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ENTERED
Office of Proceedings
December 5, 2023
Part of
Public Record

December 5, 2023

VIA E-FILING

Cynthia T. Brown
Chief, Section of Administration
Surface Transportation Board
Office of Proceedings
395 E Street, SW
Washington, DC 20423

Re: STB Docket No. NOR 42175, Complaint and Petition of the National Railroad Passenger Corp. under 49 U.S.C. § 24308(f) for Substandard Performance of Amtrak's Sunset Limited Trains 1 and 2

Dear Ms. Brown:

Enclosed for e-filing in the above-referenced proceeding is BNSF's Response to the Surface Transportation Board's ("Board") Request for Information sought in Appendix – Part III of the Board's November 20, 2023 Decision.

Please contact me with any questions.

Respectfully submitted,

/s/ Peter W. Denton

Peter W. Denton
Molly Bruder Fox
Onika K. Williams
Jennie A. Askew

Attorneys for BNSF Railway Company

Enclosures

BEFORE THE
SURFACE TRANSPORTATION BOARD

DOCKET NO. NOR 42175

COMPLAINT AND PETITION OF THE NATIONAL RAILROAD
PASSENGER CORP. UNDER 49 U.S.C. § 24308(f) FOR SUBSTANDARD
PERFORMANCE OF AMTRAK'S SUNSET LIMITED TRAINS 1 AND 2

BNSF'S RESPONSE TO THE BOARD'S REQUESTS FOR INFORMATION –
APPENDIX, PART III

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Dated: December 5, 2023

BNSF’S RESPONSE TO THE BOARD’S REQUESTS FOR INFORMATION – APPENDIX, PART III

BNSF Railway Company (“BNSF”) hereby provides the information sought in Appendix – Part III of the Surface Transportation Board’s (“Board”) November 20, 2023 Decision.

REQUEST NO. 2

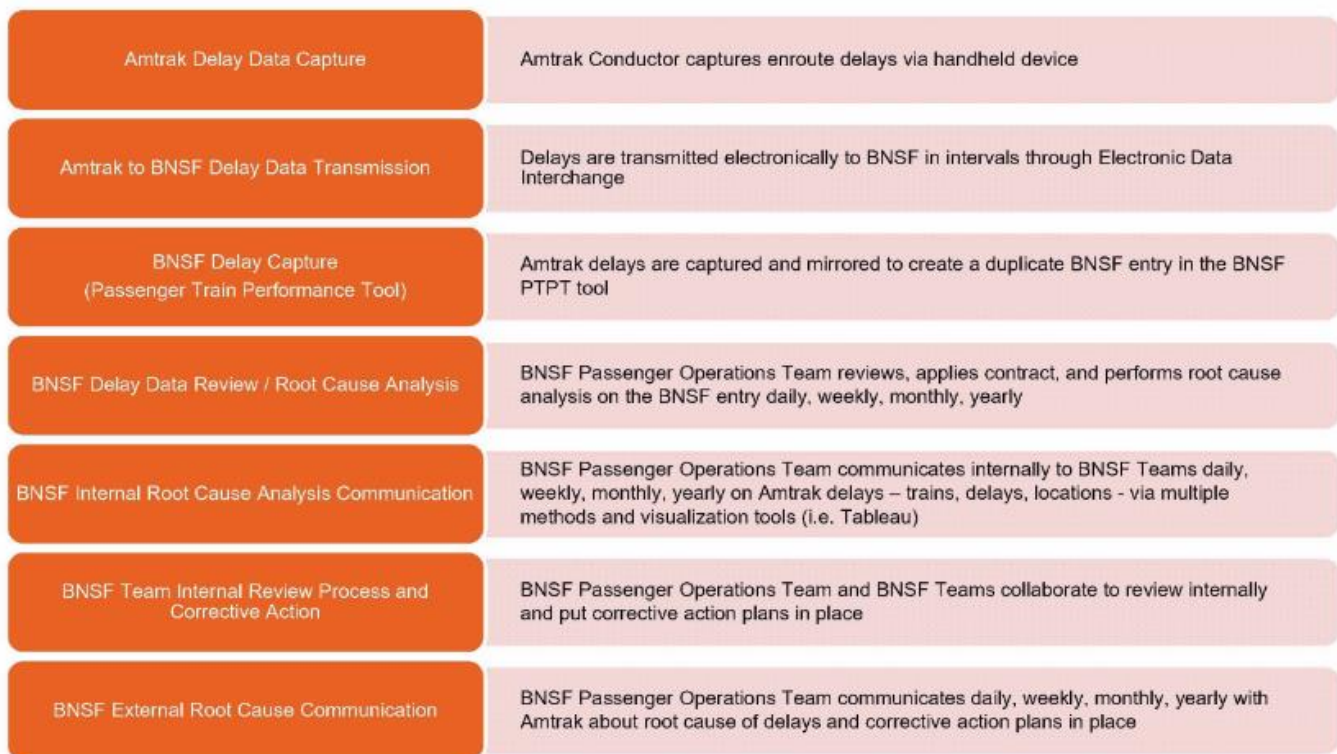
Original Question No. 2: *Delay causes.* *To the extent that you track Amtrak and/or freight train delays and their causes, explain the process(es) for gathering, categorizing, recording, and storing train delay causes. Provide all relevant standard operating procedures, employee training manuals, guidelines, instructions, and other relevant material.*

Follow-up Question:

BNSF states in its narrative response that it “actively monitors Amtrak train delays and their causes, including by reviewing Amtrak delay codes in certain circumstances.” (BNSF Second Response 2, Sept. 25, 2023). BNSF then describes its process for determining which Amtrak delay codes to review but does not describe other steps it takes to actively monitor Amtrak train delays and their causes. Additionally, none of the documents it produced appear to explain BNSF’s processes for “gathering, categorizing, recording, and storing train delay causes.” BNSF is directed to provide further detail regarding what information beyond the FRA quarterly reports and Amtrak-provided delay codes it relies on, if any, in monitoring Amtrak delays and causes, and how this information is derived.

BNSF Response to Follow-up Question: BNSF uses a variety of overlapping processes and systems to gather, categorize, record, and store information relating to train delay causes. In connection with a June 2020 comment to the FRA’s proposed rule regarding on-time performance metrics and minimum standards, BNSF submitted a presentation that detailed BNSF’s “Amtrak Delay Analysis Lifecycle”.¹ A portion of that presentation is reproduced here:

¹ See Host Railroad FRA Meeting slide deck at BNSF-SUNSET-0004921.



See Host Railroad FRA Meeting slide deck at BNSF-SUNSET-0004921. As shown in the above chart, in addition to the processes and systems described in BNSF’s original responses to the Board’s original requests, implementation of the Amtrak Delay Analysis Lifecycle relies on the tools and systems described in this supplemental response.

The Amtrak Delay Analysis Lifecycle is run primarily through BNSF’s Passenger Operations Team, which staffs a Passenger Operations Desk within BNSF’s Network Operations Center (“NOC”) and provides continuous round-the-clock coverage dedicated to the oversight of Amtrak trains while on BNSF-hosted rail lines. The Passenger Operations Desk responds to real-time reporting of service interruptions, delays, and congestion. This allows contingency planning to occur at the NOC via in-person communication, telephone, or email messaging between dispatchers, chief dispatchers, the on-duty general director of transportation, and

the Passenger Operations Desk. Additionally, along the Sunset Route, the BNSF/UP Consolidated Dispatching Center located in Spring, Tex., within UP's Spring regional office, serves as a joint regional dispatching center and provides real-time coordination with the NOC and the Passenger Operations Desk.

The BNSF Passenger Operations Team utilizes the various tools and systems summarized in this response to analyze trends in performance, to administer the BNSF Operating Agreement with Amtrak, and to take corrective actions to address conditions negatively impacting performance. The Passenger Operations Desk conducts a root-cause analysis for Amtrak delays in certain circumstances. The Passenger Operations Desk may use the following BNSF train movement oversight and real-time measurement tools to implement the Amtrak Delay Analysis Lifecycle and conduct a root-cause analysis:

1. Passenger Train Performance Tool (PTPT)

BNSF explained in its original response that BNSF receives Amtrak delay data through an Electronic Data Interchange ("EDI") feed. The Amtrak Delay Analysis Lifecycle begins with BNSF loading that EDI data into BNSF's Passenger Train Performance Tool ("PTPT").² The PTPT application allows BNSF to consume and process Amtrak's delay data. Once the Amtrak data is in the PTPT, the BNSF Passenger Operations Team applies the Amtrak/BNSF contractual terms to the data, using the PTPT application. The PTPT application allows BNSF to assess if contractual on time performance was achieved such that BNSF is entitled to a performance-based incentive payment or penalty.

When the Amtrak data is transmitted into the PTPT application, a duplicate record of the data is created. One record is Amtrak's data and that record is preserved unchanged. The duplicate record can be modified and updated by BNSF.

² See PTPT Delay Codes, BNSF-SUNSET-0004914.

BNSF's Passenger Operations Team will modify a delay code in BNSF's copy of the records when it disagrees with Amtrak's delay coding.³ BNSF then has the ability to contest the disputed delay coding with Amtrak.

2. Train Management and Dispatching System (TMDS)

BNSF uses the Train Management and Dispatching System ("TMDS") software tool to assist with the tracking of trains, maintenance, and the creation/delivery of mandatory directives. TMDS has live dispatching screens that show trains moving through the network, track work, and temporary train restrictions from slow orders, extraordinary weather restrictions, and police/fire activity fouling the tracks, among other impediments seen in the field. TMDS provides "zone views" of approximately 50- to 200-mile segmented corridors to allow users to see real-time railroad operating conditions, assisting in predicting future near-term delays and determining the root causes of any of those delays that actually occur, including through the Amtrak Delay Analysis Lifecycle. BNSF discussed the TMDS platform in its response to Original Request No. 23 and BNSF produced eleven documents in response to that request. *See* BNSF-SUNSET-0003077; BNSF-SUNSET-0001025; BNSF-SUNSET-0003897; BNSF-SUNSET-0003980; BNSF-SUNSET-0004183; BNSF-SUNSET-0004320; BNSF-SUNSET-0004416; BNSF-SUNSET-0004448; BNSF-SUNSET-0004473; BNSF-SUNSET-0004654; BNSF-SUNSET-0004706.

3. Service Interruption and Lifecycle Control (SLLC)

Unplanned train-stopping events negatively impact corridor velocity for all train types – freight and passenger alike. When an unplanned event occurs (mechanical, engineering, weather, police activity, etc.) that impedes train movement, the chief dispatcher creates a "service interruption ticket," beginning a

³ Images from the PTPT are showed at BNSF-SUNSET-0004922.

series of notifications and actions to resolve the issue as quickly as possible. The Service Interruption and Lifecycle Control (“SLLC”) tool provides a common platform for key stakeholders to resolve the issue in real-time. A companion tool, Service Interruption Dead on Line (“SIDOL”), archives all service interruptions and relief crews required for hours of service relief driven by service interruptions. The SIDOL tool assists in determining a root cause for train delays, including in connection with the Amtrak Delay Analysis Lifecycle.

4. Engineering Capacity Plan (ECAP)

BNSF spends nearly \$4 billion each year in capital, mostly in the renewal of infrastructure such as rail, ties, and ballast. This level of capital work requires significant planning and execution to keep the railroad in ideal condition while minimizing the impact of maintenance activity to daily train operations. BNSF’s Engineering Capacity Plan (“ECAP”) provides an interface between the engineering and transportation departments to plan track outage windows by territory. A planning meeting occurs daily and weekly to discuss window requests and develop operating plans. Since these windows often restrict the normal capacity of a line segment and can cause congestion through the work zone (similar to a highway lane closure causing backups approaching the work-zone during busy periods), train delays can occur around these windows. BNSF meets quarterly with Amtrak to review upcoming maintenance activities. While most planned maintenance is scheduled around passenger trains, some impacts are unavoidable. BNSF uses ECAP to help determine projects with impact to Amtrak and apply for additional “grace” for train delays associated with maintenance activities as part of the Amtrak-BNSF Operating Agreement.

5. Slow Order Reports

Railroads apply temporary speed restrictions or “slow orders” based on track conditions. Slow orders allow for the safe operation of trains through a particular

area with suboptimal track conditions. BNSF can calculate passenger and freight train delay associated with slow orders, including the additional time needed for trains to decelerate, operate through the restriction, and accelerate back to normal track speed. BNSF uses these calculations in a suite of analytic tools and reviews them regularly when assessing passenger train performance, including in connection with the Amtrak Delay Analysis Lifecycle.⁴ When slow order delays exceed certain thresholds, BNSF deploys additional focus and efforts to remedy track conditions with more significant impact to freight and passenger operations.

⁴ A sample of a type of analysis that can be completed with the tools is shown at BNSF-SUNSET-0004946.

REQUEST NO. 16

Original Question No. 16: *Amtrak delays and siding length.* *List each instance during the Relevant Period, where passing siding length resulted in an Amtrak train being stopped or slowed (i.e., when a freight train could not fit onto passing siding due to a lack of length) on portion(s) of the Route that you host, own, operate, dispatch, serve, or lease. Identify the schedule skeleton segment or skeleton-station involved, the duration of the delay to the Amtrak train, and the Amtrak train number affected, with its date of departure from origin terminal.*

Follow-up question:

The worksheet for BNSF's response has a column for delay duration in minutes. In two instances, the value for the delay is listed as zero. BNSF is directed to provide an explanation for these zero values. If corrections are needed, BNSF should provide a revised version of these worksheets (and any worksheets that this data flows to) along with a narrative explanation of the errors, what caused the errors, and how those calculations were corrected.

Additionally, in BNSF's "Cover Letter and Table of Contents" narrative, BNSF notes that it was providing a list of 15 delay instances where an Amtrak train may have been stopped or slowed due to passing siding length. BNSF's file

"Data_Dictionary_and_Templates_NOR_42175_BNSF_9_25_RESPONSE.xlsm", however, does not appear to have the tab labeled

"bnsf_amtrak_delays_siding_leng" which is where BNSF states this list is located. BNSF is directed to resubmit the file with the list.

BNSF Response to Follow-up Question: In both instances where the value of the delay is listed as zero, that data was derived directly from Amtrak delay data.

