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March 23, 2026

CN-12, FD 36873

VIA ELECTRONIC MAIL

Chief of Case Administration
Office of Chief Counsel
Surface Transportation Board
395 E Street, S.W.
Washington, DC 20423-0001

Re: **Docket No. FD 36873 - Union Pacific Corporation and Union Pacific Railroad Company – Control -- Norfolk Southern Corporation and Norfolk Southern Railway Company**

Dear Chief of Case Administration:

Grand Trunk Corporation, on behalf of itself and its U.S. rail operating subsidiaries[1] (collectively "CN"), hereby submits the attached correspondence for filing in the above-captioned docket. The correspondence and accompanying Verified Statement of Dr. Henry Kahwaty, Ph.D ("Verified Statement") addresses major flaws and inconsistencies stemming from Applicants' rail-to-rail diversion analysis submitted in their application filed on December 19, 2025.

The Verified Statement is Highly Confidential and has been filed under seal. A public version is also being made available.

Respectfully submitted,

Sara Y. Razi

Sara Y. Razi

[1] Bessemer and Lake Erie Railroad Company, Cedar River Railroad Company, Chicago, Central & Pacific Railroad Company, Grand Trunk Western Railroad Company, Illinois Central Railroad Company, Iowa Northern Railway Company, The Pittsburgh & Conneaut Dock Company and Wisconsin Central Ltd.

Chief of Case Administration
Office of Chief Counsel
Surface Transportation Board

March 23, 2026

Attachments

cc: Parties of Record

CERTIFICATE OF SERVICE

I hereby certify that, on this 23rd day of March 2026, I caused a true and correct copy of the foregoing to be served by first-class mail or email on all parties of record in this proceeding, the Secretary of Transportation, the Attorney General, and Administrative Law Judge Jenifer Soulikias.

/s/ *Andrew Bernstein*
Andrew Bernstein
Sr. Paralegal Manager
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March 23, 2026

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Re: **Docket No. FD 36873**
Union Pacific Corporation and Union Pacific Railroad Company – Control -- Norfolk Southern Corporation and Norfolk Southern Railway Company

Dear Counsel:

I write on behalf of Grand Trunk Corporation and its U.S. rail operating subsidiaries[1] (collectively, "CN") to inform Union Pacific Corporation and Union Pacific Railroad Company ("UP") and Norfolk Southern Corporation and Norfolk Southern Railway Company ("NS", together with UP, "Applicants") of major flaws and inconsistencies stemming from Applicants' rail-to-rail diversion analysis ("Diversion Analysis") submitted in their application filed on December 19, 2025 ("Initial Application").[2] CN raises these issues now to give Applicants an opportunity to correct them before submitting their revised application. This is particularly important in light of Applicants' comments indicating they will not take

[1] Bessemer and Lake Erie Railroad Company, Cedar River Railroad Company, Chicago, Central & Pacific Railroad Company, Grand Trunk Western Railroad Company, Illinois Central Railroad Company, Iowa Northern Railway Company, The Pittsburgh & Conneaut Dock Company, and Wisconsin Central Ltd.

[2] On January 16, 2026, the Board deemed Applicants' Initial Application incomplete, directing Applicants to refile no later than June 22, 2026. *See* Decision No. 9, FD 36873 (STB served Jan. 16, 2026). Applicants have indicated that they intend to submit a revised application on April 30, 2026. *See* UP-27/NS-26, FD 36873 (filed Feb. 17, 2026).

the Board up on its suggestion to "improve" the application[3] and instead will make only limited revisions to the Initial Application to specifically remedy the deficiencies identified by the Board.[4] These issues are so fundamental to the Board's and parties' review of the proposed merger that unless they are fixed, a valid assessment of the proposed merger's impacts on competition, operations, and the environment is not possible.

As detailed below and in the attached Verified Statement of Dr. Henry Kahwaty, Ph.D ("Kahwaty Statement"), Applicants' Diversion Analysis is fundamentally flawed and unreliable to assess the proposed merger's impacts. The Diversion Analysis uses a statistical model that generates "predicted" pre-merger market shares untethered from reality. The statistical model wrongly predicts high pre-merger market shares for UP and NS—including on **over 15,000** routes where UP and/or NS had **no** volume in 2023 but anticipate growth due to the merger (which we will call "Zero Traffic Routes"). Consequently, the Initial Application mistakenly treats hundreds of thousands of carloads of diverted traffic as if it were pre-existing UP/NS traffic. Correcting this—by treating the traffic as diverted—would increase projected diversions from other Class I railroads **by almost 50%, or roughly 215,000 carloads**.[5]

As a result, Applicants systematically understate diversions and, in turn, introduce inconsistent and unreliable market share projections in the Initial Application and leave meaningful volumes of traffic behind in their operating plan modeling and environmental assessment. The Board recognized the importance of market share projections that are consistent with the Applicants' projected growth when it rejected the Initial Application as incomplete.[6] The Diversion Analysis cannot be relied upon as a valid basis for the projected market shares requested by the Board. The Initial Application already introduced market share inconsistencies between the Diversion Analysis and the operating plan, raising questions

[3] *See* Decision No. 9 at 12.

[4] Applicants have made statements suggesting that they do not plan to improve their Initial Application beyond the issues identified by the Board in its January 16 Decision. *See* Jim Vena, JPMorgan Industrials Conference: Strategic Merger Insights (March 18, 2026), https://m.investing.com/news/transcripts/union-pacific-at-jpmorgan-industrials-conference-strategic-merger-insights-93CH-4568688?ampMode=1 ("They wrote us 15 pages with some pretty clear instructions on the three key areas that they wanted to see more information on, and that's what we're gonna answer."); Jim Vena, UP Q4 2025 Earnings Call (January 27, 2026) ("[W]e're going in to answer the questions that [the Board] asked us when they gave us the [decision on incompleteness]. . . . We'll answer the key questions[.] We'll make sure we do it right[.] And if we have more information and we can add something in the in the merger as we put in the, refreshed merger application, we'll do that."). CN is concerned that if the issues raised in this letter—which were not explicitly addressed in the Board's decision—are not corrected before the revised application is submitted on April 30, this will severely hinder the Board's and other interested parties' ability to assess the proposed merger's impact. Applicants should address these issues before refiling.

[5] While CN raises this error now due to the significant implications for the reliability of the Diversion Analysis and its impacts throughout the Initial Application in the competitive analysis, operating plan, and environmental assessment, CN reserves all rights to raise additional issues—either related to the current Diversion Analysis or any subsequent analysis (competitive, operational, environmental, or otherwise) Applicants submit as part of their revised application—at a later date.

[6] *See* Decision No. 9 at 5.

about which market assessment to use to analyze impacts on competition. This prevents a valid assessment of the wide-ranging competitive, operational, and environmental impacts of the merger, and increases the potential for the types of catastrophic service disruptions that have plagued past mergers.[7] CN urges Applicants to address these issues before filing their revised merger application,[8] and proffers the following in support of CN's position.

I. Applicants' Diversion Analysis Is Fundamentally Flawed and Cannot Be Relied on to Assess the Proposed Merger.

A. The Diversion Analysis Does Not Use Pre-Merger Predictions that Reflect Actual 2023 Market Shares to Estimate Traffic Diversion.

As described in the Kahwaty Statement, the UP/NS Diversion Analysis relies on a statistical model which does not accurately predict actual 2023 market shares, especially for the more than 15,000 Zero Traffic Routes for which Applicants anticipate growth due to the merger.[9] For example, the statistical model often estimates that Applicants possessed significant market share in the pre-merger world when, in reality, the actual 2023 traffic data shows they had no market share in those markets.[10] The statistical model's results are unrealistic when compared to actual market shares on Zero Traffic Routes, and they in all instances overestimate Applicants' pre-merger shares for these routes.[11]

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[7] *Major Rail Consol. Proc.*, 5 S.T.B. 539, 558 (2001) ("[T]he *CSX/NR/CR* transaction resulted in severe service problems that plagued applicants and their customers for a full year or more. Moreover, post-implementation service problems have not been limited to the *CSX/NS/CR* and *UP/SP* transactions. The *UP/CNW* and *BN/SF* transactions were also accompanied by service disruptions…"). Even the most recent Class I rail merger, *CP/KC*, has caused severe service disruptions. *See* Bill Stephens, *CPKC's IT stumble casts doubt on further Class I mergers: Analysis*, TRAINSPRO (June 25, 2025), https://www.trains.com/pro/freight/class-i/cpkcs-it-stumble-casts-doubt-on-further-class-i-mergers-analysis/ (explaining the months-long service problems resulting from problems with the integration of the CP and KCS IT systems).

[8] CN notes that although Applicants have stated they anticipate refiling their application on April 30, 2026, they have until June 22, 2026 to refile. *See* Decision No. 9 at 13.

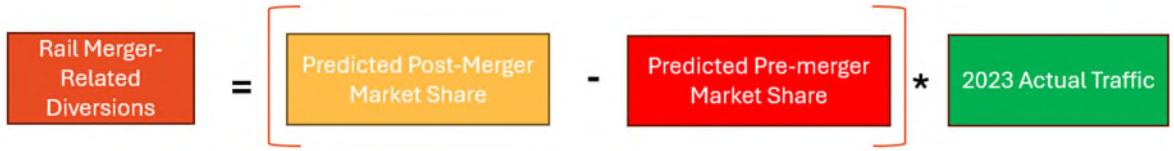
[9] *See* Verified Statement of Dr. Henry J. Kahwaty, Ph.D. (Mar. 23, 2026) [hereinafter "Kahwaty Statement"] at I.B, Par. 18 ("As explained in this Verified Statement, my review of the Diversion Analysis finds that there are over 15,000 routes for which UP/NS have no traffic in the pre-merger world, but for which the model predicts that Applicants' new service will attract diversions post-merger.").

[10] *See id*. at II.A, Par. 29 ("Other UP/NS routes or third-party railroad routes may not have been used to service any customers as detailed in the 2023 traffic data but rather were only "feasible" (i.e., potential, but not actual) routes, according to Switching Carrier/Reciprocal Switching ("SCRS") data. There are no 2023 traffic volume data for these routes.").

[11] *See id*. at II.B, Par. 27 ("In short, the statistical model assigns positive market share and traffic levels in the pre-merger world to routes that actually and *potentially* serve that market pre-merger. Thus, even if a potential route has no actual sales, market share, or traffic in the market pre-merger, the statistical model assigns it a positive pre-merger predicted market share anyway, and this market share can be large."); *see also id*., Figures 2-9, Tables 1-2 (histograms for zero-share routes showing large positive pre-merger predictions).

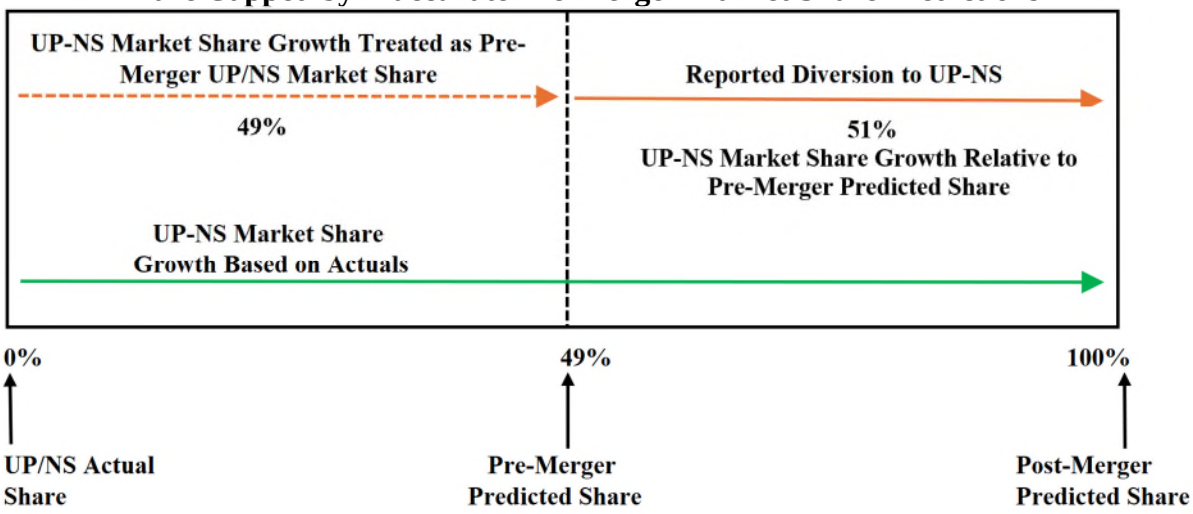
B. These Errors Yield Vastly Understated Diversions From Other Class I Railroads for More Than 15,000 Zero Traffic Routes.

The erroneous pre-merger predictions systematically skew Applicants' predicted pre-merger shares higher than actual pre-merger market shares, thus understating diversions. The Diversion Analysis estimates merger-related diversions based on this formula:



For the Zero Traffic Routes specifically, because the predicted pre-merger market shares are estimated to be greater than zero, and frequently 50% or greater, the Diversion Analysis improperly counts what should be Applicants' post-merger growth as pre-merger traffic.[12] This is illustrated in Kahwaty Statement Figure 1.[13] In this figure, diversions are understated by 49% because the Diversion Analysis considered these carloads as pre-merger traffic even though UP and NS had zero 2023 traffic on the routes in the market.

Kahwaty Statement Figure 1: UP and NS Diversions from UP/NS Zero Traffic Routes are Capped by Inaccurate Pre-Merger Market Share Predictions



C. These Errors had Widespread and Meaningful Impact in Quantifying the Diverted Carloads.

A large portion of the diversions reported by Applicants in the Diversion Analysis are predicted to come from Zero Traffic Routes, including 95% of bulk, 62% of merchandise, and

[12] *See id.* at II.C, Par. 40 ("In other words, when a route's post-merger predicted market share is greater than the pre-merger predicted market share, the diversion calculation removes the pre-merger predicted market share from the diversion estimated. This results in the Diversion Analysis counting post-merger growth from diversions as pre-merger traffic.").

[13] *See id.* at II.B, Figure 1.

61% of automotive diversions.[14] The diversions on these key routes are consistently understated by the statistical model's predictions. Indeed, the result is to significantly understate merger-related rail-to-rail diversions on over 15,000 Zero Traffic Routes, in many cases by 50% or more.[15] Thus, correctly calculating diversions on the Zero Traffic Routes to account for the omitted growth projection has an outsized impact on the overall diversion results. Correcting diversions to account for the full growth projections on these routes would increase total reported diversions **by almost 50%, and roughly 215,000 carloads**.[16] The total number of diverted carloads on general merchandise routes would be **more than double** Applicants' estimated diversions for these routes.[17]

The understated diversions have localized impacts that undermine efforts to analyze competition, operational, and environmental impacts of the merger. As illustrated in just one example in the Kahwaty Statement involving merchandise traffic between Illinois and Texas, the corrected diversion from an existing interline route to a post-merger UP-NS route is nearly four times greater than the estimate from the Diversion Analysis, once this error is corrected to account for the full growth projections.[18] As detailed below, these post-merger diverted carloads are currently left out of the operating plan and also missing from environmental impact review by subdivision, which means that there is a risk that some subdivisions may trigger the relevant thresholds but are currently omitted from Applicants' responses to the Board.[19] This is just one example of thousands.

Applicants thus vastly underestimate their anticipated merger-related growth, which prevents meaningful analysis of the proposed merger and post-merger planning systemwide and at the local level.[20]

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[14] *See id*. at III.A, Table 4 "A Large Portion of Reported Diversions to UP-NS are on UP/NS Zero Traffic Routes."

[15] *See id*. at III.C

[16] *See id*. at III.B, Table 5 "UP-NS Diversion Estimates are Substantially Understated for UP/NS Zero Traffic Routes."

[17] *See id.* (Showing that for UP/NS zero traffic routes with reported diversions, those that serve merchandise customers have reported diversions of 101,000 and an additional 115,000 in growth projected omitted from the reported diversions, so accounting for the omitted growth would result in **more than double** the diversions).

[18] *See id*. at III.C, Par. 64 ("[D]iverted traffic is *nearly four times greater than the estimate from the Diversion Analysis*.")

[19] *See id*. at IV.B, IV.D.

[20] The Diversion Analysis's methodology for calculating diversions as predicted post-merger market shares minus predicted pre-merger market shares does not cure the errors. As explained in the Kahwaty Statement, the Hunt/Schabas Statement suggests that the statistical model's inaccuracy is acceptable because certain factors omitted from the model exist both pre- and post-merger. *See* Kahwaty Statement at II.B, n.29 (citing Section III.A and Attachment F) ("[T]his is a strong simplifying assumption that fails and inserts bias into the statistical model and Diversion Analysis predictions. This bias results in understated Diversions.") This simplifying assumption is wrong in this context, and results in understated diversion estimates.

II. The Diversion Analysis's Flaws Prevent a Reliable Assessment of the Proposed Merger's Impacts and Compromise the Rest of the Application.

As the Board itself has emphasized, because this proposed merger is premised largely on Applicants' significant expected growth, it is critical for the application to accurately reflect the impacts of the anticipated growth.[21] The Zero Traffic Routes where the model's predictions are most erroneous are precisely the routes where Applicants plan to significantly increase traffic (*i.e.*, through offering new single-line service).[22] The Diversion Analysis's unreliability thus fundamentally prevents a valid assessment of the competitive, operational, and environmental impacts of the proposed merger.

A. Inconsistent and understated projected traffic growth prevents reliable assessment of competitive impacts.

The flawed Diversion Analysis creates two major issues preventing a valid assessment of competition impacts.

1. *Inconsistent market shares*

Accurate and consistent market share projections are necessary to assess the competitive impacts of the proposed merger. In its January 16, 2026 decision on completeness, the Board explicitly required Applicants to provide projected market shares in their refiled application and noted that the "projections" in the Initial Application were inconsistent with claims of growth elsewhere in the Application, including in the Diversion Analysis.[23]

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[21] In determining the Initial Application was incomplete, the Board stated that "the Application is incomplete because its impact analyses . . . do not contain market share projections for the entity to be created by the Transaction that are **consistent with the claims elsewhere in the Application that the new entity would experience growth by diverting traffic from trucks and other rail carriers**." Decision No. 9 at 1-2 (emphasis added). The Board further noted that the "Application is replete with claims that the merger will grow Applicants' traffic," and that the market share "analysis did not meaningfully consider the future because it simply added together Applicants' actual 2023 traffic and revenue shares, despite claims and projections of traffic growth throughout the Application." Decision No. 9 at 5, 6.

[22] The flaws in the Diversion Analysis and its inability to accurately predict pre-merger market shares for Zero Traffic Routes are particularly relevant to this transaction, as compared to prior usages of Oliver Wyman's analysis in other contexts, where zero-volume routes were excluded from the calibration step, or where other steps were taken to better tailor the model to the particular circumstances of the transaction. *See* Kahwaty Statement at Attachment B, "Overview of Methodologies Used for the Analysis of Rail-to-Rail Diversion." The diversion analysis needs to fit the characteristics of the transaction, and in this case the analysis and modeling assumptions are a particularly poor fit given the high prevalence of Zero Traffic Routes and the model's inability to accurately predict pre-merger shares on those routes. *See id.* at Attachment B, Par. 2 ("Any methodology selected, however, should fit the proposed transaction under consideration. For reasons identified in this Verified Statement, the Diversion Analysis is not well-suited to analyze the proposed merger.")

[23] "The Board concludes that the Application is incomplete because the full-system impact analyses do not contain Applicants' 'projected market shares' as required by 49 C.F.R. § 1180.7(b). **The Application is replete with claims that the merger will grow Applicants' traffic, in one estimate by between 15 and 26% of current rail traffic levels.**" Decision No. 9 at 5 (citing the Diversion Analysis in the Verified Statement of David T. Hunt and Matthew Schabas) [hereinafter "Hunt/Schabas Statement"] at 97 (emphasis added). The Board indicated that Applicants made "no attempt to account for any merger-related growth, **diversions**, or, indeed, any other future changes to market conditions at all." Decision No. 9 at 5 (emphasis added).

Any projected market shares Applicants provide based on the flawed Diversion Analysis would understate the expected merger-related growth across many markets. If Applicants arrive at projected market shares through alternative means, they will need to reconcile those results with the Diversion Analysis.

Even within the Initial Application, as described in Section II.B *infra*, Applicants have already provided two different post-merger market share numbers: (1) those underpinning the Diversion Analysis; and (2) the post-merger market shares used in the operating plan. This has resulted in Applicants modeling only 46% post-merger market share in automotive traffic in the operating plan, even though the Diversion Analysis estimates 61% market share. Similarly, for bulk traffic, Applicants model only 42% post-merger market share, even though the Diversion Analysis estimates 60%. These inconsistencies are unacceptable and illustrate the need for Applicants to reconcile their market share projections. The Board and interested parties need to know which projected market shares to use to assess the competitive impacts of the proposed transaction. If Applicants do not correct such inconsistencies in their revised application, they risk further delay in the proceeding to correct the inconsistencies later as the application must have consistent market shares from which the Board and other parties may conduct analyses of competition, operating, and environmental impacts.[24]

2. *Understated competitive impacts*

The Diversion Analysis's treatment of Zero Traffic Routes also is inconsistent with the Applicants' sweeping efficiencies claims, which include adding thousands of new single line routes where Applicants do not provide service today (*i.e.*, adding share on Zero Traffic Routes).[25] By design, the Diversion Analysis's predicted pre-merger market share for such routes is greater than the actual share (which is zero). This flaw creates artificially capped diversion estimates and low predicted market share gains by Applicants. Consequently, the Board and other interested parties will not be able to assess the competitive impacts and harms of the proposed merger[26] if this flaw is not fixed in the revised application.

B. Applicants Have Not Modeled All of Their Post-Merger Traffic in the Operating Plan.

Understated diversions on Zero Traffic Routes mean Applicants have not modeled all of their anticipated post-merger traffic in their operating plan. Given the substantial

[24] *See* Decision No. 16, *Canadian Pac. Ry.—Control—Kan. City S.*, FD 36500 et al. (STB served Mar. 16, 2022) (The Board suspended the procedural schedule and required Applicants to "explain further this apparent inconsistency between the 2019 baseline GT/M data in Exhibit 14 and the 2019 baseline GT/M data submitted to OEA, and to indicate which 2019 baseline data should be used in analyzing the environmental and transportation impacts of the Transaction, and the reasons why that data should be used.").

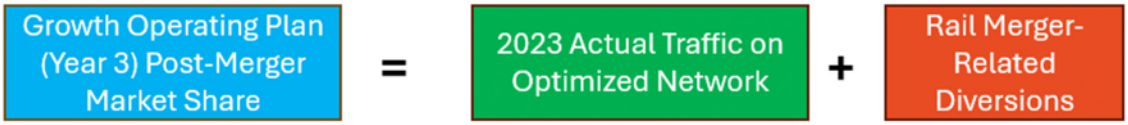
[25] *See*, *e.g.*, Verified Statement of V. James Vena (CEO at UP), Appl. Vol. 1 at 169; Verified Statement of Mark R. George (Chairman, President, and CEO at NS), Appl. Vol. 1 at 188-89; Joint Verified Statement of Kenny Rocker (Executive Vice President, Marketing & Sales at UP) and Claude E. "Ed" Elkins (Executive Vice President and Chief Commercial Officer at NS), Appl. Vol. 1 at 225.

[26] *See* Kahwaty Statement at IV.E.

inaccuracies and inconsistencies, there are legitimate questions whether the operating plan and its resourcing are viable.

1. *Traffic left behind*

Applicants' operating plan incorporates the understated diversion estimates as part of the operating plan, calculated according to the following formula:[27]



By basing operating plan traffic on the flawed Diversion Analysis, Applicants have not modeled all of their anticipated post-merger traffic. Thus, Applicants' operating plan is leaving substantial volumes of traffic behind. Applicants' plan for operating the combined railroad depends on accurate predictions of *where* traffic will go, and *how much* additional traffic there will be on specific impacted routes and rail segments. The flawed Diversion Analysis prevents a reliable assessment of these fundamental operational impacts, increasing the risk of severe post-merger service disruptions.

An example in the Kahwaty Statement relating to unit train service transporting coal out of the Powder River Basin to a plant in the Southeast highlights the problematic operational implications of the flawed Diversion Analysis.[28] Because the UP-NS Zero Traffic Route is predicted by the statistical model to have roughly half the pre-merger traffic (when in fact it has none), the Diversion Analysis estimates only about half of the UP-NS Zero Traffic Route's post-merger carloads as diverted traffic, leaving behind the other half of the diverted traffic, and resulting in widely inaccurate results.[29] On one rail segment between the Powder River Basin and a key gateway in the watershed, only a fraction of the diverted trains are reported as being diverted, which understates the actual number of additional trains that would need to operate on that corridor. Once corrected to account for the full growth projections, the diversion estimate nearly doubles.[30] These results significantly distort the operating plan and infrastructure impacts.

2. *Inconsistencies between Diversion Analysis and operating plan*

Applicants acknowledge the discrepancy between the pre-merger market shares predicted by the Diversion Analysis and actual market shares,[31] and instead use 2023 actual

[27] "The Growth Plan reflects how the fully integrated UP/NS network would operate and accommodate the traffic Applicants expect to attract through the service improvements projected to result from merged operations and new services introduced." Joint Verified Statement of Eric Gehringer and John F. Orr, Appl. Vol. 2 at 515 (citing Hunt/Schabas Statement for a description of "merger-related traffic growth expectations"). *See also* Workpaper "Growth Plan_vS", Section 2.

[28] *See* Kahwaty Statement at IV.C, Table 8, and Figure 19.

[29] *See id.* at IV.C, Pars. 77, 83.

[30] *See id.*

[31] "We assume that some of the difference between model pre-merger prediction and the historical traffic reflects commercial agreements, SCRS industry access, and other factors that are not captured in the model.

traffic plus the reported diversions to arrive at their operating plan post-merger market share, as shown in the formula above. Exhibit A-11 of the Hunt/Schabas Statement highlights these inconsistencies. As shown in Exhibit A-11, the operating plan uses a **46% post-merger automotive market share versus a 61% share** as predicted by the Diversion Analysis. For bulk, the operating plan uses **42% post-merger market share versus 60% share** as predicted by the Diversion Analysis.[32]

Exhibit A-11: Comparison of UP-NS historical traffic vs. rail-to-rail diversion model pre-merger and post-merger estimates[121]

Thousands of carloads/intermodal units

	Total market	Actual UP-NS carloads	Model: Est. UP-NS carloads pre-merger	Model: Est. UP-NS carloads post-merger	Diversions (post-minus pre-)	Traffic (actual UP-NS + diversions)	Diff: traffic minus post-
Merchandise	780	252	277	439	162	414	(25)
Intermodal	1,217	379	346	550	204	583	33
Bulk	192	53	87	115	28	81	(34)
Automotive	201	41	72	124	52	93	(31)
Total	*2,390*	*725*	*782*	*1,228*	*447*	*1,171*	*(57)*

Percentage of market

	Total market	Actual UP-NS cars	Model: Est. UP-NS share pre-merger	Model: Est. UP-NS share post-merger	Diversions (post-minus pre-)	Traffic (actual UP-NS + diversions)	Diff: traffic minus post-
Merchandise	100%	32%	36%	56%	21%	53%	-3%
Intermodal	100%	31%	28%	45%	17%	48%	3%
Bulk	100%	28%	45%	60%	15%	42%	-18%
Automotive	100%	20%	36%	61%	26%	46%	-15%

By adding understated diversions to Applicants' *actual* 2023 pre-merger traffic volume, the operating plan assumes post-merger traffic levels that are significantly below what Applicants' own diversion model predicts, further understating the magnitude of post-merger traffic.[33] As a result, the operating plan fails to account for substantial additional merger-related traffic growth, further exacerbating the risk of future service disruptions.

C. Missing traffic from the operating plan prevents localized environmental review for impacted communities.

The flawed Diversion Analysis prevents the Board and the Office of Environmental Analysis ("OEA") from assessing the true, localized environmental impacts of the proposed

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These would continue to exist, and on average, result in a continued lower share than the [statistical] model predicts." Appl. Vol. 2 at 405 (Hunt/Schabas Statement, page 97).

[32] There are also discrepancies in the estimates for merchandise traffic (operating plan 53% vs. Diversion Analysis 56%) and intermodal traffic (operating plan 48% vs. Diversion Analysis 45%). *See* Appl. Vol. 2 at 406 (Hunt/Schabas Statement, Exhibit A-11, page 98).

[33] *See* Kahwaty Statement at IV.B, Par. 73 ("The post-merger market share predictions derived in these two different ways can differ substantially, with understated Diversions reducing the post-merger market shares modeled in the Operating Plan.").

merger. Because the Diversion Analysis undercounts merger-related growth, this understatement necessarily affects the traffic levels reported for countless network segments across the combined carrier's system.[34] And it may exclude segments that would experience increased train counts triggering environmental review thresholds.

OEA's Information Requests Nos. 1-3 require information about existing and transaction-related increased train counts (trains per day) or gross ton miles (GTM) by segment, for segments where Applicants project that the proposed merger would result in increased traffic that exceeds certain thresholds.[35] Understated diversions in the operating plan also impacts which segments would trigger the thresholds for environmental review, and thus prevents a reliable assessment of how local communities would be impacted by the increased rail traffic.[36] Applicants must therefore correct their Diversion Analysis to account for the omitted post-merger traffic and update the OEA responses accordingly to ensure the environmental review accurately accounts for post-merger traffic in communities that would be subjected to increased rail traffic meeting these thresholds. CN is unable to do so with the information available,[37] and thus must rely on the Applicants to make these important corrections to ensure an appropriate environmental review.

* * *

[34] *See* Kahwaty Statement at IV.D.

[35] *See* Information Request No. 1, STB Office of Environmental Analysis, *Union Pacific Corporation and Union Pacific Railroad Company – Control – Norfolk Southern Corporation and Norfolk Southern Railway Company,* FD 36873, EO-4064 at A.1 (filed Sept. 16, 2025) (requesting Applicants to identify and map by state and milepost endpoints, each rail line segment that would experience an increase in transaction-related rail traffic of at least 100 percent (annual GTMs) or an increase of at least eight or more trains per day, in areas designated as being in attainment for the primary air pollutants regulated under the Clean Air Act ("attainment areas")); *id.* at A.2 (requesting Applicants to identify and map by state and milepost endpoints each rail line segment that would experience an increase in transaction-related rail traffic of at least 50 percent (annual GTMs) or an increase of at least three or more trains per day in areas designated as a Class I area or being in nonattainment for one or more of the primary air pollutants regulated under the Clean Air Act ("nonattainment areas")); *see also* EO 4074 (Dec. 24, 2025) and EO 4086 (Feb. 25, 2026) (requesting additional details for rail line segments identified in EO-4064).

[36] *See* Kahwaty Statement at IV.D, Par. 87. ("Because the Applicants' original diversion inputs are understated, the downstream segment level outputs are correspondingly impacted[.]")

[37] Without access to the version of MultiRail used by Applicants (which CN does not have, and Applicants have not provided), CN is unable to model how corrected diversion estimates would translate into train-level and segment-level impacts. Applicants must use MultiRail to address this issue and generate updated train counts and GTMs for purposes of determining whether the thresholds for environmental review are triggered.

Michael L. Rosenthal, Esq.
Raymond A. Atkins, Esq. March 23, 2026

Applicants have relied on a fundamentally flawed Diversion Analysis to vastly understate the rail-to-rail diversions that would result from the proposed merger. As such, the Board and other interested parties cannot accurately assess the actual competitive, operational, environmental, and other impacts of the proposed merger on the national rail network and individual line segments, or on the thousands of impacted customers and in local communities. CN urges Applicants to cure these errors and submit a reliable diversion analysis when they file their revised merger application.

Very truly yours,

Sara Y. Razi

Cc: STB Office of Chief Counsel, FD 36873
Parties of Record, FD 36873
Thomas J. Litwiler, Fletcher & Sippel LLC
Valerie O. Quinn, Fletcher & Sippel LLC
Kathryn J. Gainey, CN
Christopher K. Diamond, CN

DOCKET NO. FD 36873

UNION PACIFIC CORPORATION AND
UNION PACIFIC RAILROAD COMPANY

—CONTROL—

NORFOLK SOUTHERN CORPORATION AND
NORFOLK SOUTHERN RAILWAY COMPANY

Verified Statement of Henry J. Kahwaty, Ph.D.

March 23, 2026

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I. QUALIFICATIONS, ASSIGNMENT, AND SUMMARY OF CONCLUSIONS

A. Qualifications

1. My name is Henry J. Kahwaty. I am a Managing Director with Berkeley Research Group, LLC ("BRG"). BRG is an international firm providing expert analysis and management consulting services in the areas of economics, finance, accounting, and data analytics, among others. My business address is 1800 M Street, N.W., Second Floor, Washington, DC 20036.

2. I received my Ph.D. in Economics from the University of Pennsylvania in 1991. My fields of specialization include microeconomics, industrial organization, and antitrust economics. Industrial organization is the branch of economics that studies competition and regulation in individual markets, including the analysis of pricing, market entry, business strategy, and the effects of government policy on market performance as measured by pricing, output, and other metrics. I have worked as an economic consultant specializing in the analysis of individual markets for over 30 years. Most of my work has been in the areas of antitrust and competition policy, and I have also studied market dynamics in intellectual property cases and in analyses of the effects of changes in government policy. Prior to my work as an economic consultant, I spent nearly four years as an economist with the Antitrust Division of the U.S. Department of Justice ("Antitrust Division"). I worked on merger and monopolization investigations in a wide variety of industries while I was with the Antitrust Division. A copy of my curriculum vitae is provided as **Attachment A** to this Verified Statement. It provides a list of my publications and a list of cases in which I have testified as an expert either in deposition or at trial since 2000.

