Legal Counsel. One noted that arbitrators are typically "private individuals chosen by the parties to the dispute," *The Constitutional Separation of Powers Between the President and Congress*, 20 Op. O.L.C. 124, 148 (1996)—a definition that is plainly inapplicable to Section 207(d), where the arbitrator is chosen *by the STB*. The second opinion considered whether a hypothetical statute might "compel [a federal agency's] litigation counsel to enter into binding arbitration" by a private arbitrator. *Constitutional Limitations on Federal Government Participation in Binding Arbitration*, 19 Op. O.L.C. 208, 208-209 (1995). But the opinion acknowledged that there are no "universally applicable rules" governing arbitration, *id.* at 209, and it relied on a decision from this Court about a statute that allowed a customs collector to have an import duty jointly appraised either by two private merchants or by *a government appraiser* and a private merchant, *id.* at 217. See *Auffmordt* v. *Hedden*, 137 U.S. 310, 312, 326-327 (1890).

b. At the very least, Section 207(d) cannot be read as unambiguously *precluding* a governmental arbitrator. That eliminates the only basis for respondent's objection (Br. 28-29) to applying the canon of constitutional avoidance in support of the governmental reading.[3] In fact, the Court has long been willing to infer, for constitutional purposes, a limitation that is not expressly contained in the statutory text but is nevertheless a plausible reading. See, *e.g.*, *Zadvydas* v. *Davis*, 533 U.S. 678, 682 (2001) (construing statute authorizing detention of certain removable aliens "beyond the removal period" as "contain[ing] an implicit 'reasonable time' limitation"); *United States* v. *X-Citement Video, Inc.*, 513 U.S. 64, 70-72 (1994) (discussing Court's willingness to infer or expand scienter requirements to prevent punishment of otherwise-innocent conduct); *The Abby Dodge*, 223 U.S. 166, 173, 177 (1912) (construing "the waters of the Gulf of Mexico or the Straits of Florida" as excluding waters within "the territorial limits of a State"); *United States* v. *Palmer*, 16 U.S. (3 Wheat.) 610, 631 (1818) (construing the words "any person or persons" as excluding foreign citizens on foreign ships on the high seas).

Here, reading Section 207(d)'s reference to a government-appointed "arbitrator" as being limited to a governmental arbitrator does not "press statutory

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[3] See *Stern* v. *Marshal*, 131 S. Ct. 2594, 2605 (2011) (concluding that "the plain text" left no "room for the canon of avoidance"); *Salinas* v. *United States*, 522 U.S. 52, 60 (1997) (finding "[t]he text" to be "unambiguous on the point under consideration"); *United States* v. *Monsanto*, 491 U.S. 600, 611 (1989) (concluding that "the language is clear and the statute comprehensive"); see also *United States* v. *Stevens*, 559 U.S. 460, 481 (2010) (declining to adopt a limiting construction in light of the standards applicable to facial overbreadth challenges in the First Amendment context).

construction to the point of disingenuous evasion." *United States* v. *Locke*, 471 U.S. 84, 96 (1985) (internal quotation marks and citation omitted). It requires no greater departure from the plain text than respondent's own "private arbitrator" reading (Br. 26), and it comports with the Court's established practice of using construction to avoid, rather than create, any constitutional concern.[4]

B. Amtrak Should Not Be Considered A "Private" Entity For Purposes Of Nondelegation Analysis

Respondent's nondelegation claim is fundamentally misguided for the further reason that Amtrak should not be considered a private entity for purposes of nondelegation analysis.