The list of 15 delay instances where an Amtrak train may have been stopped or slowed due to passing siding length can be found at

"Data_Dictionary_and_Templates_NOR_42175_BNSF_9_25_RESPONSE.xlsm", at tab

"Request 16" where column O is equal to 1. BNSF can address any further similar technical issues that the Board encounters as it reviews BNSF's information.

Respectfully submitted,

/s/ Peter W. Denton

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Dated: December 5, 2023

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SURFACE TRANSPORTATION BOARD

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COMPLAINT AND PETITION OF THE NATIONAL RAILROAD PASSENGER
CORP. UNDER 49 U.S.C. § 24308(f) FOR SUBSTANDARD PERFORMANCE OF
AMTRAK'S SUNSET LIMITED TRAINS 1 AND 2

VERIFICATION

I, James Tylick, hereby certify that I am authorized to sign this verification on behalf of BNSF Railway Company.

I have read all answers in **BNSF's Response to the Board's Requests for Information; Appendix – Part III ("Response")**. While I do not have personal knowledge of all of the facts recited therein, I have been informed that the Response is based on information collected by others at or on behalf of BNSF, and is therefore necessarily limited to the records and information in existence, presently collected, and thus far discovered in the course of the preparation of the Response.

I reserve the right to make any changes to the Response if it appears at any time that omissions or errors have been made therein or that more accurate information is available.

Subject to the limitations set forth therein, I affirm that the Response is true to the best of my knowledge, information and belief.

I verify under penalty of perjury that the foregoing is true and correct.

Executed on December 5, 2023, in Fort Worth, Texas.

/s/ James Tylick
James Tylick

CERTIFICATE OF SERVICE

I hereby certify that I have caused the foregoing Appendix – Part III of BNSF Railway Company submission to be served electronically or by first-class mail, postage pre-paid, on all parties of record in this proceeding.

/s/ Jennie Askew
Jennie Askew

Attorney for BNSF Railway Company

December 5, 2023

PTPT Delay Codes

3/22/19

Blue – Amtrak

Orange – BNSF responsible delays

Green – Third Party delays

AC	Amtrak Crew Issue
ADW	Excess Station Dwell
AM	Amtrak Mechanical
AO	Amtrak Other issues
AP	Amtrak Passenger
BI	Bridge Issues
BR	Broken Rail
CM	Communication Issue
CON	Amtrak Connections
CTC	CTC Code Failure
CTI	Commuter Train Interference
DBS	Debris Strike
DF	Freight Train Interference
DI	Dispatcher Issue
DP	Passenger Train Interference
DR	Derailment
FF	Freight Failure
FH	Frost Heaves
FM	Force Majeure
IW	Inclement Weather
ITI	Initial Terminal Delay
MBO	Bridge Open for Marine Traffic
MI	Maintenance of Way Issues
OT	Other Issues – BNSF responsibility

POL	Police / Fire Holds
PTCA	Amtrak Related PTC Issues
PTCB	BNSF Related PTC Issues
SI	Signal Issues
SR	Speed Restrictions
SW	Switch Issues
TM	TMDS Failure
TRS	Trespasser Incidents
UET	Uniform Efficiency Testing
UP	UPRR Related Issue
XO	Crossover Moves



Host Railroad FRA Meeting

BNSF Team

PAUL DUNCAN, RICK WEICHER, DJ MITCHELL

MONDAY, AUGUST 26, 2019



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Focus Areas



On Time Performance (OTP)

Delays

Schedules

Other Metrics

NRPC Officer Role

A photograph of a BNSF locomotive, number 7498, crossing a steel truss bridge over a river. The locomotive is orange and yellow with "BNSF" and "7498" visible. The river flows through a rocky, forested landscape with steep, tree-covered hills in the background. The sky is clear blue. The text "OTP" is overlaid in large white letters, flanked by two horizontal orange lines.

OTP

Core Performance Concepts



BNSF believes there are several core concepts in measuring and addressing On Time Performance (OTP) against feasible schedules.

- Measure against appropriate schedules
- Properly design schedules and revise as conditions change
 - WHEN trains are running:
 - Employ BNSF's kit of tactical train movement oversight tools
 - Use BNSF's real-time measurement tools and processes to track performance
 - AFTER the trains have operated:
 - Review and update measurement processes and results
 - Update and modify train movement instructions, revise schedules to improve reliability and analyze steps to reduce bottleneck delays

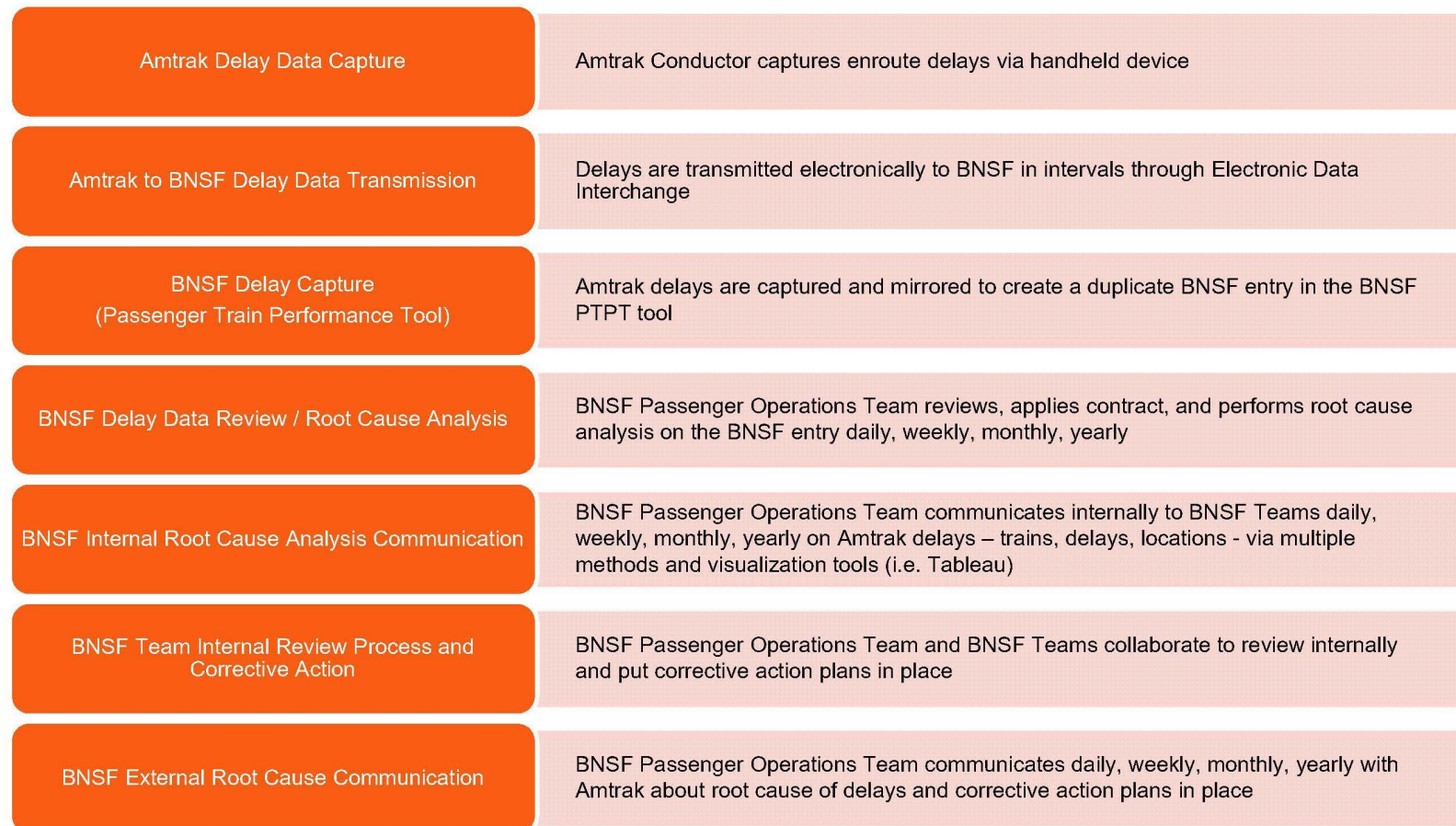
How We Measure Performance



The measurement of performance is an after-the-fact exercise. A feasible schedule provides the foundation for meaningful performance measurement in dynamic operating environments.

- Under the current 24 year-old Basic Operating Agreement, performance is measured one way, by segment-point for long distance trains and by end-point for corridor trains, with a simplistic analysis to assess responsibility for delays.
- Under our recent Service Outcome Agreements (SOA), performance is measured 2 ways, with a more sophisticated process for determining delay responsibility.
- Recently, Amtrak introduced and began measuring All-Stations OTP (ASOTP) and Customer OTP. These measurements are not recognized in, nor are they the basis for current Amtrak schedules provided for under the BNSF / Amtrak Operating Agreement.
- BNSF is willing to discuss mutually agreeable measurement alternatives.

Amtrak Delay Analysis Lifecycle



Passenger Train Performance Tool (PTPT)



07:31:49 ,Monday, August 12, 2019

BNSF Passenger Operations Performance Measurements

The Passenger Train Performance Tool (PTPT) is a measurement tool that receives, captures and stores Amtrak delay data and it was key to reaching an SOA. There are several unique features:

- Amtrak delay data is received and automatically captured into the PTPT via EDI on an hourly basis
- Amtrak data integrity remains in tact and un-editable by BNSF
- A duplicate entry is created for BNSF to edit and perform root cause analysis
- BNSF and Amtrak each have unique delay codes. But, they are all categorized into three buckets BNSF, Amtrak, 3rd Party
- Daily PTPT information is used for various internal and external BNSF reports

Runtime Console



Reload 7/7/2019

Data deletion options

- ☒ Amtrak
- ☐ Commuter

- ☒ Sunset Limited
- ☒ Southwest Chief
- ☒ California Zephyr
- ☒ Empire Builder
- ☒ Texas Eagle
- ☒ Illinois Zephyr
- ☒ Heartland Flyer
- ☒ PNW
- ☒ Canadians
- ☒ San Joaquin
- ☒ Pacific Surfliner

☒ Show displayed trains on date change

☐ Show inactive legacy groups

Updated Times Automated Times Updated Delays Automated Times Insert Update/Delete Modified Created Deleted Override Manual Entry without feed

Save Runtime Data

		Depart			Arrive			Runtime			Base	CF	XTol	TTol	NetLate	Status	O	Eff	TPR	Miles				
Train	Segment	Sch.	Act.	Late	Sch.	Act.	Late	Sch.	Act.															
Empire Builder: 7/7/2019																					Refresh monthly overview			
7	XSA - MOT	23:07	23:09	2	08:29	08:49	20	562	580	10	2	14	26	0	OT					523				
7	MOT - SBY	09:06	09:22	16	17:17	18:33	76	491	551	10	16	30	56	20	LATE					429				
7	SBY - SPK	17:22	18:44	82	01:40	02:34	54	498	470	10	16	36	62	0	OT					508				
7	SPK - SEA	02:15	03:03	48	10:25	10:45	20	490	462	10	22	0	32	0	OT					326				
27	SPK - PDX	02:45	03:19	34	10:10	10:33	23	445	434	10	22	0	32	0	OT					378				
28	PDX - SPK	16:45	16:45	0	00:13	00:01	-12	448	436	10	0	0	10	0	OT					378				
8	SEA - SPK	16:40	16:40	0	00:40	00:33	-7	480	473	10	0	0	10	0	OT					326				
8	SPK - SBY	01:25	01:25	0	11:28	11:31	3	603	606	10	0	0	10	0	OT					508				
8	SBY - MOT	11:33	12:05	32	21:27	23:36	129	594	691	10	0	59	69	60	LATE					429				

Confidential Operating Agreement Rates

Refresh monthly overview

Confidential Operating Agreement Rates

MOT - SBY Delays

Empire Builder Overview

Batch delay mode

Display Delays in Popup

	Amtrak Code	BNSF Code	Mins	Start Station	End Station	Resp	Root?	CNMU
+	PTI	DP	22	Malta	Havre	B		
-		DP	22	Malta	Havre	B		
+	DSR	SR	3	Malta	Havre	B		
-		SR	3	Malta	Havre	B		
+	DSR	SR	4	Glasgow	Malta	B		
-		SR	4	Glasgow	Malta	B		
+	FTI	DF	24	Glasgow	Malta	B		

Insert Delay

Delete Delay

Total deduction: \$11,162.99		
Code	Min.	Lost \$
DF	52	\$11,162.99

Contractual On Time Performance (OTP)



BNSF measures Amtrak delays based on the contractual schedules in the BNSF / Amtrak Operating Agreement. However, we watch and create corrective action plans around Amtrak timetable OTP for states that are governed by a service outcome agreement (SOA) – *Washington, California, Illinois, and Iowa* - along with states that are not governed by an SOA – *Oklahoma*.

Performance is measured by train, segment, train group level.

	Long Distance			SOA or Equivalent				Non-SOA		
	SWC	CZ	EB	Cascade*	SJ	PS	IZ	HF	TE	SL
Aug										
Jul										
Jun										
May										
Apr										
Mar										
Feb										
Jan										
YTD 2019										
2018										
2017										
2016										
2015										
2014										
2013										
2012										
2011										
2010										

*Includes Coast Starlight trains 11 & 14 that operate between Seattle and Portland

Green	above 90%
Yellow	above 80%
Pink	above 70%
Red	below 60%

Modified 8

On Time Performance Measurement Processes

BNSF / Amtrak Operating Agreement vs SOA



Contractual measurement under the current Operating Agreement and SOAs are measured differently.

There is also complexity because current SOAs do not supersede Operating Agreements currently in place, they are a separate measurement layered onto existing measurements.

Both fail to account for cascading delays which are delays that occur after a primary delay and create a dynamic situation for the dispatcher to manage on the fly.

The SOA process is significantly better at this because of the formal reconciliation process where the state acts as a third party mediator.