3. I have completed numerous market studies as part of merger reviews, alleged monopolization or abuse of dominance cases, and alleged collusion or coordinated conduct cases since leaving the Antitrust Division. These studies have involved the mining, manufacturing, metals, avionics, pharmaceuticals, film exhibition, mobile telephony, gasoline wholesaling and retailing, municipal solid waste, and hazardous waste disposal industries, among others. I completed a study of competition in the banking industry for

the Irish Competition Authority, and I also assisted the Irish Competition Authority with its study of the insurance industry. Both studies included recommendations for changes in government policy that would affect the competitiveness of the markets studied. I have presented analyses to the Antitrust Division, U.S. Federal Trade Commission, European Commission, Canadian Competition Bureau, and South African Competition Commission, among other agencies. I have provided expert evidence at hearings on competition cases at the Federal Trade Commission, the Canadian Competition Tribunal, the European Commission, and the British Columbia Utilities Commission.

B. Assignment

4. I have been retained by counsel for Grand Trunk Corporation, on behalf of itself and its U.S. rail operating subsidiaries (collectively, "CN").[1]

5. I have been asked by counsel for CN to evaluate whether it is reasonable to rely upon the rail-to-rail traffic diversion estimates adopted by Union Pacific Corporation, Union Pacific Railroad Company ("UP"), Norfolk Southern Corporation, and Norfolk Southern Railway Company ("NS") (collectively, "Applicants") in their initial application seeking authority for the acquisition of control by Union Pacific Corporation of Norfolk Southern Corporation and, through it, NS, which was filed on December 19, 2025 (the "Initial Application").[2] Specifically, I have been asked to evaluate the approach taken in the rail-to-rail traffic diversions study provided by David T. Hunt and Matthew Schabas of Oliver Wyman, LLC (the "Rail Diversion Analysis" or simply the "Diversion Analysis").

6. For consistency, I use certain definitions throughout this Verified Statement. When I refer to "UP-NS," I am referring to the merged railroad, and when I refer to "UP/NS," I am referring to routes involving UP, NS, or both pre-merger. When I refer to the "Diversions," I am referring to rail-to-rail diversion estimates that resulted from the Diversion Analysis.

[1] Bessemer and Lake Erie Railroad Company; Cedar River Railroad Company; Chicago, Central & Pacific Railroad Company; Grand Trunk Western Railroad Company; Illinois Central Railroad Company; Iowa Northern Railway Company; The Pittsburgh & Conneaut Dock Company; and Wisconsin Central Ltd.

[2] UP-13/NS-11, FD 36873 (Dec. 19 2025) ("App. Vol. 1"); UP-14/NS-12, FD 36873 (Dec. 19, 2025) ("App. Vol. 2"); UP-15/NS-13, FD 36873 (Dec. 19 2025) ("App. Vol. 3"); and UP-16/NS-14, FD 36873 (Dec. 19 2025) ("App. Vol. 4").

The Diversion Analysis was presented by Mr. Hunt and Mr. Schabas in their Joint Verified Statement dated December 18, 2025 (the "Initial Hunt/Schabas VS"). When I refer to "routes" analyzed in the Diversion Analysis, I am generally referring to "quads" as they are defined in the Initial Hunt/Schabas VS. A quad is the combination of an origin, origin railroad, destination, and destination railroad.[3] As such, when I discuss example markets included in the Diversion Analysis, I generally refer to origin railroads and destination railroads to describe route options available to shippers. For expositional convenience, I refer to interline route options as occurring between an origin railroad and a destination railroad, even when there are one or more bridge railroads participating in the route.

7. The Highly Confidential information, as defined by the applicable Protective Order, included in this Verified Statement is enclosed in double braces {{ }} and is redacted from the public version of this Verified Statement filed with the Board. Where information based on Highly Confidential information is presented in the public version of this Verified Statement, it is presented at the same level of aggregation as the Applicants used in the public version of the Initial Hunt/Schabas VS and does not disclose underlying details of the Highly Confidential sources or any competitively sensitive or proprietary information.[4] No material designated "Confidential" by the Protective Order is contained in this Verified Statement.

8. The Diversion Analysis was an integral part of the Initial Application, which was deemed incomplete by the Surface Transportation Board (the "STB" or "Board") on January 16, 2026.[5] Given the integral role played by the Diversions in the Initial Application and the expectation that they will form an integral part of any updated application submitted by the Applicants, I have been asked, in particular, to evaluate whether it is reasonable to rely on the Diversions as an input feeding into other parts of the Initial Application or any

[3] App. Vol. 2, Page 393 (Initial Hunt/Schabas VS, page 85).

[4] By adopting Applicants' level of aggregation and designations of Highly Confidential information, I am being conservative and taking no position as to whether that information was correctly designated as Highly Confidential in the Initial Hunt/Schabas VS, particularly insofar as it over-designates certain information as Highly Confidential.

[5] Decision No. 9, *Union Pac. Corp.– Control – Norfolk S. Corp.,* FD 36873, (STB served Jan. 16, 2026) ("Decision No. 9").

anticipated future application, such as the Operating Plan, environmental analysis, or competitive analysis.

9. The Diversions were generated using a statistical model. I do not assess in this Verified Statement how the statistical model is used to capture the effects of the proposed merger (e.g., reduced impedance) or whether specific additional explanatory variables should be included when estimating the statistical model. Rather, my focus is on whether the Diversions from this statistical model can be used reliably in the evaluation of this proposed merger.[6]

10. At a high level, the Initial Hunt/Schabas VS concludes that "a merged UP-NS would divert approximately 237,000 carloads and 204,000 containers annually of existing business that currently moves on other railroads."[7] Through my work thus far to evaluate the Diversions, I have determined that it is not reasonable to rely on the Diversions or to incorporate them into other aspects of the Initial Application (or any subsequent applications), such as the analysis of the Operating Plan, the environmental analysis, or the competitive impacts analysis. This is due to inherent methodological flaws in the Diversion Analysis when applied to the circumstances of this proposed merger. These methodological flaws result in a systematic understatement of rail diversions to the merged railroad.

C. Summary of Conclusions

11. Having an accurate rail-to-rail diversion study is critical for the analysis of the likely effects of the proposed merger of UP and NS. Rail-to-rail diversion estimates inform the Applicants' Operating Plan, network investments, environmental analysis, and competitive analysis. The Initial Hunt/Schabas VS provides a rail-to-rail diversion study, but it suffers from critical methodological and analytical flaws as applied in this case and is, therefore,

[6] Although I have not yet completed an exhaustive review, my preliminary views detailed in this Verified Statement are so fundamental in nature that I wanted to report the issues addressed herein. I reserve the right to complete a more fulsome review once the Applicants file an updated application.

[7] According to the Initial Hunt/Schabas VS, 66% of Diversions are extended haul moves where traffic is handled, pre-merger, by UP or NS with another carrier in interline service, and 34% of Diversions are traffic new to both merging parties. App. Vol. 2, Page 357 (Initial Hunt/Schabas VS, page 49).

unreliable and cannot be used to inform other parts of the analysis of the likely effects of the proposed merger.

12. The Applicants' Diversion Analysis is based on a study of the movement of cargo between an origin and a destination (each pair a specific "market"), with separate markets defined for four service types: merchandise, intermodal, bulk, and automotive. The Diversion Analysis uses a statistical model to predict market shares for individual routes. Both pre-merger and post-merger market shares are estimated. Diversions are calculated by subtracting the predicted pre-merger market shares from the predicted post-merger market shares for routes and multiplying that difference in market shares by the carloads or units in each market.[8] The carload and unit data used are from 2023.[9]

13. The merging parties have stated that large efficiencies will be generated by combining a rail network in the eastern United States with one in the western United States.[10] The combined network will allow the merged railroad to offer single line or extended service on routes or route segments that can now be offered only as interline service.[11] They claim the merged railroad's service will save time and costs when shipping goods across the country.[12] In essence, the parties argue that new single line service will be offered and compete with interline options for the same movement. If the claimed efficiencies are real, the conversion of interline service to single line service has the potential to be a source of significant rail-to-rail diversions. However, as explained in this Verified Statement, the routes on which Applicants claim the greatest efficiencies are among those routes that the Diversion Analysis gets entirely wrong by substantially understating the diversions. Such errors span all service types and are common for merchandise, automotive, and bulk traffic. Diversions are also understated for intermodal traffic but to a lesser extent.

[8] App. Vol. 2, Page 403 (Initial Hunt/Schabas VS, page 95).

[9] App. Vol. 2, Page 403 (Initial Hunt/Schabas VS, page 95).

[10] App. Vol. 1, Page 24.

[11] App. Vol. 1, Page 24. The proposed merger could involve the removal of an interchange on a segment of a longer movement involving the Applicants and a third-party carrier (e.g., CN, UP, and NS).

[12] App. Vol. 1, Page 24.

14. The Diversions should accurately reflect the impacts of the new single line service and the anticipated traffic gains in each market. The Applicants' statistical model is based on a model of customer choice, and this model fails when analyzing customer choice for new routes that were not in use in 2023. The analysis of the pre-merger world is based on 2023 data (which is the base year for the traffic diversion study), and when I refer to the pre-merger world or pre-merger actual market shares or traffic, I am referring to the markets and traffic patterns as they existed in 2023. It is now 2026, and merger analysis forecasts market conditions years into the future. Diversions based on more recent data would be more reliable because they would reflect market and customer demand changes during more recent years. Nevertheless, the Initial Hunt/Schabas VS is based on data for 2023, and these are the data I discuss as reflecting the actual pre-merger world.

15. Thousands of UP/NS routes exist where, pre-merger, the merging parties have a zero percent market share and no rail traffic. But the model predicts, contrary to the actual world in 2023, that the Applicants have significant pre-merger market share on many of these routes. For example, the statistical model may predict a 50% pre-merger market share for a UP/NS route even though that route has a zero percent market share in the actual world of 2023. Such a prediction is untethered to market fundamentals and detached from economic reality.

16. As a consequence, by estimating significant UP/NS market shares for zero-traffic routes, the statistical model is forced to reduce predicted pre-merger market shares for actual routes in use in 2023 because the shares in a market must sum to one. This distorts the market shares for all market participants, separating them from market realities.

17. A simple illustration reveals the unreliability of the Diversions. Suppose the Diversion Analysis predicted a pre-merger market share of 45% for a UP/NS route that has no traffic in 2023. Also suppose that the statistical model predicts the post-merger UP-NS market share for the route to be nearly 100% due to the supposed efficiencies resulting from single line service. For such a route, nearly 100% of market traffic would have to be diverted from another railroad in the post-merger world because the UP/NS route had no traffic in 2023. However, the Applicants' Diversion Analysis treats the 45% predicted UP/NS pre-

merger market share as representing actual 2023 UP/NS market share pre-merger, even though that route had no traffic in the actual world of 2023. The balance of the market's traffic, according to the Applicants, is the difference between the predicted post-merger and predicted pre-merger market shares for the route. That traffic and only that traffic – representing 55% of the market – is the traffic treated as the diversion for that route in the Initial Application. In actuality, the diverted traffic should be closer to 100%. The Diversion Analysis's estimate of diverted traffic in this example substantially understates the real diversions in the market by counting the additional 45% post-merger growth for the merging parties as if it were pre-merger traffic for UP/NS, even though no such pre-merger traffic existed.

18. The Diversions are replete with examples like this. As explained in this Verified Statement, my review of the Diversion Analysis finds that there are over 15,000 routes for which UP/NS have no traffic in the pre-merger world, but for which the model predicts that Applicants' new service will attract diversions post-merger. A large proportion of the Applicants' estimated Diversions are sourced from these routes, so the impact of the methodological flaws on Applicants' overall Diversion Analysis is significant, both locally and on a systemwide basis. More than 90% of bulk and 60% of merchandise and automotive Diversions stem from these zero market share routes. The estimated diversion of traffic away from other carriers to the merged entity is substantially understated in these markets. This is because much of the real-world diversion in these markets is not treated as diverted traffic in the Diversion Analysis but rather is treated as UP/NS traffic pre-merger due to the Diversion Analysis's flawed methodology. The Applicants' diversion calculations can be adjusted or corrected to remove the effects large predicted pre-merger market shares have on the Diversions for routes with no actual 2023 traffic. This adjustment shows that the UP-NS diversions on these routes were understated by approximately 50%, or 215,000 carloads or units on a systemwide basis. Examples in this Verified Statement show that the impacts of the Applicants' understatement of diversions in individual markets can be substantial, and impact all traffic types – merchandise, bulk, automotive, and intermodal.

19. The methodological flaws in the Diversion Analysis are so significant that its results are economically meaningless and cannot be reconciled with the real world. As another example of meaningless results, the model generates phantom carloads diverted away from railroads or routes that have no market traffic in the first place. Railroads or routes with no market traffic have no carloads to lose. Even so, the Diversion Analysis estimates that some will have negative traffic post-merger (meaning carloads or units less than zero). These negative traffic volumes are mathematically needed to make the Diversion Analysis methodology work but are untethered from reality. A route with negative traffic volume would have a negative market share, a result that makes no economic sense. A model that produces such unrealistic results cannot possibly provide a sound basis from which to study the impacts of the proposed merger.

20. Nevertheless, the Diversions are fundamental to other components of the Application. For example, as part of their Operating Plan, Applicants submitted a Growth Plan which shows how the combined railroad will operate three years after integration and accounting for the new traffic or extended hauls (diversions) attracted to it due to the proposed merger's benefits resulting from their integrated rail network and operations.[13] The Growth Plan describes how the merged railroad will operate safely, efficiently, and reliably – and what new trains, blocks, yards, and infrastructure are required – if the merged railroad attracts the additional traffic forecasted by the Diversion Analysis. Because the Growth Plan needs to rely on accurate diversion estimates, unreliable diversion estimates lead to unreliable Growth Plan modeling. For example, underestimating the traffic diverted to the merged railroad could lead to underestimated train counts, inaccurate operating patterns, or insufficient resources to serve the merged railroad's post-merger traffic. As a result, the network realized post-merger and the merged railroad's demand may be misaligned with the proposed Operating Plan, posing the risk of future service issues. For bulk commodities that move in unit train service, this is especially important because additional diverted traffic involves additional trains on the merged network.

[13] App. Vol. 2, Page 515 (Joint Verified Statement of Eric Gehringer and John F. Orr (Dec. 17, 2025) ("Initial Gehringer/Orr VS")), page 16.

21. The environmental analysis, which evaluates how the proposed merger may affect the environment and communities, is based on the outputs of Applicants' Operating Plan. The environmental analysis depends directly on accurate rail traffic projections. Accurate baseline and growth (diversion and organic) estimates are vital to evaluating the environmental impacts of the proposed merger on individual subdivisions and communities. Skewed and understated diversion estimates could miss locations where the Board's environmental thresholds would otherwise be triggered. For example, underestimated diversions may not trigger reviews of subdivisions, corridors, or yards that should be subject to additional analysis.

22. Finally, regarding the competition analysis, traffic volumes affect both market shares and market concentration calculations. A railroad's traffic volumes also affect the service the railroad can offer along a corridor. The ability of the STB and other stakeholders to predict the demand for services for rival railroads depends on having accurate traffic volume and flow data. The STB highlighted the importance of having competitive analyses, including market share projections, that accurately reflect the Applicants' planned growth in its Decision rejecting the Initial Application due to its lack of completeness.[14] Diversion estimates feed into that analysis, and the Diversions can only reliably inform the competitive analysis if they are credible and derived from a reliable analytical methodology. The Applicants will need to reconcile the market share projections requested by the STB with the Diversion Analysis and the market shares reported in their Operating Plan in any forthcoming application. If the Applicants use the same flawed Diversion Analysis, it will preclude a reliable assessment of competitive impacts.

II. THE DIVERSIONS ARE FUNDAMENTALLY FLAWED AND UNRELIABLE

A. Introduction to the Diversion Analysis

23. The kind of merger analysis called for by the Board's major merger rules is inherently forward-looking because it involves predicting future effects. In this matter, these include

[14] Decision No. 9, pages 5-7.

the likely effects of the proposed merger on competition, the environment, and congestion, as well as plans to alleviate any congestion. Central to these considerations is an analysis of rail-to-rail diversion. The competitive, operational, and environmental impacts arising due to the proposed transaction cannot be assessed without a reliable prediction of expected future rail traffic levels and flows. Certain competitive impacts of the proposed merger will occur on a local basis (e.g., changes in the number and identity of the railroads that can serve specific customer locations). Accurate diversion estimates must be location-specific to ensure that the planned future operations of the combined railroad are "realistic and practical"[15] and the appropriate resources and investments are allocated where needed on the merged railroad's network. Environmental impacts are also local because they are based on (among other local factors) local congestion and traffic levels.

24. The Applicants have touted the benefits of combining a railroad operating in the western United States with an interconnecting railroad operating in the eastern United States, alleging that the combination will reduce shipping times by, for example, enabling movements with fewer interchanges.[16] The Applicants also propose adding new services, enabling single line service where previously only interline service was available.[17] The addition of new services or routes is the central justification for the proposed merger, and the way the addition of new services has been modeled in the Diversion Analysis has important implications for the findings of that analysis.

25. The Applicants' Diversion Analysis is based on a study of the movement of cargo between an origin and a destination (each pair a specific "market"), with separate markets defined for four service types: merchandise, intermodal, bulk, and automotive.[18] A diversion in a

[15] App. Vol. 2, Page 516 (Initial Gehringer/Orr VS, page 17).

[16] *See*, *e.g.*, App. Vol. 1, Page 169 (Verified Statement of V. James Vena (CEO at UP) ("Initial Vena VS"), page 11); App. Vol. 1, Pages 188-89 (Verified Statement of Mark R. George (Chairman, President, and CEO at NS) ("Initial George VS"), pages 1-2); and App. Vol. 1, Page 225 (Joint Verified Statement of Kenny Rocker (Executive Vice President, Marketing & Sales at UP) and Claude E. "Ed" Elkins (Executive Vice President and Chief Commercial Officer at NS) ("Initial Rocker/Elkins VS"), page 6).

[17] *See*, *e.g.*, App. Vol. 1, Page 171 (Initial Vena VS, page 13); App. Vol. 1, Page 205 (Initial George VS, page 18; and App. Vol. 1, Page 225 (Initial Rocker/Elkins VS, page 6).

[18] App. Vol. 2, Pages 392-93 (Initial Hunt/Schabas VS, Appendix A.4., pages 84-85).

market can involve new UP-NS service (e.g., traffic on a BNSF-CSX route diverting to a UP-NS route) or extended UP-NS service (e.g., traffic on a UP-CN route diverting to a UP-NS route). The Diversions are derived from a statistical model used to estimate both pre-merger and post-merger market shares for each actual or supposed *potential* provider of the movement being studied. This statistical model used to estimate market shares is known as a logit model. It considers a choice – the customer must select a route from among two or more options – and attempts to predict how shippers will choose among routes by estimating the probabilities that a customer will choose a specific route with a specific rail line or combination of rail lines.[19] Customer selections are assumed to vary based on two route characteristics (or explanatory variables): route impedance [20] and junction frequency.[21] When I use the term "impedance", I generally refer to both explanatory variables.[22] The probabilities estimated by the statistical model are interpreted as market shares.

26. The methodology – including any statistical model – adopted to study rail-to-rail diversion should capture the scope and effects of the proposed transaction it seeks to analyze while grounding the analysis in relevant market and industry facts. I describe the statistical model and other approaches for analyzing rail-to-rail diversion, and the importance of a model's

[19] The logit model is applied to markets with only one route too, but the pre-merger and post-merger market shares are the same (100%), and there are no diversions in such markets.

[20] Total route impedance is defined as "rail miles plus a miles-equivalent for the impact of each interline junction (interchange) on a route. The miles-equivalent for a junction is set based on the quantity of traffic that passes through the junction, varying between 90 miles (for intermodal run-through lanes) and 650 miles (for low-volume interchanges). This reflects the additional time and complexity cost for an interline handling." App. Vol. 2, Page 359 (Initial Hunt/Schabas VS, page 51). *See also*, App. Vol. 2, Pages 397-98 (Initial Hunt/Schabas VS, Appendix A.6.4., pages 89-90).

[21] Junction frequency refers to the number of interchanges a rail route contains. This is characterized as reflecting "the opportunity to use more efficient physical routings due to the merger and the elimination of interchange complexity between the merging railroads." App. Vol. 2, Page 359 (Initial Hunt/Schabas VS, page 51).

[22] The Initial Hunt/Schabas VS maintains that "[t]hese two measurable characteristics serve as practical proxies for the underlying factors that drive shipper preferences on price, reliability, and transit time." App. Vol. 2, Page 327 (Initial Hunt/Schabas VS, page 19). As I explain in this Verified Statement, the statistical model used in the Diversion Analysis – which relies on indexed versions of these two explanatory variables – is not sufficient for modeling competition between historical routes and "feasible" routes.

fit to analyze a particular transaction, in greater detail in **Attachment B**, and I provide summary information about the data used to estimate the model in **Attachment C**.

27. Given the number of carloads or units shipped in a market, the estimated market shares allow for the calculation of the estimated numbers of carloads or units moved by each actual or *potential* route both before and after the proposed merger.[23] In short, the statistical model assigns positive market share and traffic levels in the pre-merger world to routes that actually and *potentially* serve that market pre-merger. Thus, even if a potential route has no actual sales, market share, or traffic in the market pre-merger, the statistical model assigns it a positive pre-merger predicted market share anyway, and this market share can be large. The positive predicted pre-merger market share generates a positive predicted pre-merger level of traffic for the potential route in that market, and in some instances, that traffic can amount to half of the total traffic in the market – or more.

28. The Initial Hunt/Schabas VS describes how diversions are calculated in the Diversion Analysis, stating:

> [T]he rail-to-rail diversion opportunity is sized by comparing the routes that UP-NS participate in pre-merger and post-merger. The model vs. model difference between the two is the forecast diversions for the route. This is irrespective of the existing market share that UP-NS already hold.[24]

In particular, the diverted market share for a UP/NS route due to the proposed merger is the statistical model's estimated post-merger market share minus the statistical model's estimated pre-merger market share. As explained in the Initial Hunt/Schabas VS, this calculation is not dependent on the actual market share held by the UP/NS route pre-merger. Diverted traffic is calculated as the difference in predicted post- and pre-merger market shares times the total number of carloads or units in the market.

[23] A railroad may participate in multiple routes serving a market. In such a case, the railroad's market share would reflect the traffic it services across all the market routes in which it participates.

[24] App. Vol. 2, Page 405 (Initial Hunt/Schabas VS, page 97).

29. There are two types of routes in the model: those that were actively used in 2023 and those that could have been used but were not actually used in 2023. Pre-merger, the merging parties actively serviced certain routes that involved either or both merging parties according to 2023 traffic data.[25] These routes had actual, non-zero market shares in 2023. Other railroads also actively serviced routes with 2023 traffic data. These are the actively used routes in the analysis. Other UP/NS routes or third-party railroad routes may not have been used to service any customers as detailed in the 2023 traffic data but rather were only "feasible" (i.e., potential, but not actual) routes, according to Switching Carrier/Reciprocal Switching ("SCRS") data. There are no 2023 traffic volume data for these routes.[26, 27] The Diversion Analysis *assume*d all such routes could have been used. Merger effects are modeled as a change in route characteristics. For example, a reduction in junction frequency on a route could result in the merged railroad's route becoming more attractive to customers relative to alternatives in the market, leading to increased sales, market share, and traffic post-merger. Routes modeled as part of the pre-merger market but that have no pre-merger market share or traffic play an important role in the Diversion Analysis.

B. The Diversion Analysis Inaccurately Estimates Market Shares for Zero Traffic Routes, and the Resulting Diversions Are Economically Meaningless

30. The methodology employed in the Diversion Analysis is altogether unreliable for estimating diversions relating to the proposed merger of UP and NS. A key shortcoming of the methodology is that the statistical model predicts pre-merger market shares that are divorced from reality. This shortcoming is recognized in the Initial Hunt/Schabas VS,[28] yet the Diversion Analysis employs inaccurate pre-merger predictions when calculating

[25] App. Vol. 2, Pages 388-90 (Initial Hunt/Schabas VS, Appendix A.2., pages 80-82 (describing the 2023 rail traffic data used in the Diversion Analysis)).

[26] App. Vol. 2, Pages 393-95 (Initial Hunt/Schabas VS, Appendix A.5., pages 85-87).

[27] The Diversion Analysis uses a screen to identify what may be competitive feasible routes. App. Vol. 2, Pages 393-94 (Initial Hunt/Schabas VS, pages 85-86).

[28] "We assume that some of the difference between model[ed] pre-merger predictions and the historical traffic reflects commercial agreements, SCRS industry access, and other factors that are not captured in the model." App. Vol. 2, Page 405 (Initial Hunt/Schabas VS, page 97).

Diversions anyway.[29] The large differences in predicted pre-merger market shares and actual market shares are, in large part, driven by the prevalence and importance of routes on which UP and NS have no traffic pre-merger, but from which the Applicants anticipate substantial gains in traffic due to the proposed merger (i.e., through providing new single line service). The Diversion analysis fails to produce reliable results for these routes, which are fundamental to the analysis of Diversions because the merging parties assert that the benefits of combining their eastern and western U.S. rail networks will be derived from growth achieved in routes like these.

31. I refer to routes involving UP, NS, or both with no actual 2023 traffic pre-merger as "UP/NS Zero Traffic Routes." All such routes are assigned some positive predicted pre-merger market share by the statistical model. If a UP/NS Zero Traffic Route involves UP and NS interchanging with each other, I refer to the route as an "UP/NS Zero Traffic Interline Route." UP/NS Zero Traffic Interline Routes are of interest because they are all modeled as transitioning to single line service post-merger.[30]

32. The treatment of UP/NS Zero Traffic Routes in the analysis leads to large inaccuracies in the Diversion Analysis. The statistical model treats zero traffic routes as options available to customers and predicts positive market share for these routes both pre- and post-merger. The extent to which market share is assigned to a route with zero traffic depends on the route's characteristics relative to those of the other routes in the market. In some cases, the characteristics as modeled in the Diversion Analysis are so favorable for the UP/NS Zero Traffic Route that the statistical model assigns a pre-merger market share of 25%, 50%, or more, even though the actual market share is zero. These pre-merger predictions do not

[29] The Initial Hunt/Schabas VS suggests that the statistical model's inaccuracy is acceptable because certain factors omitted from the model "would continue to exist [post-merger]." App. Vol. 2, Page 405 (Initial Hunt/Schabas VS, page 97). As explained in this Verified Statement in **Section III.A** and **Attachment F**, this is a strong simplifying assumption that fails and inserts bias into the statistical model and Diversion Analysis predictions. This bias results in understated Diversions.

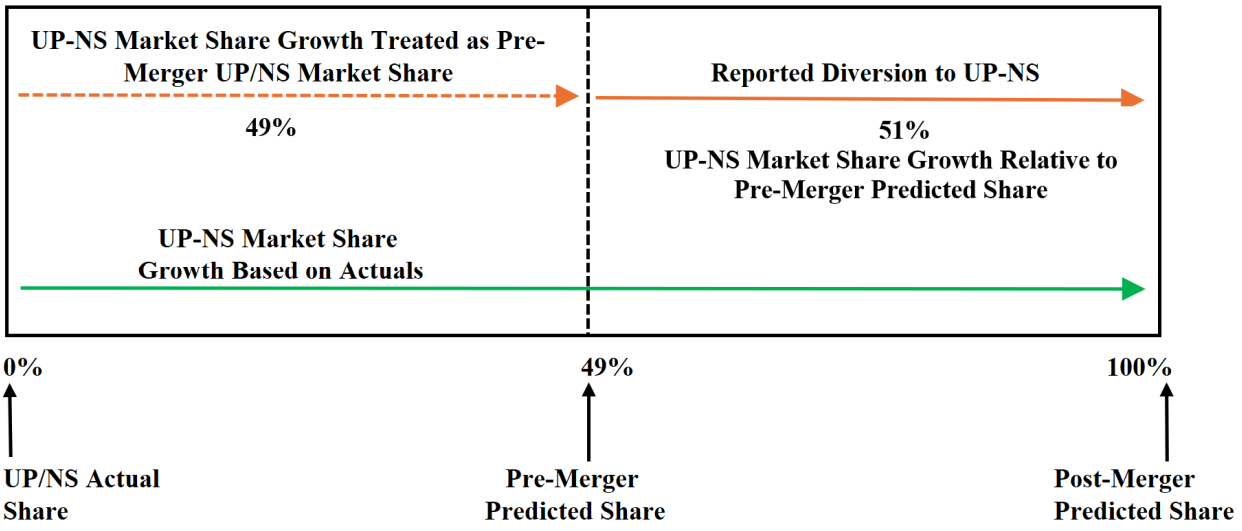
[30] A route that involves only UP and NS transitions to single line service post-merger. A more complicated movement may involve an interchange with other carriers as well. For such a route, the UP/NS segment would transition to single line service for that segment.

reflect the marketplace and are economically meaningless. Treating zero traffic routes like actively utilized routes is an important specification error in the Diversion Analysis.

33. Suppose a UP/NS Zero Traffic Route has favorable characteristics and is predicted by the statistical model to serve half of the market. For ease of exposition, suppose its predicted pre-merger market share is 49%. By reducing junction frequency or otherwise reducing route impedance, the proposed merger would make the UP-NS single line service more attractive, increasing its market share relative to its pre-merger prediction. Though the model will assign some market share to all within-market routes, these assigned market shares may be small. For ease of exposition, suppose the predicted post-merger market share for the UP-NS route is 100%. The UP/NS route had no actual market traffic pre-merger, and the associated UP-NS route serves all the market's traffic post-merger. That traffic had to come from other routes or railroads, and the merged railroad's diversion of other market traffic to itself would be 100% of the market.

34. That is not what the Diversion Analysis would calculate as diversion to the UP-NS route, however. Instead, it would calculate diversion as the difference between the post-merger predicted market share and the predicted pre-merger market share, which is 100% - 49%, or 51%. In essence, the diversion calculation removes the predicted pre-merger market share from the diversion estimate. The predicted pre-merger traffic is treated as if it is UP/NS traffic pre-merger, even though as a UP/NS Zero Traffic Route, it has no actual traffic. The removal of pre-merger predicted market share and traffic from the diversion estimate places an artificial cap on the amount of diversion found by the Diversion Analysis. This example is shown in **Figure 1**. In this figure, the removal of the 49% pre-merger predicted market share caps the estimated diversion at 51% of the market.

Figure 1
UP and NS Diversions from UP/NS Zero Traffic Routes are Capped by Inaccurate Pre-Merger Market Share Predictions



35. The net effect of including zero-share options in the model is to allocate market share to alternatives that are never chosen in the pre-merger world, which in turn reduces the predicted pre-merger shares of actual, real-world alternatives. This problem distorts market shares in all markets with zero traffic routes, not just markets with UP/NS Zero Traffic Routes. Furthermore, because the statistical model's explanatory variables (indexed route impedance and indexed junction frequency)[31] are calibrated for each service type using the zero traffic routes (in addition to historic routes with actual volume in 2023), these calibrations are distorted. This adversely affects the calibration and fit of the statistical model, degrading its predictions across all markets, not just across those with routes that have zero market shares pre-merger. The use of predicted pre-merger market shares when calculating diversions would not be problematic if the statistical model predicted pre-merger market shares accurately. It does not do so, however.

[31] In the statistical model, instead of using "the absolute values of total route impedance and junction frequency," the values are indexed to a market-specific minimum. App. Vol. 2, Page 400 (Initial Hunt/Schabas VS, page 92).

