

September 6, 2022

Electronic Submission

Joshua Wayland
Surface Transportation Board
Environmental Filing, Docket No. FD 36500
c/o VHB
940 Main Campus Drive Suite 500
Raleigh, NC 27606

Re: *Canadian Pacific Railway Company, et al.—Control—Kansas City Southern, et al.*, FD No. 36500—Comments on Draft Environmental Impact Statement

Dear Mr. Wayland,

On behalf of Canadian National Railway Company and its U.S. operating subsidiaries (CN), we respectfully submit for your consideration the following comments regarding the Draft Environmental Impact Statement (EIS) for the Canadian Pacific (CP) Acquisition of Kansas City Southern (KCS) (Proposed Action), published on August 5, 2022.

SUMMARY

In the comments below, we outline three key concerns apparent in the Draft EIS.

- First, the Draft EIS's comparison of alternatives should consider as a reasonable alternative CN's Responsive Application requesting divestiture of the KCS line between Kansas City, Missouri, and Springfield/East St. Louis, Illinois ("Springfield Line") as a condition of any approval, as described in Finance Docket No. 36500, Sub-No. 1.
- Second, the Draft EIS is predicated on CP's and KCS's fundamentally unreliable data across the proposed combined systems. The numbers in CP's and KCS's Amended Operating Plan were not "essentially the same as those submitted to OEA" as the Board expected in its April 27, 2022 Decision (Decision No. 16). Instead, CP and KCS changed again the base year data and yielded completely different base year numbers that they acknowledge is "resulting in changes in base

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plan MGTs across multiple segments.”¹ Indeed, CP and KCS included a table that reflected differing numbers across all 178 line segments in Appendix S of the Amended Operating Plan.

- Finally, the Draft EIS appears to overlook the Proposed Action’s impact on traffic levels in line segments, including the region east of Bensenville, Illinois, including where CP operates via trackage rights on CN’s tracks to reach Schiller Park Yard. Also missing from the Draft EIS are analysis of the line segments between Bensenville IMS and Willard, Ohio, even though CP’s increased merger-related tonnages exceed the Board’s thresholds for triggering environmental review. Yet all of these rail line segments are absent from CP’s and KCS’s information provided to OEA and thus are missing from the Draft EIS.

CN appreciates that these flaws are directly traceable to CP’s and KCS’s flawed data submissions, and that OEA has been placed in a difficult position due to CP’s and KCS’s failure to provide reliable and complete data. But these concerns must be addressed before the issuance of the final EIS, and likely require a supplemental EIS in order to permit informed public comment. Allowing informed public comment on the environmental impact statement is a critical part of National Environmental Policy Act (NEPA) review as part of the agency’s “‘hard look’ at the potential environmental consequences of the proposed action.”²

COMMENTS

1. The Draft EIS Fails to Analyze Divestiture of the KCS Springfield Line to CN as a Reasonable Alternative.

The Draft EIS offers little in terms of reasonable alternatives to the Proposed Action, despite CN formally proposing one in a Responsive Application. The agency’s NEPA regulations state that the EIS must include a description of “any reasonable alternatives to the proposed action.” 49 C.F.R. § 1105.7(e)(1). Indeed, the primary purpose of the EIS is to ensure agencies and the public alike are aware of environmental impacts of a proposed action, including a “full and fair discussion of significant environmental impacts” and informing “the public of reasonable alternatives that would avoid or minimize adverse impacts or enhance the quality of the human environment.” 40 C.F.R. § 1502.1.

CN’s proposed Springfield Line divestiture offers an alternative that would provide the STB greater flexibility in selecting an environmentally preferred option given the environmental

¹ Amended Operating Plan (Exhibit 13), *Canadian Pacific Railway Limited, et al.—Control—Kansas City Southern, et al.*, STB Docket No. FD 36500, App. S at 1 (filed May 13, 2022) (“CP/KCS Amended Operating Plan”).

² *N. Plains Res. Council v. Surface Transp. Bd.*, 668 F.3d 1067, 1075 (9th Cir. 2011) (citation omitted).

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benefits of diverting more than 80,000 long-haul trucks from the highways annually and converting them to rail transportation. The Draft EIS, however, analyzes only the “No-Action Alternative” and the “Proposed Action Alternative.” It does not show the comparative benefits of CN’s Responsive Application. As CN explained in its November 19, 2021 comments on scoping, in past mergers, the agency has typically analyzed at least three alternatives: (1) approval of the transaction as proposed; (2) disapproval of the proposed transaction; and (3) approval of the proposed transaction with conditions.³ Consideration of alternatives is a necessary component of any EIS.⁴ “[F]ailure to examine a reasonable alternative renders an EIS inadequate.”⁵ The OEA should make clear that it intends to analyze approval with conditions, including the proposed divestiture of the Springfield Line called for in CN’s Responsive Application, as an alternative. Failure to do so could render the agency’s environmental review incomplete and inadequate.

Although OEA noted in the Draft EIS that it would conduct a concurrent and independent environmental review of CN’s Responsive Application, it did not indicate that CN’s proposal was a reasonable alternative option to approval of the Proposed Action in full. This alternative would allow the Board, pursuant to its statutory authority, to order divestiture of parallel tracks as a condition of the Proposed Action that could potentially mitigate and diminish various environmental impacts resulting from the Proposed Action alone. CN requests, therefore, that the Board analyze and compare the impacts of the Proposed Action and its Responsive Application concurrently.

³ See, e.g., Decision, *Canadian National Railway Company & Grand Trunk Corporation – Control – EJ&E West Company*, STB Docket No. FD 35087, at 6 (served Dec. 21, 2007) (“Reasonable or feasible alternatives that will be evaluated in the EIS are (1) approval of the transaction as proposed; (2) disapproval of the proposed transaction in whole (No-Action alternative); or (3) approval of the proposed transaction with conditions, including environmental mitigation conditions.”); Notice of Intent to Prepare an Environmental Impact Statement (EIS) and Request for Comments on Proposed EIS Scope, *CSX Corporation & CSX Transportation, Inc., Norfolk Southern Corporation & Norfolk Southern Railway Company – Control and Operating Leases/Agreements – Conrail, Inc. and Consolidated Rail Corporation*, STB Docket No. FD 33388, at 7 (served July 3, 1997) (“Reasonable or feasible alternatives that will be evaluated in the EIS are (1) the proposed action, (2) the no-action alternative, and (3) the proposed action with conditions, including environmental mitigation conditions. Proposed modifications to the proposed transaction as requested by other parties in their inconsistent or responsive applications will also be addressed in the EIS.”).

⁴ 40 C.F.R. § 1502.14; see also *Alaska Survival v. Surface Transp. Bd.*, 705 F.3d 1073, 1087 (9th Cir. 2013) (“Consideration of alternatives is the heart of the [EIS]”) (cleaned up); Decision, *Dakota, Minnesota & Eastern Railroad Corporation Construction Into the Powder River Basin*, STB Docket No. FD 33407, at 14 n.33 (served Jan. 30, 2002) (“At the ‘heart’ of an EIS is the consideration of alternatives....”), *rev’d on other grounds*; *Mid States Coal. for Progress v. Surface Transp. Bd.*, 345 F.3d 520, 558 (8th Cir. 2003) (concurrence).

⁵ *Alaska Survival*, 705 F.3d at 1087.

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2. The Draft EIS Is Predicated On CP's and KCS's Fundamentally Unreliable Data Across the Proposed Combined Systems.

CP and KCS have conceded that the “base year” tonnages and train counts that they submitted to OEA were not based on actual 2019 data, but instead were the product of a “modeling” exercise.⁶ Prior filings have demonstrated that this “modeling” led to absurd and unreliable results, particularly at a line segment level. Yet the Draft EIS uncritically accepts CP's and KCS's submission and ignores well-documented concerns with the reliability of their data. The Draft EIS's reliance on a May 13, 2022 CP-KCS environmental submission that is both not based on actual ordinary course 2019 density and trains per day and inconsistent with the “modeled” densities in the October 2021 original Operating Plan is a serious error. The agency is required under NEPA to use accurate data, and CP and KCS have plainly not provided such data to the agency. CP and KCS should be required to submit actual and reliable historic tonnage and train count data in order to permit a reliable assessment of the environmental effects of their proposed transaction. Without accurate and reliable data, OEA cannot determine whether—and where—relevant thresholds for significant environmental impacts may be triggered. Nor can OEA determine any merger-related increases in trains per day and the effects of those increases on air quality, noise, traffic, and other environmental impacts.⁷ Indeed, NEPA regulations impose on federal agencies the obligation to “ensure the professional integrity, including scientific integrity, of the discussions and analyses in environmental documents” and to utilize “reliable existing data and resources”⁸ in advancing NEPA's purpose to “ensure informed decision making by Federal agencies.”⁹

The problems with CP's and KCS's ever-changing traffic data submissions have been well documented in the agency record.¹⁰ In short, CP and KCS submitted one set of traffic density data in Exhibit 14 of their STB application in October 2021 that was inconsistent with the data they submitted to OEA. After CP and KCS publicly disavowed their original Exhibit 14 in January 2022, the STB asked them to explain the data inconsistency. CP and KCS submitted another set of supposedly corrected data in March 2022, and yet another set in May 2022 after the Board ordered them to submit an amended operating plan with data that was consistent with that

⁶ Specifically, CP and KCS “modeled” a 2019 base year using monthly snapshots of traffic from multiple years (October 2020 for manifest and scheduled intermodal traffic and, for unit trains, February-May 2021 for KCS and March-June 2021 for CP)—using no 2019 data as a traffic source.

⁷ 49 C.F.R. § 1105.7(e).

⁸ 40 C.F.R. § 1502.23.

⁹ See 40 C.F.R. § 1500.1(b).

¹⁰ See CN's Comments on Applicants' Amended Operating Plan, *Canadian Pacific Railway Limited, et al.—Control Kansas City Southern, et al.*, STB Docket No. FD 36500, at 4–20 & Verified Statement of Carl Van Dyke (filed June 9, 2022) (CN's June 9th Comments) (Verified Statement of Carl Van Dyke attached as Exhibit 1); see also CN Reply to Applicants' Response to Decision No. 16, *Canadian Pacific Railway Limited, et al.—Control—Kansas City Southern, et al.*, STB Docket No. FD 36500 (filed Mar. 28, 2022) (attached as Exhibit 2).

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originally submitted to OEA. The Board reserved its final decision “on the validity of the methodology used by Applicants to generate their baseline traffic density values” and indicated that it would entertain arguments from parties that “Applicants’ data and methods are inappropriate such that Applicants cannot meet their burden to show that the Transaction would be in the public interest.”¹¹

While the Board expected that the “base-line traffic density values in the amended Operating Plan and workpapers will be essentially the same as those [] submitted to OEA,”¹² in fact CP-KCS’s modeling data presented with their latest operating plan varies significantly from the data that it gave OEA last fall and that is the basis of the Draft EIS analysis. For example, Figure 1 below shows dramatic variations between actual ordinary course 2019 gross tons per mile on the Springfield Line reported in the original Exhibit 14; the October 2021 “modeling” of 2019 gross tons per mile reflected in the Draft EIS; and the May 2022 “modeling” of 2019 gross tons per mile for the amended operating plan.

¹¹ Decision No. 17, *Canadian Pacific Railway Limited, et al.—Control—Kansas City Southern, et al.*, STB Docket Nos. 36500 (Sub-No. 1, et al.), at 5 (served Apr. 27, 2022) (“Decision No. 17”).

¹² Decision No. 17 at 6.

**Figure 1:
Comparison of KCS’s Actual Ordinary Course 2019 Gross Tons Per Mile with Varying
Modeled 2019 Gross Tons Per Mile On the Springfield Line
(tonnages are in hundreds of thousands (000))**

Subdivision	Segment	Actual 2019 Gross Tons per Mile Original Application Exhibit 14 ³⁶	Modeled 2019 Gross Tons Per Mile March 21 Exhibit 14 and OEA numbers ³⁷	Modeled 2019 Gross Tons Per Mile May 13 Exhibit 14 and Appendix T ³⁸
Mexico	Kansas City, MO – Slater, MO	10,376	5,833	6,166
Mexico	Slater, MO – Mexico, MO	8,809	3,714	4,281
Roodhouse	Mexico, MO – Roodhouse	6,655	3,390	4,019
Springfield	Roodhouse, MO – Murrayville, IL	3,090	25	998
Springfield	Murrayville, IL – Springfield, IL	43	25	168

Other line segments that are referenced in the Draft EIS similarly had wide variability between the October 2021 submission to OEA and the May 2022 Amended Operating Plan Appendix T. For example, in May 2022, CP and KCS predicted a transaction-related increase in tonnage of 56%—or more than 12 million tons per year—between Muscatine, Iowa, and Airline Junction, Missouri, despite just a 6.4% increase in aggregate train count.¹³ In another example, the total tonnages on the KCS mainline between De Quincy, Louisiana and Robstown, Texas vary from a low of 16.5 million tons and an average train weight of 5,676 tons to a high of 27.3 million tons and an average train weight of 8,591 tons, depending on the segment.¹⁴ These figures are totally inconsistent with the actual ordinary course tonnages for 2019, which exhibit much less variability.