BNSF/ Amtrak Operating Agreement

- Measured one (1) way
 - Arr / Dpt + grace period (10" for long distance trains)
 - Due to the way the long distance trains are segmented, when operating late, even when making up time in a segment, the train is still subject to being considered late even if it appears to have made up time enroute
- Contractual reliefs are applied for certain non Host railroad related delays. However, this does not impact the actual reliability of train operation
- Cascading delays are not accounted for, regardless of responsibility (i.e. if Amtrak has mechanical issues that put the train out of position on the BNSF, all delays after that are not captured as being related to the mechanical issue)
- Reconciliation is at Amtrak's discretion
- Long distance routes are not measured by each segments run time ability, but impacted by previous segment

SOA

- Measured two (2) ways
 - Arr / Dpt + grace period (varies by SOA)
 - OR
 - Minutes of Host responsible delays against a delay ceiling (delay responsibility negotiated in the agreement)
- Reconciliation Process
 - Using WSDOT as an example, both BNSF and Amtrak records are sent to WSDOT. If the records do not match, there is an opportunity for BNSF and Amtrak to reconcile. If that can not be achieved, WSDOT will make the final decision on who is responsible for the delay.
- Discussion of schedule feasibility and its relationship to routing guidelines, capacity improvements and/or maintenance practices
- Adjustments to delay ceiling minutes possible when required by planned track work

Amtrak's Proposed Measures

Why they do not work in current environment



Amtrak's proposed suite of performance measurements (e.g., 900 Mins per 10K train miles, All-Stations OTP (ASOTP) and Customer OTP) fail to consider:

- Differentiate train characteristics, route characteristics, frequency, etc.
- Measure root cause of delay
- Identify cascading impacts from primary delays, regardless of Host, Amtrak or Third Party responsibility
- Recognize seasonality
 - Changes in weather
 - Changes in subgrade / seasonal slow orders
 - Changes in traffic patterns
- Take into account track work
- Take into account slow order impact
- Recognize the impact of new or changing technology (i.e. PTC)
- Accommodate changes in business conditions (i.e. volume patterns, new business, economy)

Modified 10

Delays



How Delays are Measured, Attributed and Reconciled against Performance Measures



Performance reporting starts with input from Amtrak's conductor delay reports.

- Again, under the current 24 year-old Basic Operating Agreement, performance is measured by segment-point for long distance trains and by end-point for corridor trains.
- Once conductor delay reporting is received, BNSF verifies or adds to the reasons for delays by drawing from its own sources of information, keeping unchanged and available Amtrak's reported reasons for a delays.
- Delay data is then grouped and analyzed to identify patterns regarding delay location, duration, and cause.
- Under our recent Service Outcome Agreements (SOA), performance is measured 2 ways, with a more sophisticated process for determining delay responsibility.

Which Delays Count under Legacy Process?



BNSF and Amtrak delay codes both differ and share in their characteristics:

Differ:

- Naming convention (i.e. Amtrak (FTI); BNSF (DF))
- BNSF drills down more into root cause (i.e. Amtrak DCS) could be more than Signal, perhaps switch or broken rail)

Share:

- Delay Responsibility (i.e. BNSF and Amtrak both have the same “responsibility” categories – Amtrak, Host, Third-Party responsibility)

Host Railroad Responsible Delays are those for which BNSF is accountable.

Amtrak and Third-Party delays that cascade onto the Host Railroad can contribute to delays in which BNSF becomes responsible. This is based on the Conductor's recording of the actual delay.

Ultimately, all delays, regardless of responsibility play a critical role in the performance of the train regardless of contractual tolerances and reliefs that “protect” the Host railroad contractual OTP.

Host Railroad Responsible Delays

Code	Code Description	Explanation
CTI	Commuter Train Interference	Delays for meeting or following commuter trains
DCS	Signal Delays	Signal failure or All Other signal delays, wayside defect-detector false-alarms, defective road crossing protection, efficiency tests, drawbridge stuck open
DMW	Maintenance of Way	Maintenance of Way delays including holds for track repairs or MW foreman to clear
DSR	Slow Order Delays	Temporary slow orders, except heat or cold orders
DTR	Detour	Delays from detours
FTI	Freight Train Interference	Delays from freight trains
PTI	Passenger Train Interference	Delays for meeting or following All Other passenger trains
RTE	Routing	Routing-dispatching delays including diversions, late track bulletins, etc.

Third-Party Delays

Code	Code Description	Explanation
CUI	Customs	U.S. and Canadian customs delays; Immigration-related delays
DBS	Debris	Debris strikes
MBO	Drawbridge Openings	Movable bridge openings for marine traffic where no bridge failure is involved
NOD	Unused Recovery Time	Wait for departure time
POL	Police-Related	Police/fire department holds on right-of-way or on-board trains
TRS	Trespassers	Trespasser incidents including road crossing accidents, trespasser / animal strikes, vehicle stuck on track ahead, bridge strikes
WTR	Weather-Related	All severe-weather delays, landslides or washouts, earthquake-related delays, heat or cold orders

Amtrak Responsible Delays

Code	Code Description	Explanation
ADA	Passenger Related	All delays related to disabled passengers, wheel chair lifts, guide dogs, etc.
CAR	Car Failure	Mechanical failure on all types of cars
CCR	Cab Car Failure	Mechanical failure on Cab Cars
CON	Hold for Connection	Holding for connections from All Other trains or buses.
ENG	Locomotive Failure	Mechanical failure on engines.
HLD	Passenger Related	All delays related to passengers, checked-baggage, large groups, etc.
INJ	Injury Delay	Delay due to injured passengers or employees.
ITI	Initial Terminal Delay	Delay at initial terminal due to late arriving inbound trains causing late release of equipment.
OTH	Miscellaneous Delays	Lost-on-run, heavy trains, unable to make normal speed, etc.
SVS	Servicing	All switching and servicing delays
SYS	Crew & System	Delays related to crews including lateness, lone-engineer delays

BNSF Delay Analysis

Only recognized by Amtrak under SOAs



Amtrak delay data is received and automatically captured into the PTPT tool

- Amtrak has a delay entry line that **can not** be edited (gray field)
- BNSF has a duplicate delay entry line that **can** be edited (blue field)

Automatically, through a pre-set matching table, Amtrak delay codes are mapped/defaulted to a BNSF delay code that translates to the Amtrak code. **Example:** Amtrak FTI (freight); BNSF DF (freight).

Most of the time, the Amtrak and BNSF delay codes are compatible. Meaning, if Amtrak says the delay was due to slow orders, BNSF agrees, and the BNSF duplicate delay entry was mapped / defaulted properly and is not updated by BNSF.

	Amtrak Code	BNSF Code	Mins	Start Station	End Station	Resp	Root?
Amtrak delay entry DSR (speed restrictions)	DSR	SR	3	Kelso	Vancouver	B	
BNSF delay entry SR (speed restrictions)		SR	3	Kelso	Vancouver	B	

However, in the case where BNSF disagrees with an Amtrak delay entry, BNSF will update the BNSF duplicate delay entry. This is done after validating the root cause of the delay through various internal or external channels – *via internal email, face to face, or other electronic methods*. Amtrak may or may not update their delay entry. Amtrak will update their delay entry if they determine the original transmission was in error. This is either brought to Amtrak's attention through daily BNSF audit of the records or through an Amtrak discovery. Mostly, Amtrak will not update their original delay entry because their generic delay codes are intended to capture a multitude of issues. Whereas BNSF delay codes are more detailed to root cause.

Example: Amtrak PTI (passenger train interference); BNSF DP (passenger train interference), BUT BNSF knows the root cause was due to a freight failure. BNSF will update the duplicate delay entry to FF (freight failure).

	Amtrak Code	BNSF Code	Mins	Start Station	End Station	Resp	Root?
Amtrak delay code PTI; BNSF delay code updated from DP to FF to reflect root cause of the delay	PTI		1	Mendota	Princeton	B	
		FF	1	Mendota	Princeton	B	✓

Amtrak will not update their delay entry because for them a broken rail will likely cause an unfavorable signal and the Conductor recorded the effect, not the cause. Occasionally if they know the root cause, in this case to be a broken rail, they might describe it in the delay description field.

The other reason Amtrak would not update their delay entry would be because they believe the Conductor's assessment of the delay was more accurate than BNSF.

Another element to delay coding is delay responsibility. In addition to there being a delay code, each delay code represents a "responsibility" – BNSF, Amtrak or Third Party. There are times where Amtrak's delay entry is FTI (freight), but BNSF knows the root cause is FM (force majeure) where Amtrak was delayed by a freight that was delayed by a crossing accident. Amtrak's FTI delay code drives a responsibility of "Host Railroad" and BNSF's FM delay code places the responsibility on "Third Party".

BNSF / Amtrak Delay Change Request



When Amtrak transmits erroneous delay information (delay code, responsibility code, minutes, time, etc.), through daily self-audits, BNSF will document the discrepancy on an excel form that is sent to Amtrak for their consideration to change. See example.

Not all errors are necessarily discovered by BNSF due to the number of delays received on some days versus manpower available. The core discrepancies are found in trains that are operating late because in general more attention is given to those trains.

Service	Train	Origin Date	Note	Div	Host RR	From	To	Type	Mins	Delay Reason	Host Railroad Request Comments	HRR Comment Initials	Request Date (yyyy-mm-dd)	Amtrak Comments	Amtrak Commenter Initials	Reply Date (yyyy-mm-dd)
Empire Builder	8	06/13/19	31	NWD	BNSF	WPT	WTN	DSR	010	Per dispatcher (radio/phone) Copied 3 form a and voided 3 form a, Other, mp 165, 0, main	Requesting the code changed to reflect either SYS or OT or, split the time to copy the restrictions from the speed restrictions	CYH	2019-06-15	Re-coding entry to "SYS".	ASW	2019-06-16
Empire Builder	8	06/13/19	33	NWD	BNSF	WTN	STN	DSR	006	Per dispatcher (radio/phone) copy form a, Other, mp 85, 0, mian	Requesting the code changed to reflect either SYS or OT or, split the time to copy the restriction from the speed restriction	CYH	2019-06-15	Re-coding entry to "SYS".	ASW	06/16/19
Surfliner	785	06/14/19	12	SWD	BNSF	FUL	FUL	RTE	004	Dispatcher hold. Held for metrolink passengers, Other, ful	Per Metrolink the train was held for passengers off of ML 643 due to mechanical failures on ML equipment. Requesting the code changed to reflect station stop	CYH	2019-06-16	This entry was re-coded to "SYS". (I don't have the exact date it was done.)	ASW	07/02/19
IL Zephyr	381	06/18/19			BNSF	XUA	QCY				Quincy arrival time seems to be in error. Also delays are missing between Macomb and Quincy.	DAW	2019-06-18	QCY shows arr. at 12:16 PM. A 2-min. DSR is the only delay from MAC to QCY.	ASW	07/02/19
Cascade	507	6/30/2019	2	NWD	BNSF	TAC	TAC	WTR	93	Was held at Tacoma Station for fire at Nisqually. Other, Tacoma Depot	Type Code should be POL due to being held by Fire Dept for fire at MP 21.9, near Nisqually	DAW/DY	2019-06-30	Changing to "POL".	ASW	07/02/19

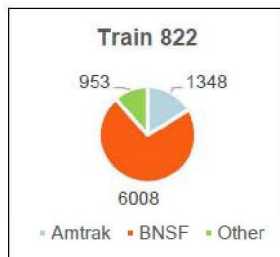
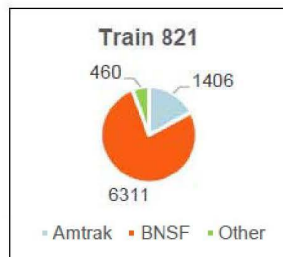
BNSF Delay Analysis

Red River Division Delays Jan 1 – Jun 26, 2019



Slows and freight delays are the top two delay categories of all delays – BNSF, Amtrak or Other (3rd Party).

Heartland Flyer



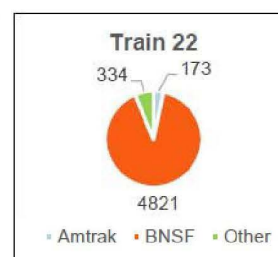
821
Top Five Delay Categories (mins)

DSR	FTI	DW	AO	FF
3844	1639	712	483	319

822
Top Five Delay Categories (mins)

SR	FTI	DW	IW	AO
3350	1855	624	588	395

Texas Eagle



21
Top Five Delay Categories (mins)

DSR	FTI	DW	AO	PTI
2753	1080	901	853	282

22
Top Five Delay Categories (mins)

DSR	FTI	DW	AO	NOD
3415	712	668	406	538

Sunset Limited



1
Top Five Delay Categories (mins)

DSR	FTI	DW	UP	TRS
1485	1323	380	358	243

2
Top Five Delay Categories (mins)

DSR	FTI	DCS	DW	XO
1943	1274	383	239	131

AO- Amtrak Other; DW – Excess Dwell; DSR – Slow Orders; FF – Freight Failure; FTI – Freight Interference; IW – Inclement Weather; NOD – Wait on time; OT – BNSF Other; TRS – Trespasser Incidents; UP – UPRR Delays; XO- Crossover Moves