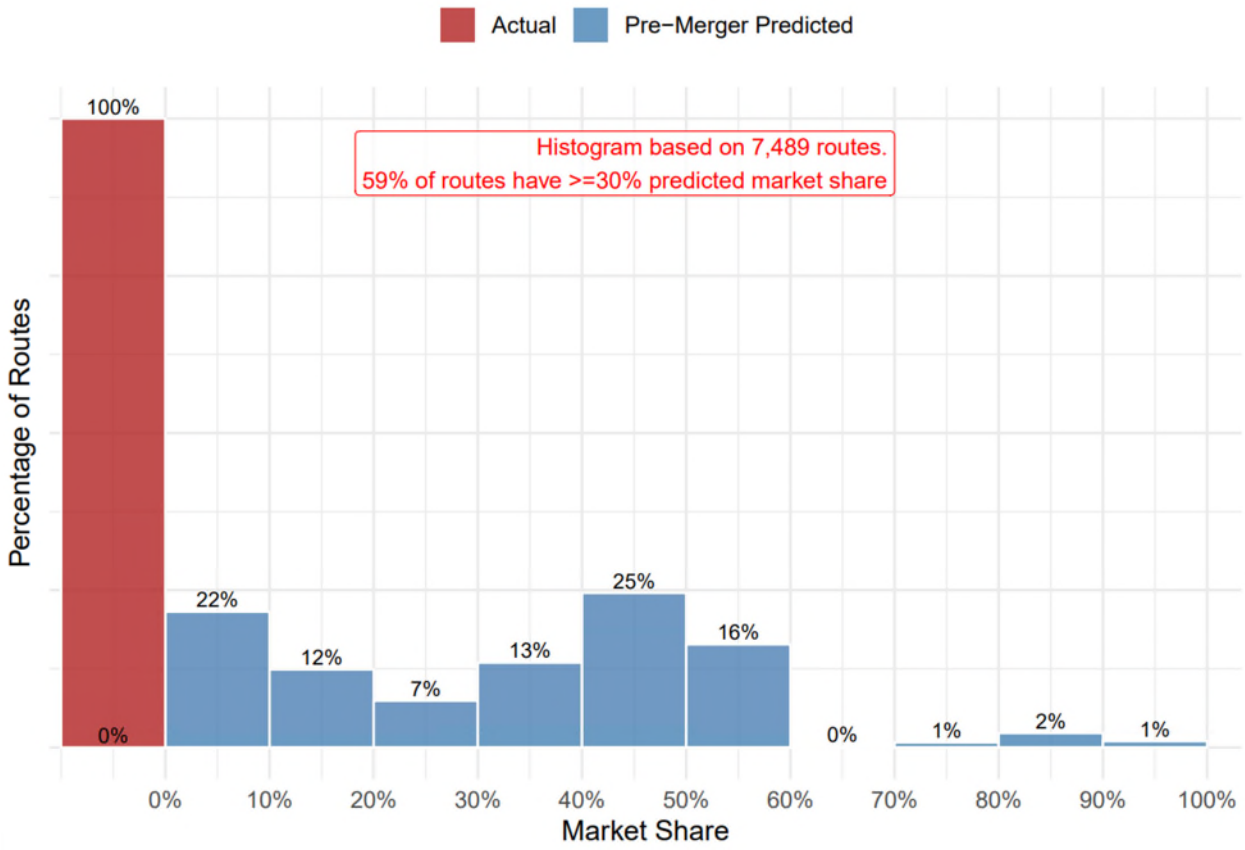
C. High Predicted Pre-Merger Estimated Market Shares for UP/NS Zero Traffic Routes are Common

36. Even though neither UP nor NS had any actual pre-merger traffic on UP/NS Zero Traffic Routes, the statistical model regularly predicts significant pre-merger market shares for them on these routes. This is demonstrated for merchandise traffic by the histogram provided in **Figure 2**. This histogram shows the distribution of the predicted pre-merger market shares for UP/NS Zero Traffic Interline Routes, each of which has an actual zero market share.[32] UP/NS Zero Traffic Interline Routes are a subset of all UP/NS Zero Traffic Routes, and all these interline routes are modeled as transitioning to single line service post-merger. **Figure 2** summarizes information on a total of 7,489 routes. The pale red histogram bar has 100% of the weight on the 0% market share category or bucket because as UP/NS Zero Traffic Interline Routes, all 7,489 routes summarized by that bar have a 0% pre-merger market share in the actual world.[33] The pale blue bars provide the distribution of the predicted pre-merger market shares broken into 10-percentage point buckets. Though the statistical model will predict positive market shares for all routes, these market shares can be near zero. While there may be some market share predictions near zero in the first bucket on the left (0% – 10%), the remaining predicted pre-merger market shares are all substantially greater than zero.

[32] A histogram shows the distribution of data by counting how many observations fall within specified ranges (or buckets) of values.

[33] For visual clarity, the red histogram bar depicting routes with zero actual pre-merger market share is forced to be plotted next to the blue histogram bar depicting the statistical model's pre-merger market share predictions. The result is the red histogram bar appearing on the x-axis to the left of zero percent market share when, in actuality, all the weight in the red histogram bar is concentrated at zero percent. All the weight in the blue histogram bars is above zero. This format is applied to all histograms plotting zero percent actual world pre-merger market shares in this Verified Statement.

Figure 2
Distribution of Predicted Pre-Merger Market Shares
for UP/NS Zero Traffic Interline Routes
Merchandise Traffic



Source: Initial Hunt/Schabas VS workpaper, "vFinal_MerchBulk_vShare_diversions_all.csv."

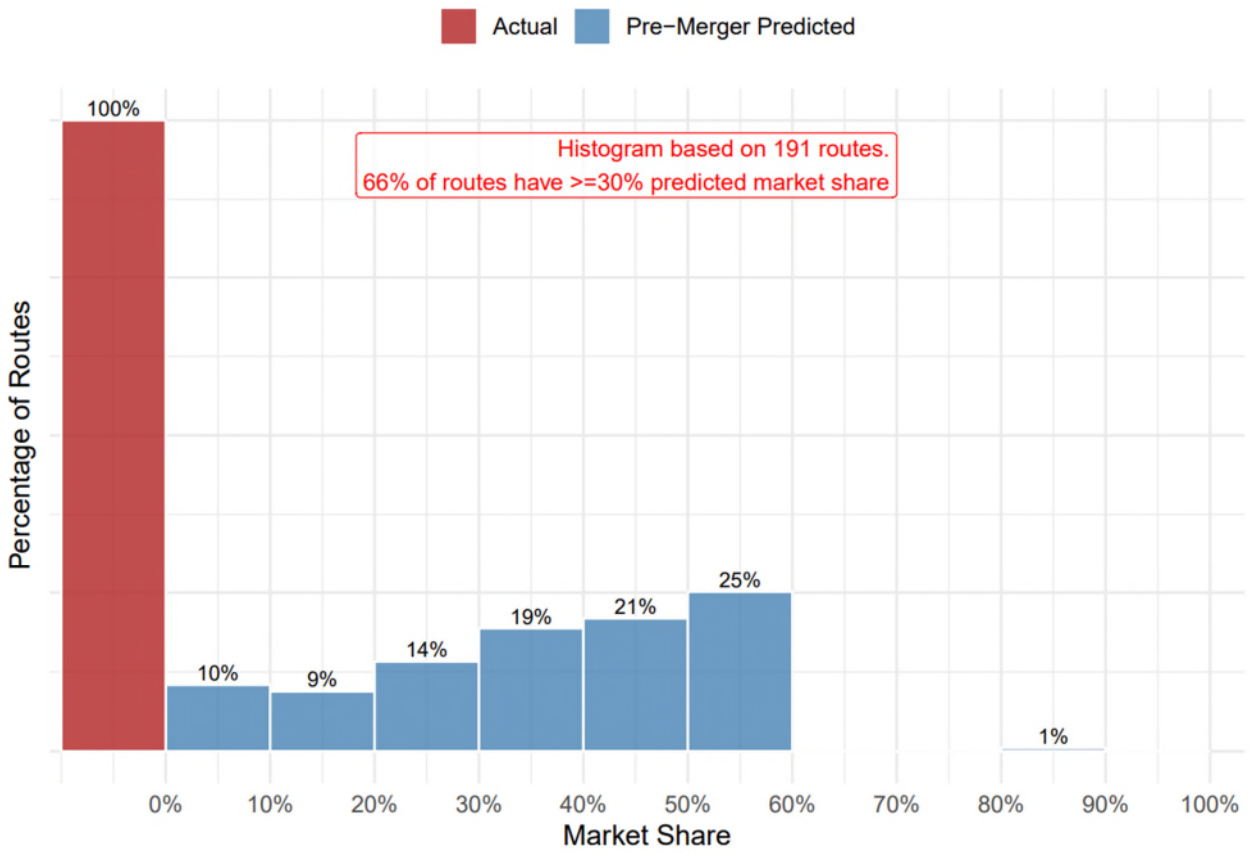
37. The predicted pre-merger market shares are not clustered near zero but rather are spread throughout a broader range with the weight of the distribution shifting or skewing away from zero and toward the middle. Some predicted market shares are over 50%, and some are even over 80%. This means some of the statistical models' predictions are wrong by more than 50 or even 80 percentage points.

38. **Figure 3** – **Figure 5** provide histograms like those in **Figure 2** but are for automotive, bulk, and intermodal traffic.[34] Though the 2023 actual market

[34] The Diversion Analysis defines markets for intermodal and automotive traffic in a different manner than that for merchandise and bulk traffic. I discuss this in greater detail in footnote 42.

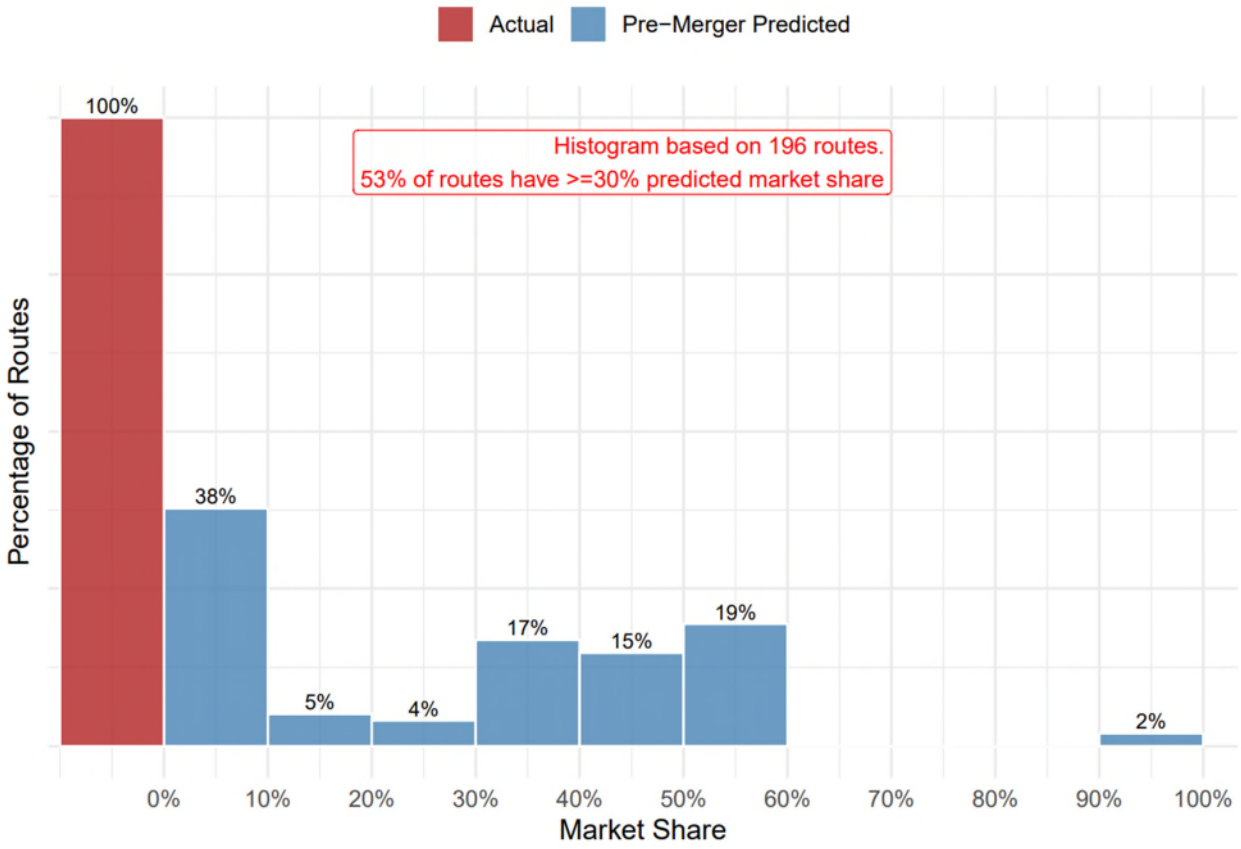
shares for the routes detailed in these Figures are all zero, the predicted shares are not clustered near zero (nor ever predicted to be zero) for any of these traffic types but rather are spread throughout a broader range, generally with weight being skewed towards the middle of the distributions.

Figure 3
Distribution of Predicted Pre-Merger Market Shares
for UP/NS Zero Traffic Interline Routes
Automotive Traffic



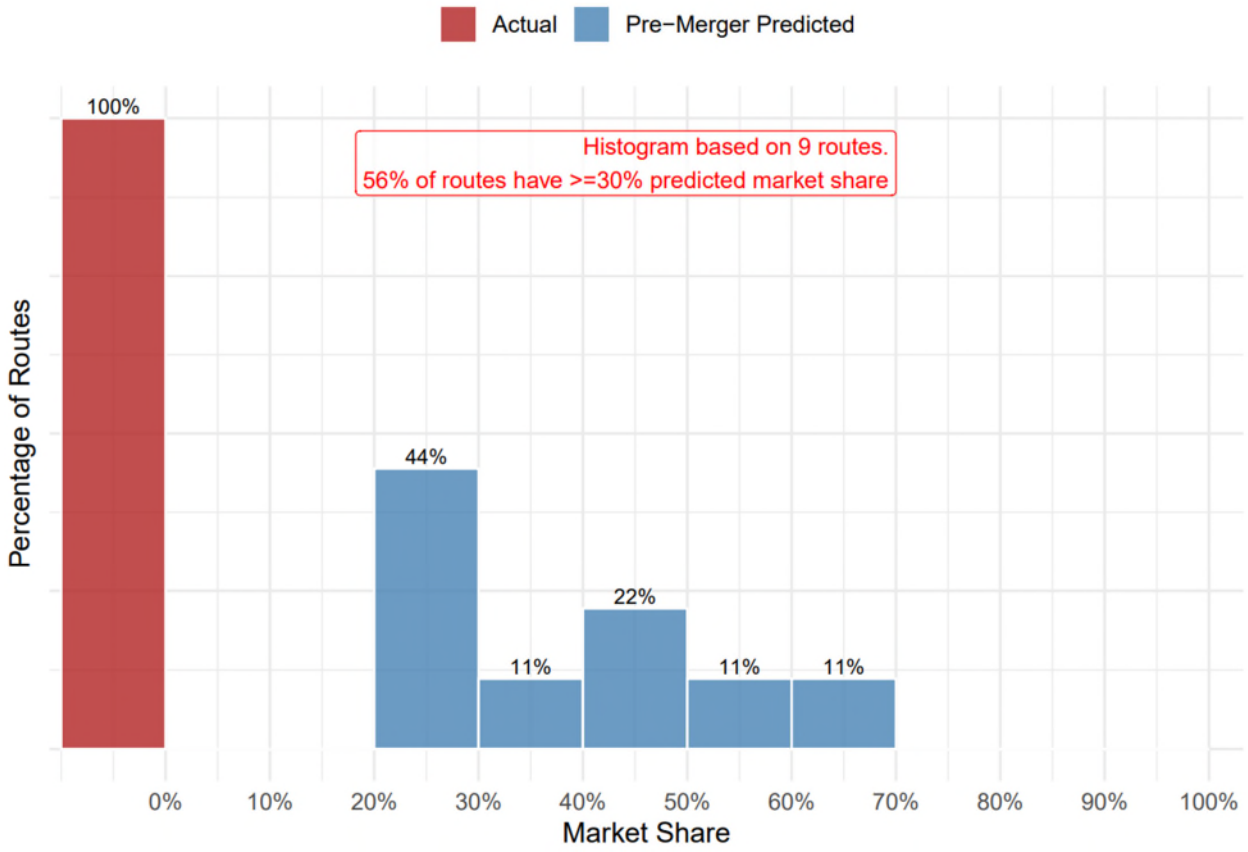
Source: Initial Hunt/Schabas VS workpapers, "vFinal_AutovShare.csv" and "vFinal_auto_diversions_removed.csv."

Figure 4
Distribution of Predicted Pre-Merger Market Shares
for UP/NS Zero Traffic Interline Routes
Bulk Traffic



Source: Initial Hunt/Schabas VS workpaper, "vFinal_MerchBulk_vShare_diversions_all.csv."

Figure 5
Distribution of Predicted Pre-Merger Market Shares
for UP/NS Zero Traffic Interline Routes
Intermodal Traffic



Source: Initial Hunt/Schabas VS workpaper, "Intermodal R2R - highly confidential.xlsx."

39. **Table 1** summarizes the pre-merger market share predictions generated by the Diversion Analysis for UP/NS Zero Traffic Interline Routes. It provides the 25th, 50th, 75th, and 90th percentile values of the predicted pre-merger market shares for UP/NS Zero Traffic Interline Routes. The 75th percentile value for the predicted pre-merger merchandise service type is 49.5%, meaning that 75% of the pre-merger predicted merchandise service market shares are less than or equal to 49.5% while 25% are above 49.5%. **Table 1** shows that there is substantial weight on relatively high predicted pre-merger market share values for UP/NS Zero Traffic Interline Routes. For merchandise routes, half of the predicted pre-merger market shares for UP/NS Zero Traffic Interline Routes are above 33.8%, and 10%

of the predicted pre-merger market shares are above 51.2%. For automotive routes, one quarter have predicted pre-merger market shares that are greater than 50%.

Table 1
Percentile Distribution of the Diversion Analysis's Pre-Merger Predicted Market Shares for UP/NS Zero Traffic Interline Routes by Service Type

Service Type	Routes	Model Share 25th Percentile	Model Share Median	Model Share 75th Percentile	Model Share 90th Percentile
Merchandise	7,489	11.9%	33.8%	49.5%	51.2%
Automotive	191	25.0%	33.3%	50.0%	50.0%
Bulk	196	0.5%	32.2%	49.4%	51.0%
Intermodal	9	27.9%	33.5%	43.7%	60.4%

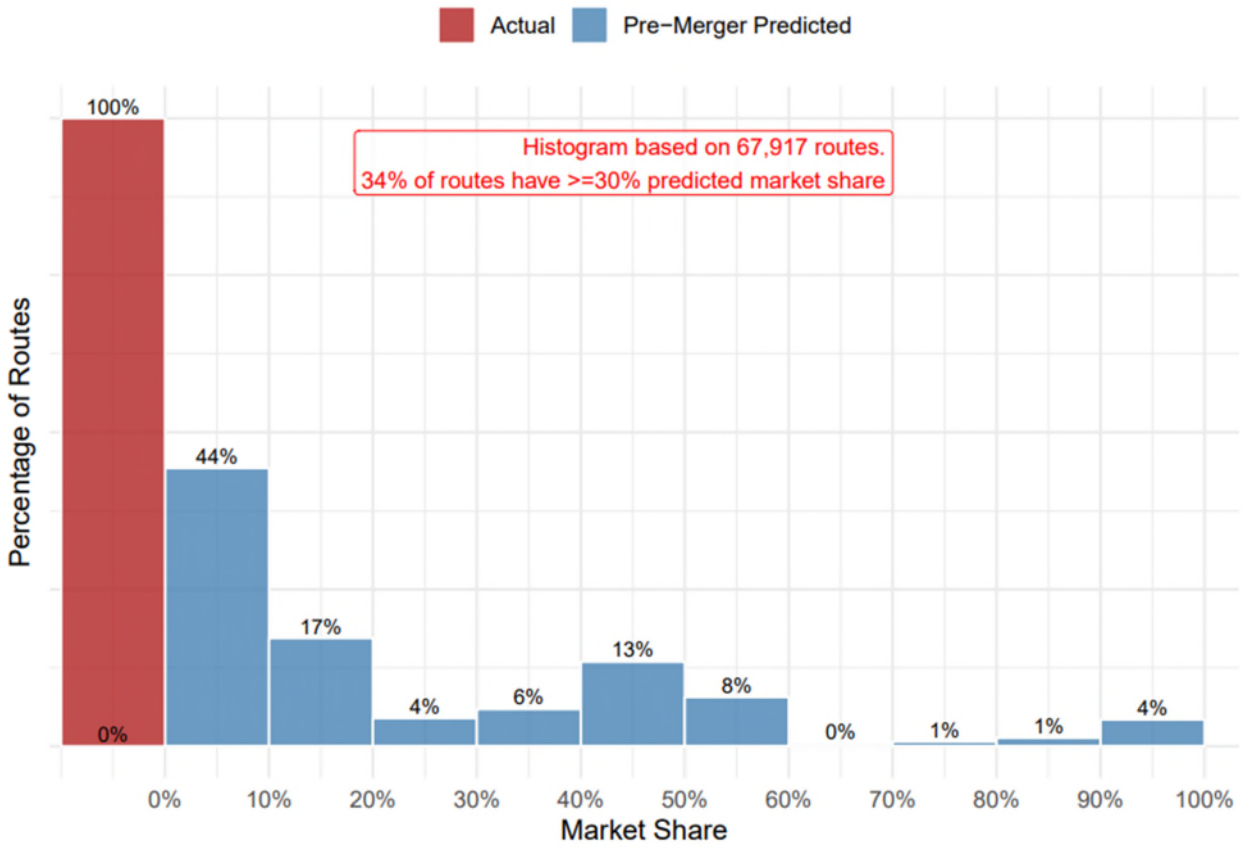
Sources:
[1] Initial Hunt/Schabas VS workpapers, vFinal_MerchBulk_vShare_diversions_all.csv; vFinal_AutovShare.csv; Intermodal R2R - highly confidential.xlsx; and vFinal_auto_diversions_removed.csv.

40. Overall, there are over 7,500 UP/NS Zero Traffic Interline Routes and most have large differences between their actual 2023 zero percent pre-merger market share and their predicted pre-merger market share. These differences between the pre-merger actual market shares and pre-merger predicted market shares are the source of significant diversion understatements. In other words, when a route's post-merger predicted market share is greater than the pre-merger predicted market share, the diversion calculation removes the pre-merger predicted market share from the diversion estimated. This results in the Diversion Analysis counting post-merger growth from diversions as pre-merger traffic.

41. Broadening the set of zero traffic routes considered to include additional routes eligible for diversion (pre-merger Applicant single line options and pre-merger Applicant interline options involving other carriers) further emphasizes that overstated pre-merger market share predictions are commonplace in the Diversion Analysis. **Figure 6** – **Figure 8** provide histograms that show the distribution of the predicted pre-merger market shares for all UP/NS Zero Traffic Routes. **Figure 6** – **Figure 8** mirror **Figure 2** – **Figure 5** but are based on all UP/NS Zero Traffic Routes, rather than just UP/NS Zero Traffic Interline Routes. For merchandise traffic, for example, the number of routes

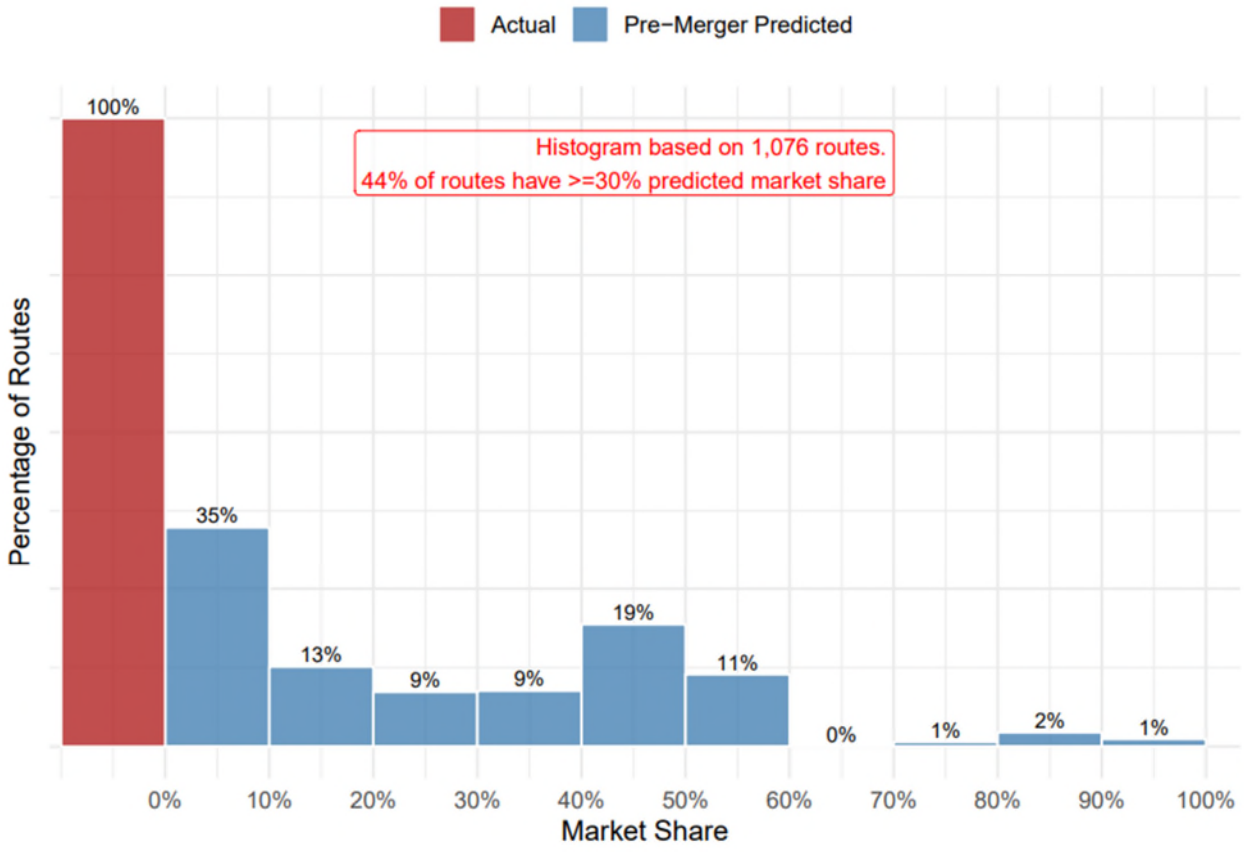
detailed in the analysis jumps from 7,489 routes to 67,917 routes. Similarly, the routes included in the analysis increase from 191 to 1,076 for automotive traffic, 196 to 2,587 for bulk traffic, and 9 to 27 for intermodal traffic.

Figure 6
Distribution of Predicted Pre-Merger Market Shares for All UP/NS Zero Traffic Routes
Merchandise Traffic



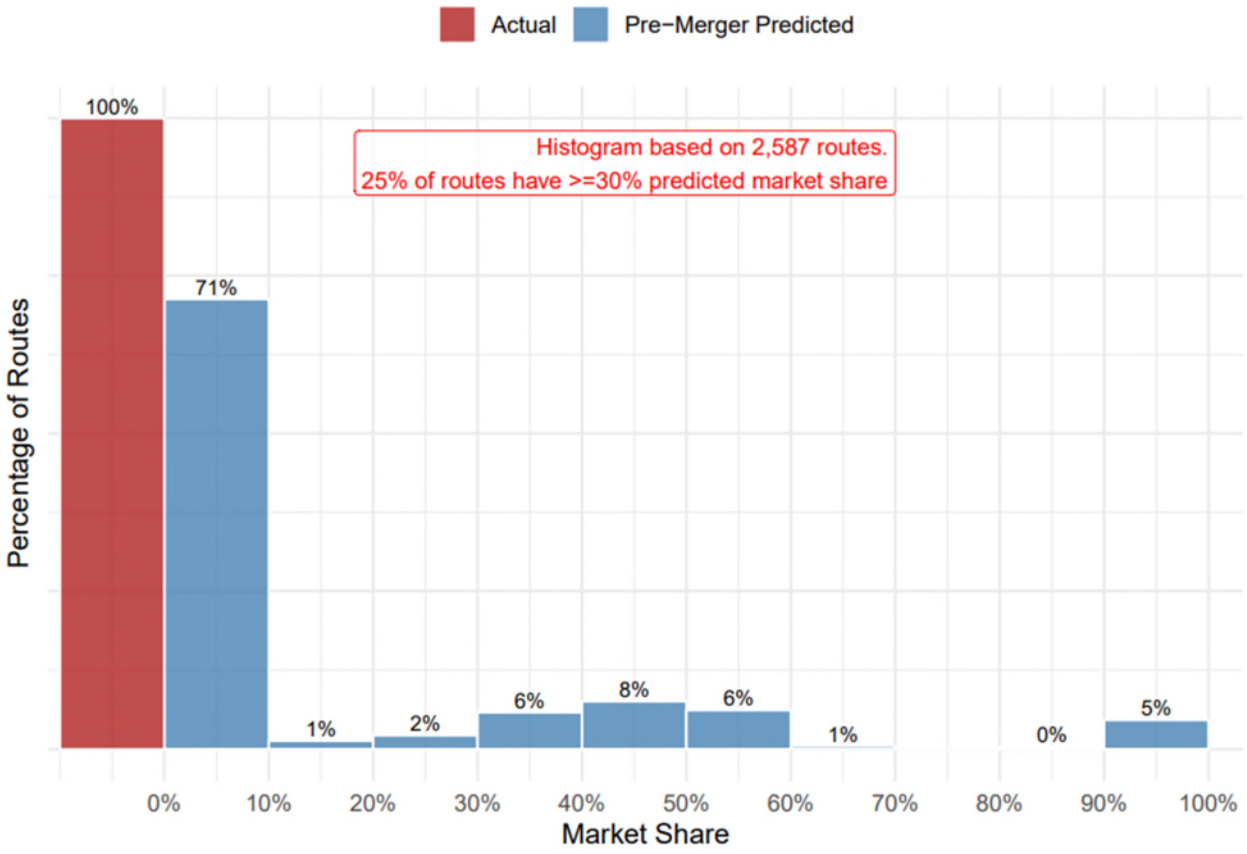
Source: Initial Hunt/Schabas VS workpaper, "vFinal_MerchBulk_vShare_diversions_all.csv."

Figure 7a
Distribution of Predicted Pre-Merger Market Shares for All UP/NS Zero Traffic Routes
Automotive Traffic



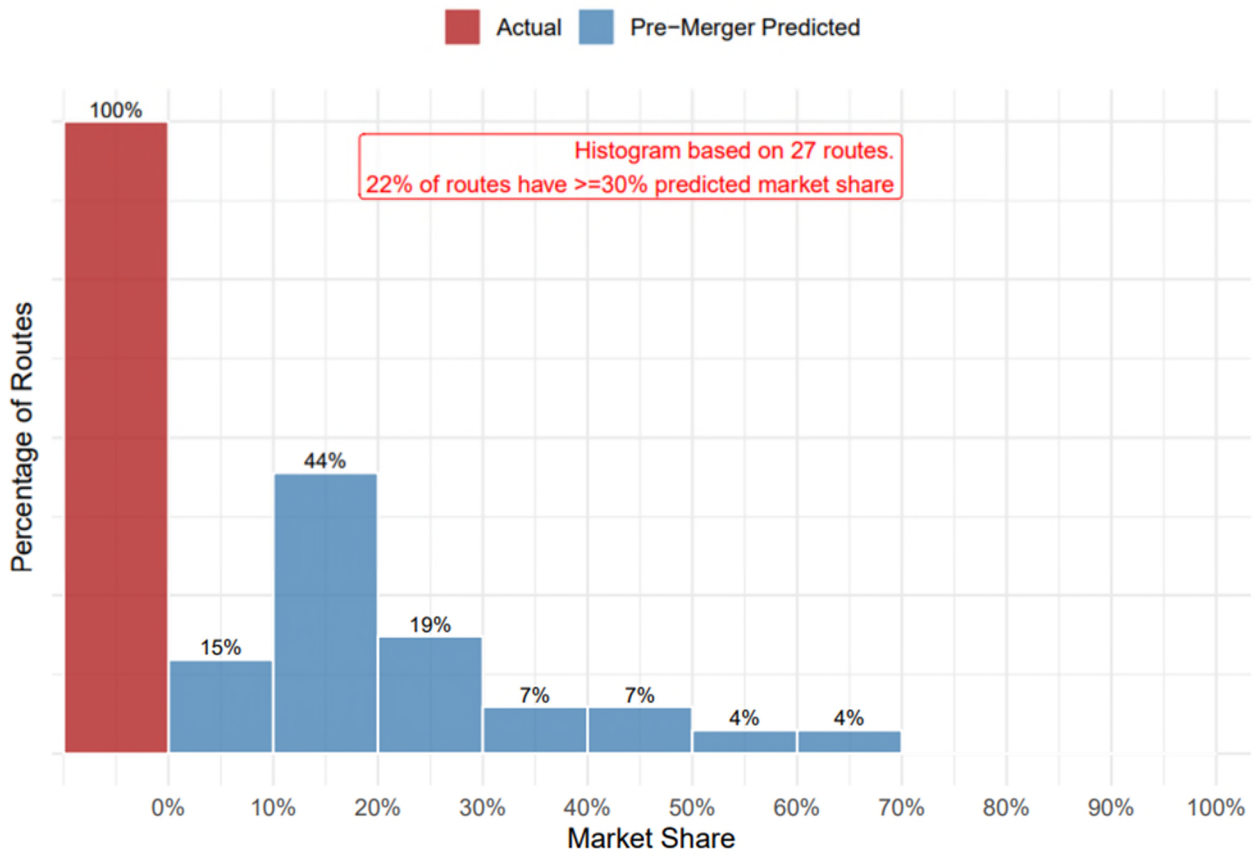
Source: Initial Hunt/Schabas VS workpapers, "vFinal_AutovShare.csv" and "vFinal_auto_diversions_removed.csv."

Figure 7b
Distribution of Predicted Pre-Merger Market Shares for
All UP/NS Zero Traffic Routes
Bulk Traffic



Source: Initial Hunt/Schabas VS workpaper, "vFinal_MerchBulk_vShare_diversions_all.csv."

Figure 8
Distribution of Predicted Pre-Merger Market Shares for All UP/NS Zero Traffic Routes
Intermodal Traffic



Source: Initial Hunt/Schabas VS workpaper, "Intermodal R2R - highly confidential.xlsx."

42. Though the actual market shares for the routes detailed in **Figure 6** – **Figure 8** are all zero, the predicted shares are not clustered near zero (nor ever predicted to be zero) but rather are spread throughout a broader range, generally with weight skewing toward the middle of the distribution and even with some market shares greater than 60% or even 80%.