Another example where the “base-line traffic density values” in the CP-KCS Amended Operating Plan are not “essentially the same as those [] submitted to OEA”¹⁵ is KCS’s overhead

¹³ CN’s June 9th Comments at 14 n.31.

¹⁴ *Id.* at 13 n.29.

¹⁵ Decision No. 17, at 6.

rights over Union Pacific track through Houston—a non-attainment area under the Clean Air Act. As noted below in Figure 2, the CP-KCS amended operating plan numbers differ from those submitted to OEA in October 2021—with the difference being either 2.24 million gross tons or 16.69 gross tons annually. Indeed, the numbers that were included in the Amended Operating Plan Appendix T—on which OEA relied and are included in the Draft EIS—are obviously incorrect. For this key line, CP and KCS submitted different segment density data **in the same amended operating plan filing**. More specifically, for the Beaumont-Rosenberg, TX segment, CP and KCS’s May 13, 2022 Amended Operating Plan includes one set of gross ton mile estimates in Appendix A and a different set in Appendix T. The Draft EIS utilizes the lower set of numbers from Exhibit T, but there has been no explanation from CP or KCS for the discrepancy, and there is no acknowledgment in the Draft EIS of the inconsistency in density data for this key segment through Houston. Finally, the KCS actual ordinary course 2019 gross tons per mile was much higher (approximately 30 million gross tons) as compared to the varying modeled density numbers for 2019 for this line segment.

Figure 2:
Comparison of KCS’s Actual 2019 Gross Tons Per Mile with
Varying Modeled 2019 Gross Tons Per Mile
Through Houston (tonnages are in hundreds of thousands (000))

Segment	Actual 2019 Gross Tons per Mile	Modeled 2019 Gross Tons Per Mile	Modeled 2019 Gross Tons Per Mile	Modeled 2019 Gross Tons Per Mile Included in the OEA Draft EIS
Beaumont, TX - Rosenberg, TX	30,151	19,280	17,039	2,590

The Houston numbers also differed drastically in merger-related growth and post-merger tonnage as Figure 3 shows below. The actual ordinary course base year GTMs from 2019 was approximately 30.2 million, whereas the base year GTMs in the Draft EIS from the CP-KCS Amended Operating Plan Appendix T was 2.6 million tons. Yet Appendix T was wholly inconsistent with other parts of the same Amended Operating Plan with respect to the pre-merger tonnage, the planned change, and the post-merger tonnage in Houston. Compare rows 3 and 4 in Figure 3. The Draft EIS indicates the post-merger tonnage through Houston will be only slightly more than 7.3 million tons annually. But if the actual ordinary course base year tons from 2019 (approximately 30 million) are added to the anticipated 14 million-ton merger related growth from Appendix A of the amended operating plan (shown in row 3), then the post-merger tonnage in Houston could be more than **44 million tons annually**, which is **six times greater** than the post-

merger tonnage indicated in the Draft EIS. Based on the merger-related growth from the CP-KCS Appendix T, the OEA concluded that Houston did not trigger additional review for noise.¹⁶

Figure 3:
Comparison of Varying Pre-Merger and Post-Merger Annual Tonnages
Through Houston (Beaumont to Rosenberg, Texas Line Segment)
(tonnages are in hundreds of thousands (000))

CP's and KCS's STB Filings	Pre-Merger KCS Tonnage Base Year (2019)	CP-KCS Merger-Related Growth	Post-Merger CP-KCS Tonnage ¹⁷
Operating Plan, 10/29/21 ¹⁸	30,151	+5,855	36,006
Original Operating Plan, 10/28/21 ¹⁹	19,280	+14,040	33,320
Amended Operating Plan, 5/13/22 ²⁰	17,039	+14,046	31,085
Amended Master Segment Table, 5/13/22²¹	2,590	+4,730	7,320

None of these inconsistencies or the overall flawed approach of CP and KCS that led to those inconsistencies has been acknowledged or addressed in the Draft EIS. The STB's analysis of environmental impacts must be based on accurate and current data.²² There is no question that the ever-shifting "modeled" numbers are not accurate traffic data that two Class I railroads could submit to OEA. Uncritical acceptance of "modeled" data that is inconsistent with both actual ordinary course data and with Applicants' prior modeled data is not the solution.

¹⁶ Draft EIS, Appendix C-20, Table C.1-1, Segment 149.

¹⁷ This number does not include organic growth.

¹⁸ Railroad Control Application, *Canadian Pacific Railway Limited, et al.—Control—Kansas City Southern, et al.*, STB Docket No. FD 36500, Ex. 14 & App. A (filed Oct. 29, 2021).

¹⁹ CP Letter Response to OEA Information Request No. 1, *Canadian Pacific Railway Limited, et al.—Control—Kansas City Southern, et al.*, STB Docket No. FD 36500 (dated October 28, 2021) (Filing ID: EI_31312).

²⁰ Amended Operating Plan, Ex. 14 and App. A.

²¹ Amended Operating Plan, App. T. The numbers in bold are included in the Draft EIS Exhibit/Table xx.

²² *Latin Americans for Social & Econ. Dev. v. Fed. Hwy. Admin.*, 756 F.3d 447, 473 (6th Cir. 2014) (upholding agency decision where agency "did not ignore current actual data, but extensively evaluated that information in the context of the [] project's purpose and needs"); *see also Native Ecosystems Council v. U.S. Forest Serv.*, 418 F.3d 953, 960 (9th Cir. 2005) (judicial standard of review of NEPA decision includes whether agency's EIS fostered informed decision making and informed public participation).

3. The Draft EIS Does Not Consider Impacts East of Bensenville, Despite Clear Evidence That Environmental Review Is Required for Those Lines.

The EIS for the Proposed Action must include all information set forth by the Board's regulations at 49 C.F.R. § 1105.7(e). Generally, the OEA must identify all rail lines where the projected increase in rail traffic warrants environmental review, based on whether the increase meets or exceeds the threshold set by the Board's regulations at 49 C.F.R. § 1105.7(e). In addition to relying on these regulatory thresholds for analyzing impacts to air quality and noise, OEA also used these thresholds to trigger additional environmental analysis regarding impacts to safety, grade crossing delay, and a broader view of other impacts (*e.g.*, vibration). DEIS, S-3.

More specifically, OEA must quantify the anticipated air quality impacts of any proposed action resulting in either (i) an increase in rail traffic of at least 100 percent (measured in GTMs annually) or an increase of at least eight trains per day on any segment of a rail line affected by the proposal, (ii) an increase in rail yard activity of at least 10 percent (measured by carload activity), or (iii) an average increase in truck traffic of more than 10 percent of the average daily traffic or 50 vehicles a day on any affected road segment. 49 C.F.R. § 1105.7(e)(5)(i). For each rail line identified as meeting or exceeding these thresholds, OEA must also determine whether the proposed action will cause (i) an incremental increase in noise levels of three decibels Ldn or more or (ii) an increase to a noise level of 65 decibels Ldn or greater, and identify sensitive receptors in the project area and quantify the noise increase for these receptors.

OEA must also state whether any expected increased emissions are within the parameters established by the relevant State Implementation Plan (SIP) where the Proposed Action affects a Class I or nonattainment area (pursuant to the Clean Air Act (CAA)), resulting in either (i) an increase in rail traffic of at least 50 percent (GTM annually) or an increase of at least three trains a day on any segment of rail line, (ii) an increase in rail yard activity of at least 20 percent (carload), or (iii) an average increase in truck traffic of more than 10 percent of the average daily traffic of 50 vehicles a day on a given road segment. 49 C.F.R. § 1105.7(e)(5)(ii).

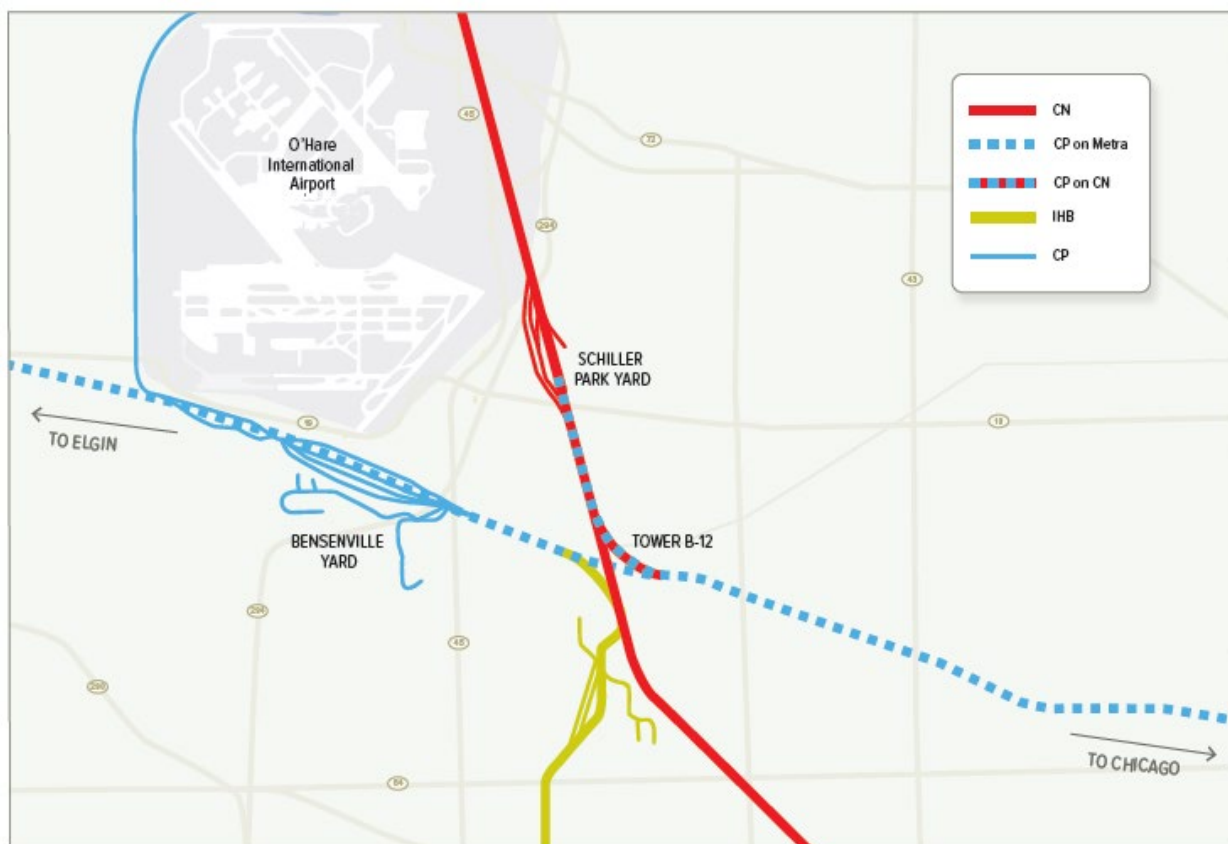
Although the Draft EIS identifies 29 rail line segments that would cause a projected increase in rail traffic that would meet or exceed the Board's thresholds for environmental review, it appears that multiple rail line segments that exceed those thresholds are missing entirely from CP's and KCS's data submissions and from the Draft EIS analysis. DEIS, 2-5.

A. Tower B12 to Schiller Park Yard Line Segment is Missing.

While Schiller Park Yard is included in the Draft EIS as exceeding the Board's merger-related thresholds for carload activity and trucks, CP has not disclosed any tonnage data or trains per day data for the line segment owned by CN between Tower B12 and Schiller Park Yard (as shown in Figure 4 below). In other words, CP's pre-transaction and post-transaction numbers do

not include the 2.3 miles of CN-owned main line in Chicago between Tower B12 and Schiller Park Yard for CP's trains to reach Schiller Park Yard, which is shared by CP and CN. CP included information showing increases in carloadings and truck activity at Schiller Park Yard as a result of the merger, which were high enough to exceed the Board's thresholds for environmental review for the yard because of the 2440% increase in yard activity. And CP provided information for Metra's track between Bensenville and Tower B12 showing a merger-related train per day increase of 6.43 trains in a non-attainment area of Chicago. Yet CP did not include any data whatsoever between Tower B12 and Schiller Park Yard. That CN-owned track between Tower B12 and Schiller Park does not appear anywhere in CP's Operating Plan, Amended Operating Plan, or data submitted to the STB's OEA.