BNSF Delay Analysis

Southwest Chief Jan – Jun 2017



No. 3 CHI - KCY	Contratual OTP	Commuter	Freq	Freight	Freq	Passenger	Freq	Freight Failure	Freq	MOW	Freq	Signal/Switch	Freq	Slows	Freq	NMRX	Freq	Weather	Freq	CNMUT Freq	Total Mins
Jan	100.0%	38	5	90	17	5	1	0	0	0	0	41	10	25	10	0	0	24	2	0	223
Feb	100.0%	9	2	76	12	0	0	0	0	0	0	45	9	28	12	0	0	3	1	0	161
Mar	100.0%	15	4	197	21	5	1	0	0	0	0	18	14	58	27	0	0	0	0	0	293
Apr	96.7%	32	5	143	23	0	0	0	0	7	1	125	14	89	38	0	0	0	0	0	396
May	77.4%	41	6	352	34	51	4	9	1	34	3	86	22	181	67	0	0	8	1	0	762
Jun	73.9%	33	6	192	18	57	6	0	0	106	5	112	23	178	72	0	0	48	3	0	726
No. 4 KCY - CHI	Contratual OTP	Commuter	Freq	Freight	Freq	Passenger	Freq	Freight Failure	Freq	MOW	Freq	Signal/Switch	Freq	Slows	Freq	NMRX	Freq	Weather	Freq	CNMUT Freq	
Jan	93.3%	51	6	160	20	11	3	0	0	7	2	23	6	91	29	0	0	4	2	7	347
Feb	96.4%	5	1	159	21	20	3	0	0	5	1	21	8	71	26	0	0	0	0	0	281
Mar	67.7%	52	6	187	23	74	8	104	1	18	5	13	4	159	45	0	0	0	0	19	607
Apr	79.3%	36	5	244	28	31	6	61	3	40	10	76	16	233	70	0	0	0	0	6	721
May	56.7%	19	4	222	27	86	10	0	0	132	6	74	11	380	92	0	0	0	0	24	913
Jun	43.5%	104	12	197	16	93	11	80	1	31	7	57	8	326	113	0	0	0	0	14	888
No. 3 KCY - LAJ	Contratual OTP	Commuter	Freq	Freight	Freq	Passenger	Freq	Freight Failure	Freq	MOW	Freq	Signal/Switch	Freq	Slows	Freq	NMRX	Freq	Weather	Freq	CNMUT Freq	
Jan	93.5%	0	0	76	16	73	17	127	3	4	1	79	10	145	42	0	0	13	3	0	517
Feb	100.0%	0	0	36	9	24	6	0	0	0	0	135	10	32	15	0	0	0	0	0	227
Mar	100.0%	0	0	139	16	130	16	0	0	0	0	61	11	165	71	0	0	1	1	1	496
Apr	82.8%	0	0	86	9	64	8	57	1	12	2	355	17	345	84	0	0	266	6	1	1185
May	77.4%	0	0	100	10	242	16	0	0	9	1	343	29	372	107	0	0	2	1	4	1068
Jun	62.5%	0	0	139	15	117	9	187	2	0	0	266	28	250	72	0	0	20	1	6	979
No. 4 LAJ - KCY	Contratual OTP	Commuter	Freq	Freight	Freq	Passenger	Freq	Freight Failure	Freq	MOW	Freq	Signal/Switch	Freq	Slows	Freq	NMRX	Freq	Weather	Freq	CNMUT Freq	
Jan	89.3%	0	0	101	10	73	11	0	0	0	0	161	21	179	42	0	0	10	4	9	524
Feb	100.0%	0	0	26	7	41	6	0	0	0	0	59	5	39	19	0	0	0	0	1	165
Mar	71.0%	0	0	71	10	155	13	0	0	0	0	150	12	153	61	0	0	0	0	24	529
Apr	89.7%	0	0	141	9	177	16	0	0	16	1	254	23	289	64	0	0	6	2	5	883
May	76.7%	0	0	159	12	231	19	0	0	0	0	322	42	372	94	0	0	69	2	17	1153
Jun	60.9%	0	0	64	8	221	14	0	0	0	0	215	17	252	53	0	0	43	2	8	795

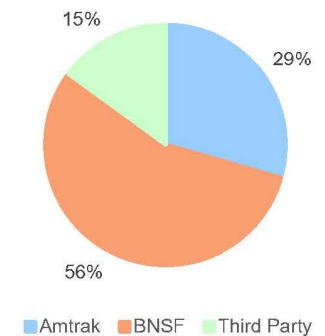
BNSF Delay Analysis

Cascade Delay Classifications Q2 2019



		Cascade Trains Q2 2019												Grand Total
		500	501	502	504	505	506	507	508	516	517	518	519	
BNSF	AM - Amtrak Mechanical	67	974	3	94	337	10	227	56	99	520	363	50	2800
	AO - Amtrak Issue	168	356	16	41	265	18	327	160	563	723	497	445	3579
	AP - Amtrak Passengers											11		11
	CON - Amtrak Connections							4			26			30
	DW - Station Dwells	246	309	115	172	326	51	259	110	164	922	720	57	3451
	ITI - Initial Terminal Delay		2			8		73				83		166
	NOD - Amtrak Wait for Dpt	270	9		2	3	104		214	1	356	453	555	1967
	PTCA - Amtrak related PTC issues		139		5	142		178	11	190	127	69	148	1009
	Amtrak Total	751	1789	134	314	1081	183	1068	551	1017	2674	2196	1255	13013
	BI - Bridge Issue				21						14			35
	BR - Broken Rail				25									25
	CTI - Commuter Interference	7	98		24	16		115		19		77		356
	DF - Freight Interference	193	837	74	317	368	101	544	510	357	825	858	283	5267
BNSF	DP - Psgr Trm Interference	290	266	80	267	314	54	458	82	991	840	796	937	5375
	FF - Freight Train Failure					41				30		140	17	228
	MI - MOW Issues	100	279	10	114	37	13	39	366	18	165	27	19	1187
	OT - Other Issues			2	21					19	4	20		66
	PTCB - BNSF related PTC issues	24								17				41
	SI - Signal Issues	185	230	63	205	252	14	224	239	99	314	383	125	2333
	SR - Speed Restrictions	410	471	92	234	342	75	299	347	1230	1301	1288	867	6956
	SW - Switch Issues				20	24								44
	XO - Crossover moves	433	171	145	235	435	109	416	49	29	476	147	30	2675
	BNSF Total	1642	2352	466	1483	1829	366	2095	1593	2809	3939	3736	2278	24588
Third Party	CN - CNRR related delays									982	533	1240	177	2932
	CS - Customs										426	45	210	681
	DBS - Debris		18						2		71	8	5	104
	FM - Force Majeure	15												15
	IW - Inclement Weather				4	11		9	18	112	21	16	3	194
	MBO - Bridge Open for Marine Traffic	28	116	31	40	70	58	91	126	148	193	359	22	1282
	MUD - Mudslide / 48 hr Moratorium									0	0	0	0	0
	POL - Police / Fire holds	16	8	27		28	49	305	226	19	141	52	70	941
Third Party Total		59	327	68	44	113	114	524	394	1274	1419	1787	508	6631

Delay Classifications
Cascade Q2 2019

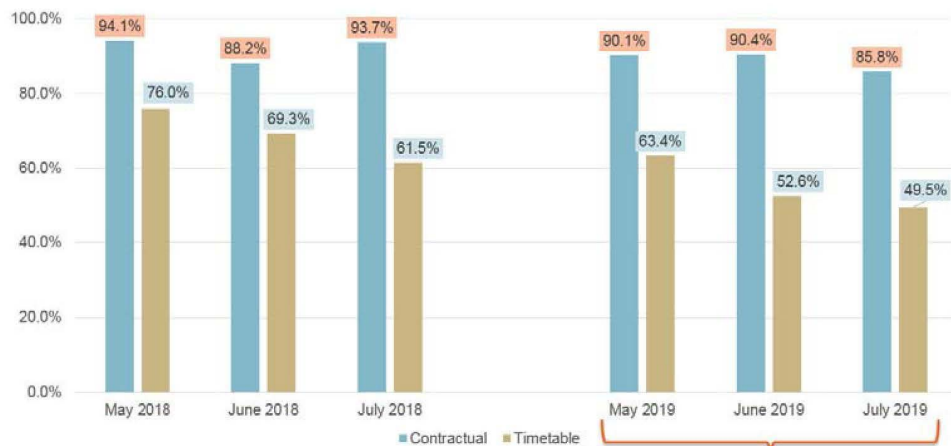


BNSF Delay Analysis

San Joaquin – A Deeper Review into Delay Reasons

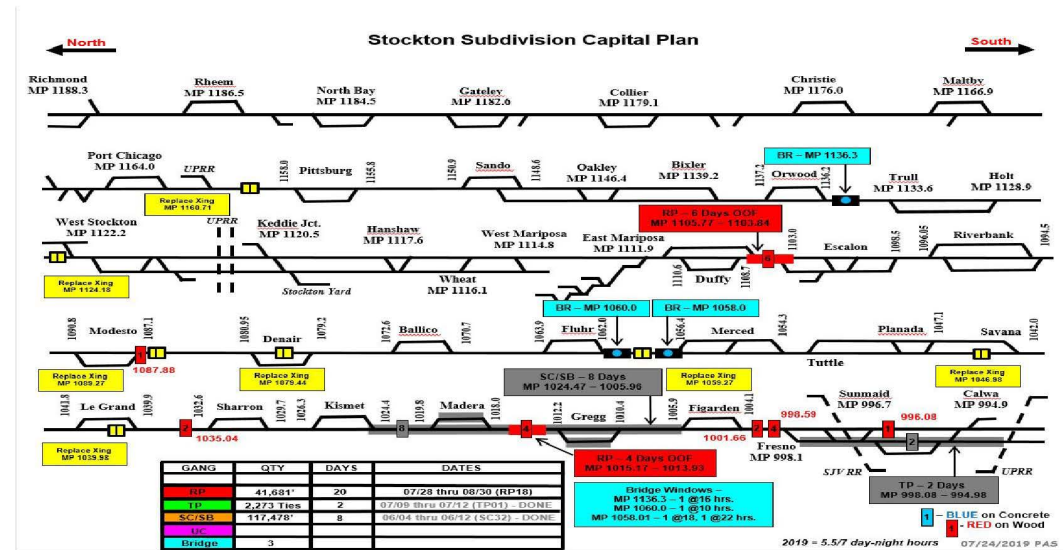


BNSF Contractual vs Timetable OTP
May-July 2019



End of May thru Mid July Surfacing and Tie Gang on Bakersfield and Stockton Sub

BNSF Stockton Sub Maintenance Work 2019



BNSF Delay Analysis

San Joaquin – A Deeper Review Continued



Amtrak related PTC delay analysis

	DCS (PTC)	SYS/SVS (PTC)	ENG (PTC)	Total	PT Chicago PTC
October 2018	388	1933	304	2625	382
November 2018	287	1801	187	2275	569
December 2018	254	1992	72	2318	635
January 2019	187	1895	148	2230	636
February 2019	60	1549	65	1674	429
March 2019	121	2083	10	2214	640
April 2019	80	2034	42	2156	504
May 2019	62	1172	36	1270	148
June 2019	18	747	59	824	72
July 2019	16	926	139	1081	154

Amtrak mechanical delay analysis

July 2019

Station Name	Amtrak		Total Minutes	Total Instances
	Minutes	Instances		
PORT CHICAGO	4	2	4	2
ANTIOCH	25	6	25	6
STOCKTON	40	8	40	8
MODESTO	2	1	2	1
DENAIR	14	5	14	5
MERCED	295	13	295	13
MADERA	19	7	19	7
FRESNO	84	10	84	10
HANFORD	40	9	40	9
CORCORAN	43	6	43	6
SANDRINI	3	1	3	1
WASCO	65	10	65	10
BAKERSFIELD	181	9	181	9
Totals	815	87	815	87

Schedules & Other Metrics



Evolution of Amtrak Schedules



- **Since the BNSF / Amtrak Operating Agreement was signed in 1996:**
 - Amtrak long distance train schedules have not evolved in response to the changing environment around them.
 - Minor modifications have been made regarding departure and arrival times, recovery base, and segment points, but from station stops to running times, much remains the same.
- **As a result**, outdated schedules which do not reflect or respond to changing conditions (e.g., seasonality, necessary track work, and ridership patterns or needs) give rise to misleading measurements of performance and a misrepresentation to passengers of Amtrak's ability to deliver on-time performance, as stated in its schedules.
- **With respect to State sponsored train service:**
 - Service has been added; and,
 - Schedules have been modified, as they were recently changed in the San Joaquin Valley as part of a collaborative effort to improve service reliability. This effort was led by the State, the Joint Powers Board and their third party contractor performing train analysis using sophisticated scheduling tools.

Fundamental and Enduring Elements for Building a Passenger Schedule



Scheduling should take into account:

- Short and long term changes in freight business
- Lag time between market place changes and the railroad's capacity investments
- Class of track
- Route characteristics and station capabilities (*e.g., station tracks vs mainline*)
- Achievable running time between stations
- Station dwell time and average station delays
- Seasonal factors
 - Subgrade and slow orders
 - Changes in traffic patterns
 - Winter vs Summer weather
- Realistic allocation of recovery time and tolerance
- Equipment types (*including locomotive horsepower per trailing ton*)
- Passenger demand in given segments and their impacts on total trip times and station dwell
- Segment points for measurement

Changing Conditions That Impact Schedules



Periodic changes in conditions that need to be accounted for when adjusting schedules:

- Track conditions
 - Seasonality
 - Track work and windows
 - Slow order impact
- Identification of:
 - Equipment
 - Crew resources
- Technology
 - PTC
 - Amtrak equipment (i.e. Charger equipment) and new or changing technology (i.e. PTC)
- Change in business conditions
 - Seasonal changes in traffic patterns
 - Ridership and passenger loading pattern changes

Evolution of Long Distance Amtrak Schedules Then and Now



Since the BNSF / Amtrak Operating Agreement went into effect in 1996, Amtrak long distance schedules have remained substantively unchanged, although conditions under which they operate have changed significantly.