43. **Table 2** summarizes the pre-merger market share predictions generated by the Diversion Analysis for all UP/NS Zero Traffic Routes. It shows substantial weight on high values in the distributions of predicted pre-merger market shares for UP/NS Zero Traffic Routes. For merchandise routes, half of the predicted pre-merger market shares for UP/NS Zero Traffic Routes are above 12.1%, one quarter of the predicted pre-merger market shares are above

44.2%, and 10% of the predicted pre-merger market shares are above 51.9%. For automotive traffic, one quarter of the predicted pre-merger market shares are greater than 50%, and for bulk traffic, one quarter of the predicted market shares are above 30.1%, and 10% of these market shares are above 51.1%.

Table 2
Percentile Distribution of the Diversion Analysis's Pre-Merger Predicted Market Shares for UP/NS Zero Traffic Routes by Service Type

Service Type	Routes	Model Share 25th Percentile	Model Share Median	Model Share 75th Percentile	Model Share 90th Percentile
Merchandise	67,917	3.8%	12.1%	44.2%	51.9%
Automotive	1,076	7.9%	25.0%	50.0%	50.0%
Bulk	2,587	0.1%	3.4%	30.1%	51.1%
Intermodal	27	12.8%	16.7%	28.4%	42.0%

Sources:
[1] Initial Hunt/Schabas VS workpapers, vFinal_MerchBulk_vShare_diversions_all.csv; vFinal_AutovShare.csv; Intermodal R2R - highly confidential.xlsx; and vFinal_auto_diversions_removed.csv.

D. The Statistical Model Does a Poor Job Predicting Actual 2023 Market Shares

44. Some statistical models do a good job predicting observed (or actual) data, but some do not. The statistical model used in the Diversion Analysis uses observed data (including both historical routes with traffic and "feasible" routes without traffic in 2023) to predict the post-merger future. The statistical model's performance can be assessed in two phases, both of which incorporate zero traffic routes: its calibration phase[35] and its execution phase.[36] In neither phase does the statistical model predict actual 2023 market shares

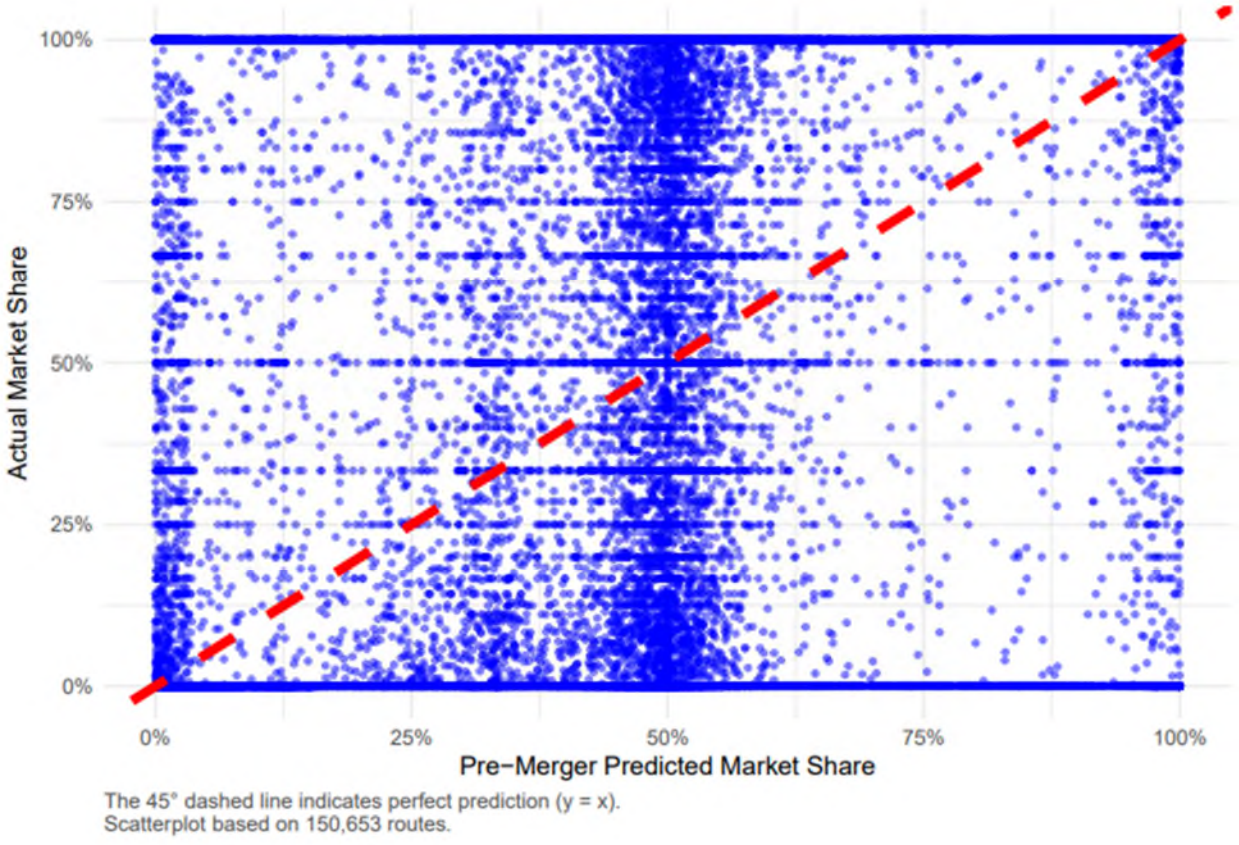
[35] The statistical model's calibration phase involves using the CCWS and feasible routes without historical traffic to estimate coefficients, for indexed route impedance and junction frequency, that minimize the sum of squares between predicted market shares and actual market shares. App. Vol. 2, Pages 393-95, 399-403 (Initial Hunt/Schabas VS, Appendix A.5., A.7.2., pages 85-87, 91-95). The Initial Hunt/Schabas VS states that "[t]he [statistical] model is calibrated using historical data to ensure that predicted choices reflect the way shippers have actually responded to cost, reliability, and transit time differences in real markets." App. Vol. 2, Page 327 (Initial Hunt/Schabas VS, page 19).

[36] The execution phase involves applying the indexed route impedance and junction frequency coefficients estimated in the calibration phase to the pre-merger and post-merger routes developed for the Diversion Analysis. App. Vol. 2, Pages 403-04 (Initial Hunt/Schabas VS, Appendix A.7.3., pages 95-96).

accurately. There is no reason to think that any model will do a good job predicting future market conduct if it does a poor job predicting observed historical market conduct.

45. **Figure 9** presents a comparison of 2023 actual and predicted market shares resulting from the statistical model's calibration phase, limited to the merchandise service type. The calibration phase generates the indexed route impedance and junction frequency coefficients used in the execution phase. Actual pre-merger market shares are indicated along the vertical axis of **Figure 9** while predicted pre-merger market shares are indicated along the horizontal axis.

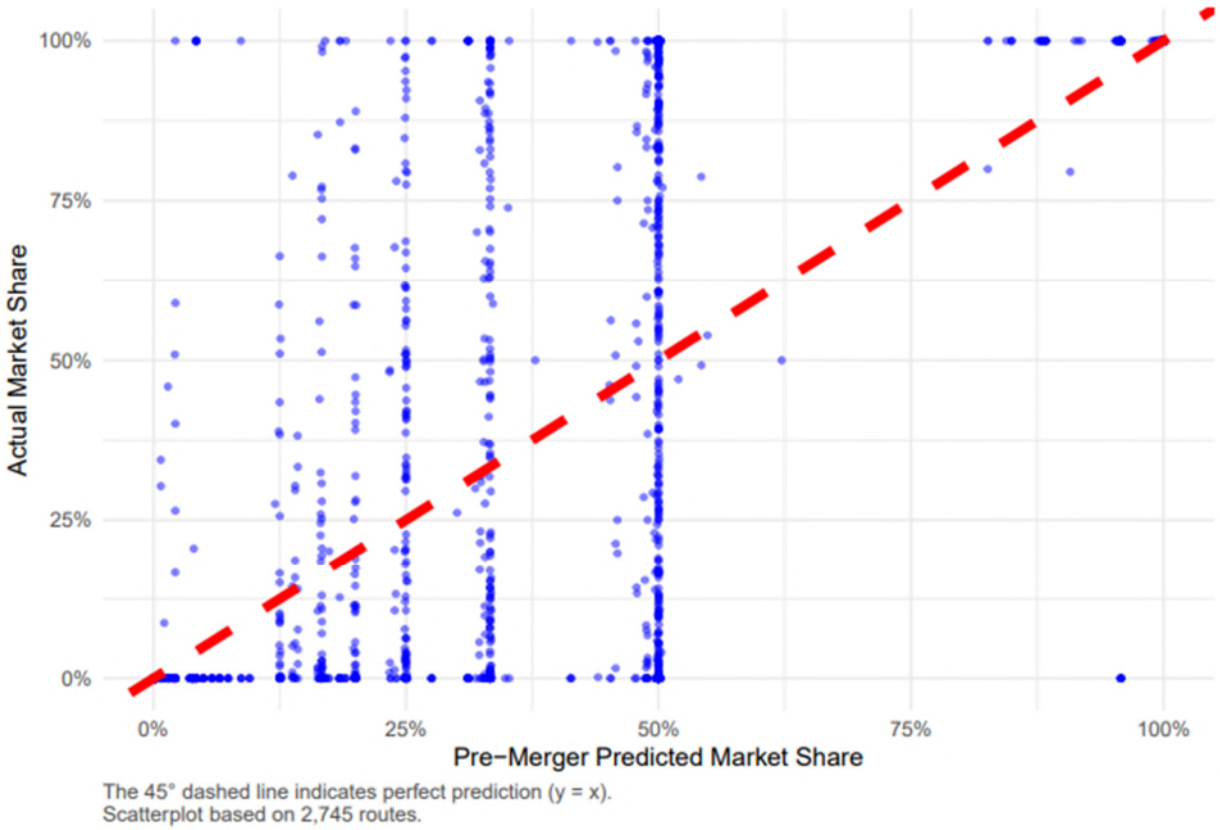
Figure 9
Comparison of 2023 Actual and Predicted Pre-Merger Market Shares
Merchandise Traffic (Model Calibration Phase)



Source: Initial Hunt/Schabas VS workpaper, "HC-vFinal_Filtered_ccws_calibration_df2025-10-22-16-57_SType_1-4.xlsx."

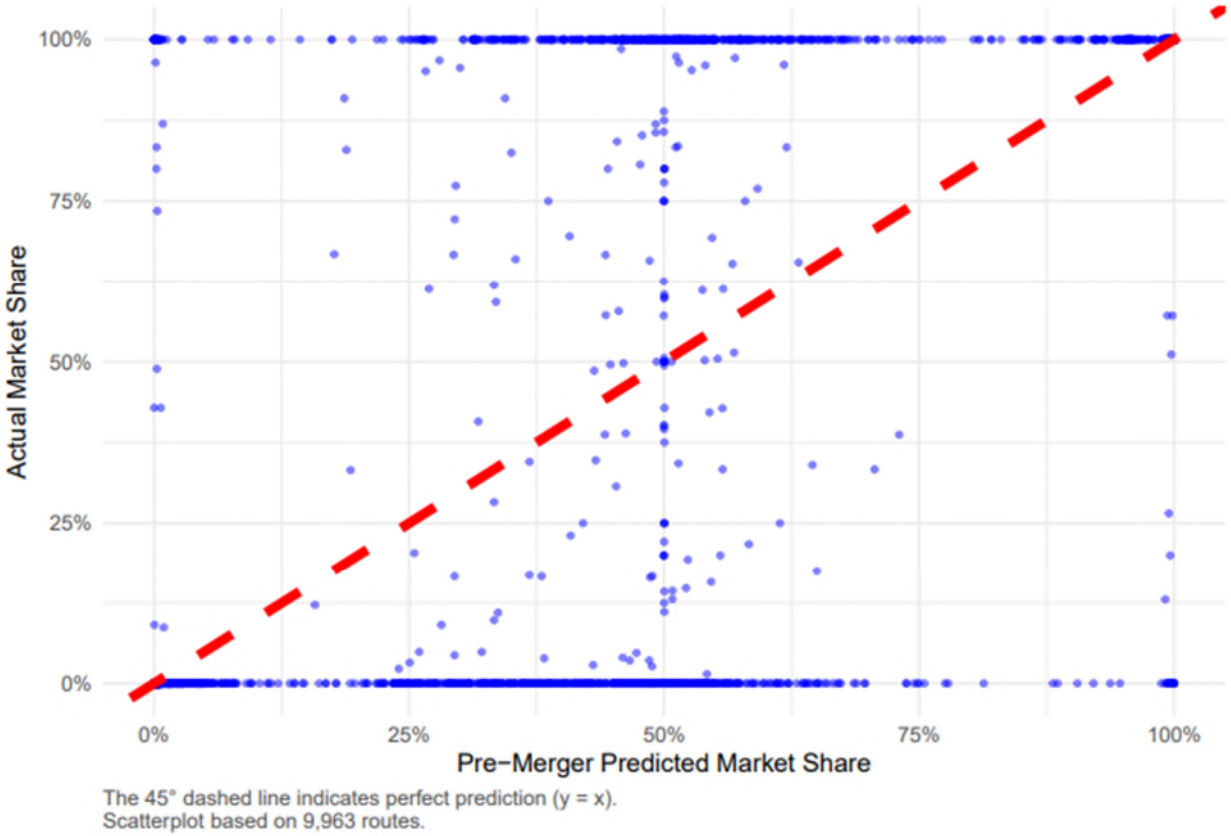
46. **Figure 9** reflects 150,653 routes. It includes a diagonal red line. Points along this diagonal red line are where the predicted pre-merger market shares and the actual 2023 pre-merger market shares are the same. The scatterplot has a point for each route in the analysis, representing the combination of the route's 2023 actual pre-merger and predicted pre-merger market shares. If the statistical model does a good job predicting actual market behavior, then the points in the scatterplot will be located primarily near the red line where the predicted and actual 2023 market shares are the same. Here, the scatterplot shows very little clustering near the red line, indicating that the statistical model does not do a good job predicting actual market shares. This is not surprising given the wide distributions of predicted pre-merger market shares for UP/NS Zero Traffic Routes detailed in **Figure 2 – Figure 8**. Calibration phase scatterplots for the automotive (2,745 routes), bulk (9,963 routes), and intermodal (3,131 routes) service types are provided in **Figure 10** – **Figure 12**. These scatterplots support the same conclusion as those derived from **Figure 9** – the statistical model does a poor job predicting actual pre-merger market shares.

Figure 10
Comparison of 2023 Actual and Predicted Pre-Merger Market Shares
Automotive Traffic (Model Calibration Phase)



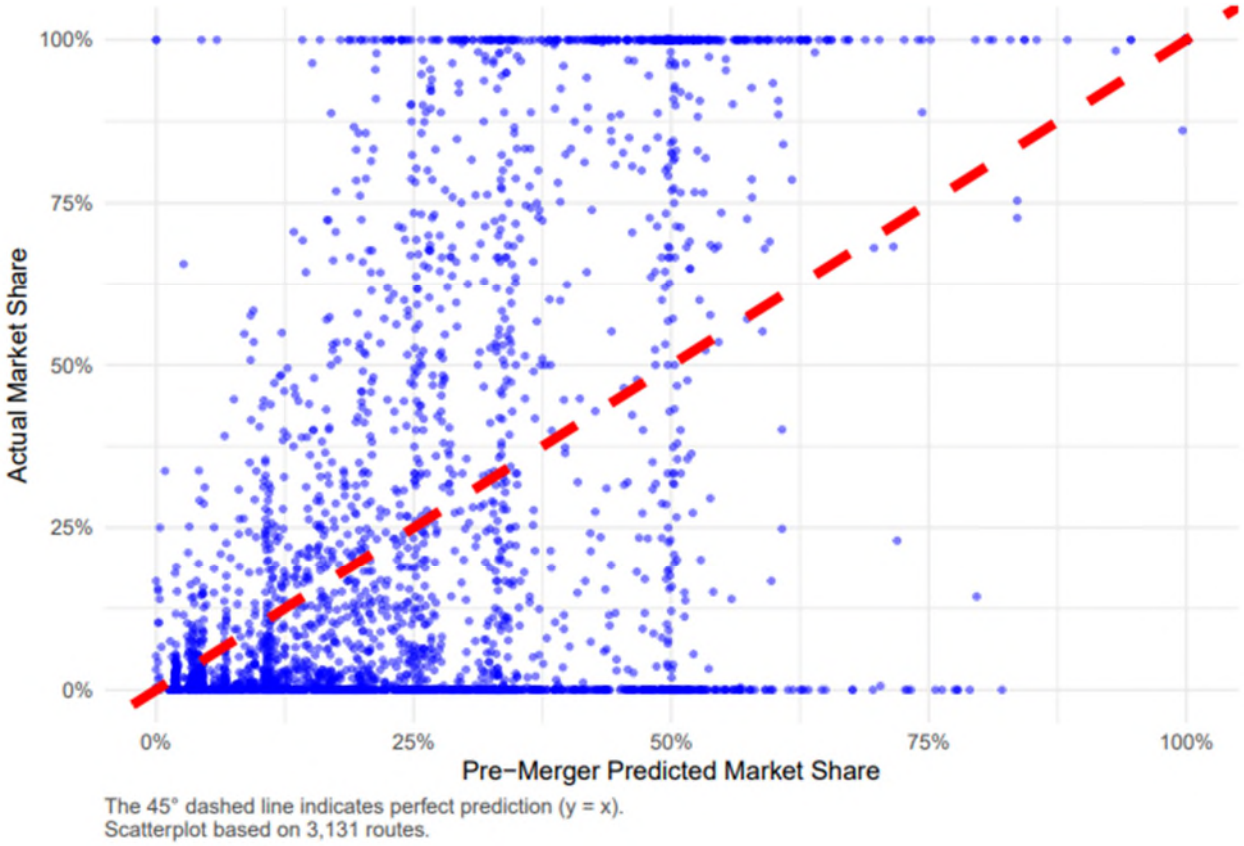
Source: Initial Hunt/Schabas VS workpaper, "HC-vFinal_Filtered_ccws_calibration_df2025-10-22-16-57_SType_1-4.xlsx."

Figure 11
Comparison of 2023 Actual and Predicted Pre-Merger Market Shares
Bulk Traffic (Model Calibration Phase)



Source: Initial Hunt/Schabas VS workpaper, "HC-vFinal_Filtered_ccws_calibration_df2025-10-22-16-57_SType_1-4.xlsx."

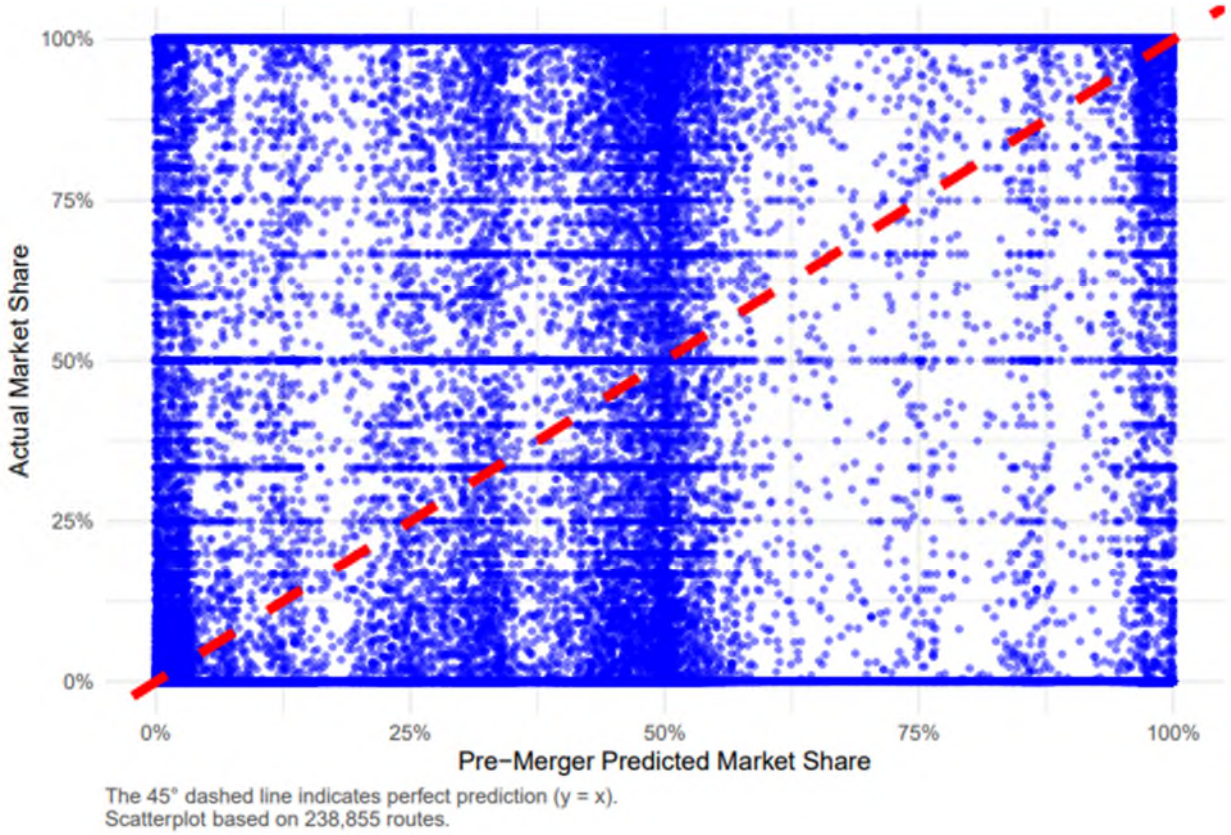
Figure 12
Comparison of 2023 Actual and Predicted Pre-Merger Market Shares
Intermodal Traffic (Model Calibration Phase)



Source: Initial Hunt/Schabas VS workpaper, "HC-vFinal_Filtered_ccws_calibration_df2025-10-22-16-57_SType_1-4.xlsx."

47. **Figure 13** presents the same comparison of merchandise traffic pre-merger market share predictions as **Figure 9** for the execution phase. The execution phase generates predicted pre-merger market shares for calculating Diversions. Again, the scatterplot shows very little clustering near the red line.

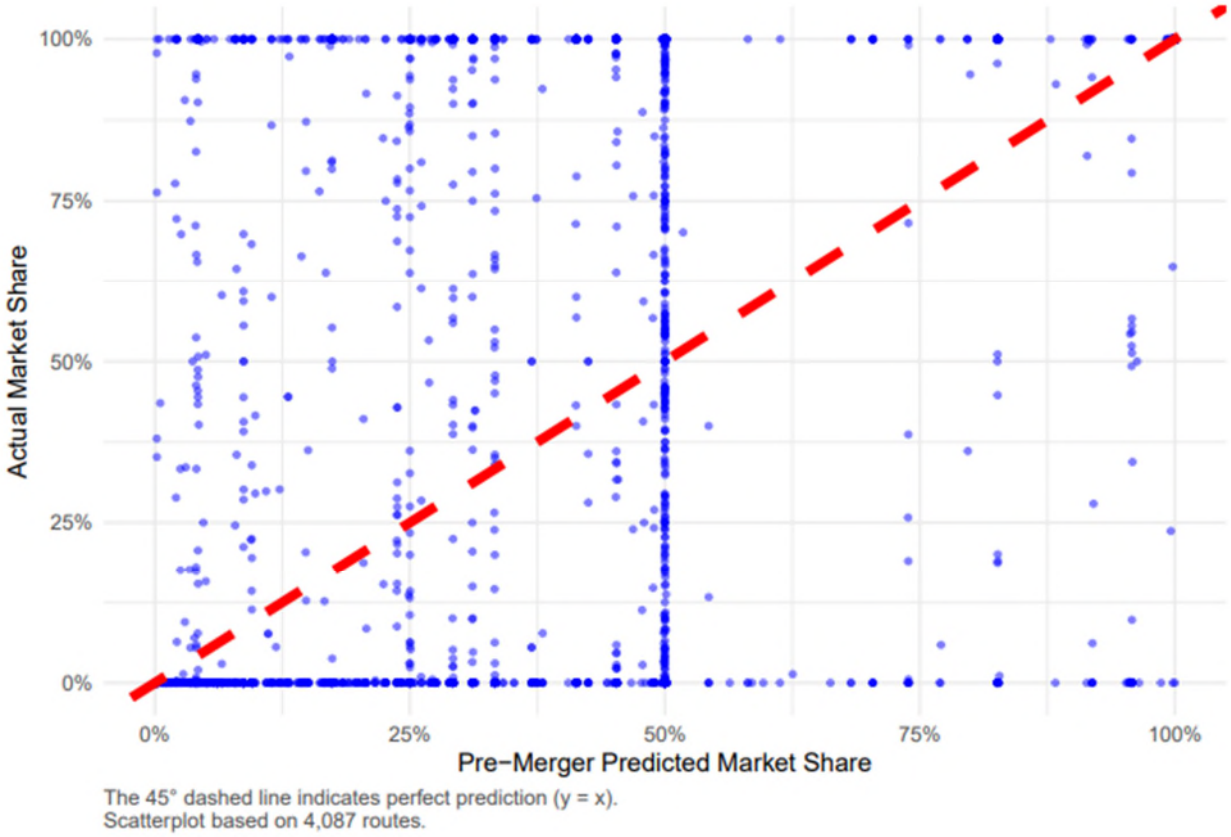
Figure 13
Comparison of 2023 Actual and Predicted Pre-Merger Market Shares
Merchandise Traffic (Model Execution Phase)



Source: Initial Hunt/Schabas VS workpaper, "vFinal_MerchBulk_vShare_diversions_all.csv."

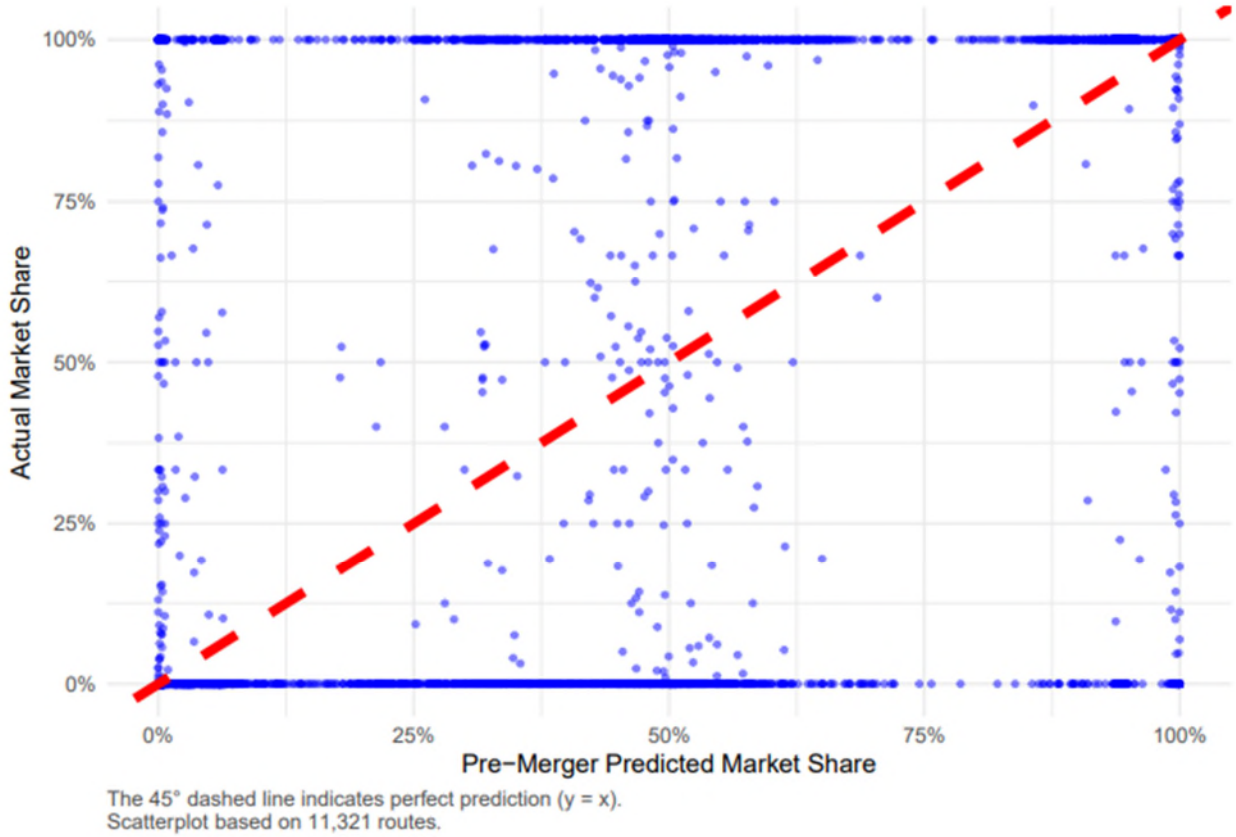
48. **Figure 14** – **Figure 16** provide the execution phase scatterplots for the automotive, bulk, and intermodal service types. These scatterplots support the same conclusions as those derived from **Figure 13** – the statistical model does a poor job predicting actual pre-merger market share.

Figure 14
Comparison of 2023 Actual and Predicted Pre-Merger Market Shares
Automotive Traffic (Model Execution Phase)



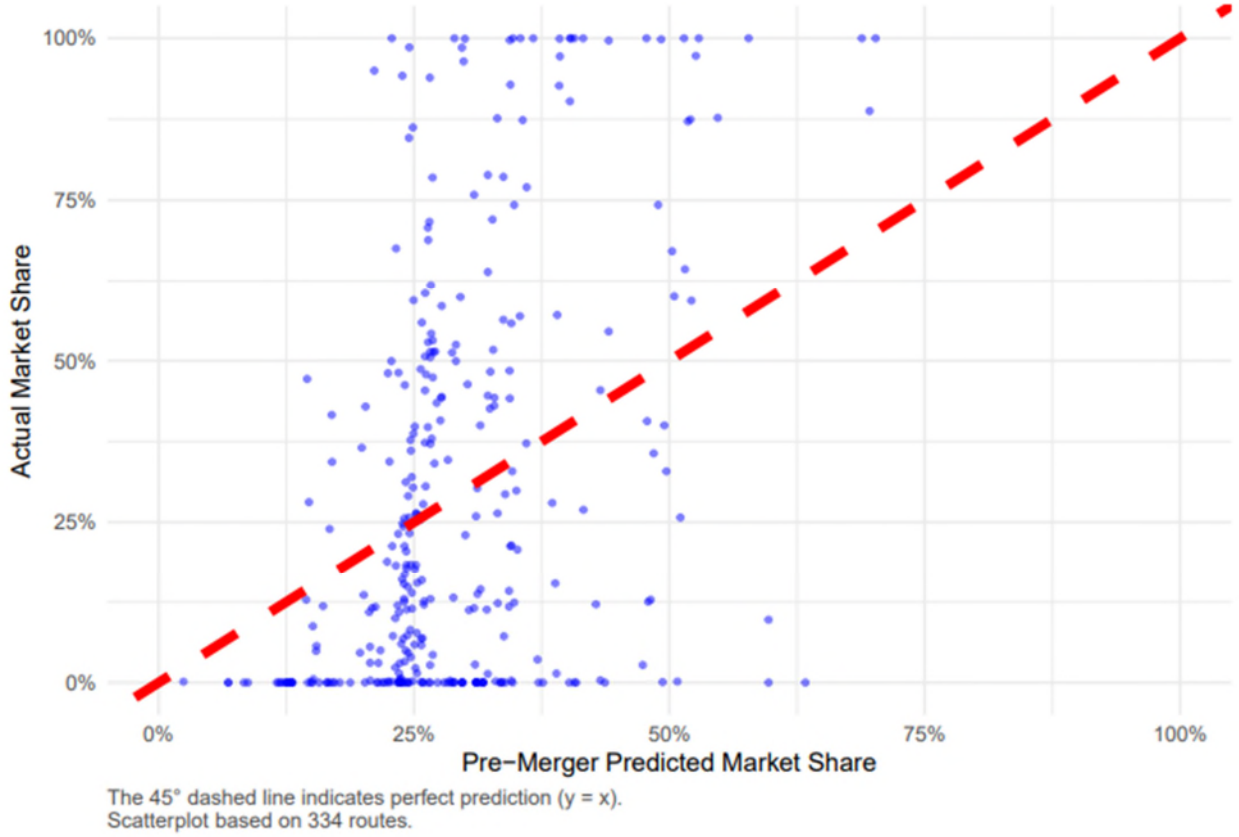
Source: Initial Hunt/Schabas VS workpapers, "vFinal_AutovShare.csv" and "vFinal_auto_diversions_removed.csv."

Figure 15
Comparison of 2023 Actual and Predicted Pre-Merger Market Shares
Bulk Traffic (Model Execution Phase)



Source: Initial Hunt/Schabas VS workpaper, "vFinal_MerchBulk_vShare_diversions_all.csv."

Figure 16
Comparison of 2023 Actual and Predicted Pre-Merger Market Shares
Intermodal Traffic (Model Execution Phase)



Source: Initial Hunt/Schabas VS workpaper, "Intermodal R2R - highly confidential.xlsx."