Figure 4:
Map Showing CP Route Between Tower B12 and Schiller Park Yard
Using Trackage Rights on CN



The failure of CP and the Draft EIS to address or even acknowledge this important line segment in the Chicago terminal is a deficiency that must be remedied before a final EIS can be issued.

B. Line Segments from Bensenville, Illinois to Willard, Ohio Are Not Addressed in the Draft EIS

CP's Appendix T from the Amended Operating Plan, which the Draft EIS incorporated, also fails to include line segments between Bensenville IMS, Illinois and Willard, Ohio, even though other information submitted by CP in the Amended Operating Plan plainly indicates those line segments will exceed the Board's threshold for merger-related increases in tonnages.

According to Exhibit 14 of the CP/KCS Amended Operating Plan, each of the three rail line segments between Bensenville and Willard are expected to see an increase by over 100% in traffic (GTMs) due to merger-related growth, far in excess of the Board's threshold for environmental review.

**Figure 5: Missing Line Segments
Between Bensenville IMS, Illinois and Willard, Ohio Exceed the Board's Thresholds
for Increases in Merger-Related Tonnages**

<u>Line Segment</u>	<u>2019 Modeled Base Year Gross Tons (000s)²³</u>	<u>Merger Year 3 Transaction- Related Increase in Gross Tons (000s)²⁴</u>	<u>Percentage Transaction- related Increase in Gross Tons</u>
Bensenville IMS, IL – Pine Jct, IN	1,655	4,813	191%
Pine Jct, IN – Garrett, IN	2,942	7,288	148%
Garrett, IN – Willard, OH	2,942	7,288	148%

The Draft EIS does **not** analyze these line segments, likely because they were not included in CP-KCS's environmental data submission in Appendix T of the amended operating plan. DEIS, S-3; *see also* DEIS, Figure 2-1. But they are clearly within scope, and they should be addressed in the environmental process.

²³ Amended Operating Plan, Ex. 14 at 44.

²⁴ *Id.*, Ex. 14 at 60.

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CONCLUSION

In light of the deficiencies in CP-KCS's amended operating plan and the resultant inadequacies in the Draft EIS, the Board should take appropriate steps in response to comments, including issuance of a supplemental EIS as needed. We look forward to reviewing any subsequent response. Please let us know if you have additional questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Peter Whitfield", written in a cursive style.

Peter Whitfield

Attachments (2)

cc: Kathryn J. Gainey, CN

Exhibit 1

THIRD VERIFIED STATEMENT OF CARL VAN DYKE

**BEFORE THE
SURFACE TRANSPORTATION BOARD**

STB Finance Docket No. 36500

**CANADIAN PACIFIC RAILWAY LIMITED; CANADIAN PACIFIC RAILWAY
COMPANY; SOO LINE RAILROAD COMPANY; CENTRAL MAINE & QUEBEC
RAILWAY US INC.; DAKOTA, MINNESOTA & EASTERN RAILROAD
CORPORATION; AND DELAWARE & HUDSON RAILWAY COMPANY, INC. –
CONTROL – KANSAS CITY SOUTHERN, THE KANSAS CITY SOUTHERN
RAILWAY COMPANY, GATEWAY EASTERN RAILWAY COMPANY, AND THE
TEXAS MEXICAN RAILWAY COMPANY**

CN'S COMMENTS ON APPLICANTS' AMENDED OPERATING PLAN

**PUBLIC
REDACTED VERSION**

**Third Verified Statement of Carl Van Dyke
June 9, 2022**

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1. Qualifications

My name is Carl Van Dyke. I am a Senior Advisor to, and a Partner Emeritus at, Oliver Wyman, a global general management consulting firm with more than 60 offices in 31 countries. My office address is One University Square Drive, Suite 100, Princeton, NJ 08540. I have been engaged in the design, development, and application of software tools to model, evaluate, and improve the operations of railroads for more than 40 years. I previously sponsored a Verified Statement filed with CN's February 28, 2022 Comments, which provides further details of my qualifications and resume.¹

2. Assignment and Summary of Findings

The purpose of this third Verified Statement is threefold: First, I address the methodology underlying the traffic density values set forth by Applicants² in the Amended Operating Plan and the accuracy of the resulting values. As my testimony (and the Verified Statement of witness Makhholm) demonstrate, the methodology applied by Applicants to develop that data is conceptually flawed and has produced density values that are, in many instances, clearly incorrect – indeed, nonsensical. Second, I identify (and sponsor) the revisions made to CN's Responsive Application pursuant to the Board's *Decision No. 17*.³ Finally, I assess whether Applicants' Amended Operating Plan changes any of the findings contained in my Verified

¹ STB Finance Docket No. 36500, CN's Comments on Application and Request for Conditions, February 28, 2022 (CN-13), Exhibit 2, Verified Statement of Carl Van Dyke – hereinafter "Van Dyke First Verified Statement."

² Applicants are Canadian Pacific Railway Limited, Canadian Pacific Railway Company, and their US rail carrier subsidiaries Soo Line Railroad Company, Central Maine & Quebec Railway US Inc., Dakota, Minnesota & Eastern Railroad Corporation, and Delaware and Hudson Railway Company, Inc. (collectively "CP" or "Canadian Pacific Applicants") and Kansas City Southern and its US rail carrier subsidiaries The Kansas City Southern Railway Company, Gateway Eastern Railway Company, and The Texas Mexican Railway Company (collectively "KCS" or "Kansas City Southern Applicants").

³ STB Finance Docket No. 36500, Canadian Pacific Railway Ltd. – Control – Kansas City Southern, et al, Decision No. 17, April 27, 2022.

Statement from February 28, 2022, filed as part of CN's Comments on the Application.⁴ Results from this final step are presented in Appendix C in this document.

In the context of line segment density data and related train counts and yard activity measures, I have been asked to review Applicants' response to the Board's *Decision No. 17*, which directed Applicants to "amend their Operating Plan to include: (1) an explicit identification of the baseline traffic density values used in the Operating Plan calculations and to be used in the environmental review; (2) a comprehensive explanation of how those values were generated; and (3) a comprehensive explanation of the rationale underlying those methodological choices."⁵

Specifically, Applicants propose to use the "adjusted" line density values submitted to the OEA and in their supporting work papers (hereinafter the "Applicants' proposed density data"), as set forth in their May 13, 2022 filing to the Board, in lieu of the actual historic tonnage values published in Exhibit 14 of the October 29, 2021 Application. Based on my review, I conclude that Applicants' use of their "adjusted" proposed density data do not result in an accurate representation of either Base Year 2019 density values or post-transaction Year 3 or 5 values.⁶

In essence, Applicants propose to replace the historic Base Year values that they developed in the normal course of business with questionable "2019 baseline" data derived through a fundamentally flawed amalgamation of data from different sources and time periods, followed by a supposed "calibration" to make the aggregate gross ton-mile (GTM) figures in their baseline match the aggregate 2019 traffic metrics (while leaving train counts and car handlings

⁴ Van Dyke First Verified Statement

⁵ STB Finance Docket No. 36500, Decision No. 17, op. cit., April, 27, 2022.

⁶ See STB Finance Docket No. 36500, Canadian Pacific Railway Ltd. – Control – Kansas City Southern, et al, Decision No. 16, March 16, 2022.

uncalibrated).⁷ Use of this questionable “base year” data for Applicants’ proposed density data submission, in combination with further “adjustments” described in Applicants’ May 13, 2022 filing, result in the use of segment-specific line GTM densities, train counts, and yard counts that are inaccurate and misleading.

Applicants compound these issues by applying an overly complex and error-prone process to the development of post-transaction tonnage values that results in demonstrably inaccurate tonnage estimates, with values that are in some cases too low and in other cases too high. For example, post-transaction tonnage estimates for the critical Sabula, Iowa to Airline Junction, Missouri line are in some cases understated by more than 10 million tons per year.⁸ And in some cases, projected merger-related tonnage increases on segments of the Springfield line are disconnected from Applicants’ own underlying traffic analysis.⁹

The fundamental problems with Applicants’ use of this modeling process include the following:

- **Use of non-representative traffic as a starting point:** Traffic snapshots from different time periods (in some cases as short as a single month) from multiple years (but not including any traffic data from 2019) were used to create Base Year 2019 tonnages in Applicants’ proposed density data. Applicants have failed to prove that the substitute data used is representative of full-year traffic for the Base Year 2019, and there is no reason to believe it is. Specifically, there is no reason to believe that the baseline data proposed by Applicants will yield an accurate segment-by-segment representation of tonnage and train counts, so as to allow the Board and OEA to accurately assess merger-specific impacts. Further adjustments described in Applicants’ May 13, 2022 filing are insufficient to remediate this concern.
- **Application of “calibration factors” is meaningless and flawed:** Applicants force-fits aggregate GTM values by using “calibration factors” to align systemwide operating metrics

⁷ CP-KCS explains calibration process in CP-KCS Amended Operating Plan, pp. 39-40.

⁸ See Exhibit 4-8 in this statement; See Appendix A.3 following statement.

⁹ See Section 5 in this statement.

for GTMs so that actual, aggregate 2019 tonnage metrics match Applicants’ proposed density data submissions on a systemwide basis. This “calibration” is a meaningless scaling exercise designed only to make aggregate metrics match (by definition, since the scaling factor is specifically derived to force numbers to match). At the same time, train counts and yard activity measures are not “calibrated” in any way, and one is left to assume that those metrics represent some amalgam of the October 2020 and early 2021 traffic levels upon which they are based. Significant differences on a line segment and yard location basis still exist between Applicants’ proposed “base year” data submissions and the actual 2019 numbers for GTMs, trains, and car handlings.

- **Fractured modeling process:** Applicants’ proposed density data tonnages are not the outputs of a coherent MultiRail-based planning process as implied by Applicants. Instead, they are the product of a fractured and highly convoluted process that used values from a variety of independent sources, altered through the use of various “calibration” factors, making it impossible to produce reliable, consistent results. Application of the “adjustments” proposed in Applicants’ May 13, 2022 filing do not correct the impact of these deficiencies. Direct inspection of the proposed base year values and post-transaction values reveal a variety of inconsistencies and suspicious results that can only lead one to conclude that those values are unreliable. Deeper analysis of the pre- and post-transaction values and modeling methods only confirms these suspicions.¹⁰
- **Projections of post-transaction tonnages are invalid and cannot be relied on:** Since the OEA Base Year 2019 values are unreliable, and Applicants have introduced significant methodological errors, projections of post-transaction tonnages also are invalid and cannot be relied on. I demonstrated the flaws in the post-transaction tonnages in my first Verified Statement,¹¹ and further expand on the unreliable nature of these values below. Applicants’ adjustments made to the “Base Year 2019 modeled tonnages” or post-transaction tonnages do not change my conclusion with regard to these projections.

¹⁰ See Sections 4 and 5 in this statement; See Appendix A following statement.

¹¹ Van Dyke First Verified Statement, Sections 5.1 and 6.1.

The evidence and logic to support these findings are presented herein. I also briefly describe the updates to CN's Responsive Application's operating plan, which are included in a separately filed amended operating plan for the Springfield line.¹²

3. Applicants' Base Year Operating Plan is Based on Traffic Density Data that is Conceptually Flawed and Demonstrably Incorrect

In their original Notice of Intent to File Application filed on March 22, 2021, Applicants selected 2019 as the Base Year for purposes of this control proceeding.¹³ In *Decision No. 3*, the Board adopted Applicants' choice.¹⁴ Thereafter, in an Amended Notice of Intent filed on September 15, 2021, Applicants again designated 2019 as the Base Year, stating that "[it] remains the last full year unaffected by the COVID pandemic for which data are available."¹⁵ Having made – and reaffirmed – their choice of Base Year, it was incumbent on Applicants to present an operating plan and segment-specific line density data that accurately portray CP's and KCS's 2019 traffic and operations.

Applicants did, in fact, base their traffic diversion studies, cost evidence, and financial exhibits set forth in the Application on CP's and KCS's Base Year (2019) data.¹⁶ However,

¹² STB Finance Docket No. 36500 (Sub-No. 3), Canadian National Railway Company and Illinois Central Railroad Company—Control—Gateway Eastern Railway Company, Amended Operating Plan, June 9, 2022.

¹³ STB Docket No. FD 36500, Canadian Pacific Railway Ltd. – Control – Kansas City Southern, et al, Notice of Intent to File Application for Approval of Transaction Subject to 49 U.S.C. §§ 11323-25, Mar. 22, 2021, p. 1.