(slight difference in trains 5 & 6 account segment point change from Lincoln in 2007 to Omaha in 2018 which changed the mileage and runtime)

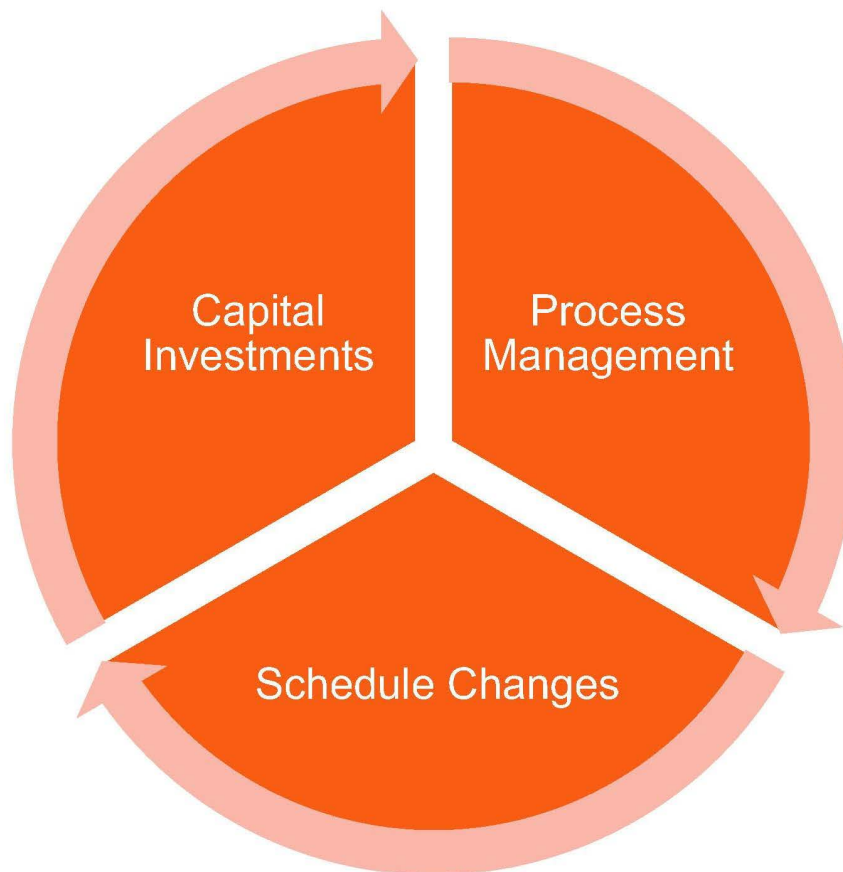
June 21, 2007 long distance train schedules

Train No	Origin	Departure Time	Arrival Time	Checkpoints	Departure Time	Scheduled Time From Origin	Recovery Time	Basic Tolerance	Additional Recov. Time (Apx V.E)	Allowed Station Dwell	Trip (eff 7/1/08) Performance Rate (TPR) (\$)	TPR Effective 4/1/07-10/3/107 for Extended Summer Schedules (\$)	Item 10 Appendix IV Train Miles
3	Union Ave.	15:19	23:42	Argentine	23:50	503	15	10	0	60	10,862		434
			8:15	La Junta	8:30	1,076	11	10	0	29	11,187		556
			16:10	Albuquerque	16:40	1,551	18	10	0	28	11,187		348
			8:08	Soto		2,587	37	10	0	74	22,375		900
4	Soto	18:53	12:17	Albuquerque	12:40	1,044	35	10	0	42	22,375		900
			20:13	La Junta	20:23	1,460	15	10	0	35	11,187		348
			7:26	Kansas City	7:45	2,133	15	10	0	51	11,187		556
			15:10	Union Ave.		2,537	15	10	0	34	10,862		434
5	Chicago*	13:56	0:18	Lincoln	0:24	622	14	10	0	49	13,789	11,704	555
			7:35	Denver		1,119	17	10	0	16	11,866	10,470	482
6	Denver	19:25	4:11	Lincoln	4:17	468	12	10	0	10	11,998		482
			15:21	Chicago*		1,136	30	10	0	50	13,769	11,015	555
7/27	Minneapolis**	22:59	8:24	Minot	8:51	565	17	10	0	27	11,118	10,004	523
			17:17	Shelby	17:22	1,158	21	10	0	69	11,118	8,893	429
			1:40	Spokane	2:15	1,721	14	10	0	41	11,118	10,004	508
				(27)Spokane	2:45								
			10:20	Seattle		2,241	20	10	0	54	11,116	10,004	326
			10:25	Portland		2,246	14	10	0	82	9,390	7,043	378
28	Portland	16:45	0:28	Spokane		463	15	10	0	19	9,390	7,982	378
8	Seattle	16:45	0:32	Spokane	1:15	467	23	10	0	17	11,116		326
			11:38	Shelby	11:43	1,073	13	10	0	76	11,116	10,282	508
			21:37	Minot	21:57	1,812	12	10	0	39	11,116	8,515	429
			7:26	Minneapolis**		2,201	18	10	0	46	11,116	8,670	523

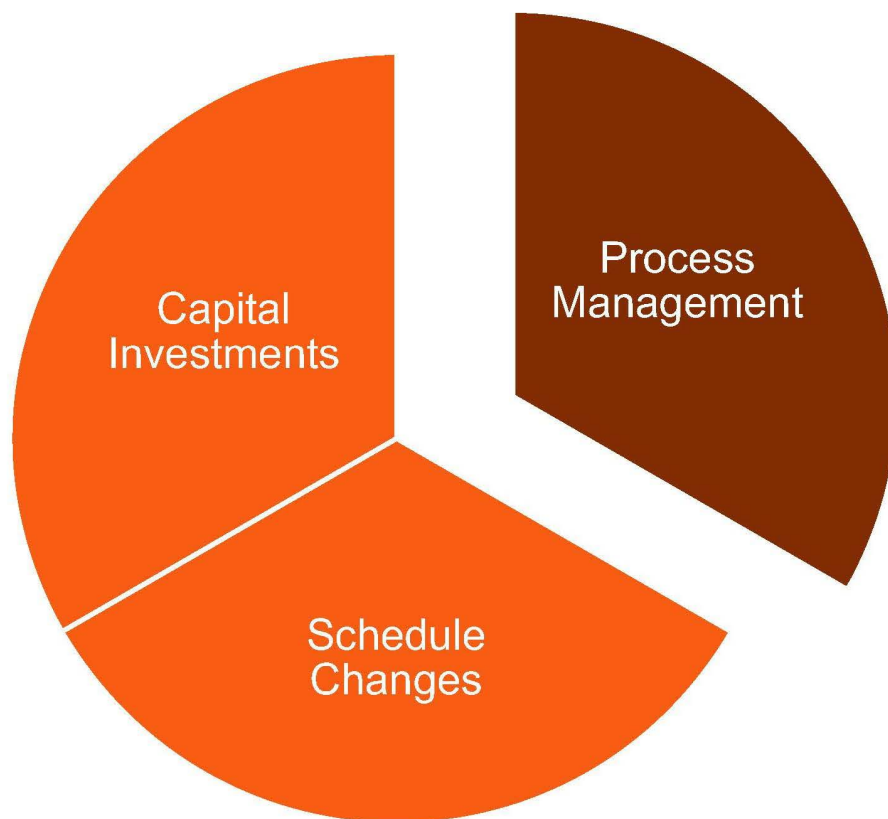
June 11, 2018 long distance train schedules

BNSF Appendix V, Table 1 Page 1 of 3													
Train No 3***	Origin Union Ave.	Depart Time 15:04	Arrival Time 23:02	Checkpoints	Scheduled		Recovery Time	Basic Tolerance	Additional Recov. Time (Apx V.E)	Allowed Station Dwell	Table 2 Station Dwell	Trip (eff 7/1/17) Performance Rate (TPR) (\$)	Item 10 Appendix IV Train Miles
					Departure Time	From Origin							
			8:15	La Junta	8:30	1,091	11	10	0	29	29	15,618	556
			15:55	Albuquerque	16:45	1,551	16	10	0	28	28	12,567	280
			8:00	Soto		2,502	37	10	0	94	94	30,707	887
4***	Soto	18:18	11:42	Albuquerque	12:10	664	30	10	0	47	47	30,787	867
			19:31	La Junta	19:41	1,453	15	10	0	40	40	12,567	280
			7:24	Kansas City	7:43	2,106	15	10	0	51	51	15,618	556
			15:09	Union Ave		2,571	17	10	0	34	34	15,165	434
5	Chicago*	14:05	22:55	Omaha	23:05	530	14	10	0	29	29	17,358	501
			7:15	Denver		1,090	23	10	0	26	26	16,571	636
6	Denver	19:10	4:59	Omaha	5:14	620	12	10	0	16	16	18,571	536
			14:41	Chicago*		1,111	18	10	0	44	44	17,358	501
7	Minneapolis**	23:07	8:29	Minot	8:06	562	23	10	0	32	32	15,519	523
			17:17	Shelby	17:22	1,150	24	10	0	79	79	15,519	429
			1:40	Spokane	2:15	1,713	19	10	0	41	41	15,519	508
			10:25	Seattle		2,238	22	10	0	56	56	15,519	326
27	Spokane	2:45	10:10	Portland		2,223	14	10	0	82	82	13,109	378
28	Portland	16:45	0:13	Spokane		448	15	10	0	19	19	13,109	378
8	Seattle	16:40	0:40	Spokane	1:25	480	20	10	0	19	19	15,519	326
			11:28	Shelby	11:33	1,068	18	10	0	76	76	15,519	508
			21:27	Minot	21:47	1,607	27	10	0	39	39	15,519	429
			7:01	Minneapolis**		2,181	21	10	0	46	46	15,519	523

3 Ways to Address Performance



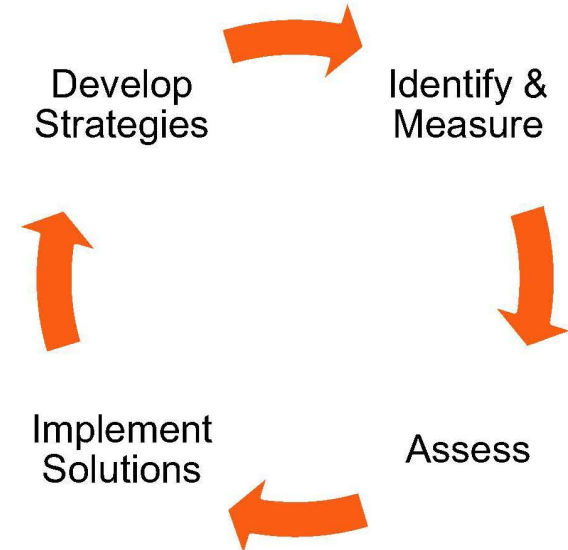
Process Management



Process Management

Cross-Functional Teams

BNSF
RAILWAY



Schedule Changes Under SOA

Mitigation Strategies Analysis at WSDOT



ID	Problem Area	Corrective Action	Owner	Status	Next Milestone	Milestone Due Date	Updates & Comments	Target Completion	Type	Section
1	CN Yard to CN Pacific Station: Yarding of trains	Investigate if grant funds' scope can be applied to build additional tracks	DJ Mitchell / Kirk Fredrickson	Open	Set up meeting with CN to explore.	7/31/2019	Transfer to separate CN tracking list. See Item 19.	4Q2019	Capital Investment	1. Vancouver, BC - Stanwood
2	DSR: Frasier River Bridge to CN Junction. CN timetable speeds	Get CN to lift speed restrictions	Patrick Sullivan	Open	Set up meeting with CN to explore.	7/31/2019	Transfer to separate CN tracking list. See Item 19.	4Q2019	Operating Practices	1. Vancouver, BC - Stanwood
3	FTI: Frasier River Bridge to CN Junction. Late arriving trains	Get BN operating to communicate ETA to CN when trains running late.	Cindy Stone	Open	Develop SOP for late train communications to CN	7/31/2019	Transfer to separate CN tracking list. See Item 19.	3Q32019	Process	1. Vancouver, BC - Stanwood
4	CN relationship atrophies without regular face-to-face meetings	Quarterly meetings reviewing performance issue analysis. (see item 19)	Tamara Noel / Patrick Sullivan	Duplicate	Reach out to CN to establish recurring meeting.	7/15/2019	Duplicate - see item 19 for progress.	3Q2019	Relationship management	General
5	Lack of visibility into CN dispatching	Use internal BNSF channel with IT	DJ Mitchell	Open	Develop approach and workplan to provide new capability.	8/31/2019		4Q2019	Analytics	1. Vancouver, BC - Stanwood
v	PTI: Logen train meets	Schedule review	DJ Mitchell / Patrick Sullivan / Kirk Fredrickson	Open	Establish Scheduling working group and decide on consultant engagement.	7/31/2019		2Q2020	Scheduling working group	1. Vancouver, BC - Stanwood
7	Auburn Yard	ST: Passenger Train Operating Plan through yard	Jeff Greenwell	Open	Develop approach and workplan to provide new capability.	7/31/2019		4Q2019	Operating Practices	3. Seattle - Tacoma
8	Auburn Yard	MT: Power switches & Tail track (business case and source funding)	DJ Mitchell	On Hold	Identify resource to conduct ROI analysis and outline of grant request	10/31/2019	Review 'On Hold' items at next status meeting to determine which should be moved to 'Open' with work expected.	TBD	Capital Investment	3. Seattle - Tacoma
9	Auburn Yard	LT: Third Main Track build-outs (business case and source funding)	DJ Mitchell / Jay Fox	On Hold	Identify resource to conduct ROI analysis and outline of grant request	12/15/2019	Review 'On Hold' items at next status meeting to determine which should be moved to 'Open' with work expected.	TBD	Operating Practices	3. Seattle - Tacoma
10	Vancouver Yard	ST: Passenger Train Operating Plan through yard (RTE highest delays on 500- VAN-KEL)	Jeff Greenwell	Open	Develop approach and workplan to provide new capability.	7/31/2019		4Q2019	Technology	5. Kelso - Portland
11	PTC: Delays in Blaine, WAS as unable to init in VAC due to data roaming	Upgrade PTC 1x modems to work in Canada	Tony Flynn	In Progress	Develop approach and workplan to provide new capability.	7/31/2019	Discussions underway with Amtrak Mechanical and Engineering.	4Q2019	Technology	1. Vancouver, BC - Stanwood
12	PTC: Delays in Tukwila, unable to init successfully in Seattle	Continue investigations - map additional track	Jason Denny	Open	Develop approach and workplan to provide new capability.	7/31/2019		4Q2019	Technology	3. Seattle - Tacoma
13	PTC: Delays in Tacoma,	Address failure to map issues at origin to avoid having to retry at TAC	Jeff Greenwell	Open	Develop approach and workplan to provide new capability.	7/31/2019		4Q2019	Technology	3. Seattle - Tacoma
14	PTC Cab car issues	Mechanical deep dive to address repeat offenders	Jeff Greenwell	Open	Engage Amtrak Mechanical to provide report on known issues and plan to correct them	8/31/2019		4Q2019	Mechanical	General
15	PTI: Meets at Clear Creek	Look at recovery time in schedule in the near term to get through chokepoint - longer term, additional main track.	DJ Mitchell / Patrick Sullivan / Kirk Fredrickson	On Hold	Identify resource to conduct ROI analysis and outline of grant request	10/31/2019	Review 'On Hold' items at next status meeting to determine which should be moved to 'Open' with work expected.	TBD	Scheduling working group	3. Seattle - Tacoma
16	FTI: CTL-KEL: Difference in speeds on hill (freights running at 20-25)	Look into meets in this area	Kelly Cunningham	Open	Establish Scheduling working group and decide on consultant engagement.	7/31/2019		2Q2020	Analytics	4. Tacoma - Kelso
17	FTI: Lake Yard. UP freight movements	Operating plan with UP in Yards VAN-PDX	Tamara Noel	Open	Develop approach and workplan to provide new capability.	7/31/2019		4Q2019	Operating Practices	5. Kelso - Portland
18	RTE: Vancouver, BC - lining manual switches to get through CN yard to access station	Determine if installing power switches in yard would deliver enough improvement to justify investment. Reach out to CN.	Patrick Sullivan	On Hold	Identify resource to conduct ROI analysis and outline of grant request	12/15/2019	Review 'On Hold' items at next status meeting to determine which should be moved to 'Open' with work expected.	TBD	Capital Investment	1. Vancouver, BC - Stanwood

Example of collaborative team (Amtrak, WSDOT, BNSF) approach to addressing performance

The team analyzed performance and met face-to-face to do a deep dive into the delays, identifying areas of focus and creating action items with assigned "ownership."