E. The Diversion Analysis Generates Post-Merger Phantom Carloads and Negative Market Shares That Are Untethered to Economic Reality

49. Inherent flaws in the Diversion Analysis are further demonstrated by predicted carload and unit counts that cannot exist in the real world. As further detailed in **Section IV.B**, the Hunt/Schabas VS estimates post-merger market shares for use in the Operating Plan not by using the post-merger market shares predicted by the statistical model but rather by adding Diversions to actual 2023 pre-merger market shares. I refer to these market shares used in the Operating Plan as "Operating Market Shares" and the carload or unit count associated with them as "Operating Carloads."

50. Due to the inaccuracies in the statistical model and the Diversions, this method of estimating Operating Market Shares can produce unrealistic results, such as post-merger market shares for some routes that are below zero or greater than 100%. Such unrealistic market share estimates result in impossible carload counts that make no sense in the real world. For example, Operating Carloads for one or more carriers in a market can be negative or can be greater than the sum of total market carload counts. If the carloads for carriers with positive market shares sum to an amount greater than the total carloads available in the market, I refer to the excess as "Phantom Carloads." If one carrier has Phantom Carloads, one or more others will have negative carloads. Carriers with negative carloads will have *negative market shares*. Phantom Carloads, negative carloads, market shares greater than 100%, and negative market shares are all economically meaningless. The output from the Diversion Analysis cannot be reconciled with reality.

51. The Phantom Carloads concept is illustrated in **Table 3**, showing a {{ }} route that has zero traffic in the real world, but is nonetheless predicted by the Diversion Analysis methodology to lose traffic due to diversions. It provides the Diversion Analysis for the market to serve merchandise traffic being transported from {{ }}, Georgia, to {{ }}, Nebraska, and is taken directly from the workpapers provided with the Initial Hunt/Schabas VS, augmented by my addition of the last column and a total for the market carloads. The last column provides each route's Operating Carloads, which reflect the Diversions. I also re-labeled the column headings for clarity.

Table 3
Sample Diversion Analysis with Phantom Carloads from the Diversion Analysis Workpapers
{{ }}, Georgia to {{ }}, Nebraska

{{

}}

52. The market detailed in **Table 3** has three routes, one of which is a route actively serviced in 2023 and two others are potential routes with no actual traffic in 2023. The {{ }} route had {{ }} carloads and a 100% pre-merger market share in the actual 2023 world. The other two routes had zero traffic in the actual 2023 world. The statistical model, however, splits the market almost evenly across the three routes pre-merger, predicting pre-merger market shares of {{ }}%, {{ }}%, and {{ }}%. The {{ }} route had no traffic in the actual 2023 world but has a reported diversion of {{ }}, whereby a "reported diversion" I mean a diversion predicted by the Diversion

Analysis. Because this diversion is negative, it represents a *loss* of traffic. Even though it had no 2023 actual pre-merger traffic, the statistical model estimates that this {{ }} route will lose {{ }} carloads post-merger. Because it has no actual traffic to lose, these losses generate *negative* carloads and *negative* market share for this route. Physical carloads cannot be negative, and such predictions generated by the Diversion Analysis are economically meaningless. The negative Operating Carloads amount is shown in the box shaded pink in **Table 3.**

53. Two additional examples of markets with Phantom Carloads are provided in **Attachment D**. The examples in **Table 3** and **Attachment D** demonstrate that the diversion methodology is flawed and unreliable and that the Diversions generated by it when analyzing the proposed merger are detached from reality and economically meaningless.

III. THE DIVERSIONS ARE SUBSTANTIALLY UNDERSTATED

54. The consequence of the flaws and methodological errors described above is that the Applicants substantially understate rail-to-rail diversions both transaction-wide and across many thousands of individual markets, including over 15,000 UP/NS Zero Traffic Routes.

A. The UP/NS Zero Traffic Route Problem Is Widespread and Impactful

55. The UP/NS Zero Traffic Route problem has a large impact on the Diversions and induces various distortions into the analysis. One important distortion involves the compression of market shares. Because the statistical model assigns a positive predicted pre-merger market share to a route (or routes) with zero observed market share, the predicted pre-merger market shares of all other routes are necessarily reduced because market shares need to sum to 1.[37] This compression does not reflect customer decision-making or market realities but instead is a necessary result of the statistical model's incorporation of pre-merger hypothetical alternatives. If the predicted pre-merger market share for a UP/NS Zero

[37] Economists refer to this as the "adding up constraint." *See, e.g.*, Epstein, R., & Rubinfeld, D.L. (2004), "Merger Simulation with Brand-Level Margin Data: Extending PCAIDS with Nests," *Advances in Economic Analysis & Policy*, Vol. 4(1): 1-26, page 5 ("Since shares must sum to 100%, the model also satisfies an adding-up constraint…").

Traffic Route is large, the distortions from compressing the shares of other routes in the market will also be large.

56. The distortions can also be seen in markets where the UP/NS route had a 100% market share in the actual world and a lower predicted pre-merger market share. I refer to UP/NS routes with a 100% pre-merger market share in the actual world as "UP/NS 100% Market Share Routes." For such a route, if the statistical model allocates market share of less than 100% to the UP/NS route, there must be at least one other route with a zero market share to which the model is assigning a positive pre-merger market share. **Figure E1 – Figure E4** provided in **Attachment E** are histograms showing the distribution of predicted pre-merger UP/NS market shares for the markets in which the UP/NS interline route has a 100% market share and there exists another route option. Histograms are provided for merchandise, automotive, bulk, and intermodal traffic. The distributions show significant weight at predicted UP/NS pre-merger market shares substantially below 100%. This further demonstrates that the approach used in the Diversion Analysis to predict market shares is often untethered to economic reality. **Figure E5** – **Figure E8** in **Attachment E** provide the same information but for all UP/NS 100% Market Share Routes and support the same conclusions. I discuss in greater detail the biases built into the statistical model and the Diversion Analysis predictions in **Attachment F**.

57. The problems for diversion estimation caused by UP/NS Zero Traffic Routes are widespread and in many cases have a substantial impact on the Diversions reported in the Initial Hunt/Schabas VS. My review of the Diversion Analysis determined that more than 90% of bulk, and 60% of merchandise and automotive Diversions stem from UP/NS Zero Traffic Routes. **Table 4** provides these percentages alongside the actual 2023 and predicted pre- and post-merger traffic on the UP/NS Zero Traffic Routes that are predicted to attract Diversions post-merger. I round these figures to the nearest thousand, consistent with the Initial Hunt/Schabas VS.[38] The Diversions for these routes total 162,000 carloads or units but the post-merger traffic increase predicted by the statistical model totals 377,000

[38] *See*, *e.g.*, App. Vol. 2, Pages 357-58 (Initial Hunt/Schabas VS, page 49-50, Exs. 6-1 and 6-2).

carloads or units relative to 2023 pre-merger actuals. The post-merger predicted traffic growth is more than 230% of Diversions because the Diversion Analysis methodology attributes part of the post-merger predicted growth to pre-merger traffic.[39]

Table 4
A Large Portion of Reported Diversions to UP-NS are on UP/NS Zero Traffic Routes

	UP/NS Zero Traffic Routes with Reported Diversions					
		[A]	*[B]*	*[C] = [B] - [A]*	*[D]*	*[E] = [C] / [D]*
Service Type	**Actual Traffic**	**Pre-Merger Predicted Traffic**	**Post-Merger Predicted Traffic**	**Reported Diversions**	**Reported Diversions (All Routes)**	**Percent of Reported Diversions (All Routes) from UP/NS Zero Traffic Routes**
Merchandise	0	115,000	216,000	101,000	162,000	62%
Automotive	0	35,000	63,000	29,000	47,000	61%
Bulk	0	57,000	84,000	27,000	28,000	95%
Intermodal	0	8,000	14,000	6,000	204,000	3%
Overall	**0**	**215,000**	**377,000**	**162,000**	**442,000**	**37%**

Notes:
[1] Merchandise, Bulk, and Automotive traffic expressed in carloads. Intermodal traffic expressed in units.
[2] Reported Diversions (All Routes) as reflected in the Initial Hunt/Schabas VS at Exhibit 6-1.

Sources:
[1] Initial Hunt/Schabas VS workpapers, vFinal_MerchBulk_vShare_diversions_all.csv; vFinal_AutovShare.csv; Intermodal R2R - highly confidential.xlsx; and vFinal_auto_diversions_removed.csv.

B. Systemwide, the Diversions for UP/NS Zero Traffic Routes Are Substantially Understated – by almost 50%

58. The Diversion Analysis predicts positive pre-merger market shares for over 15,000 UP/NS Zero Traffic Routes with diversions to UP-NS, including nearly 5,000 UP/NS Zero Traffic Routes with UP-NS diversions that will have a post-merger market share that is greater than or equal to 90%. The average pre-merger predicted UP/NS market share for these approximately 5,000 routes is 47%.[40] The estimated diversion of traffic away from other carriers to the merged railroad is substantially understated because the average pre-merger predicted market share of 47% is so large – on average, it represents nearly half of the actual 2023 traffic in these approximately 5,000 markets. Much of the post-merger

[39] (377,000 / 162,000) = 233%.

[40] Kahwaty Workpaper "Workpaper - Section III.xlsx." *See also*, Initial Hunt/Schabas VS workpapers "vFinal_MerchBulk_vShare_diversions_all.csv", "vFinal_AutovShare.csv", and "Intermodal - R2R highly confidential.xlsx."

predicted traffic in these thousands of markets is not treated as diversions in the Diversion Analysis but rather is treated as pre-merger traffic for the merging parties due to the flawed Diversion Analysis methodology. As described above in paragraph 34, this leads to understated and effectively limited or "capped" diversion estimates.

59. The extent of the effects of the caps that the statistical model and the diversion calculation place on UP-NS diversions can be demonstrated by studying the more than 15,000 UP/NS Zero Traffic Routes that have UP-NS diversions. Specifically, the aggregate effect of the caps on individual market share and traffic diversions can be quantified as shown in **Table 5**. When adjusting or correcting for the model's growth projections that have been removed from the Diversions, **Table 5** shows that the diversions to these UP/NS Zero Traffic Routes were understated by **approximately 50%, or 215,000 carloads or units**. Aggregate or total carload diversion is substantially understated by the Initial Hunt/Schabas VS.

Table 5
UP-NS Diversion Estimates are Substantially Understated for UP/NS Zero Traffic Routes

	UP/NS Zero Traffic Routes with Reported Diversions							
		[A]	*[B]*	*[C] = [B] - [A]*	*[D] = [A] = [B] - [C]*	*[E]*	*[F] = [E] + [D]*	*[G] = ([F] / [E]) - 1*
Service Type	**Actual Traffic**	**Pre-Merger Predicted Traffic**	**Post-Merger Predicted Traffic**	**Reported Diversions**	**Growth Projection Omitted from Reported Diversions**	**Reported Diversions (All Routes)**	**Diversions Corrected for Omitted Growth Projection**	**% Increase**
Merchandise	0	115,000	216,000	101,000	115,000	162,000	278,000	71%
Automotive	0	35,000	63,000	29,000	35,000	47,000	82,000	73%
Bulk	0	57,000	84,000	27,000	57,000	28,000	85,000	201%
Intermodal	0	8,000	14,000	6,000	8,000	204,000	212,000	4%
Overall	**0**	**215,000**	**377,000**	**162,000**	**215,000**	**442,000**	**657,000**	**49%**

Notes:
[1] Merchandise, Bulk, and Automotive traffic expressed in carloads. Intermodal traffic expressed in units.
[2] Reported Diversions (All Routes) as reflected in the Initial Hunt/Schabas VS at Exhibit 6-1.

Sources:
[1] Initial Hunt/Schabas VS workpapers, vFinal_MerchBulk_vShare_diversions_all.csv; vFinal_AutovShare.csv; Intermodal R2R - highly confidential.xlsx; and vFinal_auto_diversions_removed.csv.

60. The Diversion Analysis uses the estimated pre-merger market shares – as opposed to actual 2023 market shares or accurately predicted baseline market shares – as the basis for the simple arithmetic calculations for route-by-route diversions. These pre-merger predicted market shares often bear little relation to actual pre-merger market shares. If neither UP nor NS had any traffic on a route pre-merger, the merged railroad's post-merger traffic on that route must have been diverted from some other railroad. But the Diversion Analysis excludes large volumes of the UP-NS predicted post-merger traffic from being counted as

diverted because the model predicts UP/NS pre-merger traffic to begin with. As a result, the use of the difference between predicted post-merger and predicted pre-merger market shares leads to a systematic understatement of diversion for UP/NS Zero Traffic Routes.

C. Diversions Are Substantially Understated on Local Routes

61. The Initial Hunt/Schabas VS maintains that, in the Diversion Analysis, "[i]t is important … that the bottom-up analysis from the SPLC-SPLC level is most appropriate to view in aggregate … and the overall net increase in share [across markets] is what is important."[41] However, the authors provide no reasons for why their Diversion Analysis, which is market-focused, should not be applied or interpreted at a market level.[42] Considering only the overall net increase or level of aggregate diversion masks or hides Phantom Carloads and negative market shares. Furthermore, the Initial Application's reliance on the Diversion Analysis (e.g., in the Operating Plan and environmental analysis) necessitates precision and accuracy in determining changes in localized traffic flows resulting from the proposed merger. For this reason, the Applicants' themselves use the Diversions at the location level in their Operating Plan. The overall net increase, viewed in aggregate, cannot inform the analysis of local operational, environmental, or competitive conditions.

62. The importance of proper market share predictions can be seen in the example of merchandise traffic originating in {{ }}, Illinois, and terminating at {{ }}, Texas. **Table 6** details the routes serving this market that originate and/or terminate with {{ }} and the Applicants.[43] This market is almost entirely served by a {{ }} interline route, which had more than {{ }}% of the actual 2023 pre-merger market share. The statistical model, however, predicts that the {{ }} interline route has only a

[41] App. Vol. 2, Page 405 (Initial Hunt/Schabas VS, page 97). SPLC stands for "Standard Point Location Code" and is a numeric code used in the transportation industry to identify the location of freight stations (*e.g.*, origin, destinations, and junction points) across North America. Railinc, Standard Point Location Code, available at https://public.railinc.com/resources/standard-point-location-code.

[42] The Diversion Analysis defines intermodal markets at the BEA level, automotive markets at the origin SPLC to destination BEA level, and all other traffic markets at the SPLC level. App. Vol. 2, Page 361 (Initial Hunt/Schabas VS, page 53).

[43] UP or NS are involved as intermediate carriers in the four routes that are rolled into the "Other Route Options" category in **Table 6**.

{{ }}% market share pre-merger. The 2023 actual pre-merger market share for the {{ }} interline route was zero percent, but the statistical model predicts its market share to be {{ }}%. Because the pre-merger predicted market share for the {{ }} interline route is high relative to its actual 2023 zero percent pre-merger market share, the predicted traffic diversion is understated by a wide margin. The predicted pre-merger market share for the {{ }} interline route is more than {{ }} percentage points lower than its actual 2023 market share. The predicted pre-merger market shares for the other market routes analyzed are distorted as well. The other two {{ }} interline options ({{ }} and {{ }}) also receive predicted pre-merger market shares that are higher than their actual pre-merger market shares. In the case of {{ }}, its predicted pre-merger market share is {{ }} percentage points greater than its actual pre-merger market share of {{ }}%.

Table 6
Diversions on the {{ }}, Illinois to {{ }}, Texas Route
Corrected for Omitted Growth Projection
Merchandise Traffic

{{

}}

63. The {{ }} interline option detailed in **Table 6** receives a predicted pre-merger market share of {{ }}% ({{ }} carloads) even though its actual 2023 market share was zero percent. As a result, the reported diversion on this routing option is understated by exactly the amount of this pre-merger prediction. Adjusting the diversion calculation to correct for the removal of the {{ }} interline option's {{ }}% predicted pre-merger market share instead of its actual 2023 pre-merger market share of zero percent increases the diversion estimate from the reported {{ }} carloads to {{ }} carloads, an increase of {{ }}%.

64. Due to the {{ }} option having a zero percent market share pre-merger, all the traffic it would handle post-merger would, therefore, necessarily come from diversion from other routes and/or railroads. The {{ }} interline route had a {{ }}% pre-merger market share, representing {{ }} of {{ }} total carloads. The Diversion Analysis estimates that the merged railroad would divert {{ }} carloads/units away from the

{{ }} interline option.[44] However, the {{ }} interline option pre-merger handles nearly {{ }}% of the volume in this market. Recalculating diversion from {{ }} using actual 2023 pre-merger market shares instead of inaccurately predicted 2023 pre-merger market shares results in a diversion of {{ }} carloads away from the {{ }} interline option.[45] In this example, after adjusting the calculations for the omission of growth traffic, diverted traffic is *nearly four times greater than the estimate from the Diversion Analysis*.[46]

65. Another example is automotive traffic originating in {{ }} and {{ }}, Michigan, and terminating in {{ }}, Texas. In this example, recalculating diversion using actual 2023 pre-merger market shares instead of the inaccurately predicted pre-merger market shares results in diversion away from a {{ }} interline option that is double the estimate from the Diversion Analysis. The route originating in {{ }} was operating {{ }}% as an interline route between {{ }} and {{ }}. The statistical model assigned the "feasible" (i.e., potential, but not actual) {{ }} route {{ }}% of the market pre-merger, forcing {{ }}'s estimated pre-merger market share and volume to decrease substantially. **Table 7** summarizes the routes included in the Diversion Analysis along with their actual 2023 and predicted pre-merger market shares and carload counts and the predicted post-merger market shares and carload counts.

[44] (2.4% - 28.6%) * {{ }}.

[45] (2.4% - 99.9%) * {{ }}.

[46] Conversely, the difference in actual pre-merger market shares and projected post-merger market shares for the other two {{ }} interline options suggests that the two would be expected to gain {{ }} carloads post-merger [{{ }} + {{ }}]. This is because the model's predictions imply that the two interline options would experience diversions greater than the actual volume served by the route. Specifically, the model predicts the {{ }} interline option will lose {{ }} cars and the {{ }} option will lose {{ }} cars even though they shipped {{ }} carload and {{ }} carloads, respectively, in the pre-merger actual 2023 world.

Table 7
Diversions on the {{ }}, Michigan to {{ }}, Texas Route
Corrected for Omitted Growth Projection
Automotive Traffic

{{

}}

66. The statistical model reduces {{ }}'s estimated pre-merger market share from the actual 2023 {{ }}% to {{ }}%. This is a reduction of {{ }} percentage points. The {{ }} route's estimated post-merger market share is {{ }}%, representing just {{ }} carloads.

67. With {{ }} handling all {{ }} carloads in the market pre-merger, {{ }}'s post-merger predicted traffic of only {{ }} cars indicates that {{ }} cars were diverted from {{ }} to the merged railroad. This is not what the Diversion Analysis calculated as diversion, however. Because the predicted pre-merger {{ }} market share was only {{ }}%, representing {{ }} carloads, the arithmetic used in the Diversion Analysis shows the diversion of only {{ }} carloads away from {{ }}, not {{ }} carloads away from {{ }}. The diversion figures are off by {{ }} carloads in this example because the structure of the Diversion Analysis treats the pre-merger predicted traffic for {{ }} as if it is actually the merging parties' traffic pre-merger. The missing {{ }} carload diversion from {{ }} is captured not in the differences between predicted post-merger and predicted pre-merger {{ }} traffic but rather in the difference between {{ }}'s predicted pre-merger and actual pre-merger traffic. Pre-merger traffic

predictions are distorted by the zero-traffic route to which the statistical model assigned {{ }}% of the market's carloads. The amount of traffic diverted in this example more than doubles once the diversion calculation is corrected for the omitted growth.

68. **Attachment G** provides three additional examples of the inaccuracies and distortions that result from including UP/NS Zero Traffic Routes in the Diversion Analysis. These include an automotive traffic example, a merchandise traffic example, and an intermodal traffic example.

D. The Use of an Inappropriate Merger Analysis Framework Causes the Understated Diversions

69. Treating the pre-merger predicted UP or NS traffic as if it were UP or NS actual traffic pre-merger is inaccurate and misleading when the predictions themselves are inaccurate. This principle arises when economists use merger simulation techniques – many of which utilize the same modeling framework used here – to estimate post-merger competitive effects. As explained by Werden, Froeb, and Scheffman with regard to the use of merger simulation to estimate the price effects of a merger:

> Any model used to predict the effects of a merger must fit the facts of the industry in the sense that the model explains past market outcomes reasonably well. Many critical modeling choices can be justified or rejected by evidence gathered in the normal course of a merger investigation.[47]

70. In the present matter, the Diversion Analysis estimates Diversions by comparing the post-merger and pre-merger market shares predicted by the Applicants' statistical model. The baseline pre-merger market shares predicted by the statistical model do not fit the actual pre-merger market shares reasonably well. If the differences between actual pre-merger market shares and predicted pre-merger market shares were small, there might not be any practical difference between using either to estimate diversions. However, the differences between predicted and actual pre-merger market shares are not small in the Diversion Analysis, especially for thousands of UP/NS Zero Traffic Routes. If the model does not

[47] Werden, G. J., Froeb, L. M., & Scheffman, D. T. (2004), "A Daubert Discipline for Merger Simulation," *Antitrust Law Journal*, Vol. 18(3): 89-95, page 94.

predict pre-merger shares well, the appropriate modeling response is to improve the statistical model, not to draw conclusions from improper comparisons.[48]

IV. FLAWS IN THE DIVERSION ANALYSIS PREVENT A RELIABLE ASSESSMENT OF THE OPERATING, ENVIRONMENTAL, AND COMPETITIVE IMPACTS OF THE PROPOSED MERGER

A. Introduction

71. Diversions play an important role in this proceeding because they are fundamental to the Operating Plan, environmental review, and competitive assessments. These all require localized and accurate traffic information. As such, route-specific but inaccurate diversions prevent a viable assessment of these key components to analyze a major railroad merger. In terms of the Operating Plan, for example, the analysis of congestion on a line needs to be based on the actual expected increases in traffic on that line, not just on part of these increases, because the congestion analysis is based on actual anticipated traffic, not underestimated predictions.[49] Congestion analysis is also location-specific, relying on actual traffic conditions at specific locations in the rail network. Part of a line can be congested even if the rest of it is not. In addition, the Diversions are used in the Applicants' Growth Plan, which, among other things, determines merger-related investments and post-merger workforce levels. Without a reliable diversion analysis, the STB and other stakeholders cannot accurately assess the actual operational, environmental, competitive, or other impacts of the proposed transaction.

[48] *See*, Peter Davis and Eliana Garcés (2010), *Quantitative Techniques for Competition and Antitrust Analysis*, Princeton, NJ: Princeton University Press, page 385 ("If a merger simulation model is built, then the investigator will have to show that it predicts the facts of the industry reasonably well…predicted prices, costs, and margin behavior must be consistent with the reality of the industry. …[it is…] vital to take the time to refine and check the model sufficiently before proceeding to the merger forecasting exercise.").

[49] *See, e.g.*, App. Vol. 2, Page 511 (Initial Gehringer/Orr VS, page 12) (explaining the Base Plan used actual 2023 pre-merger traffic).

B. Inaccurate Diversions Lead to Fundamental Flaws in the Operating Plan

72. The Applicants' "Growth Plan" operating plan reflects the merger-related traffic growth detailed in the Diversion Analysis.[50] The Operating Plan models how the Applicants will handle post-merger traffic on their integrated network, including traffic diverted from other carriers, while reflecting their proposed service improvements. Modeling these operations with accurate diversion and growth estimates is vital to ensure that the Applicants' Growth Plan is "realistic and practical".[51] The Growth Plan accounts for what investments and resources the Applicants will need to allocate to handle the increased volume and maintain the service levels proffered in their Service Assurance Plan and to customers. If the Diversions are not accurate, their modeling in the Growth Plan may not identify areas where capacity will be insufficient to handle the growth traffic, which could result in potential service issues and the misallocation of investments and resources.

73. The Diversion Analysis uses the statistical model to predict post-merger market shares and traffic levels, but these post-merger predictions are not what the Applicants use as the post-merger market shares and traffic levels in their Operating Plan. Instead, pre- and post-merger predicted market shares are used to calculate diversions, and the Operating Market Shares (which are used in the Operating Plan) are calculated as the *actual* pre-merger market shares adjusted by the estimated levels of diversion.[52] Similarly, post-merger traffic levels used in the Operating Plan are the pre-merger *actual* traffic levels adjusted by the estimated levels of diverted traffic.[53] The post-merger market share predictions derived in these two different ways can differ substantially, with understated Diversions reducing the post-merger market shares modeled in the Operating Plan. This indicates that the choice of

[50] App. Vol. 2, Page 515 (Initial Gehringer/Orr VS, page 16 n. 12); *See also,* Initial Gehringer/Orr VS § 5.

[51] Gehringer and Orr, who developed the Applicants' Operating Plan, state that "[t]he Growth Plan was designed to ensure that the proposed operations of the combined railroad are realistic and practical, and UP/NS will have the resources needed to adjust to a changing world as the transaction is implemented." App. Vol. 2, Page 516 (Initial Gehringer/Orr VS, page 17).

[52] The Initial Hunt/Schabas VS defines post-merger market share as "actual UP/NS traffic [share] plus diversions [share]." App. Vol. 2, Pages 404-07 (Initial Hunt/Schabas VS, Appendix A.8, pages 96-99).

[53] Exhibit A-11 of the Initial Hunt/Schabas VS provides the method to calculate the post-merger carloads as the actual market carloads multiplied by the estimate of the post-merger market share. App. Vol. 2, Page 406 (Initial Hunt/Schabas VS, Appendix A.8, page 98).

which market share measure to use is critically important for the analysis of the Operating Plan, and in any event introduces significant inconsistencies between the Diversion Analysis and Operating Plan.

74. The two different methods used to estimate post-merger market shares also highlight why it is important to improve the accuracy of the statistical model. With a more accurate statistical model, predicted post-merger market shares could (and should) feed directly into the Operating Plan. The application would then provide one consistent set of market share numbers, negating the concern over which set of post-merger market shares to use for different parts of the analysis. While the Initial Hunt/Schabas VS states that the Operating Market Shares are the appropriate figures to use,[54] given that the Diversions are significantly understated, the Operating Market Shares are also significantly understated. For UP/NS Zero Traffic Routes, the Diversions are understated by the removal of the predicted pre-merger market shares. Correcting for this by adding back the predicted pre-merger market shares implies that the correct market shares to use in the Operating Plan for UP/NS Zero Traffic Routes are the post-merger market shares estimated by the statistical model.

75. The Initial Hunt/Schabas VS highlights the discrepancy between the two post-merger market share predictions in its Exhibit A-11. A copy of this Exhibit is provided as **Figure 17**. The red box on the left highlights the UP-NS post-merger market shares estimated by the statistical model. The red box on the right highlights the Operating Market Shares, defined as the actual 2023 pre-merger market share adjusted by Diversions.[55] The bulk traffic market shares reported in Exhibit A-11 are 60% based on the statistical model and 42% based on the Operating Market Shares. These differ by 18 percentage points. The automotive market shares are 61% based on the statistical model and 46% based on the Operating Market Shares. These differ by 15 percentage points. These are very substantial

[54] App. Vol. 2, Pages 405-06 (Initial Hunt/Schabas VS, Appendix A.8, pages 97-98).

[55] Exhibit A-11 provides shares that are aggregated across the merged railroad's business. App. Vol. 2, Page 406 (Initial Hunt/Schabas VS, Appendix A.8, page 98). These shares are not specific to the individual markets defined in the Initial Hunt/Schabas VS.

differences. The two merchandise traffic market share estimates differ by 3 percentage points, as do the two intermodal traffic market shares.

Figure 17
Exhibit A-11 from the Initial Hunt/Schabas VS

Exhibit A-11: Comparison of UP-NS historical traffic vs. rail-to-rail diversion model pre-merger and post-merger estimates[121]

Thousands of carloads/intermodal units

	Total market	Actual UP-NS carloads	Model: Est. UP-NS carloads pre-merger	Model: Est. UP-NS carloads post-merger	Diversions (post-minus pre-)	Traffic (actual UP-NS + diversions)	Diff: traffic minus post-
Merchandise	780	252	277	439	162	414	(25)
Intermodal	1,217	379	346	550	204	583	33
Bulk	192	53	87	115	28	81	(34)
Automotive	201	41	72	124	52	93	(31)
Total	*2,390*	*725*	*782*	*1,228*	*447*	*1,171*	*(57)*

Percentage of market

	Total market	Actual UP-NS cars	Model: Est. UP-NS share pre-merger	Model: Est. UP-NS share post-merger	Diversions (post-minus pre-)	Traffic (actual UP-NS + diversions)	Diff: traffic minus post-
Merchandise	100%	32%	36%	56%	21%	53%	-3%
Intermodal	100%	31%	28%	45%	17%	48%	3%
Bulk	100%	28%	45%	60%	15%	42%	-18%
Automotive	100%	20%	36%	61%	26%	46%	-15%

76. In short, if diversions are understated, the Operating Plan will not reflect the reasonably expected post-merger operations of the merged railroad and will fail to model all traffic anticipated because of the proposed merger – thus leaving traffic behind. I have explained in this Verified Statement that the Diversions are significantly understated. In the next sections, I discuss an example highlighting the problems raised by UP/NS Zero Traffic Routes for assessing operational, environmental, and competitive assessments. I then consider the implications of the example in each of these three areas.

C. An Example Illustrates Local Issues that Arise from Inaccurate Diversions

77. If diversions are understated, the Operating Plan will not reflect the reasonably expected post-merger operations of the merged railroad and will fail to model all traffic anticipated because of the proposed merger – thus leaving traffic behind. An example involving unit train service transporting coal out of the Powder River Basin ("PRB") from {{

}} to {{ }},[56] a southeastern United States coal fired power plant located in {{ }} illustrates the issues with such inaccuracies. According to 2023 traffic data, the coal was all shipped using an interline {{ }} route. The Diversion Analysis predicts this traffic will divert to single line UP-NS service after the proposed merger.[57] The movement is described in **Table 8**. In this example, recalculating diversion using actual 2023 pre-merger market shares instead of the inaccurately predicted pre-merger market shares results in diversion away from the {{ }} interline option that is more than double the estimate from the Diversion Analysis.

Table 8
Diversions on the {{ }} to {{ }} Route,
Corrected for Omitted Growth Projection
Bulk Traffic

{{

}}

78. As shown in **Table 8**, the {{ }} to {{ }} interline movement holds a {{ }}% 2023 market share pre-merger, but the Diversion Analysis predicts only a {{ }}%

[56] Market ID {{ }}. Initial Hunt/Schabas VS workpaper, "vFinal_MerchBulk_vShare_diversions_all.csv."

[57] The Diversion Analysis considers multiple movements from PRB mines. The example focuses on only two of these movements.

market share pre-merger for this route. The UP to NS interline route, which has no actual traffic according to 2023 traffic data, is predicted to hold the balance, or {{ }}% of the market pre-merger. The statistical model predicts a nearly even split pre-merger between the two routes because both routes have one interchange and their total impedances are nearly the same pre-merger.

79. Post-merger, the UP-NS route is predicted to serve nearly {{ }}% of the market, ({{ }} carloads). The Diversion Analysis reports {{ }}% of the market's traffic as being diverted ({{ }} carloads), and it counts the rest of the merged railroad's traffic as if it were UP/NS traffic pre-merger ({{ }} carloads). When compared to the actual 2023 pre-merger route traffic, *all* the predicted traffic on the UP-NS route post-merger is diverted from the {{ }} route ({{ }} carloads).

80. In this example, the Diversion Analysis under-reported diversions by more than 50% because it treated a large amount of traffic diverted from another railroad as if it were pre-merger traffic for the merging parties. The post-merger predicted market share of (nearly) {{ }}% for the merged railroad in this example may be viewed as being reasonable. However, the estimated diversion of roughly {{ }}% is widely off because the Diversion Analysis mechanically calculates diversion as the difference in the predicted post-merger market share and the predicted pre-merger market share for the UP/NS route, even though the predicted pre-merger market share for the route is off by roughly {{ }} the size of the market. As described in **Attachment B**, certain rail-to-rail diversion methodologies pre-dating the Diversion Analysis took into consideration "all or nothing" markets, like the coal market detailed in this section, giving them special attention when calibrating the model for estimating market shares or when counting diversions. Despite the precedent, the Diversion Analysis applies the same analysis to "all or nothing" markets as it does to all other types of rail markets instead of using an analysis for these markets that is tailored to their special characteristics.

81. **Figure 18** provides four maps that show:

- In the first panel, the actual 2023 pre-merger world where {{ }} interchanged with {{ }};

- In the second panel, the predicted pre-merger world where the actual {{ }} 2023 traffic is allocated roughly {{ }} between {{ }} and UP;

- In the third panel, the post-merger predicted world where nearly all the traffic is on the merged UP-NS route and therefore corrected diversions relative to the 2023 pre-merger actuals are a nearly {{ }}% diversion or shift of traffic from {{ }} to UP-NS; and

- In the fourth panel, the Diversions from the Diversion Analysis, where all the traffic is on UP-NS but, as indicated in the red text, only about {{ }}% of the traffic on the {{ }} segment is reported as diverted to the merged railroad.

Figure 18
Map of Routes from the Powder River Basin ({{ }} and {{ }}, {{ }}) to {{ }}, ({{ }}, {{ }}) with Diversion and Train Counts

{{

}}

Note: While {{ }} and {{ }} are the names of the start city in the Initial Hunt/Schabas VS workpapers, I understand that the coal mines at these stations are more commonly referred to as the {{ }} and the {{ }}.