¹⁴ STB Docket No. FD 36500, Canadian Pacific Railway Ltd. – Control – Kansas City Southern, et al, Decision No. 3, April 21, 2021, p. 3. ("Applicants indicate that they will use 2019 as the base year for the impact analysis in the application.")

¹⁵ STB Docket No. FD 36500, Canadian Pacific Railway Ltd. – Control – Kansas City Southern, et al, Amended Notice of Intent to File Application for Approval of Transaction Subject to 49 U.S.C. §§ 11323-25, September 15, 2021, p. 3.

¹⁶ See, e.g., Verified Statement of Brown/Zebrowski from CP-KCS Application, Vol. 2, footnote 1. ("The Board has made 2015-2019 CWS data available for this proceeding. We rely on 2019 data for measuring representative traffic patterns because it is the most recent period of full-year data available in both traffic tape data and CWS data sources, which are analyzed together in our work"; Verified Statement of Bengt Muten from CP-KCS Application,

neither the Operating Plan filed as part of the Application on October 29, 2021 nor the Amended Operating Plan filed on May 13, 2022 is based on Applicants' actual 2019 traffic. Rather, Applicants' Amended Operating Plan was prepared using CP and KCS traffic for the following time periods:

- CP and KCS non-unit train traffic from a single month, October 2020¹⁷
- CP unit train traffic from March-June 2021¹⁸
- KCS unit train traffic from February-May, 2021¹⁹
- Non-unit train service plans in effect on CP and KCS during the first quarter of 2021²⁰

Based on the description provided by Applicants, the non-unit train service plan was adjusted to match the October 2020 traffic,²¹ while the 2021 unit trains were used “as is.” It is noteworthy that the data used by Applicants to construct a “2019 base year” does not actually include *any* data from 2019. To develop Base Year traffic density values for use in their Amended Operating Plan and Exhibit 14, Applicants purportedly “calibrated” the traffic density data generated from these 2020-2021 data sources to make them consistent with CP’s and KCS’s actual 2019 aggregate full-year statistics.²² Specifically, Applicants adjusted the aggregate systemwide tonnages (GTMs) “modeled” by their 2020-2021-based operating plan constructed methodology to match Applicants’ *actual* aggregate systemwide GTMs from 2019. They then applied the resulting “calibration factors” by line segment to estimate 2019 Base Year tonnage and density for each segment. Applicants claim that this convoluted methodology generated line-

Vol. 2 at 3 (“In my analysis, I relied upon the truck flows that are reflected in the IHS Markit Transearch database for 2019, the intermodal flows from CP and KCS waybill data for 2019, and the 2019 STB Carload Waybill Sample.”)

¹⁷ CP-KCS Amended Operating Plan, p. 34, ¶82.

¹⁸ CP-KCS Amended Operating Plan, footnote 19, p. 37.

¹⁹ CP-KCS Amended Operating Plan, footnote 19, p. 37.

²⁰ CP-KCS Amended Operating Plan, p. 34, ¶82.

²¹ CP-KCS Amended Operating Plan, p. 34, ¶82.

²² CP-KCS Amended Operating Plan, pp. 39-40.

specific densities that “reasonably reflected [CP’s and KCS’s] pre-Transaction operations.”²³ At the same time, no such calibration was applied to the train counts or yard handlings, leaving one to assume that they represent some amalgam of 2020 and 2021 values, with no connection to 2019.

In Decision No. 17, the Board instructed Applicants and other interested parties to use the density data “modeled” by Applicants “to ensure consistency of analysis.”²⁴ However, the Board made clear that:

*“This decision should not be interpreted as a determination by the Board on the validity of the methodology used by Applicants to generate their baseline traffic density values....Parties remain free to argue that Applicants’ data and methods are inappropriate such that Applicants cannot meet their burden to show that the Transaction would be in the public interest.”*²⁵ (emphasis added)

The Board instructed Applicants to submit with their Amended Operating Plan “(2) a comprehensive explanation of how those values were generated, and (3) a comprehensive explanation of the rationale underlying those methodologies.”²⁶

As this Verified Statement and the Verified Statement of witness Makhholm show, the traffic density values set forth in Applicants’ “Master Segment Table” are based on a conceptually flawed methodology that produced density values that are inconsistent and demonstrably incorrect, and this is not consistent with the regulatory intent of adopting a “base year” for the purpose of assessing the impacts of a merger transaction to determine whether the transaction is in the public interest.

²³ CP-KCS Amended Operating Plan, p. 30, ¶72.

²⁴ STB Finance Docket No. 36500, Decision No. 17, op. cit., April, 27, 2022, p. 5.

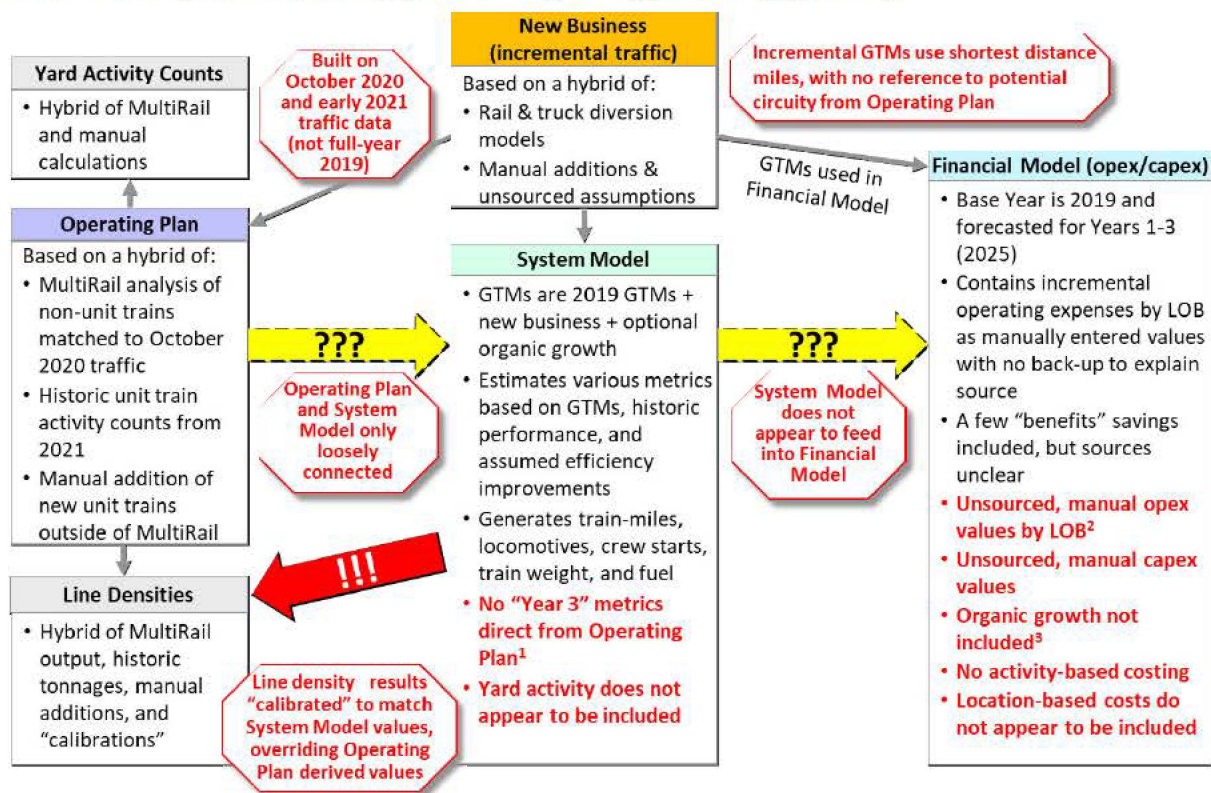
²⁵ STB Finance Docket No. 36500, Decision No. 17, op. cit., April, 27, 2022, p. 5.

²⁶ STB Finance Docket No. 36500, Decision No. 17, op. cit., April, 27, 2022, p. 5.

3.1 The methodology applied by Applicants to develop the Master Segment Table traffic density values is conceptually flawed

It is important to remember that Applicants used a complex, fractured, and fundamentally flawed approach to develop their Operating Plan and the various operating metrics. Many of the flaws in Applicants' methodology are discussed in detail in my first Verified Statement,²⁷ with significant additional details provided in Appendix A below. As a reminder of Applicants' approach, Exhibit 3-1 below depicts the logic (or illogic) flow employed by Applicants (updated from my prior Verified Statement to reflect additional understanding of the process employed).

Exhibit 3-1: Depiction of the Applicants' modeling process (updated)²⁸



Notes: 1. Except perhaps through selected "efficiency factors," such as changes in train weight or velocity. 2. While operating metrics in the System Model are not broken out by Line of Business. 3. Appears that organic growth may have been used only in the calibration of line densities.

²⁷ Van Dyke First Verified Statement, Section 4.4.

²⁸ Adapted from Van Dyke First Verified Statement, Exhibit 4-1.

Applicants continue to insist in their responses to Board *Decision No. 16* and the Amended Operating Plan filing that Applicants' proposed density data values were derived from a MultiRail analysis.²⁹ But that is simply not the case. The tonnage values used by Applicants in their proposed density data submissions are not the result of a well-structured MultiRail analysis but instead were manufactured through a complicated process based on numerous separate data sources and "calibrations" that have yielded highly suspect results.³⁰ One can see the illogic in the resulting tonnage numbers through a simple inspection of the proposed tonnage values, as detailed in subsequent sections of this Verified Statement. The ill-conceived attempt to "calibrate" Applicants' "constructed" density data to match CP, KCS, and KCSM actual aggregate 2019 values does nothing to remedy this fundamentally flawed process. Nor do other "adjustments" in Applicants' Amended Operating Plan result in base year data that is anywhere close to Applicants' actual 2019 traffic flows on a segment by segment and yard by yard basis.

Further, this process has been made even more complex for post-transaction values in the Amended Operating Plan, while carrying forward all of the flaws present in the original filing. The result is that in addition to suspect base year values, post-transaction tonnage values are equally invalid, if not even less accurate, than base year values.

Detailed, step by step, logic flows for both pre- and post-transaction calculations of segment-by-segment tonnages are provided in Appendix A. This includes examples of how these calculations were applied to specific line segments and a more detailed exploration of the resulting errors for selected line segments.

²⁹ See STB Finance Docket No. 36500, Applicants' Response to Decision No. 16, pp. 5-6, ¶¶8-9; CP-KCS Amended Operating Plan, pp. 30, 37, 57.

³⁰ Van Dyke First Verified Statement, Sections 4.1 and 4.3; See Sections 4 and 5 in this statement; See Appendix A following statement.

As witness Makhholm explains, Applicants’ attempt to “model” CP and KCS base year traffic densities is inconsistent with the regulatory purpose for adopting a “base year,” since Applicants use partial year extracts of data from multiple years, none of which is 2019.³¹ The result is a “model” that does not properly consider the impacts of seasonality, nor the normal “month to month” variability in traffic that can occur in specific portions of the network for a variety of reasons (demand patterns, operational reasons, labor issues, temporary plant closures, weather, etc.). Scaling samples from short time periods to full-year figures necessarily replicates – and augments – the impact of these variations which, even if small in the aggregate, can be substantial on a segment-by-segment, commodity-by-commodity basis.

Moreover, as my prior testimony shows,³² Applicants’ “calibration” methodology – which is simply an aggregate scaling of the “baseline” data to match CP’s and KCS’s respective systemwide traffic GTMs for the time periods used in their analysis – is simply not capable of producing accurate and reliable segment-specific density values. By applying the same network-wide “calibration factors” to adjust the line densities on each individual line segment on CP’s and KCS’s networks, Applicants are assuming that the percentage difference between the “modeled” (and uncalibrated) line densities and the actual line densities is the same for every segment of the network. To understand this, consider Exhibit 3-2:

Exhibit 3-2: Example of applying uniform calibration factors to equal proportional errors

Line Segment	A: Segment Mileage	B: Historic Tonnage	C: Uncalibrated “Model” Tonnage	D: Percent Difference	E: Calibration Factor	F: Calibrated “Model” Tonnage
Segment A	40	10	12.5	25%	0.8	10
Segment B	30	15	18.75	25%	0.8	15
Segment C	20	20	25	25%	0.8	20

³¹ STB Finance Docket No. 36500, CN’s Comments on Application and Request for Conditions, June 9, 2022, Verified Statement of Jeff Makhholm – hereinafter “Makhholm Verified Statement”, p. 4

³² STB Finance Docket No. 36500, CN’s Comments on Application and Request for Conditions, March 28, 2022, Verified Statement of Carl Van Dyke – hereinafter “Van Dyke Second Verified Statement”, Section 3.2.