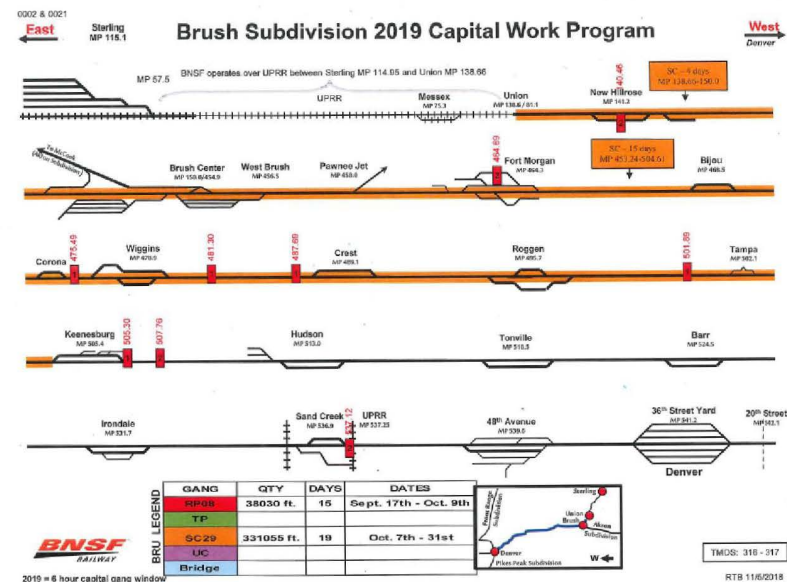
Process Management Efforts by BNSF

BNSF Annual Maintenance Programs' Impact on Schedules



Example of annual meeting conducted and hosted by BNSF for the benefit of Amtrak planning as it relates to the upcoming capital program that will impact Amtrak routes

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Process Management Efforts by BNSF

Track Maintenance Without Schedule Adjustment

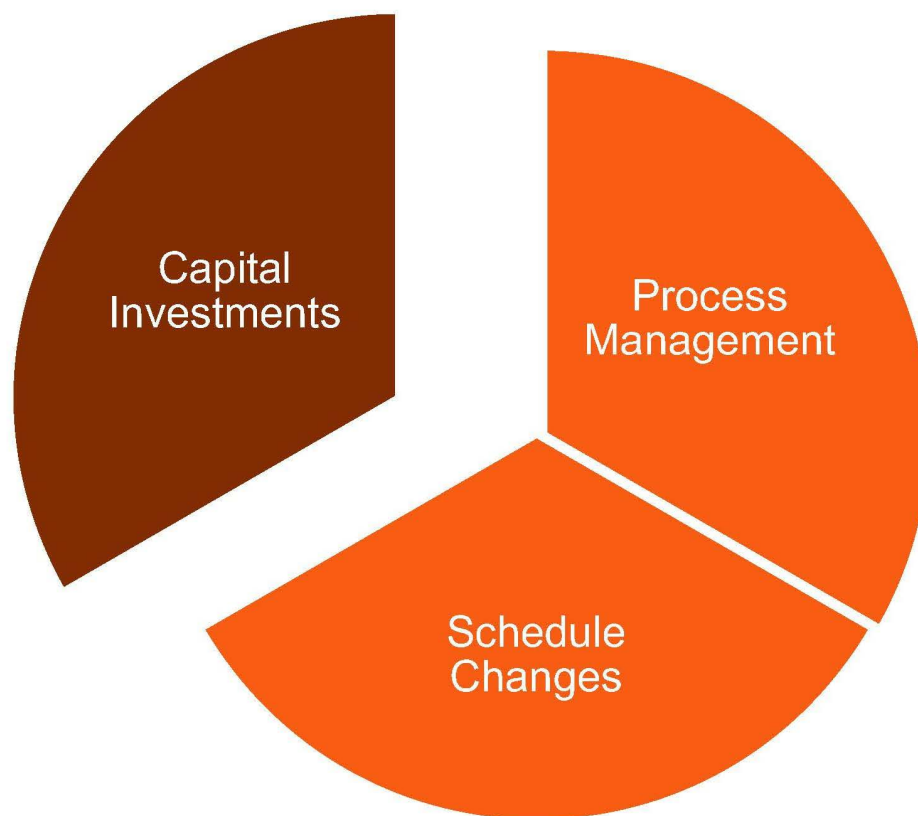


Example of BNSF performed tie gang work on the Raton sub on behalf of Amtrak for the solely used capital plan work.

Southwest Chief train schedules were not adjusted to accommodate the known work, but they were impacted from slow orders and displaced meets as a result of the work.

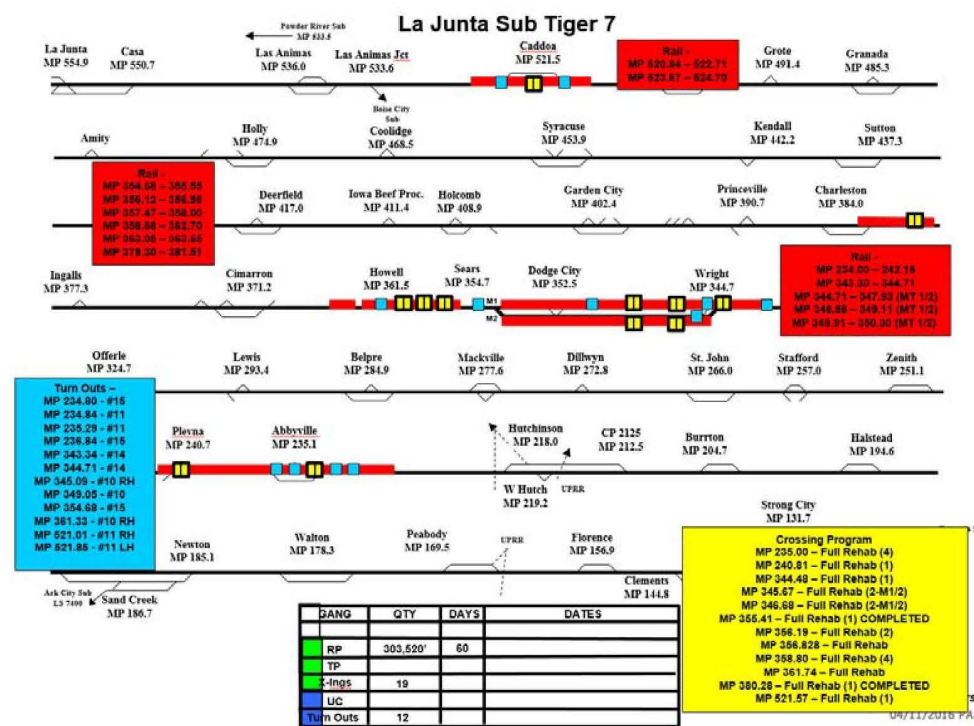
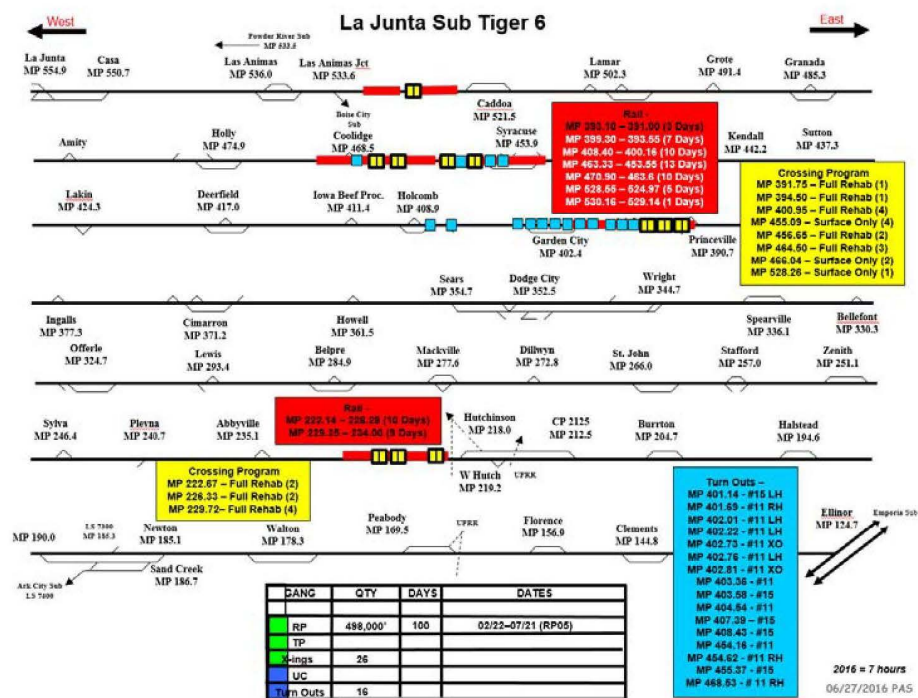


Capital Investments



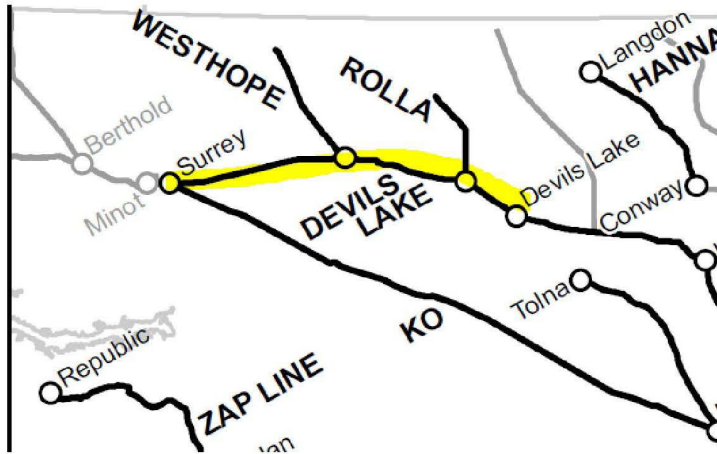
Capital Investments

Collaborative Capital Improvements – Tiger Programs



Capital Investments

Collaborative Capital Improvements – Devils Lake



Scope: To improve and raise the Devils Lake Bridges and the Devils Lake line in order to avoid service interruptions due to rising water levels and to eliminate slow orders related to bolted rail. Enable Amtrak Empire Builder to operate over higher water levels of Devils Lake at speeds to avoid having to modify the scheduled route of such service to avoid Devils Lake.

Except for frost heaves, slow orders fell from 25 minutes in 2012 to 4 minutes in 2019.

Project 1

- Prepare track and ties for lifting
- Rebuilding bridges MP 92.2 and MP 103.6
- Raise approximately 5.4 miles of grade up to five feet between MP 91.39 and MP 105.43
- Rip rap slopes
- Other incidental work

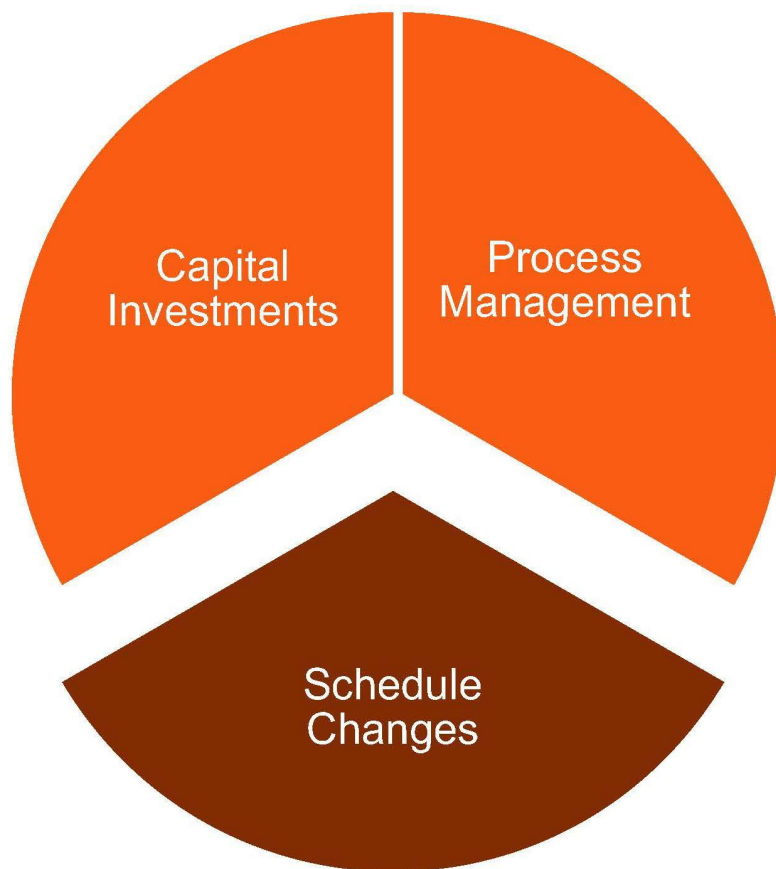
Project 2

- Replace bolted rail with continuous rail, switches and other track material MP 31.50 – MP 91 and MP 105.51 – MP 114.25
- Raise approximately 12.4 miles of grade between MP 91.39 and MP 105.43
- Rip rap slopes
- Other incidental work

Project 3

- Raising the grade and track up to 4 feet incrementally between MP 91 and MP 106