1. Respondent does not deny the federal government's multiple and extensive forms of control over Amtrak. As detailed in our opening brief (at 42-46), Congress has not simply chartered Amtrak and

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[4] There is no merit to respondent's further suggestion (Br. 29) that the use of a governmental arbitrator would violate the Appointments Clause (U.S. Const. Art. II, § 2, Cl. 2). Even assuming that the arbitrator's authority, confined to the single impasse over the metrics and standards, to "assist the parties in resolving their disputes through binding arbitration," 49 U.S.C. 24101 note (PRIIA § 207(d)), would constitute the "performance of a significant governmental duty," *Buckley* v. *Valeo*, 424 U.S. 1, 141 (1976) (per curiam), the limited nature of that duty would allow the arbitrator to be an inferior, rather than principal, officer. See *Edmond* v. *United States*, 520 U.S. 651, 661-662 (1997). While Section 207(d) does not explicitly address the authority to remove the arbitrator (see Resp. Br. 29-30), it is implicit in the appointment power. See *Free Enter. Fund* v. *Public Co. Accounting Oversight Bd.*, 561 U.S. 477, 509 (2010); *Keim* v. *United States*, 177 U.S. 290, 293 (1900). The arbitrator's appointment by the STB would therefore comport with the Appointments Clause.

turned it loose to make profits. It has prescribed Amtrak's mission and various public-interest goals—often at a striking level of detail.[5] Gov't Br. 4-5, 7 n.4; see *Lebron* v. *National R.R. Passenger Corp.*, 513 U.S. 374, 397 (1995) ("Amtrak was created by a special statute, explicitly for the furtherance of federal governmental goals."). Congress has retained federal ownership of all of Amtrak's preferred stock and has retained governmental control over Amtrak's management by, among other things, providing for presidential appointment (subject to the Senate's advice and consent) of nearly all of Amtrak's Board of Directors. Gov't Br. 43-45.[6] Not least—having long since

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[5] The most recent bill authorizing appropriations for Amtrak, which was favorably reported by the House Committee on Transportation and Infrastructure on September 17, 2014, conforms to Congress's pattern of micromanagement; accompanying provisions would require Amtrak, among other things, to establish a "pilot program that allows passengers to transport domesticated cats or dogs on certain trains." H.R. 5449, 113th Cong., 2d Sess. § 210(a).

[6] Respondent incorrectly suggests (Br. 42) that the selection of Amtrak's directors does not comport with the Appointments Clause. The only one of Amtrak's nine directors who is not appointed by the President with the advice and consent of the Senate is Amtrak's own President, who is appointed by the other eight directors, has his salary fixed by the remaining directors, and "serve[s] at the pleasure of the board." 49 U.S.C. 24303(a) and (b). Amtrak's President is therefore an inferior officer. See *Free Enter. Fund*, 561 U.S. at 510 (noting that "'[t]he power to remove officers' at will and without cause 'is a powerful tool for control' of an inferior") (quoting *Edmond*, 520 U.S. at 664). As such, he may be appointed by the other eight directors. See *id.* at 510-513 (approving appointments by the SEC Commissioners, considered as a collective Head of a Department that is not subordinate to or contained within any other component of the Executive Branch); *Silver* v. *United States Postal Serv.*, 951 F.2d 1033, 1036-1041 (9th Cir. 1991) (rejecting Appointments Clause challenge to the Board

acknowledged that "Amtrak is not a for-profit corporation," H.R. Rep. No. 1182, 95th Cong., 2d Sess. 15 (1978)—Congress has furnished more than $41 billion in subsidies to Amtrak over 43 years. Gov't Br. 45-46.

Respondent cannot avoid those structural and operational realities by pointing to Congress's declaration that Amtrak "shall be operated and managed as a for-profit corporation," or that it is not a federal "department, agency, or instrumentality." 49 U.S.C. 24301(a)(2) and (3). What respondent calls (Br. 39) "Congress's 'statutory disavowal' of Amtrak's agency status" did not, as respondent suggests (Br. 42), require Congress to choose between making Amtrak a traditional agency with rulemaking authority subject to the Administrative Procedure Act and making it a wholly private non-agency. Congress is free to pick and choose among statutory obligations and powers. Thus, the APA is inapplicable to some indisputably governmental entities (like Congress and this Court) and to some legislative rules made by federal agencies. See 5 U.S.C. 551(1), 553(a). And, with respect to Amtrak itself, Congress has expressly exempted it from some of the statutory requirements that generally apply to governmental agencies (such as Title 31 of the United States Code, which includes the False Claims Act) but subjected it to others (such as the Freedom of Information Act and the Inspector General Act). See Gov't Br. 39-40.