Under Applicants' approach, the calibration factor is determined by computing GTMs associated with columns B and C and taking the ratio of the two. In the above example, B yields 1,250 GTMs and C yields 1,562.5 GTMs, giving us a calibration factor of 1250/1562.5 or 0.8. Now let us consider a case where the differences between the historic tonnage and uncalibrated model tonnage are not proportional, as shown in Exhibit 3-3:

Exhibit 3-3: Example of applying uniform calibration factors to unequal proportional errors

Line Segment	A: Segment Mileage	B: Historic Tonnage	C: Uncalibrated "Model" Tonnage	D: Percent Difference	E: Calibration Factor	F: Calibrated "Model" Tonnage
Segment A	40	10	15	50%	0.8	12
Segment B	30	15	18.75	25%	0.8	15
Segment C	20	20	20	0%	0.8	16

In the above example, the calibration factor remains the same, as the historic values are unchanged, and the uncalibrated model tonnage yields the same total number of GTMs when summed across all segments. However, the percentage differences (Column D) are very different, and the resulting "calibrated" tonnages no longer correspond to historic values, with an overestimate on Segment A and an underestimate on Segment C.

The above example demonstrates both the nature of CP-KCS's calibration process, and how this calibration process does nothing to mitigate fundamental errors in the modeling process.³³ Accordingly, Applicants' methodology cannot yield accurate traffic density values at a line segment level, which is essential to the primary purpose of the operating plan. Furthermore, based on my review of the CP-KCS Application, Amended Operating Plan, and work papers,

³³ To further highlight how this is problematic, consider a scenario where the base traffic in the sample month in a specific location is lower than expected *for a specific reason in one location* (e.g., labor action impacting a major shipper, or renovations being made at a plant). Logically, one would expect that once that factor subsides (e.g., the labor action is over), overall traffic levels will return to what they would have otherwise been, due to an *increase in traffic in that specific location*. However, the use of an aggregate scaling such as the one proposed by Applicants would instead force an increase in *all other segments* to make aggregate figures match, while *keeping that specific location depressed*. Clearly, the methodology will yield unreasonable results on a location-by-location basis.

Applicants made no effort to “calibrate” train counts or yard activity measures to in any way correspond to 2019 (not even at an aggregate level) – meaning that the trains and yard activity values in their Amended Operating Plan represent only a mix of October 2020 and early 2021 values, not 2019 values.

In the end, the accuracy of base year data matters because that data is critical to quantifying the impacts of a merger, including operating plan details, capital planning, capacity requirements, labor implications, environmental impact, and financial projections. If one or more elements of base year data are not reliable, the Board and interested parties lose the ability to accurately assess the effects of the merger. Particularly, the fact that the Applicants’ constructed Base Year 2019 does not correspond to *any* single time period (and certainly not 2019) impedes a reliable assessment of the merger’s impacts.

3.2 Applicants’ rationale for applying their convoluted approach to developing Base Year traffic densities are meritless

Despite 2019 being accepted as the Base Year by the Board based on the pre-filing notice of CP-KCS, the Applicants elected to walk away from actual 2019 data in their development of the post-transaction Operating Plan. They provide a number of rationalizations for doing so in their Amended Application, with the primary statement being as follows:

“We concluded that it would not be reasonable to use traffic data from 2019 to represent Base Plan operations because of the changes in traffic flows and operational design between 2019 and early 2021, which would have resulted in a mismatch that undermined the reliability of the Base Plan as a reflection of pre-Transaction conditions.”³⁴

Applicants then try to further justify this decision by citing various traffic and operational changes that occurred post-2019, such as the loss by CP of intermodal contracts, the acquisition

³⁴ CP-KCS Amended Operating Plan, p. 33, ¶79.

of the Central Maine & Quebec, and the reduction of coal traffic on KCS.³⁵ A review of the examples cited show that with the exception of a power plant closure on KCS, none of these changes would have any meaningful impact on the CP-KCS transaction and merger-related traffic movements. Surely, Applicants could have simply removed the coal traffic for the one impacted power plant, and otherwise used the 2019 traffic “as is” from a merger assessment perspective. At the same time, they dismiss the relevance of the shutdown of the Port of Lazaro Cardenas during their selected month of October 2020 for intermodal traffic as only impacting Mexico.³⁶ Given the plans for new traffic at Lazaro Cardenas, and the potential for congestion at the port or on the lines within Mexico, with a chance of spillover effects into the US, the failure to include this traffic would seem much more material to the merger than the loss of some CP intermodal traffic that does not in any way intersect with the KCS network, or CP’s acquisition of a rail line serving Quebec and the State of Maine. Furthermore, a permanent loss of traffic would tend to free up capacity, causing its overstatement to yield a more conservative assessment of the merger operating plan, while the omission of key traffic that is expected to recover would tend to overstate available capacity and mask the true impacts of traffic increases.

Based on 40 years of modeling railroad operations, I have learned that no period of time is perfect. Every year contains “anomalies,” such as work stoppages, plant openings or closings, weather issues, changing economic conditions, etc. One can work around these issues by making targeted adjustments, or perhaps simply making note of the issues in the description of the results. However, the fact is that Applicants adopted 2019 as their Base Year. If 2019 was an inappropriate period of time to use, then they could have – and should have -- proposed a different base year. Applicants cannot unilaterally walk away from the base year that they

³⁵ CP-KCS Amended Operating Plan, p. 33, ¶80.

³⁶ CP-KCS Amended Operating Plan, pp. 34-35, ¶83.

selected, use an amalgam of data from different time periods in multiple other years to build the operating plan, and then attempt to bury the details in the work papers while continuing to claim that 2019 was used as the base year. I see no reason, based on my professional experience, that Applicants could not have used the agreed upon base year, adjusting their 2021 blocking and train service plan to match the 2019 traffic, including perhaps adjusting this traffic in strategic ways to reflect the most significant differences, if any.

At the same time, Applicants state that one cannot rely on the tonnage values they collected in the normal course of business for two primary reasons: 1) these tonnages include locomotives, and 2) there were anomalous measurement practices on KCS resulting in distorted (primarily overstated) tonnage values.³⁷ As explained in Section 4.2 of this Verified Statement, the first issue could have been easily resolved by using publicly available data regarding CP and KCS tonnages with (or without) locomotive tons. While we understand that there may have been some over or under statement of tonnages on some KCS line segments due to internal data collection processes, we do not believe these defects were so serious as to prevent the historic tonnages from being used to validate the base year line densities.

3.2.1 Applicants' approach is not comparable to prior merger approaches

Applicants attempt to portray the methodologies underlying their Amended Operating Plan as being equivalent to those used in prior mergers.³⁸ Nothing could be further from the truth. Specifically, Applicants' (incorrectly) claim that the approach that they used was also used by applicants in several prior Class I merger proceedings:

See, e.g., CN/IC, Finance Docket No. 33556, Application Vol. 2 (CN/IC-7), Operating Plan (Exhibit 13) (filed July 16, 1998) at 127 ("Operating Plan was constructed using 1996 as the base traffic year;" "To provide as accurate an indication of current operating patterns as possible, CN and IC used freight train operations and other daily

³⁷ CP-KCS Amended Operating Plan, pp. 31, 35.

³⁸ CP-KCS Amended Operating Plan, p. 32.

operating data for the first quarter of 1998.”); *UP/SP*, Finance Docket No. 32760, Application Vol. 3 (UP/SP-24), Operating Plan (Exhibit 13) (filed Nov. 30, 1995) (Operating Plan built “using 1994 traffic levels;” “To provide as accurate an indication of operating patterns as possible, UP and SP planners identified freight train schedules and other operating data for the most recent period during 1995 for which this information was available when planning began.”); *BN/Santa Fe*, Finance Docket No. 32549, Application Vol. II (BN/SF-8), Operating Plan (Exhibit 13) (filed Oct. 1994) at 7 (traffic study used 1993 as base year, operating plan used “terminal blocking and train schedules ... in effect in mid 1994”).³⁹

I was personally involved in developing the operating plans submitted in both the CN/IC merger and the UP/SP merger.⁴⁰ While the operating plans in those cases did not rely entirely on the train service plan from the designated “base year,” there are several very important (and meaningful) distinctions between the approach taken in those mergers and the methodologies employed by Applicants in this proceeding:

- First, and most importantly, the traffic data that was used to develop the operating plan in both the CN/IC and UP/SP mergers was the applicants’ actual real-world traffic for the chosen base year, not an amalgam of sample time periods taken from other years.⁴¹ (Based upon the language from Applicants’ Amended Operating Plan quoted above, that also appears to have been the case in the BN/SF proceeding as well).
- The non-unit train operating plans in both CN/IC and UP/SP were adjusted to match the actual base year traffic.⁴² In other words, the train counts, yard activity levels, and tonnages in the operating plans submitted in those cases reflected the actual base year, not some other time period(s).
- In both CN/IC and UP/SP, the operating plan was based on a full year of traffic in order to average out seasonal effects and to capture the full breadth of operations throughout the year.⁴³

³⁹ CP-KCS Amended Operating Plan, see footnote 10, p. 32.

⁴⁰ I cannot speak to the details of the BN/Santa Fe merger filing.

⁴¹ *CN/IC*, Finance Docket No. 33556, Application Vol. 2 (CN/IC-7), *UP/SP*, Finance Docket No. 32760, Application Vol. 3 (UP/SP-24)

⁴² *CN/IC*, Finance Docket No. 33556, Application Vol. 2 (CN/IC-7), *UP/SP*, Finance Docket No. 32760, Application Vol. 3 (UP/SP-24)

⁴³ *CN/IC*, Finance Docket No. 33556, Application Vol. 2 (CN/IC-7), *UP/SP*, Finance Docket No. 32760, Application Vol. 3 (UP/SP-24)

- In both CN/IC and UP/SP, unit trains included in the base year operating plan were based on the actual unit train movements observed in the full-year, base year traffic.⁴⁴ There, was no reason to adopt unit trains from other time periods, when the actual historic unit train movements could be directly identified through the analysis of the base year waybills. The same is true for the CP-KCS merger, where full year 2019 waybill data was available.

Finally, as stated in my first Verified Statement, at least in the case of CN/IC and NS/Conrail, the actual base year train counts and system metrics were used to inform the capital planning process and to drive the financial analysis of the pre- and post-transaction scenarios.⁴⁵ No such relationship exists in the CP-KCS Application.

In short, the only element that Applicants' operating plan has in common with those presented in prior merger cases is the use of a blocking and/or train plan from an alternate time period as the starting point for developing the non-unit train operating plan. Here, Applicants decided to adjust their 2021 non-unit train plans to match their October 2020 traffic⁴⁶; it would have been no more difficult to match the full-year 2019 traffic instead. Moreover, because Applicants used a sample of unit trains from 2021 and did not even look at the actual unit train traffic at an O-D level for 2021 or compare it with actual 2019 unit train traffic and make appropriate adjustments⁴⁷, there is truly no analytic connection between Applicants' unit trains and the 2019 Base Year.

In conclusion, as a result of methodologically flawed "calibrations" applied by Applicants, the Amended Operating Plan is disconnected from any specific and identifiable Base Year and certainly is not based on CP's and KCS's actual 2019 experience. Both the original operating

⁴⁴ CN/IC, Finance Docket No. 33556, Application Vol. 2 (CN/IC-7), UP/SP, Finance Docket No. 32760, Application Vol. 3 (UP/SP-24)

⁴⁵ Van Dyke First Verified Statement, Sections 3 and 4.

⁴⁶ CP-KCS Amended Operating Plan, pp. 30, 34.

⁴⁷ CP-KCS Amended Operating Plan, pp. 30, 37.

plan submitted by Applicants and their more recent Amended Operating Plan are based on methodologies that render them unsuitable as a basis for assessing the impacts of the proposed merger on communities, customers, other railroads, and other interested parties, on a geographically specific, line-by-line basis.

The confusion related to the interpretation of Applicants' operating plan data, inconsistent data, and the requirement to file an amended operating plan are a direct result of the complex and convoluted approach Applicants took in developing their post-merger operating plan. If Applicants had taken the straightforward approach of using full-year 2019 traffic, including unit trains, within MultiRail, and producing all of their key line and yard metrics using MultiRail, none of the issues Applicants now confront would have arisen.

Applicants' need to disavow their historic tonnage values collected in the ordinary course of business is also a direct result of the flawed modeling approach they adopted. Surely, the issue of inclusion of locomotives in these values could have been addressed through appropriate adjustments, as I have set forth in this Verified Statement.⁴⁸ Based on the statistics published by the AAR, it is clear that KCS and CP know the amount of GTMs their locomotives generate separate from railcars.⁴⁹ The "disavowal" of their own corporate statistics by Applicants is again a direct result of the incompatibility of their Base Year models with the actual operations and traffic for 2019.