Schedule Changes

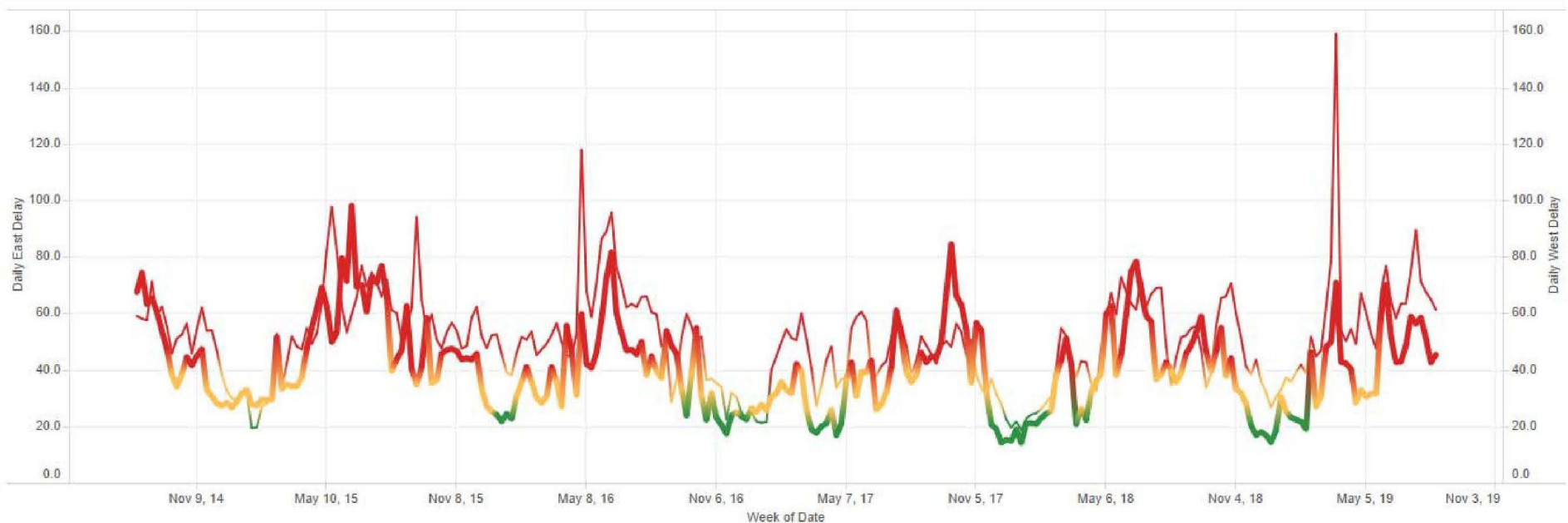


Changes that Suggest Need for Schedule Review

Underlying Track Conditions



Example of California Zephyr trains operating between Chicago and Omaha from August 11, 2014 through August 11, 2019 (5 yr period). Historically, slow orders are higher between February and September due to ground conditions in the spring and maintenance season throughout the summer months.



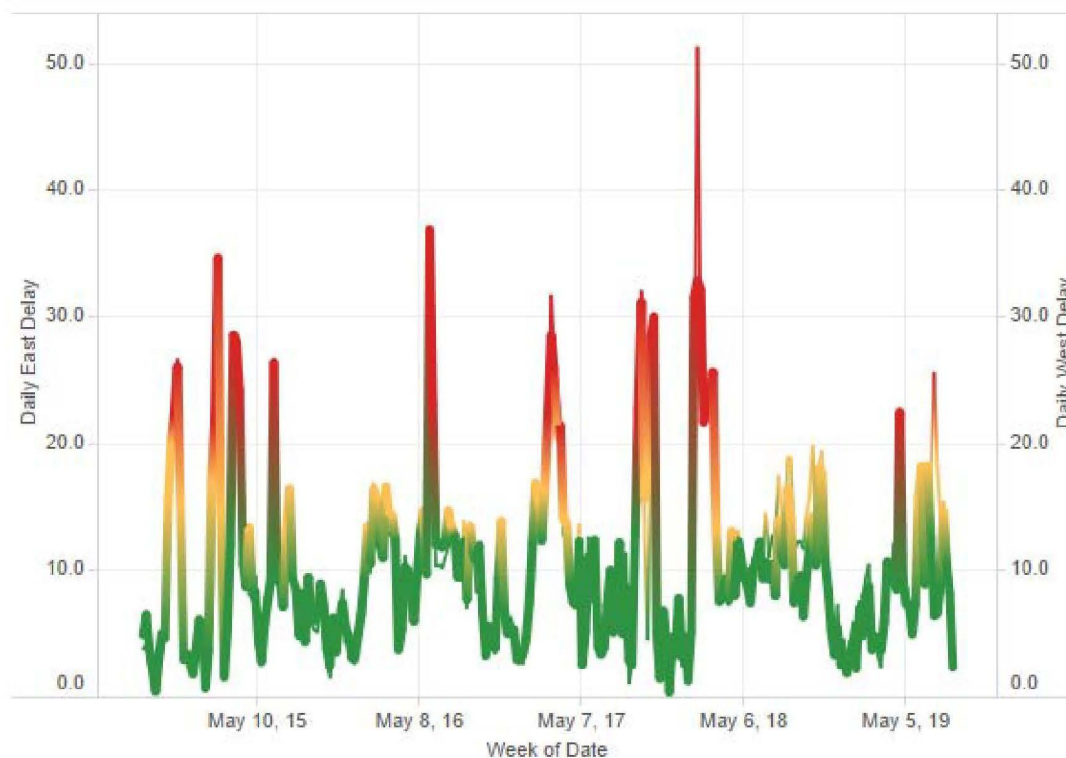
Changes that Suggest Need for Schedule Review

Seasonality – Track Maintenance



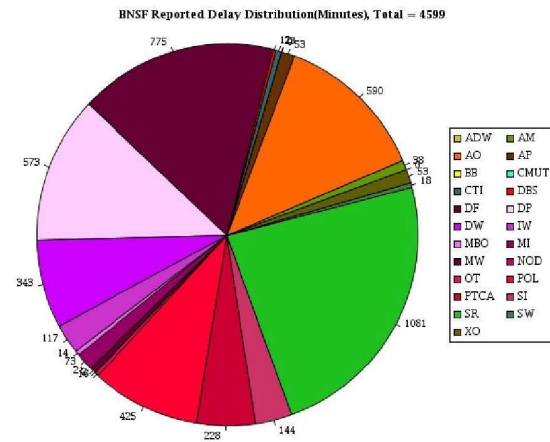
Example of San Joaquin Valley trains operating between Bakersfield and Port Chicago from August 1, 2014 through August 11, 2019 (5 yr period).

During track maintenance season, slow orders are typically elevated, and freight operations are impacted.



Changes that Suggest Need for Schedule Review

Big Data / Root Cause Analysis

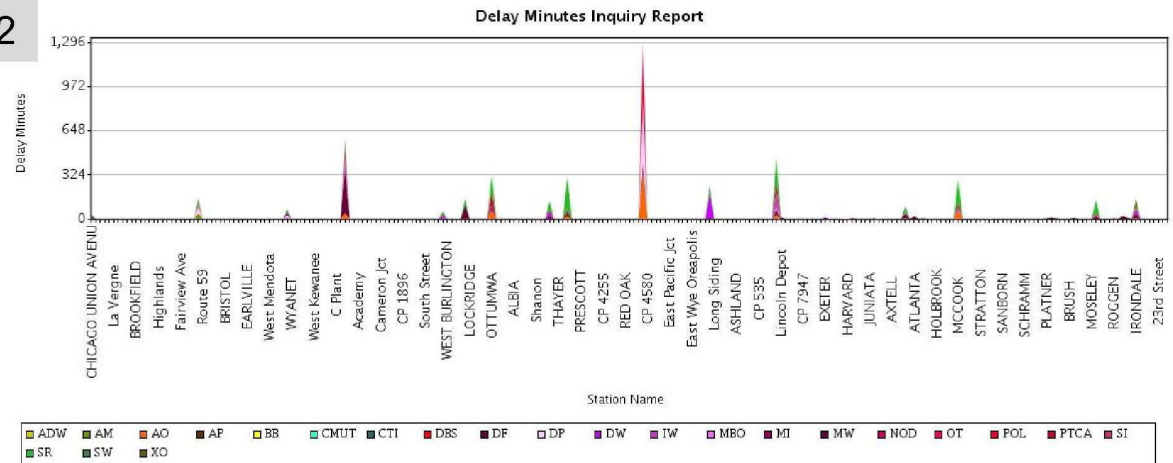


Ex: 1

Heartland Flyer



Ex: 2

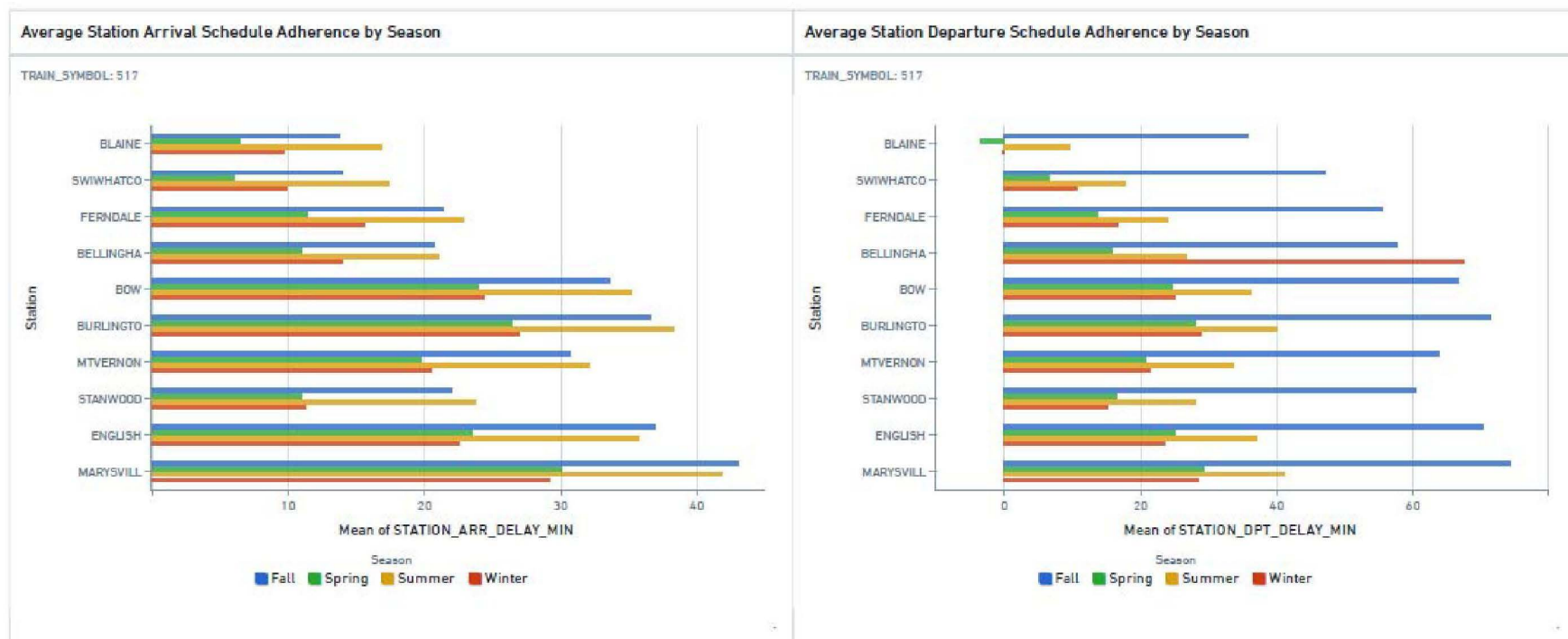


Ex: 3

Root Cause Analysis Delay Codes		
Delay Code	Description	Delay Group
ADW	Station Dwell	Amtrak
AM	Amtrak Mechanical	Amtrak
AO	Amtrak Issue	Amtrak
AP	Amtrak Passengers	Amtrak
BB	MW Buyback	Maintenance
CMUT	Couldn't Make Up Time	CNMUT (could not make up time)
CTI	Commuter Interference	Train Interference / Dispatching
DBS	Debris	Force Majeure
DF	Freight Interference	Train Interference / Dispatching
DP	Psgr Trm Interference	Train Interference / Dispatching
DW	Station Dwells	Amtrak
IW	Inclement Weather	Weather
MBO	Bridge Open for Marine Traffic	Bridge Open for Marine Traffic
MI	MOW Issues	Maintenance
MW	Right of Way Accident/Misc, Weather	Weather
NOD	Amtrak Wait for Dpt	Amtrak
OT	Other Issues	Other BNSF
POL	Police / Fire holds	Force Majeure
PTCA	Amtrak related PTC issues	Amtrak
SI	Signal Issues	Signal / Switch / Communication
SR	Speed Restrictions	Maintenance
SW	Switch Issues	Signal / Switch / Communication
XO	Crossover moves	Train Interference / Dispatching

Changes that Suggest Need for Schedule Review

Average Station Adherence by Season



Changes that Suggest Need for Schedule Review

Transit time – Station Pairs



Transit Time for All Station Pairs in Minutes (Actual vs Schedule)

2018 data – 12 Amtrak trains

Displaying 69 rows

Transit_Time_Station_Pair	Seq_Num	Min Actual	Max Actual	Median Actual	Schedule
SEAKINSTR, WA - ARGO, WA	10	4.450	216.750	5.933	4.000
SEAKINSTR, WA - EDMONDS, WA	10	27.717	182.983	59.750	25.017
ARGO, WA - BLARIVER, WA	30	4.817	91.033	5.950	1.000
EDMONDS, WA - EVERETT, WA	50	15.367	101.217	16.883	22.000
BLARIVER, WA - TUKWILA, WA	60	0.050	19.383	0.283	6.000
EVERETT, WA - PAJCT, WA	70	3.100	66.333	7.117	3.017
TUKWILA, WA - AUBURN, WA	70	12.067	1,453.883	15.500	16.000
PAJCT, WA - MARYSVILL, WA	80	11.400	54.400	13.067	10.000
MARYSVILL, WA - ENGLISH, WA	90	6.683	104.850	7.667	6.000
VANCOUVER, WA - AMTVANPAS, WA	100	2.200	41.467	4.783	1.000
AUBURN, WA - RESERVATI, WA	110	11.633	43.633	12.800	17.000
ENGLISH, WA - STANWOOD, WA	110	7.167	95.650	14.867	7.000
BLAINE, WA - SWIWHATCO, WA	130	9.567	68.533	15.800	5.000
STANWOOD, WA - MTVERNON, WA	130	6.767	52.367	7.783	14.000
SWIWHATCO, WA - FERNDAL, WA	140	6.317	73.800	7.117	1.000
MTVERNON, WA - BURLINGTO, WA	150	2.483	74.000	8.300	18.017
RESERVATI, WA - TACOMA, WA	150	5.067	166.167	8.417	4.000
RIDGEFIEL, WA - LONJCT, WA	150	15.767	52.450	17.550	11.000
BURLINGTO, WA - BOW, WA	160	5.950	89.950	7.150	4.000
FERNDAL, WA - BELLINGHA, WA	160	16.433	3,803.183	21.833	18.000
TACOMA, WA - NISQUALLY, WA	160	21.650	176.500	26.217	20.017
BOW, WA - BELLINGHA, WA	170	12.583	91.217	20.117	6.000
BELLINGHA, WA - BOW, WA	180	14.233	47.217	16.050	6.000