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of Postal Governors, which consisted of nine individual Governors (appointed by the President with the advice and consent of the Senate), the Postmaster General (appointed by the nine Governors), and the Deputy Postmaster General (appointed by the nine Governors and the Postmaster General)).

There is accordingly no basis for respondent's contention (Br. 35-36) that Congress's decision to deprive Amtrak of sovereign immunity from suit simultaneously requires it to have made Amtrak a private actor for purposes of participating in the development of the metrics and standards. Congress has waived sovereign immunity for certain entities without also depriving them of their governmental status for purposes of exercising even true regulatory authority. See, *e.g.*, 12 U.S.C. 1701c(a) and 1702 (authorizing the Secretary of Housing and Urban Development to "make such rules and regulations as may be necessary to carry out his functions, powers, and duties," and providing that he may, "in his official capacity," "sue and be sued"); 39 U.S.C. 401(1) and (2) (waiving the Postal Service's sovereign immunity while simultaneously giving it the authority "to adopt, amend, and repeal such rules and regulations * * * as may be necessary in the execution of its function under this title"). Nor is this Court's decision in *Bank of the United States* v. *Planters' Bank*, 22 U.S. (9 Wheat.) 904 (1824), to the contrary.[7]

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[7] In *Bank of the United States*, the Court concluded that "[t]he State of Georgia, by giving to [a state-chartered] Bank the capacity to sue and be sued, voluntarily strips itself of its sovereign character, so far as respects the transaction of the Bank, and waives all the privileges of that character." 22 U.S. (9 Wheat.) at 907-908. The Court said the same had been true with respect to "the old Bank of the United States," in which the federal government merely held shares, without otherwise "impart[ing]" to it "the privileges of the government." *Id.* at 908. Neither of those propositions is in tension with the conclusion that a statutorily created entity subject to multiple forms of governmental control can, if Congress wishes, exercise governmental authority subject to Congress's direction.

2. The critical point is that the latitude permitted to Congress under the nondelegation doctrine is defined by the Constitution, not statute. As *Lebron* concluded, Amtrak is a governmental agency or instrumentality for the purpose of individual rights guaranteed by the Constitution. See 513 U.S. at 394. That reasoning extends to the nondelegation doctrine, which, like other structural provisions of the Constitution, also serves to protect individual liberty. Gov't Br. 40-41. If Amtrak is governmental "for purposes of the constitutional *obligations* of the Government" (as respondent concedes, Br. 35), then the Constitution does not prevent Congress from treating it as governmental to the extent that Congress chooses to make an otherwise-permissible grant of authority to it.

C. The Court Should Decline To Decide, Or Should Reject, Respondent's Due-Process Claim

When it granted certiorari, the Court did not include respondent's additional question (Br. in Opp. i, 20-23) about its claim under the Due Process Clause. Nevertheless, respondent again advances (Br. i, 43-50) that claim as an independent basis for invalidating Section 207. The Court should decline to decide that question in the first instance or, in any event, should reject it on the merits.

1. The court of appeals should address respondent's due-process claim in the first instance

As the Court often observes, it is "a court of final review and not first view," and it therefore does not ordinarily "decide in the first instance issues not decided below." *Zivotofsky* v. *Clinton*, 132 S. Ct. 1421, 1430 (2012) (citations omitted). That practice carries

special force in the context of constitutional questions that have not been addressed by the court of appeals. See, *e.g.*, *ibid.*; *Bond* v. *United States*, 131 S. Ct. 2355, 2360, 2367 (2011); *FCC* v. *Fox Television Stations, Inc.*, 556 U.S. 502, 529 (2009); *Cutter* v. *Wilkinson*, 544 U.S. 709, 718 n.7 (2005).