Source: Initial Hunt/Schabas VS workpaper, "vFinal_MerchBulk_vShare_diversions_all.csv"

82. Pre-merger, the {{ }} traffic moved from the PRB to {{ }} on the {{ }} network. This traffic was interchanged with {{ }} in {{ }} for onward delivery to {{ }}.[58] Converting carloads to train counts, according to the Diversion Analysis data, the market traffic equates to approximately {{ }} unit trains.[59] The Diversion Analysis treats {{ }} of the {{ }} unit trains as UP/NS traffic and reports the difference as diverted unit trains from {{ }} ({{ }} unit trains). Both routes ship the coal to {{ }} on the same {{ }} lines. From a Growth Plan perspective, there should be no change to the {{ }} segment between {{ }} and {{ }}, which would continue to handle the roughly {{ }} trains post-merger. All the change in this example is in the PRB to {{ }} segment.

83. With only {{ }} additional trains reported as being diverted from {{ }} to UP on the UP PRB to {{ }} segment, the Diversion Analysis understates the actual number of additional trains that would need to operate on UP's PRB to {{ }} corridor. Actual diverted trains {{ }} are more than double reported diverted trains {{ }}, significantly distorting the operating plan and infrastructure impacts: in reality, post-merger, UP will need to plan for {{ }} additional trains on the PRB to {{ }} segment, but the operating plan only accounts for {{ }} additional trains. The number of diverted trains in this example is more than double the diverted train count reported by the Applicants' analysis.

[58] This discussion in this paragraph and the next is based on the route detailed in **Table 8** and a second route from the PRB to {{ }} with a nearby origin. Nearly 100% of traffic on this second route is predicted to be diverted to the UP-NS route post-merger. This second route is included because the operational impacts of diversion in this area are broader than the impact of diversion on the {{ }} to {{ }} route. Market IDs: {{ }} Initial Hunt/Schabas VS workpaper, "vFinal_MerchBulk_vShare_diversions_all.csv."

[59] Based on 135 cars per train on average. Kahwaty Workpaper "Unit Train Size.xlsx."

84. According to EIA data, about 5 million tons of PRB coal was delivered to {{ }} by rail in 2023.[60] If all this coal is diverted to the UP network, this would result in over 300 unit trains diverted annually.[61] The use of predicted market shares when estimating diversion via the Diversion Analysis caps the number of additional trains flowing into the operating plan substantially below that. This shows the importance of having accurate diversion estimates for use in the Operating Plan when considering the effects of the proposed merger on the merged railroad's ability to operate successfully while handling the anticipated traffic on its network and meeting service targets.

D. Errors in the Operating Plan Induced by Inaccurate Diversion Figures Flow to Environmental Review

85. The environmental analysis relies on several key operating plan metrics – such as trains per day, gross ton-miles, and changes in traffic density – all of which depend on the accuracy of the diversion estimates.[62] If diversions are understated, the analysis will fail to identify real impacts of the proposed merger (such as increased congestion, noise, emissions, and blocked grade crossings), thereby undermining the accuracy and reliability of the environmental review. Changes in traffic levels from the actual pre-merger to post-merger condition are a fundamental component of the environmental analysis. These changes are used to identify locations where additional merger-related rail traffic may create new community impacts or where increased volumes may necessitate additional infrastructure or mitigation measures. For these reasons, accurate diversion estimates are essential to study environmental impacts.

86. To evaluate the environmental implications of understated diversion estimates, the analysis must be performed at the level of discrete line segments on the Applicants' combined network. In particular, the Office of Environmental Analysis asked Applicants to identify

[60] Kahwaty Workpaper "Issue Plant 2023 EIA Data.xlsx."

[61] Kahwaty Workpaper "Issue Plant 2023 EIA Data.xlsx."

[62] *See* Information Request No. 1, Office of Environmental Analysis, *Union Pac. Corp.– Control – Norfolk S. Corp.*, FD 36873, EO 4064 (Sept. 16, 2025); Information Request No. 2, Office of Environmental Analysis, *Union Pac. Corp.– Control – Norfolk S. Corp.*, FD 36873, EO 4075 (Dec. 24, 2025); Information Request No. 3, Office of Environmental Analysis, *Union Pac. Corp.– Control – Norfolk S. Corp.*, SFD 36873, EO 4086 (Feb. 25, 2026).

and map by state and milepost endpoints each rail line segment that would experience an increase in transaction-related rail traffic of at least 100% (annual GTMs) or an increase of at least eight trains per day in areas designated as being in attainment for the primary air pollutants regulated under the Clean Air Act ("attainment areas"), and to identify and map by state and milepost endpoints each rail line segment that would experience an increase in transaction-related rail traffic of at least 50% (annual GTMs) or an increase of at least three trains per day in areas designated as a Class I area or being in nonattainment for one or more of the primary air pollutants regulated under the Clean Air Act ("nonattainment areas").[63] The Applicants submitted their initial responses to these requests on December 18, 2025.[64] The Applicants' responses, based on the understated Diversions, could fail to identify rail line segments that would exceed these thresholds if the Diversion Analysis had not removed pre-merger predicted traffic from the diversion calculations. Thus, if the Diversions are not updated, there may be communities that would experience increased rail traffic above these thresholds, without receiving the proper environmental review.

87. I am unable to identify the specific rail line segments that may have been omitted from evaluation based on the information provided by the Applicants. Proper evaluation requires flowing the revised diversion estimates into the Applicants' Growth Plan and into Oliver Wyman's MultiRail modeling software.[65] MultiRail assigns traffic to trains and segments and generates the operative segment level metrics, including train counts and gross ton-miles, used to assess diversion and changes from market growth to determine whether applicable environmental thresholds are exceeded. However, I do not have access to the MultiRail software used by the Applicants to replicate the Applicants' analysis. Because the Applicants' original diversion inputs are understated, the downstream segment level

[63] Information Request No. 1, STB Office of Environmental Analysis, *Union Pac. Corp.– Control – Norfolk S. Corp.*, FD 36873, EO 4064 (Sept.16, 2025).

[64] Response to Information Request No. 1, *Union Pac. Corp.– Control – Norfolk S. Corp.*, FD 36873, EI-34152 – EI-34158 (Dec. 18, 2025). The Applicants further supplemented their responses on January 5, 2026, and January 30, 2026. Response to Information Request No. 2, *Union Pac. Corp.– Control – Norfolk S. Corp.*, FD 36873, EI-34161 – EI-34162 (Jan. 5, 2026); Response to Information Request No. 2, *Union Pac. Corp.– Control – Norfolk S. Corp.*, FD 36873, EI-34174 – EI-34175 (Jan. 30, 2026).

[65] MultiRail is a software application used for rail service design planning that was created and maintained by Oliver Wyman. App. Vol. 2, Pages 510-11 (Initial Gehringer/Orr VS, pages 10-11).

outputs are correspondingly impacted and likely underinclusive as to the areas that trigger environmental review; yet determining on which segments corrected inputs could trip additional environmental thresholds requires correcting the diversions and rerunning the same preprocessing and MultiRail modeling used in the Applicants' Growth Plan.

E. Accurate and Consistent Diversions are Critical to Competitive Impact Analysis

88. The Board and other stakeholders cannot meaningfully assess the competitive impacts of the proposed transaction if the Applicants' merger-related growth projections are derived from a flawed diversion analysis. In Decision No. 9, the Board expressly directed the Applicants to provide projected market shares in their refiled application.[66] The Board further observed that the "projections" included in the original application were inconsistent with other claims of merger-related growth, including those contained in the Diversion Analysis.[67]

89. The Diversions are inaccurate and understated for the reasons set out in this Verified Statement. Consequently, post-merger projected market shares derived from these flawed Diversions would also be incorrect and understated. Any projected market shares that the Applicants submit based on the Diversion Analysis will necessarily understate the level of diversion-related growth, the merged railroad's market share, market concentration, and the competitive impact of the proposed merger in many markets.

90. In the 2001 Merger Guidelines, the Board emphasized the importance of reliable, transaction-specific information in the market analysis to evaluate the effects of a proposed transaction on the rail network, including its implications for competition and service adequacy.[68] In promulgating the 2001 Merger Guidelines, the Board explained that the revised market analysis requirements were intended to "supply the types of information that we have found most helpful in assessing harm to competition or to essential services

[66] Decision No. 9, pages 3-7.

[67] Decision No. 9, pages 4-5.

[68] *See* Major Rail Consolidation Procedures, Surface Transportation Board Ex. Parte No. 582 (Sub-No. 1), EB 31881 (June 11, 2021) ("2001 Merger Guidelines").

in previous major merger transactions."[69] The Board further required applicants to provide data showing how a proposed transaction would affect geographic and product competition, as well as market concentration at major origin and destination points and along major corridors of the combined system.[70] The statute and the Board's regulations require the application to include an impact analysis that reasonably reflects the expected competitive effects of the proposed transaction. An analysis built on understated diversions cannot meet that standard.

91. Inaccurate diversion estimates undermine this analytical framework by distorting the conditions under which competitive and adequate service can be maintained. When diversion volumes are understated, the resulting market concentration measures and corridor level traffic densities are similarly understated, impairing the Board's ability to assess whether a proposed transaction preserves the volume necessary to support competitive downstream effects or to maintain adequate service in affected regions.

92. To see the impact of diversions on market share calculations, consider **Figure 19**, which compares the post-merger shares reflected in the Operating Plan to the post-merger shares predicted by the statistical model for the PRB coal example provided in **Table 8**. **Figure 19** includes two pie charts. The pie chart on the left provides the Operating Market Shares (actual shares plus Diversions). Because the UP-NS route has 0% market share pre-merger, its Operating Market Share would be {{ }}% = ({{ }}% + {{ }}% - {{ }}%). The Operating Market Share for the {{ }} route is {{ }}% = ({{ }}% + {{ }}% - {{ }}%). These are the post-merger market shares reflected in the Operating Plan. The pie chart on the right provides the post-merger market shares derived from the statistical model, which are {{ }}% for the UP-NS route and {{ }}% for the {{ }} route. In this example, the merged firm's post-merger market share used in the Operating Plan is less than half of the merged firm's predicted market share.

[69] 2001 Merger Guidelines, page 60.

[70] 2001 Merger Guidelines, pages 58-61.

Figure 19
Market Share Inaccuracies Introduced by the Diversion Analysis Methodology
PRB Coal Example with UP/NS Zero Traffic Route

{{

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93. As discussed in **Section II.E** and **Section IV.B**, Applicants have already provided two different post-merger market share numbers: (1) those predicted by the statistical model in the Diversion Analysis and (2) the shares used in the Operating Plan, which consist of actual 2023 pre-merger market shares adjusted to reflect Diversions. Any projected market shares Applicants provide in their refiled application will need to be reconciled with these other estimates. Without consistent post-merger market share estimates, the Board and other stakeholders cannot accurately assess the competitive impacts of the proposed transaction.

V. CONCLUDING COMMENTS

94. For the Diversion Analysis to be useful, it is essential that the differences between actual and predicted pre-merger traffic levels are small and that the model accurately captures the substitution patterns between routes within a market. If the baseline estimates do not align with real-world patterns, the analysis will fail. A review of the Diversion Analysis indicates

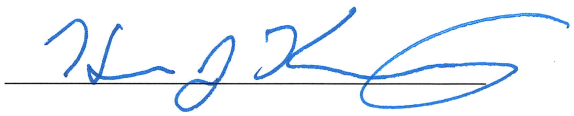
significant discrepancies between actual and predicted pre-merger traffic estimates. Furthermore, the model indicates diversion patterns in numerous markets that are not possible in reality. Given these widespread inaccuracies in the baseline estimates, relying on the Diversion Analysis to estimate industry diversions resulting from the proposed merger is not based on acceptable analytical methods.

95. Applicants' Diversion Analysis needs to reflect rail-to-rail traffic diversion estimates that are tethered to the 2023 *actual* rail network and reflect market realities rather than reflecting the *unreliably predicted* pre-merger rail market shares generated by using a flawed statistical model. Without such revisions, the STB and relevant stakeholders cannot properly evaluate the operational, environmental, and competitive effects of the proposed merger.

VERIFICATION

I, Henry J. Kahwaty, declare under penalty of perjury that the foregoing is true and correct. Further, I certify that I am qualified and authorized to file this statement.

Executed on this 23rd day of March, 2026.



Henry J. Kahwaty, Ph.D.

Attachments

Attachment A
C.V. of Henry J. Kahwaty, Ph.D.

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SUMMARY

Henry Kahwaty is an economist working out of Berkeley Research Group's Washington, DC office. His areas of expertise include microeconomics, industrial organization, and antitrust economics. He has completed numerous antitrust reviews of mergers and horizontal and vertical contractual arrangements. He has also completed studies of monopolization and abuse of dominance in the context of government investigations and private litigation. His merger work includes studies in metals, solid waste, gasoline wholesaling and retailing, industrial products, computer hardware and software, defense electronics, pharmaceuticals, electricity, consumer goods, and telecommunication services and equipment. In addition, he has analyzed competition issues in the mining, luxury goods, banking, chemicals, software development tools, and hardware emulation industries. He has completed studies of vertical restraints and vertical integration, and the impact of such vertical relationships on competition. His work also includes the study of price fixing allegations, class certification, and antitrust damages.

In addition to antitrust and competition policy, Dr. Kahwaty has completed analyses of intellectual property damages and the economic impact of changes in government policy. Dr. Kahwaty's policy work includes the analysis of issues in healthcare, including the costs associated with changes in Medicare, Medicaid, and the availability of generic drugs and biologic medicines. He has also worked on small business issues.

Dr. Kahwaty has presented analyses to the Antitrust Division of the U.S. Department of Justice, the U.S. Federal Trade Commission, the Directorate-General for Competition of the European Commission, the Canadian Competition Bureau, the Competition Tribunal of Canada, the Competition Commission South Africa, the Centers for Medicare & Medicaid Services, the Congressional Budget Office, Congressional Committee Staff, the Medicare Payment Advisory Commission, the U.S. Federal Energy Regulatory Commission, the U.S. Small Business Administration, and the British Columbia Utilities Commission. Dr. Kahwaty started his career as an Economist with the Antitrust Division of the U.S. Department of Justice. At the Antitrust Division, he specialized in market power analysis for merger and monopolization cases with a focus on the computer software, banking, manufacturing, and defense industries. He spent 15

years as a Senior Economist, Principal, and Director with LECG working out of LECG's offices in Washington and London. He received his Ph.D. in Economics from the University of Pennsylvania in 1991. He was selected for inclusion in the 2011 and 2013 – 2025 editions of Lexology Index: Competition/The International Who's Who of Competition Lawyers & Economists, the 2021 – 2025 editions for commercial litigation, and the 2023 – 2024 editions for consulting experts.

EDUCATION

Ph.D. (Economics), University of Pennsylvania, 1991
M.A. (Economics), University of Pennsylvania, 1988
B.A. (Economics and Mathematics), University of Pennsylvania, 1986

PRESENT EMPLOYMENT

Berkeley Research Group, LLC, Managing Director, 2011 – present

OTHER POSITIONS

Member, Board of Directors, Florida West Coast Symphony, Inc. (d/b/a Sarasota Orchestra), 2021 - 2024

PREVIOUS POSITIONS

Law & Economics Consulting Group, Inc. and LECG, LLC
Director, 2002 – 2010
Principal, 1999 – 2002
Senior Managing Economist, 1997 – 1999
Senior Economist, 1995 – 1996

U.S. Department of Justice, Antitrust Division, Economic Litigation Section
Economist, 1991 – 1995

- Prepared economic models and analysis for antitrust cases.
- Prepared antitrust investigation plans.
- Reviewed civil investigative demands, second requests, subpoenas, complaints, affidavits, and other documents.
- Assisted attorneys with gathering evidence, including conducting witness interviews and assisting with witness depositions.
- Recommended whether to initiate enforcement actions.

PROFESSIONAL EXPERIENCE

Consultant to Rational Software in proposed acquisition of Pure Atria, 1997.

Consultant to Aptix Corporation in Aptix Corporation v. Quickturn Design Systems, 1998.

Consultant to New England Electric System in proposed acquisition by National Grid Group plc, 1999.

Consultant to New England Electric System in proposed acquisition of Eastern Utilities Associates, 1999.

Consultant for third party in proposed acquisition of Reynolds Metals by Alcoa, 1999 – 2000.

Consultant to SmithKline Beecham in proposed merger with Glaxo Wellcome, 2000.

Consultant to De Beers in proposed acquisition of Ashton Mining, 2000.

Consultant to National Grid USA in proposed acquisition of Niagara Mohawk, 2000 – 2001.

Consultant to De Beers in proposed joint venture with LVMH Moët Hennessy - Louis Vuitton, 2001.

Consultant to Edison Electric Institute in Notice of Proposed Rulemaking on Standards of Conduct for Transmission Providers, 2001.

Consultant to De Beers in European Commission review of De Beers' Supplier of Choice strategy, 2001 – 2003.

Consultant to De Beers in European Commission review of proposed Trade Agreement with ALROSA, 2001 – 2004.

Consultant to BT Ignite in Public Consultation regarding Draft Recommendation on Relevant Product and Service Markets related to the European Commission's Guidelines on Market Analysis and the Assessment of Significant Market Power under the Community Regulatory Framework for Electronic Communications Networks and Services, 2002.

Consultant to Phelps Dodge in Phelps Dodge Corporation v. U.S. Energy Corporation, 2003.

Consultant to Alcoa Flexible Packaging in H.S. Crocker v. Alcoa Flexible Packaging, 2003 – 2004.

Consultant to the Competition Authority (Ireland) regarding its Study of Competition in the Irish Banking Sector, 2003 – 2004.

Consultant to Financial Services Authority (United Kingdom) regarding its approach to the implementation of the Capital Requirements Directive, 2004 – 2005.

Consultant to the Competition Authority (Ireland) regarding its Study of Competition in the Irish Insurance Sector, 2004 – 2005.

Consultant to De Beers in U.S gem diamond class action litigations, including Shawn Sullivan, et al. v. DB Investments, Inc., et al., 2005 – 2008.

Consultant to firm being investigated by the Antitrust Division of the U.S. Department of Justice regarding the domestic impact of alleged foreign price fixing, 2007.

Consultant to the Generic Pharmaceutical Association regarding the benefits of developing a pathway for generic biologics, 2007 – 2009.

Consultant to Tropitone Furniture in Energy Alternatives v. Tropitone Furniture, 2007 – 2008.

Consultant to the Generic Pharmaceutical Association regarding the costs associated with implementing e-pedigrees and serialization for the generic pharmaceutical industry, 2008.

Consultant to Republic Services in proposed acquisition of Allied Waste, 2008.

Consultant to Polypore International in Federal Trade Commission v. Polypore International, 2008 – 2010.

Consultant to Generic Pharmaceutical Association regarding Medicare and Medicaid reform, 2009 – 2010.

Consultant to EA Engineering, Science and Technology regarding small business size standards, 2009 – 2010.

Consultant to Watson Pharmaceuticals regarding Medicare reimbursements for certain products, 2010 – 2011.

Consultant to United HealthGroup Incorporated in United HealthGroup Incorporated v. Columbia Casualty Company, et al., 2011 – present.

Consultant to CCS Corporation, Complete Environmental Inc., and Babkirk Land Services Inc. in Commissioner of Competition v. CCS Corporation, et al., 2011 (Tervita).

Consultant to third party in various monopolization and abuse of dominance investigations of Google, 2011 – 2015.

Consultant to third party in investigation of the acquisition of certain assets of Viterra by CF Industries, 2012 – 2013.

Consultant to fitness benefit provider in antitrust review of issues related to the use of exclusive contracting in the provision of fitness benefits to Medicare Advantage plans, 2012 – 2013.

Consultant to Rockwell Collins in proposed acquisition of ARINC, 2013 – 2014.

Consultant to De Beers in Michelle Fairhurst v. De Beers Canada Inc., et al., 2013 – 2014.

Consultant to MedImpact Healthcare Systems, Inc. in Star Discount Pharmacy, Inc., et al. v. MedImpact Healthcare Systems, Inc., et al., 2014.

Consultant to De Beers in Daniel Ammazzini et al. v. Anglo American PLC, et al., 2014 – 2015.

Consultant to De Beers in Kirk Brant v. De Beers Canada Inc., et al., 2015.

Consultant to Parkland Industries in Commissioner of Competition v. Parkland Industries Ltd., et al., 2015 – 2016.

Consultant to AMC in Cobb Theatres III, LLC, et al. v. AMC Entertainment Holdings, Inc., et al., 2016.

Consultant to third party in investigation of Microsoft's proposed acquisition of LinkedIn, 2016.

Consultant to Chemtrade in proposed acquisition of Canexus, 2016 – 2017.

Consultant to AMC in iPic-Gold Class Entertainment, LLC, et al. v. Regal Entertainment Group, et al., 2016 – 2017.

Consultant to Parkland Industries in proposed acquisition of the majority of the Canadian CST assets from Couche-Tard, 2016 – 2017.

Consultant to Parkland Industries in proposed acquisition of Canadian refinery and downstream fuel business from Chevron, 2017.

Consultant to AMC in Viva Cinemas Theaters and Entertainment LLC d/b/a Viva Cinema v. America Multi-Cinema, Inc., 2018.

Consultant to EA Engineering, Science and Technology regarding small business size standards, 2018 - 2020.

Consultant to Aleris in proposed acquisition of Aleris by Novelis, 2018 – 2019.

Consultant to Parkland in An Inquiry into Gasoline and Diesel Prices in British Columbia, 2019.

Consultant to Compassion-First in proposed acquisition of National Veterinary Associates, 2019.

Consultant to Katzkin Leather, Inc., Clearlight Partners, LLC, and Clearlight Partners Management, LLC, in Classic Soft Trim, Inc. et al., v. Ross Albert, et al., 2020.

Consultant to Parkland Industries in Cayman Islands Fuel Sector Consultation, 2020.

Consultant to Republic Services in proposed acquisition of Santek Waste Services, 2020.

Consultant to Republic Services in proposed acquisition of Randy's Environmental Services, 2020.

Consultant to Telkom in Telkom SA SOC Ltd v. Vodacom (PTY) Ltd, et al., 2020 - 2021.

Consultant to Computer and Communications Industry Association in the European Commission's consultation on the Digital Markets Act, 2021.

Consultant to Telkom in Competition Commission investigation of agreements between Mobile Telephone Networks South Africa and Liquid Telecommunications South Africa, 2021.

Consultant to Telkom in complaint to the Competition Commission of South Africa regarding wholesale supply contracts in the South African mobile communications market, 2021.

Consultant to Parkland Corporation in proposed acquisition of Pétroles Crevier, 2021 – 2022.

Consultant to Parkland Corporation in proposed acquisition assets from Cenovus Energy, 2021 – 2022.

Consultant to Telkom in potential acquisition by Mobile Telephone Networks South Africa, 2022.

Consultant to Astron Energy in proposed acquisition of Engen Ltd by Vitol Emerald Bidco (Pty) Ltd., 2023 – 2024.

Consultant to Parkland Corporation in proposed acquisition of assets related to the Western Canadian retail fuel marketing business of McDougall Energy Inc., 2024.

Consultant to California Chamber of Commerce in the California Law Revision Commission's review of California's antitrust laws, on-going.

Consultant to Canadian National Railway in proposed merger of Union Pacific and Norfolk Southern Railways, on-going.

Consultant to parties in price fixing litigation and government investigations, on-going.

Consultant to several pharmaceutical companies regarding potential exposure to patent damages from at-risk launches of generic products.

Consultant to parties regarding class certification, competitive effects, and damages estimates in private antitrust litigations including class action litigations.

Consultant to parties regarding private antitrust cases and intellectual property cases.

Consultant to parties regarding merger reviews and business practice investigations.

Testimony

Provided declaration relating to the acquisition of Niagara Mohawk by National Grid USA, Federal Energy Regulatory Commission, Docket No. EC01-63-000, 2001.

Provided hearing testimony before the Directorate-General for Competition of the European Commission in review of De Beers' proposed Trade Agreement with ALROSA, Case COMP/E-2/38.381 – De Beers-ALROSA and Case COMP/B-2/38.381 – De Beers, 2003.

Provided report and deposition testimony in H.S. Crocker, Inc. v. Alcoa Flexible Packing, No. 02 C 50010, U.S. District Court for the Northern District of Illinois (Western Division), 2004.

Provided statement and deposition testimony in Energy Alternatives, Inc. v. Tropitone Furniture Co., Inc., 06-CVS-8782, North Carolina General Court of Justice, Superior Court Division, 2008.

Provided report, deposition testimony, and trial testimony in Federal Trade Commission v. Polypore International, Docket No. 9327, 2009.

Provided report and deposition testimony in UnitedHealth Group, Inc. v. Columbia Casualty Company, et al., 05-CV-01289, U.S. District Court for the District of Minnesota, 2011.

Provided report addressing efficiencies, report addressing the analysis of competition issues, and trial testimony in The Commissioner of Competition v. CCS Corporation, et al., Competition Tribunal (Canada), CT-2011-002, 2011 (Tervita).

Provided two affidavits addressing class certification in Michelle Fairhurst v. De Beers Canada Inc., et al., The Supreme Court of British Columbia, Vancouver Registry, No. S-071209, 2013.

Provided report and deposition testimony in Star Discount Pharmacy, Inc., et al. v. MedImpact Healthcare Systems, Inc., et al., 5:11-cv-2206-AKK, U.S. District Court for the Northern District of Alabama (Northeastern Division), 2014.

Provided affidavit addressing class certification and testimony in Questioning in Daniel Ammazzini et al. v. Anglo American PLC, et al., Court of Queen's Bench for Saskatchewan, Judicial Centre of Saskatoon, Q.B. No. 877 of 2011, 2014.

Provided affidavit addressing class certification in Kirk Brant v. De Beers Canada Inc., et al., Ontario Superior Court of Justice, Judicial Centre of Ontario, 1399/10C, 2015.

Provided report analyzing competitive effects for mediation in Commissioner of Competition v. Parkland Industries Ltd., et al., Competition Tribunal (Canada), CT-2015-003, 2016.

Provided report and deposition testimony in Cobb Theatres III, LLC, et al. v. AMC Entertainment Holdings, Inc., et al., 1:14-CV-00182-ELR, U.S. District Court for the Northern District of Georgia (Atlanta Division), 2016.

Provided disclosure and deposition testimony in iPic-Gold Class Entertainment, LLC, et al. v. Regal Entertainment Group, et al., District Court for Harris County, Texas, 234th Judicial District, No. 2015-68745, 2017.

Provided report and deposition testimony in Viva Cinemas Theaters and Entertainment LLC d/b/a Viva Cinema v. America Multi-Cinema, Inc., 4:15-cv-01015, U.S. District Court for the Southern District of Texas (Houston Division), 2018.

Provided reports and hearing testimony in An Inquiry into Gasoline and Diesel Prices in British Columbia, Project No. 1599007, British Columbia Utilities Commission, 2019.

Provided report, deposition testimony, and hearing testimony in Classic Soft Trim, Inc. et al., v. Ross Albert, et al., No. 6:18-cv-01237, U.S. District Court for the Middle District of Florida (Orlando Division), 2020.

Provided rebuttal report and deposition testimony in arbitration in the immunoassay industry, International Institute for Conflict Prevention & Resolution, 2021.

Provided report, supplemental report, answering report, and rebuttal report in Telkom SA SOC Ltd v. Vodacom (PTY) Ltd, et al., CT Case No: FTN143OCT20, Competition Tribunal of South Africa, 2020 (joint with Kalyan Dasgupta and Phil Alves). Also provided submissions to the Competition Commission (joint with Kalyan Dasgupta, Phil Alves, and Justin Tonkin).

Reports

Provided report titled "Vertical Integration, Economic Efficiency, and Standards of Conduct Regulation of Electric and Natural Gas Transmission Providers." Notice of Proposed Rulemaking on Standard of Conduct for Transmission Providers, Federal Energy Regulatory Commission, Docket No. RM01-10-000, 2001.

Provided report titled "Market Definition and Market Power Analysis: Public Consultation on a Draft Commission Recommendation," European Commission, 2002 (joint with Richard Shin and Richard Levine).

Provided report titled "Study of Competition in the Provision of Non-investment Banking Services in Ireland: Phase 1 Report." The Competition Authority (Ireland), 2003 (joint with Andy Baziliauskas and John Evans).

Provided report titled "The Proposed EC Technology Transfer Block Exemption Regulation: An Economic Assessment." European Commission, 2003 (joint with Peter Grindley, Edward Sherry, and David Teece).

Provided report titled "Study of Competition in the Provision of Non-investment Banking Services in Ireland: Report and Recommendations." The Competition Authority (Ireland), 2004 (joint with Andy Baziliauskas).

Provided report titled "Survey of the Impacts of CRD Implementation on the UK Financial Services Industry." Financial Services Authority, 2005 (joint with Mark Tilden, Colin Lawrence, Thomas Ortenzi, and Karen Forseter).

Provided report titled "The Small Business Administration's Size Standards Methodology and the Environmental Remediation Services Industry." U.S. Small Business Administration, 2010.

Provided report titled "The Small Business Administration's Size Standards Methodology and the Environmental Remediation Services Sub-industry." U.S. Small Business Administration, 2018.

Provided report titled "Fuel Sector Consultation." Cayman Islands Utility Regulation and Competition Office, 2020.

Provided Report titled "Is the Proposed Digital Markets Act the Cure for Europe's Platform Ills? Evidence from the European Commission's Impact Assessment." European Commission, 2021.

Speeches and Conference Presentations

"Antitrust Damages," Litigation Services Subcommittee of the Greater Washington Society of Certified Public Accountants, Washington, D.C., January 28, 1999.

"Unregulated Affiliates and the Market Power Problem," Forum on Electric Power Market Restructuring, Washington, D.C., February 19, 1999.

"The Analysis of Market Power," Deregulation Progress Report: Issues and Insights Conference, Vail, Colorado, August 4, 1999.

"Worldwide Convergence in Competition Enforcement," XXXV International Association of Financial Executives Institutes World Congress, Florence, Italy, October 11, 2004.

"The Potential Savings from Biogenerics," Generic Pharmaceutical Association Annual Policy Conference, Washington, D.C., September 17, 2009.

"Generic Substitution: The Savings," Generic Pharmaceutical Association Governors' Staff Briefing, March 9, 2011.

Mock Trial Testimony as Expert Witness for the Plaintiff, 2011 American Bar Association Antitrust Section Spring Meeting, Washington, D.C., March 31, 2011.

"Debating the Efficiencies Defence," 2017 Canadian Bar Association Competition Law Fall Conference, Ottawa, Canada, October 26, 2017.

"High-Level Roundtable on Competition and Innovation: Why Europe Needs Dynamic Models in Digital Markets – and How Europe Can Build Them," Lisbon Council, 2021.

"Antitrust Fundamentals and Dynamic Competition," Platform Regulation Forum, Insights@Questrom Live Conference, 2021.

Papers and Publications

"Is the Digital Markets Act the Cure for Europe's Platform Ills? Evidence From the European Commission's Impact Assessment," Research in Law and Economics, in: The Economics and Regulation of Digital Markets, volume 31, pages 5-52, Emerald Group Publishing Limited, 2023 (joint with David Teece).

"United States: economist perspective," *Enforcer Hub*, Global Competition Review, 2022 (joint with Cleve Tyler).

"United States: economist perspective," *Enforcer Hub*, Global Competition Review, 2021 (joint with Cleve Tyler).

"Is the Proposed Digital Markets Act the Cure for Europe's Platform Ills? Evidence from the European Commission's Impact Assessment," Lisbon Council, April 12, 2021 (joint with David Teece).

"Rebooting Digital Market Power," Competition Policy International, December 14, 2020 (joint with David Teece).

"United States Overview," *Competition Economics Handbook 2021*, Global Competition Review, 2020 (joint with Cleve Tyler).

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"Analysis of Horizontal Market Power in Transactions under the Federal Power Act." Federal Energy Regulatory Commission, 2011 (joint with Carl Danner, Keith Reuter, and Cleve Tyler).

"HHI Screening Thresholds and the U.S. Department of Justice and Federal Trade Commission Horizontal Merger Guidelines", U.S. Department of Justice and Federal Trade Commission Horizontal Merger Guidelines Review Project, Project No. P092900, 2009.

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"The Proposed EC Technology Transfer Block Exemption Regulation: An Economic Assessment" (joint with Peter Grindley, Edward Sherry, and David Teece), 2003.

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"The Analysis of Market Concentration, Market Power and the Competitive Effects of Mergers in the Electricity Industry" (joint with Richard Gilbert), June 1997.

"Unregulated Affiliates and the Market Power Problem," February 1999.

TEACHING EXPERIENCE

University of Pennsylvania, Philadelphia, Pennsylvania, 1988 – 1991

Course taught include Industrial Organization, Topics in Microeconomics, Topics in Macroeconomics, Intermediate Microeconomics, Introductory Microeconomics, Introductory Macroeconomics.