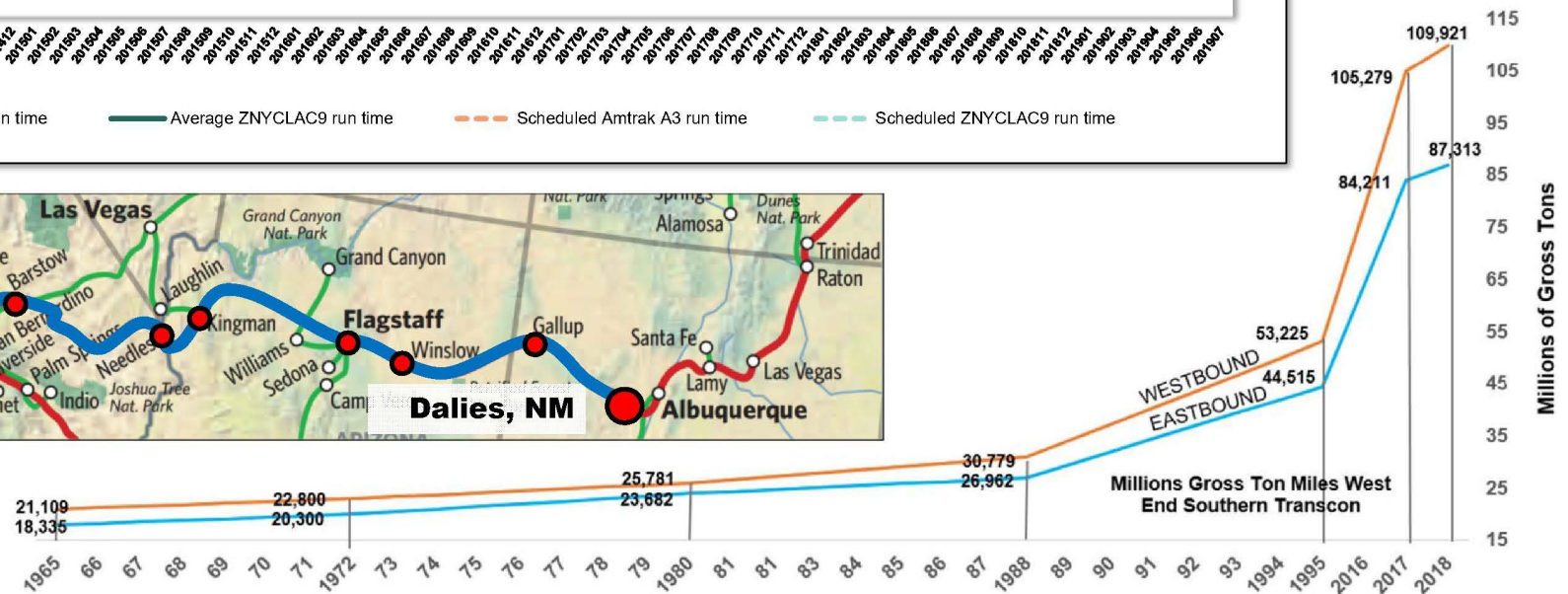
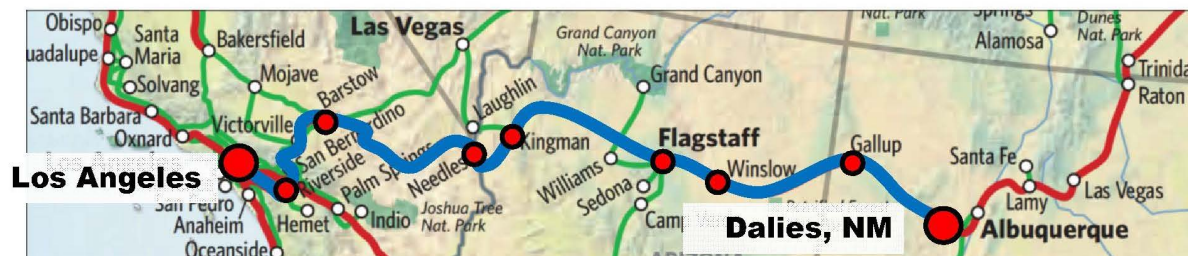
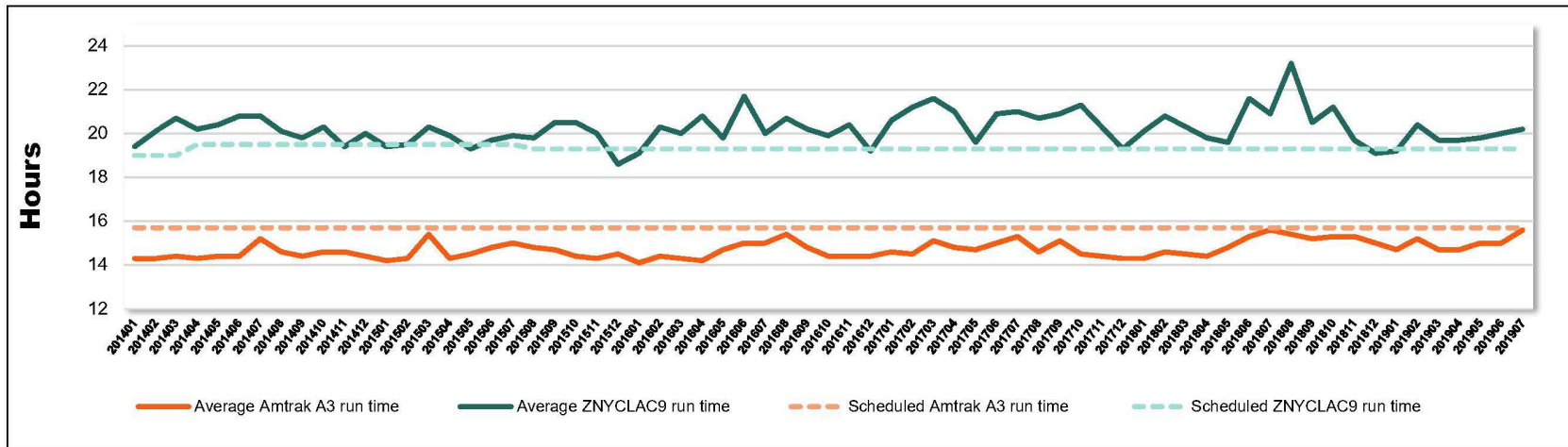
Min/Max/Median times for station pairs for all trains side by side with schedule time

Amtrak Southwest Chief Evolution



- Volume on the Southern Transcon has ramped up significantly, not only in the past decade but since Amtrak's formation.
- Southwest Chief schedule has not been fundamentally adjusted.
- BNSF has invested capital to handle growth and maintain performance.
- Amtrak's Southwest Chief runs at 90 MPH in some segments, mostly 79 MPH in others where our trains are running 70 MPH.
- BNSF prioritizes Amtrak and BNSF takes the brunt of delays as a result of zero capital investment on Amtrak's part to maintain this.

Amtrak Southwest Chief (A3) and ZNYCLAC9 Train Historical Run Times – Dalies, NM to Los Angeles – 2014-2019

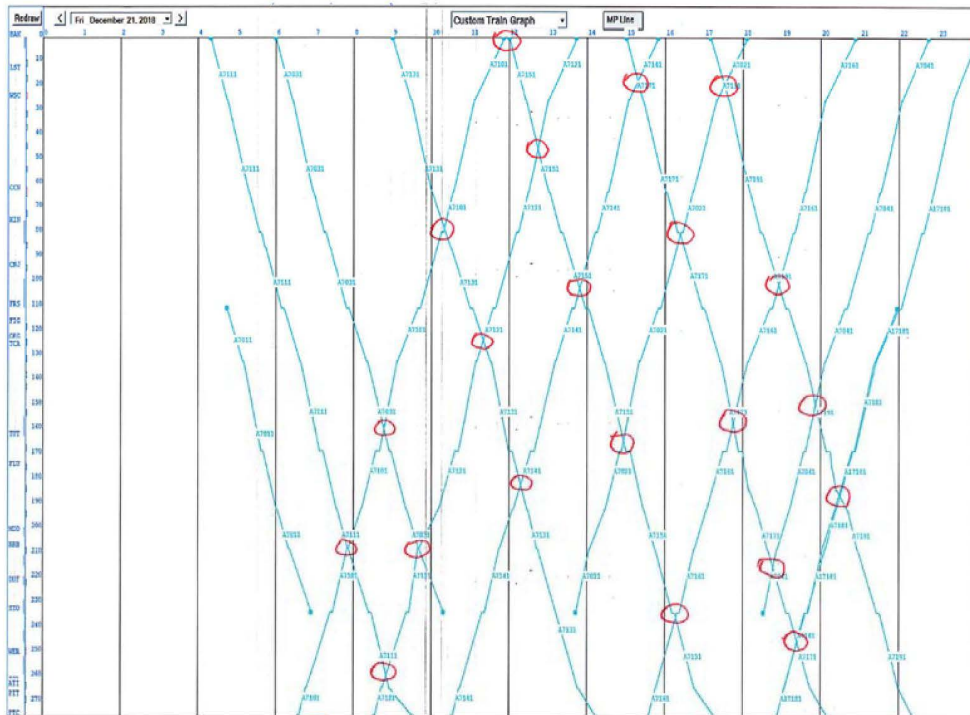


Schedule Changes

San Joaquin

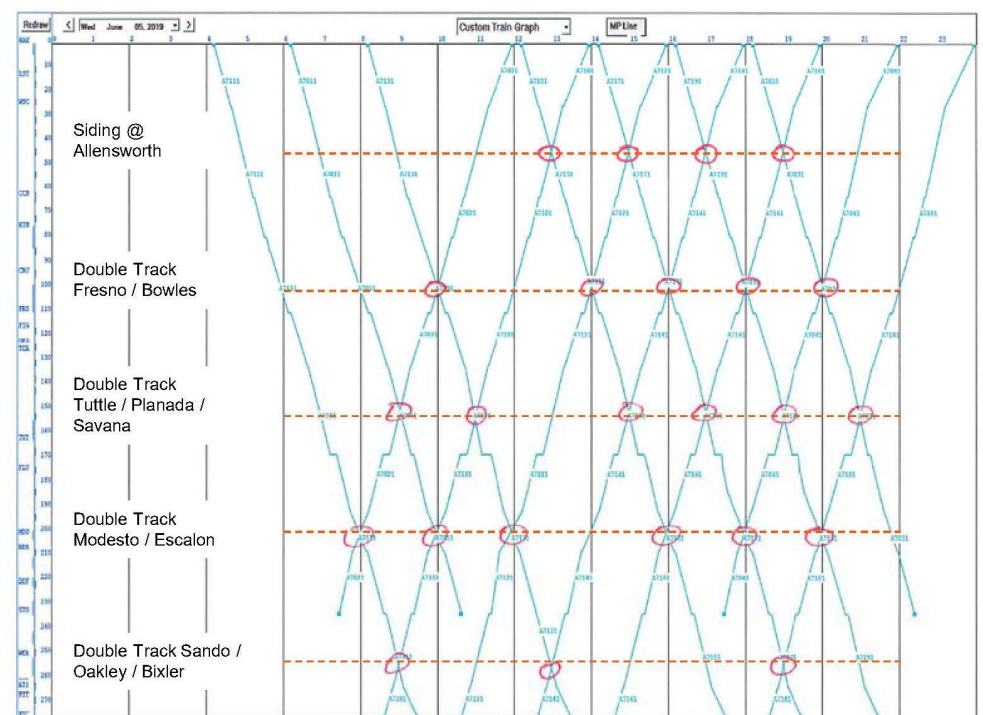


Pre May 20 schedule change where San Joaquin trains operated with too much variability and created complexities for the dispatchers and adjoining host railroads (UPRR)



Collaborative approach to scheduling with Deutschebahn, SJPA, Amtrak, BNSF

Post May 20 schedule change where variability was reduced and improved processes for dispatcher and adjoining host railroad.



How Should Schedules be Set?



- **Reflect study of historic performance by season or quarter, reflecting the factors described earlier, e.g.:**
 - Achievable running time between stations
 - Station dwell time and average station delays
 - Seasonal factors
 - Track maintenance windows
 - Passenger demand and impact (*i.e.*, at major stations rather than treating all stations equally)
 - Realistic grace time allotment for given segments
 - Route characteristics
 - Points of measurement
- **Incorporate mechanism and meetings for periodic review and adjustment:**
 - Periodic review of schedule to reflect evolution of passenger and freight demands
 - Equipment changes
 - Planning for major maintenance or line work

NRPC Officer



NRPC Officer Role



Liaison between BNSF and Amtrak

- Protects Amtrak rights while operating on BNSF
- Protects BNSF franchise against Amtrak

Administrates BNSF / Amtrak Operating Agreement

Directs management of BNSF Passenger Operations Team

- Operations
 - Assistant Director
 - Senior Manager
 - 24/7 Managers (5)
- Finance
 - Manager
 - Assistant Manager

Directs management of 108 passenger stations on BNSF

Directs management of Amtrak operations of BNSF

- 92 trains per day
- Special movements

Directs management of monthly billing processes

Works with BNSF Engineering on impactful capital projects

Directs management of internal education and continual awareness of Amtrak within BNSF

Potential for key interface with Amtrak equivalent for SOA-type reconciliation process