In this case, the same result follows from the Court's well-established practice of declining to address issues that are not fairly included within the scope of the questions on which the Court granted certiorari. See *Cutter*, 544 U.S. at 727 n.2 (Thomas, J., concurring); *Lebron*, 513 U.S. at 379; Sup. Ct. R. 14.1(a). The Court did not add respondent's due-process question when it granted the government's petition for certiorari. Cf. *NLRB* v. *Noel Canning*, 133 S. Ct. 2861, 2861-2862 (2013). The Court should again decline the request to address that question.

Adhering to the Court's usual practices would be particularly appropriate in this case, because the basis for respondent's due-process claim has markedly shifted since it was rejected by the district court.[8]

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[8] The district court held that, for purposes of the Due Process Clause, Amtrak is a "governmental entity" rather than a "private entity." Pet. App. 34a-35a. Respondent now contends (Br. 49-50) that its due-process claim does not "depend[] on a determination that Amtrak is a private actor," because the claim "was framed broadly" in its complaint. Respondent quotes one sentence from its complaint, which said that "Section 207 of PRIIA violates the due process rights of the freight railroads" by vesting power in Amtrak. Resp. Br. 50 (quoting J.A. 177). But the complaint's preceding sentence articulated respondent's proposed rule, demonstrating that its due-process claim was predicated on Amtrak's purportedly private status. J.A. 177 ("Vesting the coercive power of the government in interested *private parties* violates the due process rights of regulated third parties, as secured by the Fifth

Accordingly, if this Court reverses the court of appeals' holding with respect to respondent's nondelegation claim (*i.e.*, the question on which it granted certiorari), it should remand for further proceedings in which respondent could pursue its due-process claim in the light shed by the Court's analysis of the operation of Section 207 and of Amtrak's public or private status for nondelegation purposes. See *United States* v. *Comstock*, 560 U.S. 126, 149-150 (2010).

2. If this Court reaches the question, it should reject respondent's due-process claim

In any event, respondent's due-process claim fails on the merits.

a. Relying principally on *Carter Coal*, respondent contends that the Due Process Clause prevents a self-interested entity from wielding "the power to regulate the business of another, and especially of a competitor." Resp. Br. 44 (quoting *Carter Coal*, 298 U.S. at 311). As discussed above (see pp. 5-9, *supra*), however, Amtrak's authority to act jointly with the FRA in developing the metrics and standards is not properly characterized as regulatory power. Nor is Amtrak's position *vis-à-vis* the host railroads like that of a mar-

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Amendment to the United States Constitution.") (emphasis added); see also Resp. Mem. in Supp. of Its Mot. for Summ. J. 32, D. Ct. Doc. 8 (Dec. 2, 2011) ("Delegations to *private parties* are unconstitutional for the additional and independent reason that such delegations violate the due process rights of regulated third parties.") (emphasis added); Resp. Reply in Supp. of Its Mot. for Summ. J. & Opp. to Pet. Mot. for Summ. J. 26, D. Ct. Doc. 13 (Mar. 6, 2012) ("[G]ranting *a private corporation* 'the power to regulate the business of another, and especially of a competitor' is 'clearly a denial of rights safeguarded by the due process clause of the Fifth Amendment.'") (quoting *Carter Coal*, 298 U.S. at 311-312) (emphasis added).

ket competitor. Rather, Amtrak is more like "a customer of a common carrier that cannot refuse to furnish a service to the customer at the approved rate." Gov't Br. 24 n.7. And all else aside, even a self-interested and truly private party may trigger an investigation by an independent and indisputably disinterested governmental agency like the STB without running afoul of the Due Process Clause. Any other rule would proscribe most of the claims that private parties routinely bring before most administrative agencies or courts.