In short, the confusion, errors, and computational complexity associated with the Applicants' post-merger operating plan is a mess of their own making.

⁴⁸ See Section 4.2. in this statement.

⁴⁹ See Exhibit 4-6 in this statement.

4. Applicants' Base Year Tonnage and Train Counts Cannot be Validated Due To the Methodology Used

The Board, OEA, and interested parties must be able to validate that the operating plan and associated activity measures fairly and accurately represent both pre- and post-transaction conditions. This is required to ensure that communities, customers, other railroads, and other parties affected by the proposed merger can correctly assess the feasibility and impacts of the transaction on the environment, safety, service levels, congestion, and other metrics of interest.

As I described in the previous section, the approach taken by Applicants makes complete validation of their Base Year traffic densities impossible. Applicants disavow the real-world tonnage values set forth in their original Exhibit 14 and essentially ask the Board (and interested parties) to trust that the tonnage figures generated by their convoluted methodology provide an accurate reference point for assessing the merger.⁵⁰

As an initial matter, Applicants did not include in their work papers the waybill data for the periods in 2021 associated with the unit trains they used, so the record contains no method or data to validate that the unit train tonnages or counts used by Applicants accurately reflect early 2021 unit train traffic levels, or to explain how the underlying traffic levels from 2021 compare to 2019 Base Year values.

Nonetheless, I have attempted to validate Applicants' traffic density values, and to the extent possible, train counts. As described below, the tonnage values produced by Applicants' "calibration" methodology are dramatically inaccurate in multiple cases, supporting a conclusion that those density values – and Applicants' Amended Operating Plan – are simply not reliable.

⁵⁰ CP-KCS Amended Operating Plan, pp. 33-34.

4.1 Base Year (pre-transaction) reported tonnages are erroneous based on direct inspection of actual 2019 tonnage values

Based on my review of Applicants' traffic density methodology, Applicants did not use their selected 2020-2021 traffic to project tonnages by line segment. Instead, they appear to have projected trains by line segment, and then applied externally developed average train weights by segment to arrive at estimated tonnage values for each segment. Those values were then "calibrated" through Applicants' methodology to generate the segment-specific density values set forth in their Master Segment Table.⁵¹

The result of this convoluted modeling approach is a set of train weights (and resulting densities) that vary dramatically between adjacent line segments, even where trains appear to traverse those line segments without stopping to pick up or set off cars. Under Applicants' approach, no distinction was made between different types of trains or the effects of changing train frequency on average train weight. The significant anomalies created by this approach are readily apparent in the Base Year tonnage values upon which Applicants' Amended Operating Plan is based.

Exhibit 4-1 below illustrates this issue for the KCS mainline between Beaumont, TX and Robstown, TX:

⁵¹ See Appendix A below for details of methodology applied by Applicants.

Exhibit 4-1: Beaumont to Robstown train counts, tonnages, and average train weights

Subdivision	Line Segment	Applicants' Base Daily Train Count ⁵²	Applicants' Calibrated Base Year Tonnage (millions) ⁵³	Average Train Weight ⁵⁴	Adjusted 2019 Historic Tonnage ⁵⁵
Beaumont to Rosenberg	Beaumont, TX – Rosenberg, TX ⁵⁶	8.47	{{ }}	{{ }}	27.92
Rosenberg	Rosenberg, TX - Kendleton, TX	8.39	26.32	8,595	26.23
Rosenberg	Kendleton, TX – Victoria, TX	8.70	27.28	8,591	24.08
Victoria to Robstown	Victoria, TX – Placedo, TX (UP)	7.94	16.45	5,676	23.89
Victoria to Robstown	Placedo, TX – Robstown, TX (UP)	7.94	16.45	5,676	23.90
	Maximum Value	8.70	27.28	8,595	27.92
	Minimum Value ⁵⁷	7.94	16.45	5,676	23.89
	Percent Difference (Min. to Max.)	10%	66%	51%	17%

While the train count remains fairly consistent over the segments of this line, the annual total tonnage varies dramatically between segments, from a low of 16.5 million tons (with an average train weight of 5,676 tons) to a high of 27.3 million tons (with an average train weight of 8,591 tons). Comparing the inconsistent tonnage values generated by Applicants' methodology with the adjusted historic tonnages (and comparatively low variability in tonnages) in the far

⁵² CP-KCS Amended Operating Plan, Appendix T, p. 10.

⁵³ CP-KCS Amended Operating Plan, Appendix T, p. 11; Work paper 24.1.1.9-Trains Per Day and Gross Ton Miles.xlsx for Beaumont – Rosenberg segment.

⁵⁴ Calculated by annual tonnage / (daily train count * 365 days); See work paper for this statement "HC - Segment Tonnage Comparison – Applicant Submitted vs. Historical.xlsx" for more detail.

⁵⁵ The Adjustment is introduced to exclude locomotives from the tonnage reported in Exhibit 14 "Part A", based on the historical portion of GTMs corresponding to locomotives for KCS (as reported in the Analysis of Class I Railroads). See Exhibit 4-6 in this Statement for further details on this calculation. An analogous calculation is used to adjust tonnages for CP where appropriate. This adjustment was made by Oliver Wyman.

⁵⁶ For the Beaumont to Rosenberg subdivision, the Applicants' Amended Operating Plan shows there being one segment labeled "BEAUMONT TO ROSENBERG" in Appendix T with a significantly low 2.59 million annual tonnage. In the accompanying work paper, 24.1.1.9-Trains Per Day and Gross Ton Miles.xlsx, there are two segments for this subdivision labeled {} and {}

of which have different density values. We gave the benefit of the doubt and assumed the {} segment displayed the correct tonnage of {} based on the density values of the adjacent segments.

⁵⁷ Minimum value excludes the potentially erroneous Beaumont – Rosenberg segment.

right column, it is apparent that the Applicants' proposed tonnages are almost certainly wrong, particularly for the two UP line segments.

Applicants provide an estimate of the number of cars traversing each line in their work papers (and shown in Exhibit 4-2).⁵⁸ The car count is clearly fairly consistent over this line. If one takes this car count and multiplies it by an estimated average gross weight per car of 75 tons,⁵⁹ one can develop an independent estimate of the base tons for each line segment, as shown in Exhibit 4-2:

Exhibit 4-2: Beaumont to Robstown daily car counts and estimated annual tonnage

Line Segment	Non-Unit Train Daily Cars ⁶⁰	Unit Train Daily Cars ⁶¹	Total Daily Cars ⁶²	Annual Tonnage at 75 tons/car (millions)	Applicants' Calibrated Base Year Tonnage (millions)
Beaumont, TX – Rosenberg, TX	{{ }}	{{ }}	{{ }}	{{ }}	{{ }}
Rosenberg, TX - Kendleton, TX	{{ }}	{{ }}	1,015.2	27.8	26.32
Kendleton, TX – Victoria, TX	{{ }}	{{ }}	1,080.4	29.6	27.28
Victoria, TX – Placedo, TX (UP)	{{ }}	{{ }}	985.3	27.0	16.45
Placedo, TX - Robstown, TX (UP)	{{ }}	{{ }}	985.3	27.0	16.45

This cross-check creates values that are fairly consistent with the Rosenberg-Kendleton and Kendleton-Victoria segment tonnages as reported by Applicants and reinforces that the tonnage on the other three segments are likely underestimated by at least 10 million annual tons. Note that reducing the assumed average gross weight to 60 tons per car still yields an annual tonnage

⁵⁸ Work paper 24.1.1.9-Trains Per Day and Gross Ton Miles.xlsx.

⁵⁹ Testing a wide set of assumptions about empty/loaded ratios and loaded and empty gross weights leads me to conclude that 75 gross tons per car is a conservative estimate. For example, assuming an equal loaded/empty ratio for grain yields something like 30 tons empty and 130 tons loaded, or 80 tons per car. CP for example uses 110 tons for a loaded intermodal car and 60 tons for an empty, and assumes about 25% of the cars are empty, yielding an average weight of 97.5 tons. Multilevels counterbalance this somewhat, perhaps weighing 50 tons empty, 70 tons loaded, with an average of 60 tons, assuming a 50/50 split of loaded to empty (higher if you assume more loads than empties).

⁶⁰ Work paper 24.1.1.9-Trains Per Day and Gross Ton Miles.xlsx.

⁶¹ Work paper 24.1.1.9-Trains Per Day and Gross Ton Miles.xlsx.

⁶² CP-KCS Amended Operating Plan, Appendix T, p. 12, elicited daily carloads by dividing annual carloads by 365 days; Work paper 24.1.1.9-Trains Per Day and Gross Ton Miles.xlsx for the Beaumont – Rosenberg segment.

on segments through Placedo of 21.6 million tons, representing 5 million tons under-reported. (It should be noted that 60 tons per car represents a very low estimate that is unlikely, in my opinion, to be the case in reality.)

The unreliable nature of Applicants' traffic density data is likewise apparent with respect to other segments of the proposed CPKC network. Exhibit 4-3 provides additional examples of line segments where large variations in train weight appear to drive differences in tonnage that may not be aligned with reality.

Exhibit 4-3: Examples of Tonnage Variations Caused By Suspect Train Weights

Subdivision	Line Segment	Applicants' Base Daily Train Count ⁶³	Applicants' Calibrated Base Year Tonnage (millions) ⁶⁴	Average Train Weight ⁶⁵	Adjusted 2019 Historic Tonnage ⁶⁶
Marquette	Bluff, MN - MN/IA Marquette, IA	7.66	13.05	7,672	18.82
Marquette	MN/IA Marquette, IA - Marquette, IA	4.66	16.37	9,624	18.84
Ottumwa	Nahant, IA – Muscatine, IA	6.09	13.31	5,988	14.02
Ottumwa	Muscatine, IA – Ottumwa, IA	4.30	14.77	9,411	16.06
Laredo	Ottumwa, IA - MO/IA Laredo, MO	3.17	10.37	8,962	11.51
Laredo	MO/IA Laredo, MO - Laredo, MO	3.17	10.37	8,962	11.46
Kansas City North	Laredo, MO - Polo, MO	3.74	12.36	9,054	11.46
Kansas City	Polo, MO Airline Jct, MO	3.62	10.49	7,939	11.22
Mexico	Slater, MO - Mexico, MO	1.85	4.28	6,338	8.19
Roodhouse	Mexico, MO - Roodhouse, IL	2.12	4.02	5,195	6.19
Springfield	Roodhouse, IL - Murrayville, IL	0.78	1.00	3,512	2.87
Jacksonville	Murrayville, IL - Jacksonville, IL	0.73	1.33	4,992	2.85
Godfrey	Roodhouse, IL - Godfrey, IL	1.57	1.05	1,832	3.55
East St Louis Term	Godfrey, IL - East St Louis, IL	3.71	6.84	5,051	5.10
Pittsburg	Pittsburg, KS - Kansas City, MO	15.14	36.81	6,661	47.67
Heavener	Watts, OK - Pittsburg, KS	14.14	41.89	8,116	37.92
Artesia	Tupelo, MS – Corinth, MS	1.71	3.26	5,223	2.68
Counce Branch	Corinth, MS – Sharps, MS	4.29	1.71	1,092	2.10

⁶³ CP-KCS Amended Operating Plan, Appendix T, pp. 2, 6, 10.

⁶⁴ CP-KCS Amended Operating Plan, Appendix T, pp. 3, 7, 11.

⁶⁵ Calculated by annual tonnage / (daily train count * 365 days); See work paper for this statement "Segment Tonnage Comparison – Applicant Submitted vs. Historical.xlsx" for more detail.

⁶⁶ CP-KCS Amended Operating Plan, Amended Exhibit 14, pp. 37, 39. Tonnages adjusted by Oliver Wyman to exclude the weight of locomotives for KCS, a calculation explained in Exhibit 4-6.

As a further example of using car counts as a cross check, Applicants report 625.5 cars per day on both segments of the Marquette subdivision, which at 75 tons per car would yield 17.1 million tons per year. Likewise, the Godfrey subdivision is reported to have 119.2 cars per day, while the Godfrey to East St. Louis segment is reported to have 120.1 cars per day. At 75 tons per car, 120 cars per day would yield 3.3 million tons per year, which compares favorably to the historic tonnage on the Godfrey subdivision, but not the East St. Louis Terminal subdivision . Based on this, one can only conclude one of the following: (a) the estimated car counts are wrong, (b) some combination of the train counts and average train weights are wrong, or (c) all of the above.