PROFESSIONAL MEMBERSHIPS

American Economic Association
American Bar Association (Associate Member)
Canadian Bar Association (Competition Law Section Affiliate)

March 2026

Attachment B
Overview of Methodologies Used for the Analysis of Rail-to-Rail Diversions

1. The methodology adopted to study rail-to-rail diversions should capture the scope and effects of the proposed transaction it promises to model while grounding the analysis in relevant market and industry facts. The Diversion Analysis employs a model developed by Oliver Wyman to study rail-to-rail diversion (the "OW Model") which can be described as "a logit model of route choice."[71] The statistical model used in the Diversion Analysis is a discrete choice model used to estimate the probability that a shipper selects a rail route based "on the characteristics of that route relative to all other competitive routes in the market."[72] This discrete choice model is a multinomial logit model, which is a form of logistic regression, that estimates the probabilities that particular routes are selected based on the characteristics of total route impedance and junction frequency.[73] These probabilities are interpreted as market shares.

2. The statistical model used in the Diversion Analysis is similar in some respects to those used in past proceedings before the STB and the ICC, including, for example, Mr. Hunt's rail-to-rail diversion study in support of CN's proposed acquisition via divestiture of CPKC's Springfield Line ("Springfield Diversion Analysis"),[74] and Mark A Hornung's rail-to-rail diversion study in support of the BNSF merger ("BN-ATSF Diversion Analysis").[75] Other studies, such as Mr. Hunt's rail-to-rail diversion analysis in support of

[71] App. Vol. 2, Page 327 (Initial Hunt/Schabas VS, page 19).

[72] App. Vol. 2, Pages 358-62 (Initial Hunt/Schabas VS, § 6.2., pages 50-54).

[73] The Initial Hunt/Schabas VS recognizes that other factors, such as commercial agreements and SCRS industry access, may differentiate one rail route from another. App. Vol. 2, Page 405 (Initial Hunt/Schabas VS, page 97).

[74] On February 28, 2022, CN asked the Board to order CP and KCS to divest the Springfield Line to CN as a condition of any approval of the proposed CP-KCS merger. The Springfield Line is recognized as KCS's lines between Kansas City, Missouri, and Springfield, Illinois and East St. Louis, Illinois. *See*, Responsive Application of Illinois Central Railroad Company ("CN Responsive Application in CPKCS"), *Illinois Central Railroad Company – Acquisition of a Line of Railroad Between Kansas City, Mo, and Springfield and East St. Louis, Il – Kansas City Southern Railway Company*, FD 36500 (Sub-Nos. 1, 2, 3, 4), CN-14 (Feb. 28, 2022), page 2.

[75] Verified Statement of David T. Hunt in Support of Springfield Line Divestiture to CN ("Hunt CPKCS VS"), Exhibit 12A in CN Responsive Application in CPKCS; and Verified Statement of Mark A. Hornung, *Burlington Northern*

CN's acquisition of the Iowa Northern Railroad, have taken a different approach that does not involve a logit model used to estimate market shares ("CN-IANR Diversion Analysis").[76] The approaches taken in these other studies differ. Any methodology selected, however, should fit the proposed transaction under consideration. For reasons identified in this Verified Statement, the Diversion Analysis is not well-suited to analyze the proposed merger. Namely, the Diversion Analysis does not appropriately model routes for which UP-NS is expected to offer new single line service, which is the chief efficiency touted by the Applicants.

3. The OW Model employed in the Initial Hunt/Schabas VS was derived from a model developed by ALK Associates and used for the BN-ATSF Diversion Analysis (the "Advanced Traffic Diversion Model" or "ATD Model").[77] One important difference between the OW Model and the ATD Model is that the OW Model relies on a logistic regression to estimate market shares while the ATD Model did not.[78] Instead, the ATD Model was tailored to selecting coefficients with two goals in mind: minimizing error *and* accurately predicting 0% or 100% market share extrema.[79]

4. In the Springfield Diversion Analysis, Mr. Hunt used an OW Model. Although I cannot fully evaluate the Springfield Diversion Analysis based on the public information available to me, the OW Model used for that analysis appears more suited for modeling the proposed

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Inc. and Burlington Northern R.R. Co. – Control and Merger – Santa Fe Pacific Corp. and the Atchison, Topeka and Santa Fe Ry. Company, FD 32549, BN/SF-7, (Oct. 2, 1994) ("Hornung BNSF VS").

[76] Rather than use a logit model, as Mr. Hunt did in prior proceedings, Mr. Hunt employed a binary choice model which did not require estimating market shares for a pre-merger base year. This binary choice approach is synonymous to an "all-or-nothing" approach which predicts whether "all" or "none" of a set of traffic would divert, based on relevant characteristics. *See*, Verified Statement of David T. Hunt, Appendix B in Application, *Canadian National Railway Company and Grand Trunk Corporation – Control – Iowa Northern Railway Company*, FD 36744, CN/IANR-1 (Jan. 30, 2024) ("Hunt CN/IANR VS"), page 27.

[77] For example, both models estimate the market share that a new service line is likely to attract and compare the estimated market shares to a baseline to calculate diversions.

[78] *See*, App. Vol. 2, Page 399 (Initial Hunt/Schabas VS, page 91); and Hornung BNSF VS, "Calibration of the market share equation" Section, pages II 34 - II 46; Figures II-5 through II-12; and Table II-6.

[79] Hornung BNSF VS, "Calibration of the market share equation" Section, pages II 34 - II 46; Figures II-5 through II-12; and Table II-6.

transaction covered in the Springfield Diversion Analysis than it does for modeling the proposed UP and NS merger.

5. For one, the Springfield Diversion Analysis differs vastly in scope. Whereas the proposed merger of UP and NS would create a transcontinental railroad, CN's proposed CPKC divestiture of the Springfield Line involved a much narrower set of markets and traffic. That proposed divestiture related to CPKC ownership of two parallel routes, and it would have provided for a second competitor in a region stretching between Kansas City, Missouri, and Springfield, Illinois and East St. Louis, Illinois.[80] Targeted market entry was the focus of the proposed CPKC divestiture of the Springfield line. As such, the Springfield Diversion Analysis studied a limited set of markets:

- The Springfield Diversion Analysis was limited to studying CN's entry into just seven intermodal markets and nine grain markets.[81] Although the exact number of automotive markets cannot be determined from available public information, the Springfield Diversion Analysis appears to have modeled at least fifteen automotive markets[82] and no merchandise markets.[83] By comparison, the Diversion Analysis studies UP-NS entry into more than 5,000 markets via new single line offerings serving both the origin and destination.[84] **Section III.A** of this Verified Statement explains the widespread nature of the UP/NS Zero Traffic Route problem and how the problem leads to compression of market shares for alternative routing options. The resulting bias leads to understated Diversions in thousands of markets where new entry is predicted as a result of the proposed UP-NS

[80] CN Responsive Application in CPKCS, page 2.

[81] Grain shipments are a certain type of bulk shipment. Hunt CPKCS VS, Exhibit 5-1 and Exhibit 5-3, pages 15, 18.

[82] Hunt CPKCS VS, Exhibit 5-2, page 17.

[83] There is no mention of modeling rail-to-rail diversion in merchandise markets found in the Hunt CPKCS VS. Figures 10 and 14 in this Verified Statement show that the statistical model used in the Diversion Analysis does a poor job predicting market share for merchandise traffic. This is not a service type that the Springfield Diversion Analysis attempted to model.

[84] Kahwaty Workpaper "Workpaper - Attachment B.xlsx."

merger and is likely more pronounced in the Diversion Analysis than the Springfield Diversion Analysis. **Table C2** in **Attachment C** displays how common zero market share traffic is in the Diversion Analysis. Approximately 95% of merchandise and bulk markets having more than one route contain a zero percent market share route, and 85% of automotive markets having more than one route contain a zero percent market share route. Almost 50% of intermodal markets having more than one route contain a zero percent market share route.

6. Secondly, the statistical model applied in the Springfield Diversion Analysis differed in at least one fundamental way from the Diversion Analysis:[85]

- The statistical model used in the Springfield Diversion Analysis appears to have been calibrated using the CCWS only[86] and did not also consider routes *without* historical volume, as the Diversion Analysis did.[87] Although I cannot come to a complete determination based on the public information available to me, for the reasons discussed in **Section II**, omitting such routes from the calibration step may have led to a relatively better statistical model fit in the Springfield Diversion Analysis.

7. A chief efficiency touted by the Applicants involves growth spurred by the creation of a transcontinental railroad and an array of new single line services. For the Diversion Analysis to be consistent with the claimed efficiencies of the proposed transaction, it *must* appropriately model the impact of new UP-NS single line service entering many markets. As described in this Verified Statement, it does not.

[85] There may be additional modeling differences between the diversion analyses that I am unaware of based on the limited public information available to me.

[86] "The coefficients for the logit model were calibrated using the STB 2019 Carload Waybill Sample." Hunt CPKCS VS, page 39.

[87] "There also are competitive routes with no historical volume included in the [calibration step]." App. Vol. 2, Pages 393-95 (Initial Hunt/Schabas VS, Appendix A.5., pages 85-87).

8. Consistent with the idea that the optimal rail-to-rail diversion analysis methodology is the methodology that best fits the proposed transaction it promises to model, Mr. Hunt, in his analysis of rail-to-rail diversion supporting CN's acquisition of Iowa Northern, elected to stray from the logit model approach he used in the Springfield Analysis, in favor of a "binary choice" modeling approach. Mr. Hunt's justification was that:

> [T]he nature of this transaction and the fact that the base data only contained IANR movements was more suited to a binary choice – either all of the traffic for a record would divert to CN-IANR, or none of it would.[88]

9. Although the Diversion Analysis model includes at least some markets that are "all or nothing," like the CN-IANR Diversion Analysis, the Diversion Analysis does not make any adjustments in the estimation methodology used to handle such markets.[89] The CN-IANR approach, or something similar, could have been used to more appropriately model "all or nothing" markets. Moreover, the Diversion Analysis does not attempt to evaluate how well the statistical model performs when predicting route market shares in such markets. This model calibration and evaluation issue was addressed by the BN-ATSF Diversion Analysis, which employed the ATD Model. Like the market shares studied in the Diversion Analysis, the BN-ATSF Diversion Analysis studied an "overwhelming number of historical market shares [that] were exactly 0% or exactly 100%."[90] As described above, the ATD Model used in the BN-ATSF Diversion Analysis was intentionally calibrated to more closely predict 0% and 100% historical market shares accurately. The Diversion Analysis fails to address this issue entirely. Where the Diversion Analysis does consider UP/NS Zero Traffic Routes, the analysis in this Verified Statement indicates that the Diversions understate diversion substantially.

[88] Hunt CN/IANR VS, page 27.

[89] In **Section IV.C**, I provide an example of the Diversion Analysis resulting in understated diversion of a coal movement from the PRB. The example could have been studied using a binary choice modeling approach.

[90] Hornung BNSF VS, page II 40.

Attachment C
Description of the Data Used to Estimate the Statistical Model in the Diversion Analysis

1. The data used to estimate the statistical model employed by the Diversion Analysis are the same data used to generate the figures and tables presented in this Verified Statement. Figures and tables presented in this Verified Statement rely on the following files produced January 15, 2026, in support of the Initial Hunt/Schabas VS. **Tables C1 – Tables C4** present basic summary statistics on certain of these files:

    - vFinal_MerchBulk_vShare_diversions_all.csv;
    - vFinal_AutovShare.csv;
    - Intermodal R2R - highly confidential.xlsx;
    - vFinal_auto_diversions_removed.csv;
    - vFinal_MerchBulkvShare_withSTCC.csv;
    - HC-vFinal_Filtered_ccws_calibration_df2025-10-22-16-57_SType_1-4.xlsx; and
    - R2R_Merchandise_Bulk_Diversions_vF.csv.

2. **Table C1** presents the total number of routes and markets, and the total number of routes and markets with zero traffic, by service type.

Table C1
Diversion Analysis Data Summary Statistics

Service Type	Total Markets	Markets with a Zero Traffic Route	Percent of Markets with a Zero Traffic Route	Average Number of Routes per Market	Median Number of Routes per Market	Total Routes	Routes with Zero Traffic	Percent of Routes with Zero Traffic
Merchandise	116,644	60,633	52%	2.05	2	238,855	113,726	48%
Automotive	2,004	887	44%	2.04	2	4,087	1,770	43%
Bulk	6,990	2,471	35%	1.62	1	11,321	4,196	37%
Intermodal	97	48	49%	3.44	4	334	73	22%

Notes:
[1] Across all markets in the Diversion Analysis.
[2] Routes with Zero Traffic identified using column 'ExpandedCarsUpdated_pre'.

Sources:
[1] Initial Hunt/Schabas VS workpapers, vFinal_MerchBulk_vShare_diversions_all.csv; vFinal_AutovShare.csv; Intermodal R2R - highly confidential.xlsx; and vFinal_auto_diversions_removed.csv.

3. **Table C2** presents these statistics limited to markets with more than one route (or record).

Table C2
Diversion Analysis Data Summary Statistics
Limited to Markets with More Than One Route

Service Type	Total Markets	Markets with a Zero Traffic Route	Percent of Markets with a Zero Traffic Route	Average Number of Routes per Market	Median Number of Routes per Market	Total Routes	Routes with Zero Traffic	Percent of Routes with Zero Traffic
Merchandise	64,315	60,231	94%	2.90	2	186,526	113,324	61%
Automotive	1,044	886	85%	3.00	2	3,127	1,769	57%
Bulk	2,554	2,467	97%	2.70	2	6,885	4,192	61%
Intermodal	97	48	49%	3.44	4	334	73	22%

Notes:
[1] Data is limited to markets in the Diversion Analysis with more than one route.
[2] Routes with Zero Traffic identified using column 'ExpandedCarsUpdated_pre'.

Sources:
[1] Initial Hunt/Schabas VS workpapers, vFinal_MerchBulk_vShare_diversions_all.csv; vFinal_AutovShare.csv; Intermodal R2R - highly confidential.xlsx; and vFinal_auto_diversions_removed.csv.

4. **Table C3** presents these statistics limited to markets with more than one route and containing a UP/NS Zero Traffic Route.

Table C3
Diversion Analysis Data Summary Statistics
Limited to Markets with More Than One Route & a UP/NS Zero Traffic Route

Service Type	Markets with a Zero Traffic Route	Percent of Markets with a Zero Traffic Route	Average Number of Routes per Market	Median Number of Routes per Market	Total Routes	Routes with Zero Traffic	Percent of Routes with Zero Traffic
Merchandise	46,237	100%	3.13	3	144,705	95,495	66%
Automotive	754	100%	3.27	3	2,462	1,592	65%
Bulk	1,872	100%	2.87	2	5,373	3,473	65%
Intermodal	23	100%	3.65	4	84	46	55%

Notes:
[1] Data is limited to markets in the Diversion Analysis with more than one route and a UP/NS Zero Traffic Route.
[2] Routes with Zero Traffic identified using column 'ExpandedCarsUpdated_pre'.

Sources:
[1] Initial Hunt/Schabas VS workpapers, vFinal_MerchBulk_vShare_diversions_all.csv; vFinal_AutovShare.csv; Intermodal R2R - highly confidential.xlsx; and vFinal_auto_diversions_removed.csv.

5. **Table C4** is limited to UP/NS Zero Traffic Routes and presents the number of these routes with reported diversions in the Diversion Analysis.

Table C4
Diversion Analysis Data Summary Statistics
Percentage of UP/NS Zero Traffic Routes with Diversions

	[A]	*[B]*	*[C] = [B] / [A]*
Service Type	**UP/NS Zero Traffic Routes in the Actual World**	**UP/NS Zero Traffic Routes with Diversions**	**Percent of UP/NS Zero Traffic Routes with Diversions**
Merchandise	67,917	14,532	21%
Automotive	1,076	331	31%
Bulk	2,587	402	16%
Intermodal	27	9	33%
Overall Number of Routes	**71,607**	**15,274**	**21%**

Notes:
[1] Routes with Zero Traffic identified using column 'ExpandedCarsUpdated_pre'.

Sources:
[1] Initial Hunt/Schabas VS workpapers, vFinal_MerchBulk_vShare_diversions_all.csv; vFinal_AutovShare.csv; Intermodal R2R - highly confidential.xlsx; and vFinal_auto_diversions_removed.csv.

Attachment D
Additional Examples of Phantom Carloads

1. The market detailed in **Table D1** is merchandise traffic moving from {{ }}, Georgia, to {{ }}, Texas, and is taken directly from the Diversion Analysis workpapers augmented in the same manner as **Table 3**. There are {{ }} carloads in the market. Three routes terminating on {{ }} had zero traffic in the pre-merger world. One of these routes has a predicted pre-merger market share of {{ }}%, while the other two have predicted pre-merger market shares of {{ }}%. All three have negative diversions. Because these routes have no traffic, their diversions involve Phantom Carloads that do not exist but are necessary to keep the total carloads in balance at {{ }}. The three routes with negative post-merger carload counts are highlighted in pink. The sum of the Operating Carloads for two of the routes is greater than the total number of carloads in the market, and the other three routes have negative Operating Carloads. The negative carloads from these three routes just offset the carload overage of the other two routes.

Table D1
Sample Diversion Analysis Taken from the Diversion Analysis Workpapers
{{ }}, Georgia to {{ }}, Texas

{{

}}

2. **Table D2** provides a third example of Phantom Carloads. The market detailed in **Table D2** is merchandise traffic moving from {{ }}, Georgia, to {{ }}, Texas. There are {{ }} carloads in the market. The diversion analysis considers 10 potential routes. Only two of these routes had actual 2023 traffic pre-merger. All eight of the other routes are zero traffic routes and have estimated pre-merger market shares, including one with a {{ }}% predicted pre-merger market share. Seven routes in the market are estimated to

have negative diversions, negative Operating Carloads, and negative market shares. Negative carloads and negative market shares are economically meaningless.

Table D2
Sample Diversion Analysis Taken from the Diversion Analysis Workpapers
{{ }}, Georgia to {{ }}, Texas

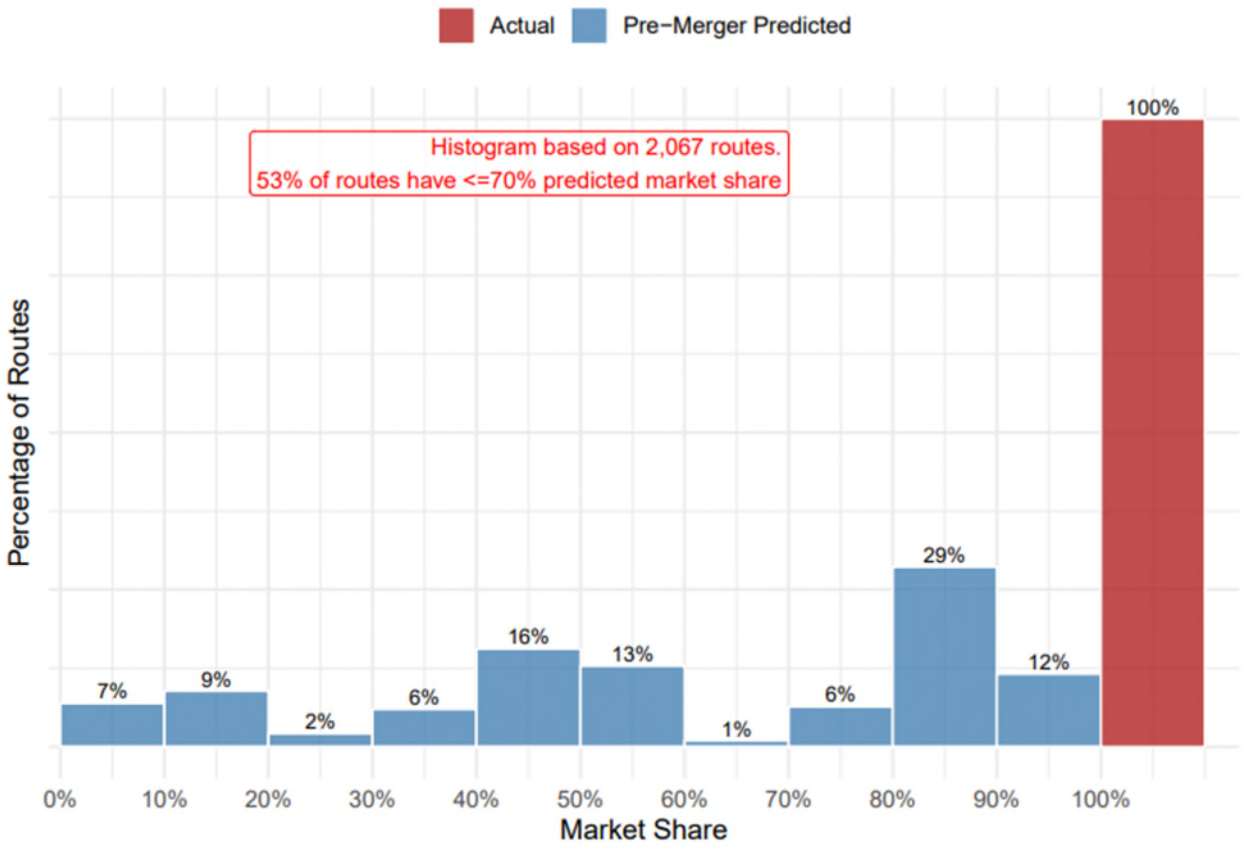
{{

}}

Attachment E
Histograms and Tables Providing the Distributions of Predicted Pre-Merger Market Shares for UP/NS 100% Market Share Routes with More than One Route in the Market

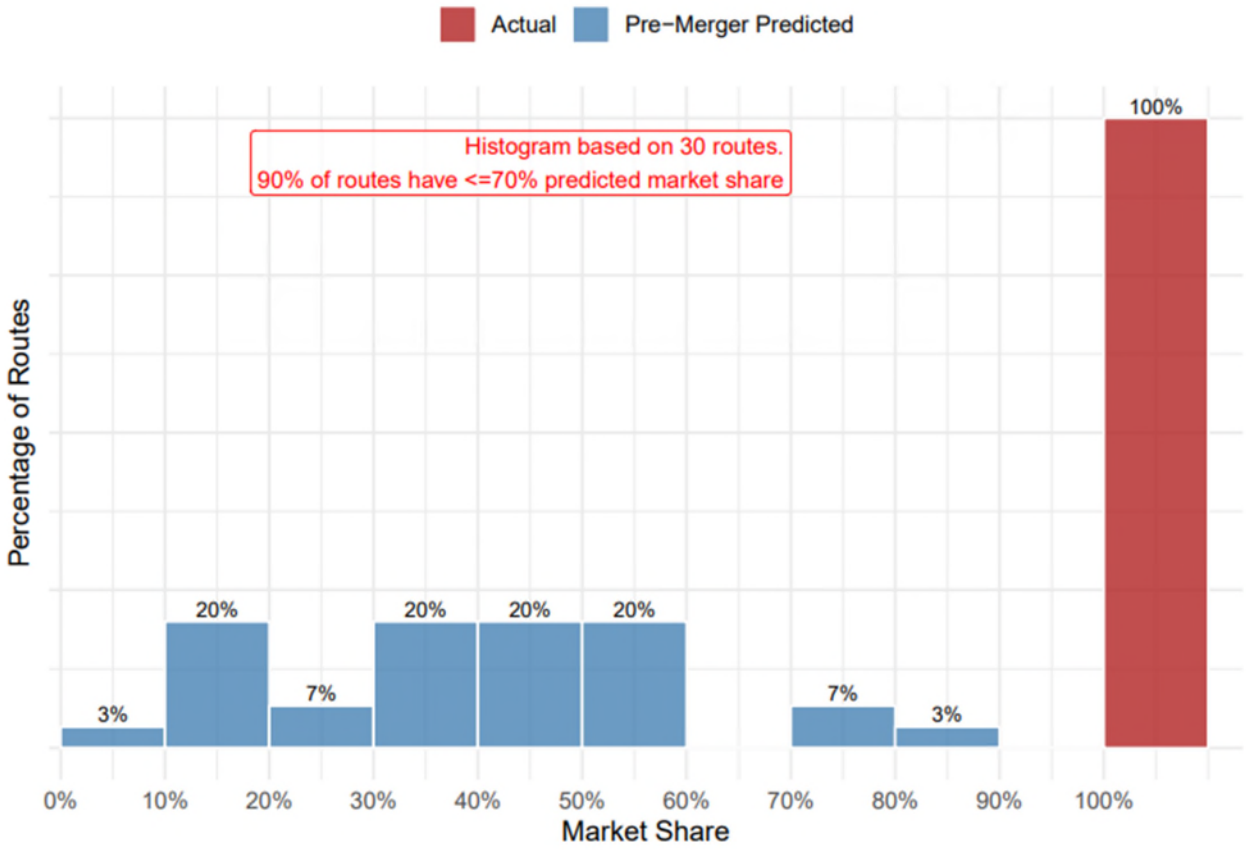
1. **Figure E1** – **Figure E8** provide histograms that show the distribution of the predicted pre-merger market shares for UP/NS routes in markets with multiple routes where the UP/NS route has 100% of the actual 2023 market share. The red bar in each figure represents the actual 2023 pre-merger world, with 100% of the weight of the distribution on the 100% market share category or bucket because at least one of the merging parties has a 100% market share in the actual world for any route in these markets pre-merger. The blue bars superimposed in each figure provide the distribution of the predicted pre-merger market shares. **Figure E1** provides the histogram for merchandise traffic on interline routes. It summarizes information on a total of 2,067 interline routes. **Figure E2** provides the same information for automotive traffic on interline routes and provides information on 30 routes. **Figure E3** and **Figure E4** provide this information for bulk traffic and intermodal traffic on interline routes, representing 110 and eight routes, respectively. **Figures E5 through E8** provide the same information as **Figures E1 through E4**, but for all UP/NS 100% Market Share routes. Though the actual market shares for these UP/NS routes were all 100%, the predicted shares are not clustered near 100% but rather are spread throughout a broader range, generally with weight moving toward the middle of the distribution.

Figure E1
Distribution of Predicted Pre-Merger Market Shares for
UP/NS 100% Market Share Interline Routes
Merchandise Traffic



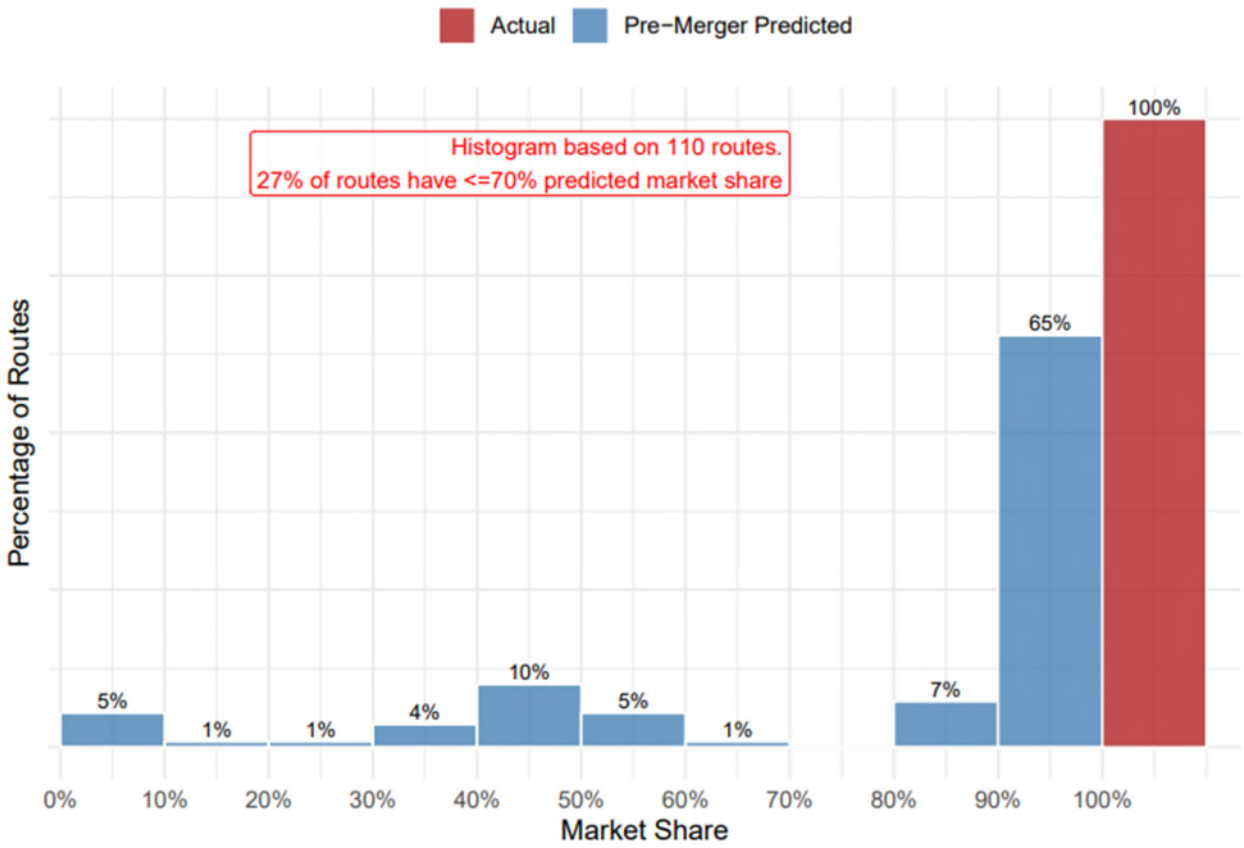
Source: Initial Hunt/Schabas VS workpaper, "vFinal_MerchBulk_vShare_diversions_all.csv."

Figure E2
Distribution of Predicted Pre-Merger Market Shares for UP/NS 100% Market Share Interline Routes
Automotive Traffic



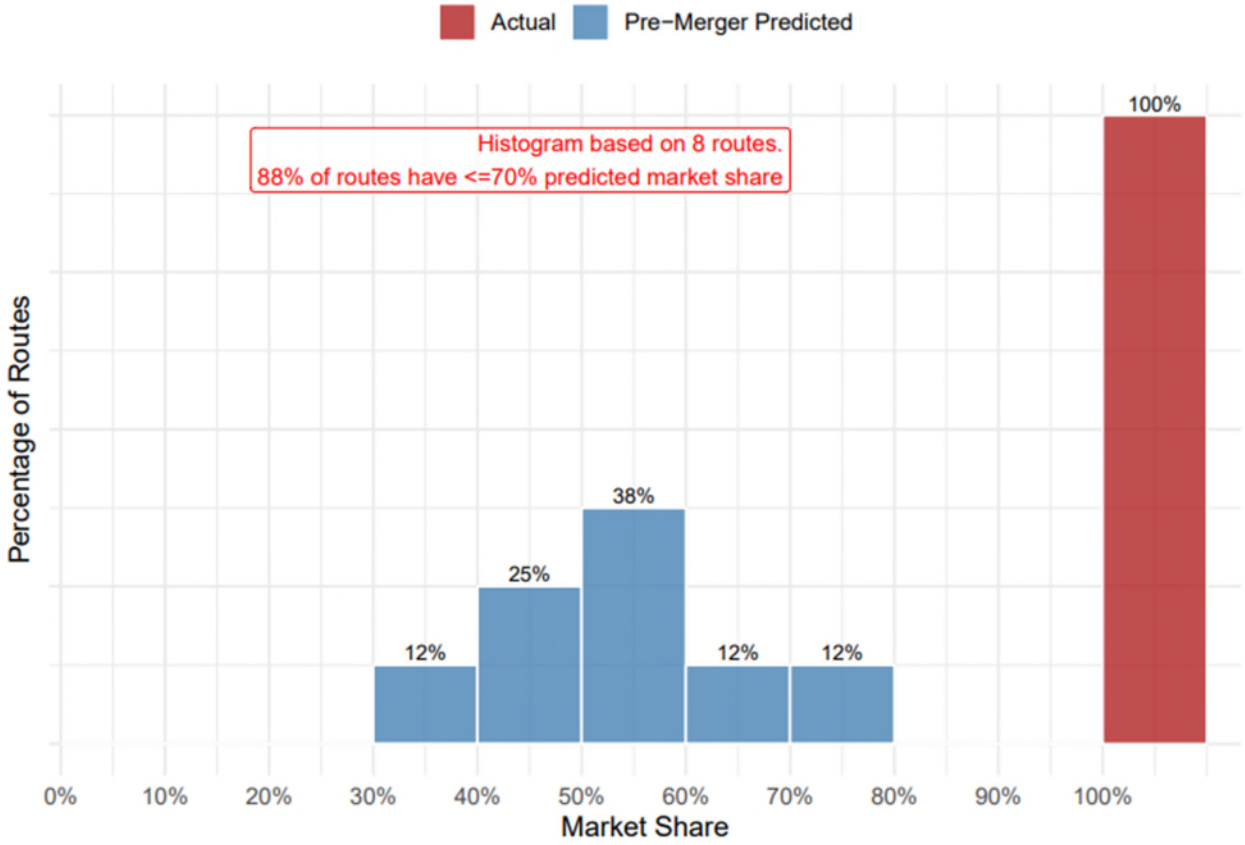
Source: Initial Hunt/Schabas VS workpapers, "vFinal_AutovShare.csv" and "vFinal_auto_diversions_removed.csv."