Indeed, to the extent that respondent seeks to differentiate its due-process claim from its nondelegation claim, it does so principally by citing a line of cases in which the Court has been punctilious about requiring *adjudicators* to be disinterested. See Resp. Br. 44 (citing *Tumey* v. *Ohio*, 273 U.S. 510 (1927); *Ward* v. *Village of Monroeville*, 409 U.S. 57 (1972); *Gibson* v. *Berryhill*, 411 U.S. 564 (1973)).[9] As the Court has explained, "[t]he rigid requirements of *Tumey* and *Ward*" were "designed for officials performing judicial or quasi-judicial functions" and were inapplicable to agency officials seeking to enforce the law before an independent adjudicator. *Marshall* v. *Jerrico, Inc.*, 446 U.S. 238, 248 (1980); see also *Concrete Pipe & Prods. of Calif., Inc.* v. *Construction Laborers Pen-*

[9] Respondent also cites (Br. 44) *Young* v. *United States ex rel. Vuitton et Fils S.A.*, 481 U.S. 787 (1987), which relied upon the Court's supervisory power, not the Due Process Clause, and held that the power to prosecute a criminal contempt could not be exercised by someone who was required by principles of legal ethics to represent an interest other than that of the public. *Id.* at 807-809.

sion Trust, 508 U.S. 602, 619 (1993) (reaffirming "[t]he distinction between adjudication and enforcement").

In *Marshall*, the Court rejected the proposition that an agency official was insufficiently disinterested to bring an administrative enforcement action seeking monetary penalties for the unlawful employment of child labor, when any recovery would be retained by the agency to defray administrative costs. 446 U.S. at 241, 246-250. Without determining "with precision" what leeway would be allowed to those bringing an enforcement action before a disinterested adjudicator, the Court concluded that the likelihood that the agency official would act in a biased fashion was sufficiently remote because his salary was fixed and the budgetary consequences for the agency were minimal. *Id.* at 250-252.

b. Here, the only potential adjudicatory body is the STB, which would determine whether a host railroad had failed to provide the statutorily required preference for intercity-passenger-rail traffic (49 U.S.C. 24308(f)(2)), or would "prescribe reasonable terms and compensation" in the event that Amtrak and a host railroad could not agree on new contract terms (49 U.S.C. 24308(a)(2)(A)(ii)). Even assuming that the process of developing the metrics and standards constituted a rulemaking function, it would still satisfy the standard applied in *Marshall*. Although respondent asserts (Br. 45-46) that Amtrak's officers have a "strong private financial incentive to maximize Amtrak's profits," that incentive derives from a statutory provision that would apply only in years during which Amtrak does not receive federal assistance, 49 U.S.C. 24303(b). Given Amtrak's unbroken string of unprofitability, that cannot have been a realistic inducement

to biased decisionmaking. And, to the extent that Amtrak itself might stand to recover damages for a violation of the statutorily required preference, 49 U.S.C. 24308(f)(2), they would not go to the corporation's general fund; they could be used only "for capital or operating expenditures on the routes over which delays" resulted from the statutory breach, 49 U.S.C. 24308(f)(4).

c. Finally, it is noteworthy that—unlike the statute invalidated in *Carter Coal*—Section 207 did not give Amtrak a unilateral ability to adopt the metrics and standards. Their development required the active participation and approval of the FRA, a neutral governmental agency as to which plaintiff makes no claim of bias. Under the circumstances, Amtrak's role in developing the metrics and standards was not at all akin to "[e]mpowering Burger King to regulate McDonald's." Resp. Br. 48. If it decides to reach the question, the Court should reject respondent's due-process claim.

* * * * *

For the foregoing reasons and those stated in our opening brief, the judgment of the court of appeals should be reversed.

Respectfully submitted.

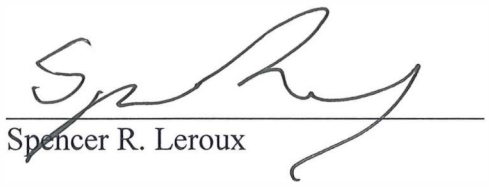
DONALD B. VERRILLI, JR.
Solicitor General

OCTOBER 2014

CERTIFICATE OF SERVICE

I certify that I have this 14th day of September, 2017, caused a true copy of the Highly Confidential and Public versions of the foregoing Rebuttal Submission of Illinois Central Railroad Company and Grand Trunk Western Railroad Company to be served electronically upon the following counsel for National Railroad Passenger Corporation:

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