4.2 If Applicants’ methodology were sound, the segment-specific density data underlying the Amended Operating Plan should correlate to Applicants’ actual 2019 traffic, but it does not

If, as Applicants claim, their methodology produced traffic densities that “reasonably reflect pre-Transaction operations,”⁶⁷ one would expect that the segment-specific tonnage values and train counts in the Amended Operating Plan would reflect CP’s and KCS’s actual experience in 2019. However, because Applicants used a list of unit trains from early 2021, estimated the tonnage for those trains through a convoluted process not directly tied to the traffic they carried, and used non-unit trains matched to traffic from October 2020,⁶⁸ the connection to 2019 on a segment-specific basis is essentially nonexistent. This flaw in Applicants’ methodology was further exacerbated by their reliance on externally sourced average train weights instead of the actual tonnage for non-unit traffic that moved over their networks during October 2020.

⁶⁷ CP-KCS Amended Operating Plan, p. 30, ¶ 72.

⁶⁸ Because Applicants matched their non-unit train operating plan to October 2020 and made no “calibration” adjustments with respect to 2019, I can only conclude that the train counts are reflective not of 2019 but of October 2020.

Moreover, in a flawed attempt to develop tonnage estimates for individual line segments, Applicants simply applied to each segment within each merging railroad the same “calibration factor” that they used to make aggregate systemwide GTMs in the Amended Operating Plan model match the total systemwide GTMs of each of the merging railroads during 2019.⁶⁹ This process necessarily assumed that the percentage difference between the tonnage that moved during the time periods (in 2020 and 2021) that Applicants used in their Amended Operating Plan for each merging railroad and the tonnage that actually moved over each railroad’s lines during 2019 was *the same for every segment on CP and KCS, respectively!*

To test this (dubious) hypothesis, it is useful to benchmark the tonnage figures generated by Applicants’ methodology against their actual 2019 experience. Applicants’ actual Base Year tonnage values (while somewhat imperfect, as are most data sets) are the best available source of information for benchmarking purposes.⁷⁰ Another way to test the validity of Applicants’ traffic densities is to compare them with Applicants’ full year 2019 waybill data. As I demonstrate below, neither October 2020 nor early 2021 provide a representative view of 2019 traffic volumes, and the differences between Applicants’ “calibrated” density values and their 2019 real-world line densities are significant. Based on my analysis, it is fair to question the accuracy of the Base Year traffic densities presented in the Amended Operating Plan.

In my first Verified Statement, I demonstrated that October 2020 is not a representative period for non-unit train traffic⁷¹ as detailed in Exhibit 4-4.

⁶⁹ CP-KCS Amended Operating Plan, pp. 39-40.

⁷⁰ Applicants could have simply used the full year 2019 traffic data for both unit and non-unit traffic, eliminating the need for their convoluted modeling process.

⁷¹ Van Dyke First Verified Statement, Sections 5.2 and 6.3.1.

Exhibit 4-4: Examples of impacts from Applicants using non-representative traffic data

Traffic Type	Description	Impact
Intermodal	Due to a blockade by striking teachers, the Port of Lazaro Cardenas was effectively closed during October 2020	Applicants base period is missing about { } annual loaded northbound container moves, which would cause on the order of { } annual gross tons to not be included in the Mexican density data ⁷²
Carload	Fewer boxcar loadings on KCS/KCSM in October 2020 (when annualized) than observed for full year 2019	11% under-representation of loaded boxcar moves ⁷³
Automotive	Fewer multilevel loadings on KCS/KCSM in October 2020 (when annualized) than observed for full year 2019	13% under-representation of loaded multilevel moves ⁷⁴
Automotive	O-D patterns for multilevel traffic in October 2020 do not correspond to full year 2019 traffic patterns	Gains and losses of thousands of cars per year at an O-D by O-D level ⁷⁵

I also examined the unit train data for several segments, including oil trains over the CP line from Sabula, Iowa to Airline Junction, Missouri;

KCS { } trains to/from { }, and KCS { } trains to/from the { } on the Greenville subdivision in Texas. I have reviewed the revised unit train details provided in the work papers for Applicants' Amended Operating Plan,⁷⁶ and have updated my analysis of those three cases accordingly. The results are summarized in Exhibit 4-5 below.

Exhibit 4-5: Examples of impacts from Applicants using non-representative traffic data

Traffic Type	Description	Impact ⁷⁷
Unit Train	Only a fraction of unit crude oil trains are included in the train counts for the Sabula, Iowa to Airline Junction, Missouri line, even though significant numbers moved in 2019	Instead of the 2019 average of { } oil trains/month on the Davenport-Ottumwa line, the Applicants' Base Year values only reflect about { } oil trains/month, causing just under { } annual gross tons not to be included in the Applicants' density data for this line

⁷² Van Dyke First Verified Statement, Section 5.2.

⁷³ Van Dyke First Verified Statement, Section 6.3.1.

⁷⁴ Van Dyke First Verified Statement, Section 6.3.1.

⁷⁵ Van Dyke First Verified Statement, Section 6.3.1.

⁷⁶ Work paper 24.1.1.3.11-TPD Bulk Base CP.xlsx; Work paper 24.1.1.3.12-TPD Bulk Base KCS.xlsx.

⁷⁷ See Appendix B for further details of the impact described.

Traffic Type	Description	Impact ⁷⁷
Unit Train	Minimal unit { } trains moved between { } and Mexico in the KCS unit train “snapshot” and were thus not represented in the Applicants’ base values	Caused on the order of { } annual gross tons not to be included in the Applicants’ density data on the Springfield line, and possibly on the entire route from { } to Laredo, TX and beyond
Unit Train	Underreporting of unit trains to/from the { } on the Greenville subdivision between Shreveport and Wylie	{ } trains traveling to/from { } are undervalued by { } trains a month, causing just over { } annual gross tons not to be included in the Applicants’ density data on the Greenville subdivision. This underreporting may extend as far north as Kansas City

The overall impact of the issues cited in Exhibit 4-5 is likely under reporting by millions of gross tons – for the studied CP and KCS mainline segments, and a corresponding underestimate of Base Year train counts. See Appendix B for further details of the unit train analysis presented above.

Turning to the comparison of the tonnage values by line segment in the Amended Operating Plan and work papers with Applicants’ real world experience, we can observe anomalous values on many lines. Many of these differences are too large in terms of both size of the differences and their geographic scope to be explained solely by 1) CP’s and KCS’s different treatment of locomotives in developing line density data in the ordinary course, or 2) alleged localized errors in the KCS data collection process. Indeed, as I demonstrate below, the same anomalous results appear on CP *lines* where no localized data collection errors were alleged by Applicants.

If Applicants’ actual 2019 tonnage values are adjusted to account for the difference in reporting of locomotive tons, then they should provide a reasonable point of comparison to tonnages submitted with Applicants’ Amended Operating Plan.

As noted in my prior testimony, GTMs with and without locomotives for the US operations of all Class I railroads (including KCS and CP) are publicly available in the annual Analysis of

Class I Railroads (lines 700-701 and 703-704) (see Exhibit 4-6 below). This data source shows that, during the year 2019, locomotives represented 5.6% of overall GTMs for the US operations of CP and 7.4% of GTMs for the US operations of KCS. Based on the knowledge that 5.6% of GTMs on CP's US lines are related to locomotives, taking 94.4% of the 2019 tonnage values for the CP lines, as listed in Exhibit 14 Part A, should produce a reliable estimate of GTMs without locomotives for CP.

Exhibit 4-6: 2019 Class I GTMS, from R-1 reports (US lines only) ⁷⁸

Line Item	CSX	NS	CN (GTC)	BNSF	KCS	CPSL	UP
700. Locomotives	28,856,795	30,429,239	7,763,728	109,762,761	4,928,962	4,198,385	72,880,060
701. Cars, Contents and Cabooses	386,301,629	369,908,032	126,171,491	1,158,585,109	61,737,927	70,743,019	836,209,187
703. Non-Revenue	2,120,408	2,810,057	1,209,914	11,191,234	32,507	428,316	10,406,772
704. Total Gross Ton-Miles	417,278,832	403,147,328	135,145,133	1,279,539,104	66,699,396	75,369,720	919,496,019
% of GTMs due to Locomotives	6.9%	7.5%	5.7%	8.6%	7.4%	5.6%	7.9%

A similar adjustment of 92.6% of tonnage values in the original 2019 Exhibit 14 Part A values for KCS should provide a comparable estimate for KCS. However, I note that Applicants have alleged that there are other errors in the KCS Exhibit 14 Part A tonnage measures⁷⁹, so we assumed to be conservative that some caution must be used when applying the adjusted KCS tonnage values to any comparisons.

4.2.1 Example 1: Benchmarking of the CP line through Ottumwa and Davenport

An examination of the CP line through Ottumwa and Davenport, Iowa (and associated feeder lines) reveals significant differences between Applicants' Amended Operating Plan and

⁷⁸ Analysis of Class I Railroads, Association of American Railroads (AAR).

⁷⁹ CP-KCS Amended Operating Plan, pp. 78-80.

their real world 2019 density values (adjusted to account for the difference in locomotive tonnage reporting).

The tonnage map for the Ottumwa-Davenport line published in the Amended Operating Plan is shown in Exhibit 4-7 below, and my benchmarking of the Master Segment Table density data⁸⁰ for these lines is presented in Exhibit 4-8.

Exhibit 4-7: 2019 tonnage map for Ottumwa-Davenport line, as published in the Application⁸¹



⁸⁰ Based on Appendix T in the CP-KCS Amended Operating Plan.

⁸¹ CP-KCS Application, Volume 2, Exhibit 14 traffic density maps, pp. 508, 510. CP-KCS Amended Operating Plan, Amended Exhibit 14, p. 37.

Exhibit 4-8: Benchmarking of selected CP line segments, Ottumwa-Davenport & feeder lines⁸²
 Millions of annual gross tons

Line Segment	Segment Miles ⁸³	Adjusted 2019 Historic Tonnage ⁸⁴	Applicants' Calibrated Base Year Tonnage ⁸⁵	Tonnage Difference	Percent Diff.
Marquette-Sabula	98.0	20.00	29.17	9.18	45.9%
Davis Jct.-Sabula	61.5	9.82	15.56	5.75	58.6%
Sabula-Clinton	16.5	22.72	22.08	-0.64	-2.8%
Clinton-Water Works	33.2	17.25	15.36	-1.89	-11.0%
Work Works-Nahant	4.5	17.41	15.36	-2.05	-11.8%
Nahant-Muscatine	24.6	14.02	13.31	-0.70	-5.0%
Muscatine-Ottumwa	82.5	16.06	14.77	-1.28	-8.0%
Ottumwa-MO/IA Laredo	61.2	11.51	10.37	-1.14	-9.9%
MO/IA Laredo-Laredo	41.1	11.46	10.37	-1.09	-9.5%
Laredo-Polo ⁸⁶	n/a	11.46	12.36	0.91	7.9%
Polo-Airline Jct.	42.1	11.22	10.49	-0.73	-6.5%

The benchmarking reveals mostly consistent underreporting in Applicants' "calibrated" Base Year tonnage data for some segments of the Ottumwa line (in the range of 5-10 percent), and large differences, in the neighborhood of approximately 50 percent, for the Marquette and Davis Junction lines that feed into the Ottumwa line. Unless Applicants assert that there are large errors (beyond the inclusion of locomotives) in the historic tonnage *values CP generates in the normal course of business*, it is clear that the density figures generated by Applicants' "calibration methodology" do not – contrary to what Applicants assert – "reasonably reflect pre-Transaction operations."

Applying the cross-check to the Applicants' reported base car counts for this line clearly demonstrates a number of modeling errors (Exhibit 4-9).

⁸² Oliver Wyman analysis.

⁸³ CP-KCS Amended Operating Plan, Appendix T, pp. 1, 5.

⁸⁴ CP-KCS Amended Operating Plan, Amended Exhibit 14, Part A, p. 37. Tonnages adjusted by Oliver Wyman to exclude the weight of locomotives for CP, a calculation explained in Exhibit 4-6.

⁸⁵ CP-KCS Amended Operating Plan, Appendix T, pp. 3, 7.

⁸⁶ Appears to be trackage rights on Union Pacific, and therefore omitted from some tables.