Figure E3
Distribution of Predicted Pre-Merger Market Shares for
UP/NS 100% Market Share Interline Routes
Bulk Traffic



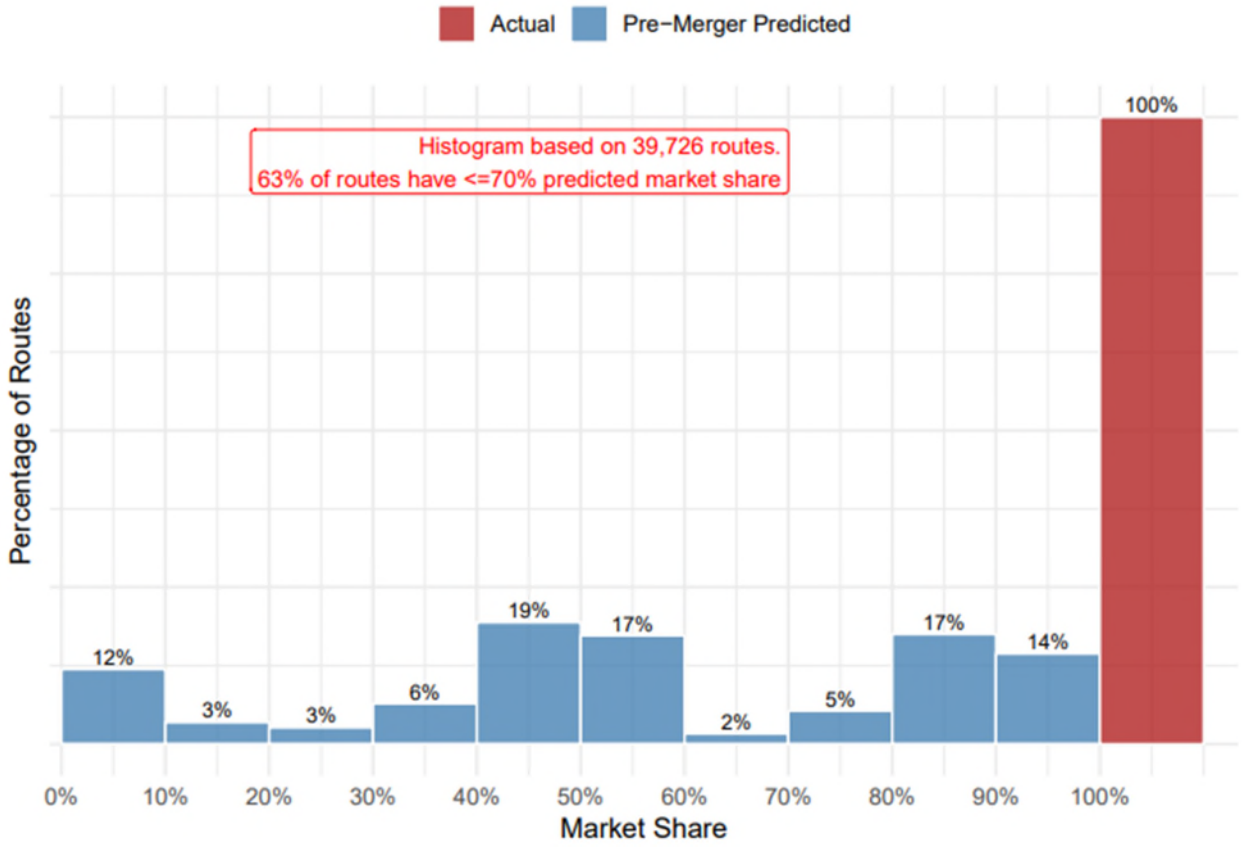
Source: Initial Hunt/Schabas VS workpaper, "vFinal_MerchBulk_vShare_diversions_all.csv."

Figure E4
Distribution of Predicted Pre-Merger Market Shares for UP/NS 100% Market Share Interline Routes
Intermodal Traffic



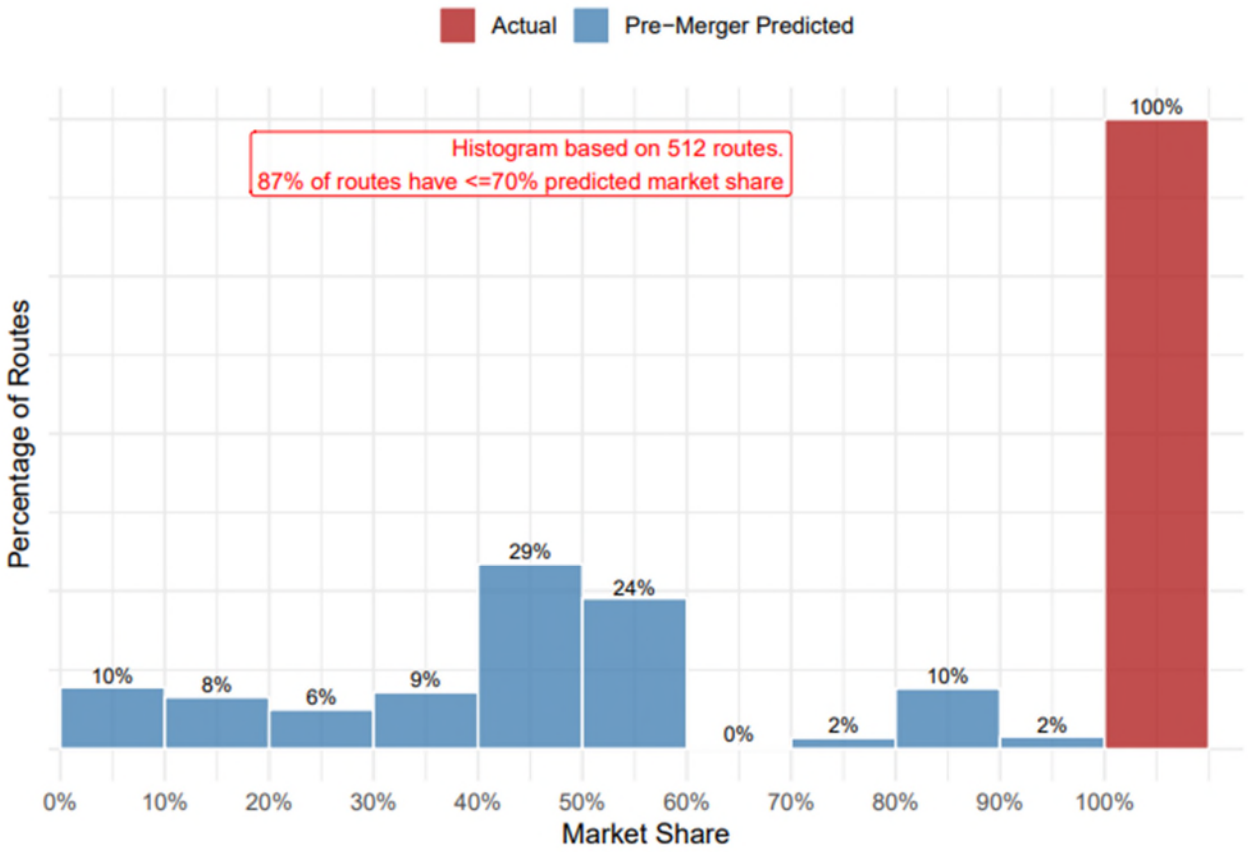
Source: Initial Hunt/Schabas VS workpaper, "Intermodal R2R - highly confidential.xls."

Figure E5
Distribution of Predicted Pre-Merger Market Shares for
All UP/NS 100% Market Share Routes
Merchandise Traffic



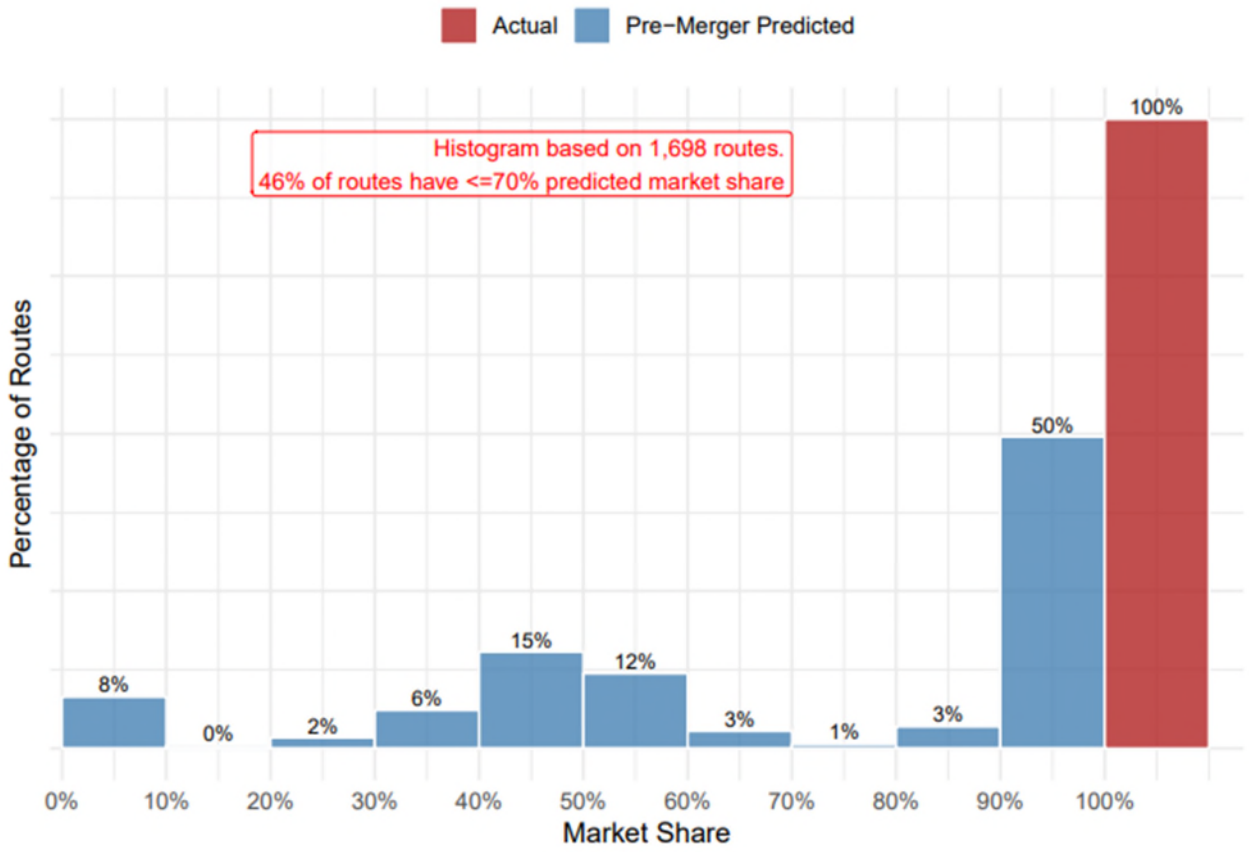
Source: Initial Hunt/Schabas VS workpaper, "vFinal_MerchBulk_vShare_diversions_all.csv."

Figure E6
Distribution of Predicted Pre-Merger Market Shares for
All UP/NS 100% Market Share Routes
Automotive Traffic



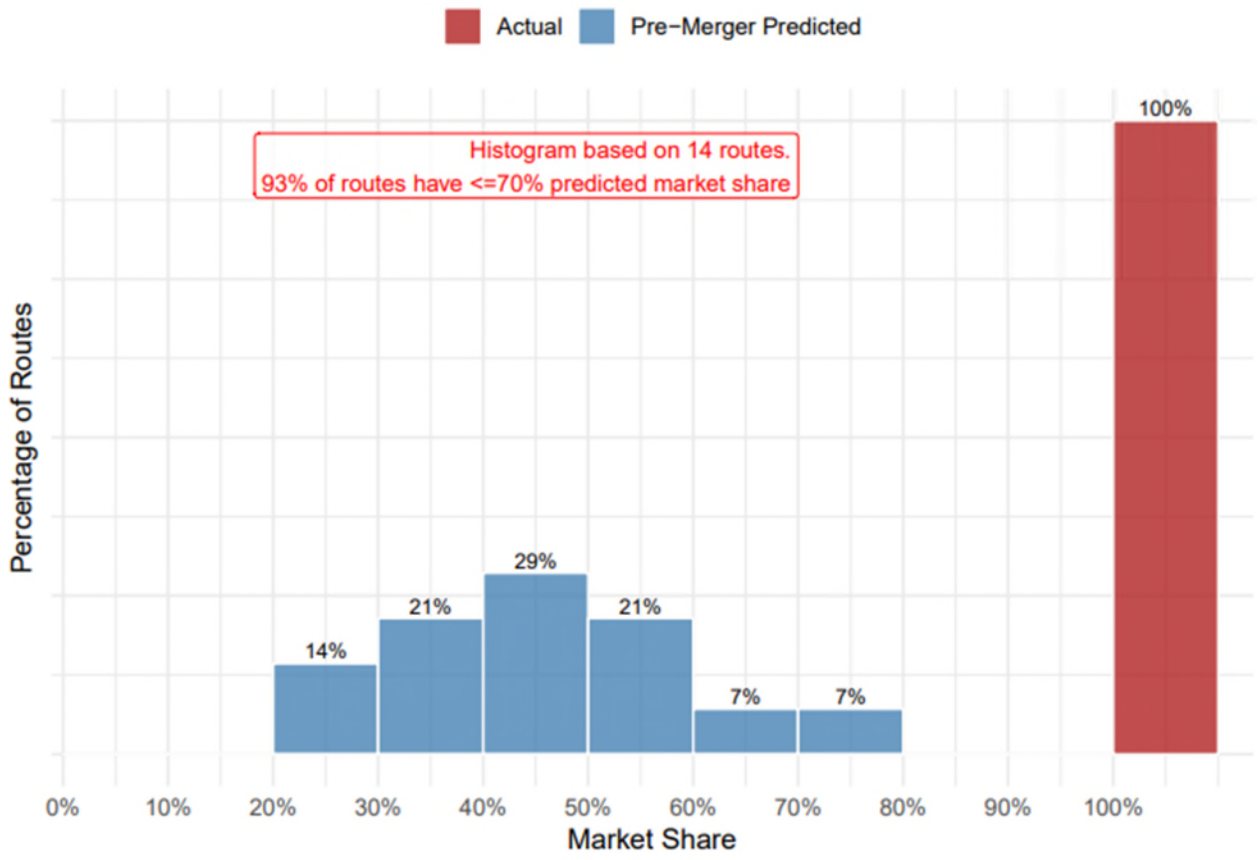
Source: Initial Hunt/Schabas VS workpapers, "vFinal_AutovShare.csv" and "vFinal_auto_diversions_removed.csv."

Figure E7
Distribution of Predicted Pre-Merger Market Shares for
All UP/NS 100% Market Share Routes
Bulk Traffic



Source: Initial Hunt/Schabas VS workpaper, "vFinal_MerchBulk_vShare_diversions_all.csv."

Figure E8
Distribution of Predicted Pre-Merger Market Shares for
All UP/NS 100% Market Share Routes
Intermodal Traffic



Source: Initial Hunt/Schabas VS workpaper, "Intermodal R2R - highly confidential.xls."

2. **Table E1** and **Table E2** provide information on the distributions of the predicted market shares for UP/NS 100% Market Share Routes, with **Table E1** limited to UP/NS interline routes and **Table E2** addressing all routes. Looking first at interline routes, the median pre-merger market share for merchandise traffic is 53.9%. This means that half of the predicted pre-merger market shares for UP/NS 100% interline routes carrying merchandise traffic are below 53.9%. When all routes are included, that percentage falls to 51.1%. These figures and the others in these tables show that the distributions of predicted pre-merger market shares for UP/NS 100% Market Share Routes are substantially skewed away from 100%.

Table E1
Percentile Distribution of the Diversion Analysis's Pre-Merger Predicted Market Shares for UP/NS 100% Market Share Interline Routes by Service Type

Service Type	Routes	Model Share 10th Percentile	Model Share 25th Percentile	Model Share Median	Model Share 75th Percentile
Merchandise	2,067	12.0%	41.4%	53.9%	86.2%
Automotive	30	13.0%	25.5%	39.7%	50.0%
Bulk	110	33.8%	55.8%	94.0%	95.0%
Intermodal	8	39.1%	46.0%	52.2%	60.5%

Sources:

[1] Initial Hunt/Schabas VS workpapers, vFinal_MerchBulk_vShare_diversions_all.csv; vFinal_AutovShare.csv; Intermodal R2R - highly confidential.xlsx; and vFinal_auto_diversions_removed.csv.

Table E2
Percentile Distribution of the Diversion Analysis's Pre-Merger Predicted Market Shares for All UP/NS 100% Market Share Routes by Service Type

Service Type	Routes	Model Share 10th Percentile	Model Share 25th Percentile	Model Share Median	Model Share 75th Percentile
Merchandise	39,726	4.2%	41.1%	51.1%	85.9%
Automotive	512	11.4%	31.1%	50.0%	50.0%
Bulk	1,698	28.9%	48.3%	89.6%	99.5%
Intermodal	14	30.7%	35.7%	40.5%	52.5%

Sources:

[1] Initial Hunt/Schabas VS workpapers, vFinal_MerchBulk_vShare_diversions_all.csv; vFinal_AutovShare.csv; Intermodal R2R - highly confidential.xlsx; and vFinal_auto_diversions_removed.csv.

Attachment F
The Predictions of the Statistical Model and the Diversion Analysis are Biased

1. The Initial Hunt/Schabas VS acknowledges that both the pre-merger and post-merger carload estimates generated by the statistical model used in the Diversion Analysis are biased, recognizing that important factors reflective of commercial realities in the railroad industry are not accounted for:

> [S]ome of the difference between model[ed] pre-merger prediction[s] and the historical traffic reflects commercial agreements, SCRS industry access, and other factors that are not captured in the model. These would continue to exist, and on average, result in a continued lower share than the logit model predicts.[91]

2. Omitting important variables, like commercial agreements and industry access, can impact the accuracy of any model's predictions. The statistical model (logit model) in this case is particularly sensitive to this specification error. Addressing biases caused by "left out variables" (commonly referred to as "omitted variable bias") is a widely researched topic.[92] A second source of bias in the model, which is the focus of much of the analysis in this Verified Statement, is the inclusion of zero market share routes in markets where the service was truly not available in 2023 according to traffic data. For such markets, the statistical model included one or, in some cases, several alternatives in the choice set (i.e., the routes available to serve the market). In many instances, these alternative routes were not selected in actuality but nevertheless were assigned a high market share by the statistical model given their features. This specification error is also widely researched.[93]

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[91] App. Vol. 2, Page 405 (Initial Hunt/Schabas VS, page 97).

[92] *See, e.g.*, Wooldridge, Jeffrey M. (2018), *Introductory Econometrics, A Modern Approach*, Cengage, 7th Ed., pages 84-87; Greene, William, H. (2020), *Econometric Analysis*, Pearson, 8th Ed., pages 99-101; Angrist, Joshua, D. and Jörn-Steffen Pischke (2009), *Mostly Harmless Econometrics, An Empiricist's Companion*, Princeton, NJ: Princeton University Press, pages 59-64; and Lee, Lung-Fei (1982), "Specification Error in Multinomial Logit Models," *Journal of Econometrics*, 20(2): 197-209.

[93] *See, e.g.*, Horowitz, Joel (1982), "Specification Tests for Probabilistic Choice Models," *Transportation Research Part A: General*, 16(5-6): 383-394; Horowitz, Joel (1981), "Identification and Diagnosis of Specification Errors in the Multinomial Logit Model," *Transportation Research Part B: Methodological*, 15(5): 345-360; and Wooldridge,

3. The Initial Hunt/Schabas VS cites Train (2009), *Discrete Choice Methods with Simulation*, as the source of the standard multinomial logit choice-probability formula,[94] which the authors apply to a carrier/route choice setting to generate predicted market shares. Their citation to Train (2009) is limited to adopting the logit functional form for converting relative route characteristics into choice probabilities, rather than drawing on the publication for identification strategy, bias correction, or the treatment of counterfactual differencing.

4. The Initial Hunt/Schabas VS contends that subtracting the pre-merger shares from the post-merger shares would address omitted variable bias in the Diversion Analysis.[95] This assertion is not accurate for several reasons. First, I discuss the reasons why differencing does not eliminate bias within a non-linear logit framework, followed by a brief overview of econometric literature that discusses challenges comparable to those found in rail diversion studies. Subsequently, I consider the impact of including "unavailable" zero market share routes in the choice set and provide a summary of recommended methodologies for addressing this issue.

The Diversion Analysis's Methodology of Differencing the Pre-Merger and Post-Merger Predictions Does Not Cure the Bias

5. The Initial Hunt/Schabas VS does not assess how the acknowledged bias affects the statistical model's predicted shares, nor does it identify the narrow conditions under which subtracting predicted pre-merger and post-merger shares would eliminate that bias. In a linear model, a common additive error can drop out when outcomes are differenced.[96] But

Jeffrey M. (2018), "More on Specification and Data Issues," Chapter 9 in *Introductory Econometrics, A Modern Approach*, Cengage, 7th Ed.

[94]App. Vol. 2, Page 400 (Initial Hunt/Schabas VS, page 92 n. 115).

[95] App. Vol. 2**,** Page 405 (Initial Hunt/Schabas VS, page 97).

[96] This is true so long as the error is constant over time. *See, e.g.*, Allison, Paul D. (2005), *Fixed Effects Regression Methods for Longitudinal Data Using SAS*, Cary, NC: SAS® Publishing, pages 1-2 ("As is well known, the omission of a key covariate can lead to severe bias in estimating the effects of the variables that are included…[however] by using the fixed effects methods discussed in this book, it is possible to control for all possible characteristics of the individuals in the study – even without measuring them – so long as those characteristics do not change over time.")

the multinomial logit model is nonlinear: predicted market shares are ratios that depend on the full set of alternatives through the common denominator. As a result, omitted factors (or other specification errors) generally distort shares in a nonadditive way that differs across markets, alternatives, and time periods. Differencing two biased logit predictions therefore does not, in general, "cancel" the bias; it simply produces the difference between two biased, nonlinearly transformed objects. Only in the exceptional case where the unobserved component enters utility in exactly the same- way for all alternatives in a given market in both periods – so that it leaves relative utilities unchanged – would differencing remove the bias.[97] There is no evidence that such restrictive conditions hold here.

6. First, pre-merger and post-merger biases are not likely to be identical because the proposed merger would constitute the most significant event in the railroad industry since deregulation. According to the Applicants, the proposed transaction is expected to generate substantial efficiencies that will advantage customers and alter industry dynamics. In other words, the market conditions prior to and following the proposed merger are expected to differ markedly due to this proposed transaction, in large part due to the Applicants' new ability to offer single line service on many new routes.

7. Second, the modeling approach to UP/NS Zero Traffic Routes introduces bias, which is significant in pre-merger predictions but negligible in post-merger analyses. A market share of zero may occur even when an option is "feasible" simply because it was not selected by any customers during the observation period. When Zero Traffic Routes are incorporated into a logit share model, the underlying assumption is that the routes are available for selection but had a very small probability of selection. Thus, a zero observed share indicates choices made during the "study" period rather than reflecting no demand for the option. Consequently, the predicted pre-merger share for such alternatives should be close to zero. If the model consistently predicts higher market shares for alternatives with zero observed shares, this suggests that the zeros are not the result of sampling

[97] Train, Kenneth E. (2009), *Discrete Choice Methods with Simulation*, 2nd Ed., Cambridge, NY: Cambridge University Press ("Train (2009)"), Chapters 2 and 3.

variation but rather indicate model misspecification. Refer to **Figure 13** for further illustration.

8. Including Zero Traffic Routes impacts the market shares of all other routes. When the model includes an unavailable alternative, it causes choice-set misspecification, meaning the statistical model must assign a positive probability to an option that should actually have zero probability. This requirement lowers the calculated probabilities of all available options pre-merger, since total share must sum to 100%. As a result, pre-merger market shares are proportionally adjusted. The biases, therefore, differ pre-merger and post-merger, and subtracting two biased shares only gives a biased difference. Because this bias is non-additive (bias does not enter as a constant), using differencing or fixed effects does not resolve the issue.[98]

Omitted Variable Bias in Logit Market Share Models

9. The omission of a variable from a multinomial logit model is not inherently a flaw; rather, it is an explicit feature of the model's framework relied upon in the Initial Hunt/Schabas VS and is, by design, incorporated into the error term. Train emphasizes the construction of the error term and operates under the implicit assumption that any observable and relevant attributes influencing decisions would be included in the representative utility, provided they are available. Consequently, within this idealized context, the residual unobserved utility is interpreted as idiosyncratic noise within the multinomial logit model.[99]

10. Omitted variables pose a problem only when the unseen components of utility are correlated with alternatives and individual preferences. Train notes that, in reality, many aspects of available choices are unobserved and may relate to observed variables – meaning that unless this correlation is directly modeled or addressed with instruments, estimation

[98] Train (2009), Chapters 2 and 3; Jerry Hausman & Daniel McFadden (1984), "Specification Tests for the Multinomial Logit Model," *Econometrica*, 52(5): 1219-40.

[99] Train (2009), Chapters 2 and 3.

will be inconsistent.[100] To achieve proper identification, one must either explicitly model the correlation structure or utilize instruments that remove the relationship between observed attributes and unobserved utility. Ignoring such correlations results in estimated coefficients that mix the effect of observed attributes with those of correlated, unmeasured characteristics, producing inconsistent parameter estimates. For instance, if price is linked with unobserved quality, the estimated price coefficient captures both price response and the effects of unobserved traits.[101]

11. Proper identification thus requires either directly modeling the correlation structure in unobserved utility – using methods like random coefficients or error-components specifications – or employing instrumental variables approaches that remove the influence of unobserved utility from observed attributes. Train lists three alternatives to address endogeneity caused by omitted variables: (1) the BLP approach, created by Berry, Levinsohn, and Pakes through several publications; (2) the control function approach, developed by Heckman and Hausman; and (3) a full maximum likelihood method, as used by Villas-Boas and Winer (1999) with multinomial logit models and extended to random coefficient choice models by Park and Gupta (forthcoming). Each of these techniques involves multiple steps and demands significant computational resources. At no point does Train's textbook recommend simply subtracting two potentially biased estimates as a way to resolve omitted variable bias.[102]

Including an Alternative in the Modeled Choice Set that is Unavailable to the Decision Maker – Zero Market Share Routes

12. The effects of the specification error on the UP-NS diversion model caused by including the zero market share routes has been widely discussed throughout this Verified Statement. This issue is addressed in the textbook cited in the Initial Hunt/Schabas VS, and Train is clear that in the logit framework, zero observed share does not imply low utility when an

[100] Train (2009), Chapters 2 and 3.

[101] Train (2009), pages 317-20.

[102] Train (2009), Chapter 13.

alternative is unavailable. Choice probabilities are defined conditional on the choice set, and infeasible alternatives receive zero probability by construction, independent of their attributes. Further, Train's framework implies that zero-share markets reflect availability constraints, not preference rankings, unless availability is explicitly established. Utility is only meaningful conditional on feasibility.[103]

The Diversion Analysis Models Entry Decisions Using a Model of Choice Among Active Rivals

13. When a carrier has no pre-merger market share but presents observable characteristics that may attract customers, the modeler lacks visibility into both the carrier's decision to enter the market and the customers' rationale for rejecting its service. These unobserved elements are often correlated with the model's cost variables and can differ among carriers.

14. Standard logit models are incorrectly specified when zero market shares result due to non-entry because they mistakenly treat unavailable choices as active competitors. Accurate modeling requires the explicit inclusion of entry or availability decisions, employing frameworks such as two-stage entry-and-demand models, selection models, or choice-set formation methodologies to account for cases where alternatives do not participate in the market.[104]

15. It is important to note that the Train textbook model, referenced in the Initial Hunt/Schabas VS, assumes an exogenously defined choice set that outlines available options for the decision maker. In this context, zero observed market shares are interpreted as outcomes of low but positive choice probabilities for accessible alternatives. The models discussed by Train do not incorporate entry or availability decisions and consequently do not treat zero shares as indicative of structural non-entry. As advised by the Train treatise, the proper

[103] Train (2009), Chapters 2 and 3.

[104] *See, e.g.*, Steven Berry and Peter Reiss (2007), "Empirical Models of Entry and Market Structure," Chapter 29 in *Handbook of Industrial Organization*, Vol. 3, edited by M. Armstrong and R. Porter, Elsevier, pages 1845-1886; Moshe Ben-Akiva and Steven R. Lerman (1985), "Multinomial Choice," Chapter 5 in *Discrete Choice Analysis: Theory and Application to Travel Demand*, Cambridge, Massachusetts: MIT Press; and Seim, Katja (2006), "An Empirical Model of Firm Entry with Endogenous Product-Type Choices," *RAND Journal of Economics*, 37(3): 619-640.

approach for unavailable options is the use of an accurate ex ante specification of the choice set, rather than adjustments within the demand model itself.[105]

[105] Train (2009).

Attachment G
Examples of Inaccuracies and Distortions that Result from Including UP/NS Zero Traffic Routes in the Diversion Analysis

1. This Attachment provides additional examples of the inaccuracies and distortions that result from including UP/NS Zero Traffic Routes in the Diversion Analysis.

2. The first example is automotive traffic originating in {{ }}, {{ }}, and {{ }}, Michigan and terminating in {{ }}, Oregon. This market is summarized in **Table G1**. Comprised of three routes – one actual route and two feasible zero traffic routes – this market had 2023 traffic of {{ }} carloads. {{ }} is involved in the actual route and handled {{ }}% of the pre-merger 2023 traffic. However, the statistical model divides the pre-merger market share equally among all three routes, assigning each {{ }} carloads. The statistical model reduces {{ }} total estimated pre-merger market share from the actual {{ }}% to {{ }}%. This is a reduction of over {{ }} percentage points.

Table G1
Diversions on the {{ }}, Michigan to {{ }}, Oregon Route
Corrected for Omitted Growth Projection
Automotive Traffic

{{

}}

3. In all, {{ }} estimated post-merger market share is {{ }}%, representing {{ }} carloads. With {{ }} handling all {{ }} carloads in the market pre-merger, {{ }} post-merger predicted traffic of only {{ }} carloads indicates that {{ }} carloads were diverted from {{ }} to the feasible routes, including the merged railroad. However, the Diversion Analysis only reports {{ }} carloads being diverted from {{ }} in this market.

4. Using the Diversion Analysis methodology, this market has Phantom Carloads and negative carloads post-merger. The sum of Operating Carloads on the {{ }} and {{ }} interline routes is {{ }} which exceeds actual 2023 market traffic by {{ }} carloads – the same number of carloads diverted away from the zero traffic {{ }} route. Indeed, with the reported diversion for the {{ }} reflecting a loss of {{ }} carloads even though it had zero pre-merger traffic, this route is predicted by the Diversion Analysis methodology

as having negative carloads. In this example of automotive traffic, the Diversion Analysis prediction of the traffic diverted was under-reported by over 56%.[106]

5. The merchandise market originating in {{ }}, Texas, and terminating in {{ }}, Tennessee, provides another example of the problems caused by the Diversion Analysis's treatment of UP/NS Zero Traffic Routes. This market is summarized in **Table G2**. Comprised of five routes – three actual routes and two feasible routes with zero traffic in 2023 – the market has {{ }} total carloads. {{ }} was involved in all three actual 2023 routes – twice as a terminating carrier and once as an intermediate carrier in the {{ }} interline route – and thus handled {{ }}% of the actual 2023 pre-merger volume during some part of the movement.

[106] {{ }}/{{ }} = 56.9%.

Table G2
Diversions on the {{ }}, Texas to {{ }}, Tennessee Route
Corrected for Omitted Growth Projection
Merchandise Traffic

{{

}}

6. The statistical model assigns the feasible {{ }} single-line route {{ }}% of the market pre-merger and the feasible {{ }} single-line route {{ }}% of the market pre-merger, even though neither route had any actual 2023 market share pre-merger. This forces the {{ }} interline route's estimated pre-merger market share ({{ }}%) and carload count ({{ }}) to decrease substantially to {{ }}% and {{ }} carloads, respectively. The statistical model reduces {{ }} total estimated pre-merger market share from the actual {{ }}% to {{ }}%. This is a reduction of over {{ }} percentage points. In all, {{ }} estimated post-merger market share is {{ }}%, representing {{ }} carloads across two routes.

7. With {{ }} handling all {{ }} carloads in the market pre-merger, {{ }} post-merger predicted traffic of only {{ }} carloads indicates that {{ }} carloads were diverted from {{ }} to the feasible routes, including the merged railroad. However, the Diversion Analysis reports zero diversions in this market. In this example, the Diversion Analysis reports zero diversions even though the merged railroad is predicted to gain substantial new traffic relative to 2023 pre-merger actuals.

8. The intermodal market originating in {{ }}, Texas, and terminating in {{ }}, Virginia and {{ }}, Maryland, provides another example of the problems caused by the Diversion Analysis's treatment of UP/NS Zero Traffic Routes. This market is summarized in **Table G3**. The {{ }} route handled {{ }}% of the traffic pre-merger ({{ }} units), yet the statistical model only assigns it {{ }}% of the traffic pre-merger ({{ }} units), giving the other {{ }}% ({{ }} units) of the pre-merger traffic to the {{ }} route, which handled none of the actual traffic. After correcting the calculations for the omission of growth traffic on the merged railroad's route, diverted traffic is more than five times higher than the estimate from the Diversion Analysis.

Table G3
Diversions on the {{ }}, Texas to {{ }}, Virginia Route
Corrected for Omitted Growth Projection
Intermodal Traffic

{{

}}

9. The Diversion Analysis finds diverted traffic to be {{ }} carloads. Correcting for omitted growth increases diversions by {{ }} carloads to a total of {{ }} carloads. These are not unique market examples but rather exhibit the problems caused by the structure of the Diversion Analysis and methodology used to calculate Diversions.