Exhibit 4-9: Marquette to Airline Junction car counts and estimated annual tonnage⁸⁷

Line Segment	Non-Unit Train Daily Cars ⁸⁸	Unit Train Daily Cars ⁸⁹	Total Daily Cars ⁹⁰	Annual Tonnage at 75 tons/car (millions)	Applicants' Calibrated Base Year Tonnage (millions)
Marquette-Sabula	{ }	{ }	1108.9	30.4	29.17
Davis Jct.-Sabula	{ }	{ }	595.3	16.3	15.56
Sabula-Clinton	{ }	{ }	983.9	26.9	22.08
Clinton-Water Works	{ }	{ }	855.4	23.4	15.36
Work Works-Nahant	{ }	{ }	855.4	23.4	15.36
Nahant-Muscatine	{ }	{ }	761.1	20.8	13.31
Muscatine-Ottumwa	{ }	{ }	720.6	19.7	14.77
Ottumwa-MO/IA Laredo	{ }	{ }	498.6	13.7	10.37
MO/IA Laredo-Laredo	{ }	{ }	424.7	11.6	10.37
Laredo-Polo ⁹¹	{ }	{ }	412.1	11.3	12.36
Polo-Airline Jct	{ }	{ }	409.8	11.2	10.49

Interestingly, the car counts and modeled tonnages for each of the Marquette-Sabula and David Junction-Sabula segments are fairly consistent with each other, yet differ significantly from the historic tonnages as shown in Exhibit 4-8 above. Whether the discrepancies on these segments are due to modeling errors such as inappropriately routing Chicago traffic over these segments, or due to modeling errors, is impossible for me to say. What is clear is that the process of creating the Base Year values has failed to produce results that correspond to actual 2019 line segment densities in this case.

Exhibit 4-9 also reinforces the underreporting of tonnage between Nahant and Ottumwa, and indicates the presence of various potential modeling errors in the Ottumwa to Airline Junction line, resulting in variances in the tonnages against both historic values and between adjacent line segments.

⁸⁷ CP-KCS Amended Operating Plan, Appendix T, p. 8.

⁸⁸ Work paper 24.1.1.9-Trains Per Day and Gross Ton Miles.xlsx.

⁸⁹ Work paper 24.1.1.9-Trains Per Day and Gross Ton Miles.xlsx.

⁹⁰ CP-KCS Amended Operating Plan, Appendix T, pp. 4, 8.

⁹¹ Appears to be trackage rights on Union Pacific, and therefore omitted from some tables.

4.2.2 Example 2: Benchmarking of the KCS Mainline Between Kansas City and Laredo

A side-by-side comparison of Applicants' actual 2019 tonnages (adjusted to account for the difference in locomotive reporting) for the KCS mainline between Kansas City and Laredo and the density values underlying the Amended Operating Plan likewise reveals variances that are too extreme to be credibly explained by differences in the methodologies used by KCS and CP in developing line densities in the normal course of business. Exhibit 4-10 below provides a summary view of the KCS mainline values – note that I used 92.6% of the original Exhibit 14 Part A values to account for the tonnage related to locomotives on KCS.

Exhibit 4-10: Comparison of historic 2019 tonnage from Applicants' Exhibit 14 Part A to the Applicants' proposed density data for KCS mainline

Millions of annual gross tons

Segment	Adjusted 2019 Historic Tonnage ⁹²	Applicants' Calibrated Base Year Tonnage ⁹³	Tonnage Difference	Percent Difference
Kansas City - Pittsburg	47.5	36.8	-10.7	-22%
Pittsburg - Watts	37.8	41.9	4.1	+11%
Watts - Poteau	35.4	36.1	0.7	+2%
Poteau - Heavener	36.1	37.4	1.4	+4%
Heavener - De Queen	38.9	34.2	-4.7	-12%
De Queen - Ashdown	39.8	41.3	1.5	+4%
Ashdown - Shreveport	42.4	34.3	-8.1	-19%
Shreveport - Leesville	31.2	24.7	-6.5	-21%
Leesville - De Quincy	27.9	25.5	-2.4	-8%
De Quincy - Beaumont	30.8	21.6	-9.2	-30%
Beaumont – Rosenberg ⁹⁴	27.9	{ }	{ }	{ }
Rosenberg - Kendleton	26.2	26.3	0.1	0%
Kendleton - Victoria	24.1	27.3	3.2	+13%
Victoria - Placedo	23.9	16.5	-7.4	-31%
Placedo - Robstown	23.9	16.5	-7.5	-31%

⁹² CP-KCS Amended Operating Plan, Amended Exhibit 14 Part A, p. 39 – Tonnages adjusted by Oliver Wyman to exclude the weight of locomotives for KCS, a calculation explained in Exhibit 4-6.

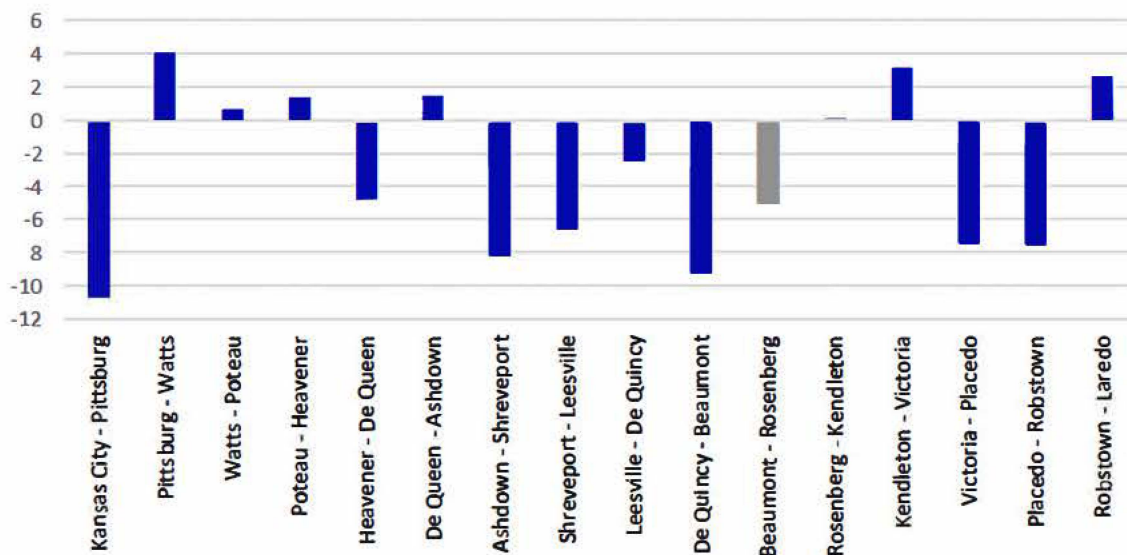
⁹³ CP-KCS Amended Operating Plan, Appendix T, p. 11.

⁹⁴ For the Beaumont - Rosenberg used tonnage from the { } segment in the work paper 24.1.1.9-Trains Per Day and Gross Ton Miles.xlsx due to likely inaccuracy in the values published in Appendix T. See notes for Exhibit 4-1 for further details.

Segment	Adjusted 2019 Historic Tonnage ⁹²	Applicants' Calibrated Base Year Tonnage ⁹³	Tonnage Difference	Percent Difference
Robstown - Laredo	34.5	37.3	2.7	+8%

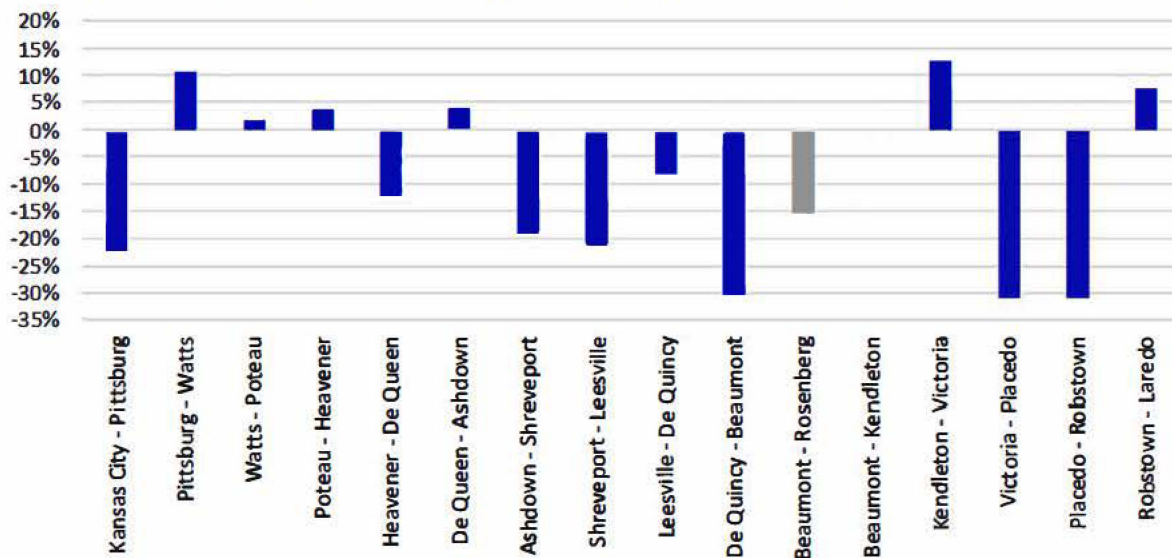
The charts depicted in Exhibits 4-11 and 4-12 provide a graphical view of the substantial variances between the data generated by Applicants' "calibration methodology" and their actual 2019 data, in terms of both absolute values and percentages. (See also the discussion of part of this line segment in Section 4.1 above.)

Exhibit 4-11: Tonnage differences between historic 2019 tonnage from the original Exhibit 14 Part A Density Data (adjusted) to the Applicants' proposed density data for KCS mainline⁹⁵
Millions of annual gross tons



⁹⁵ For the Beaumont - Rosenberg used tonnage from the {{ }} segment in the work paper 24.1.1.9-Trains Per Day and Gross Ton Miles.xlsx. The absolute difference for this segment is {{ }}. See notes associated with Exhibit 4-1 for further details.

Exhibit 4-12: Percentage differences in historic 2019 tonnage from the original Exhibit 14 Part A Density Data (adjusted) versus the Applicants' proposed density data for KCS mainline⁹⁶



As one examines these differences, we can observe a logical and consistent pattern in the historic tonnages, with significant changes at Shreveport (where traffic likely disperses in many directions), and Robstown-Laredo, where interchange traffic bound to Mexico comes onto KCS. However, Applicants' data show a significant number of line segments that vary by more than 20% from the actual historic values. It is hard to believe that the KCS "normal course of business" numbers are so faulty as to result in errors of this magnitude. It is also curious that many of the segments between De Quincy and Robstown in particular are massively lower in Applicants' "modeled" line density data.

The real-world 2019 values reflect a measured and consistent pattern, so it does not appear credible that the differences between this data and the density values in Applicants' Amended Operating Plan can be explained by KCS historic numbers overstating density, or traffic that

⁹⁶ For the Beaumont - Rosenberg used tonnage from the {{ }} segment in the work paper 24.1.1.9-Trains Per Day and Gross Ton Miles.xlsx. The percent difference for this segment is {{ }}. See notes associated with Exhibit 4-1 for further details.

moved over only a portion of each and every one of these segments, or issues of misallocation of traffic between segments. Certainly, the inclusion or exclusion of locomotives cannot explain a 30% difference in tonnage, when we know that locomotives represented only 7.4% of overall GTMs on KCS in the Base Year. It is far more likely that the discrepancies between Applicants’ “modeled” density figures and the data compiled in the normal course of business are attributable to the cumulative effects of using non-representative traffic and fundamental flaws in Applicants’ calibration-based methodology.

4.2.3 Example 3: Shreveport – Wylie Line

KCS’s line between Shreveport, Louisiana and Wylie, Texas presents another set of highly questionable tonnage values. Below is a comparison of Applicants’ actual 2019 density data (adjusted for locomotives) and the density values underlying the Amended Operating Plan.

Exhibit 4-13: Comparison of historic 2019 tonnage from the original Exhibit 14 Part A to the Applicants’ proposed density data for Shreveport to Wylie line segments
Millions of annual gross tons

Segment		Adjusted 2019 Historic Tonnage ⁹⁷	Applicants’ Calibrated Base Year Tonnage ⁹⁸	Tonnage Difference	Percent Difference
Shreveport	Greenville	21.0	12.9	-8.0	-38%
Greenville - Wylie		16.4	13.9	-2.5	-15%

Of particular relevance in this exhibit is not only the large 38% difference in tonnage on the Shreveport – Greenville segment, but the change in tonnage between the segments. In the historic 2019 data, the tonnage *decreased* by 4.6 million tons on the Greenville-Wylie segment relative to the Shreveport-Greenville segment, while in Applicants’ modeled data, we instead see an *increase* of 1 million tons.

⁹⁷ CP-KCS Amended Operating Plan, Amended Exhibit 14 Part A, p. 39 – Tonnages adjusted by Oliver Wyman to exclude the weight of locomotives for KCS, a calculation explained in Exhibit 4-6.

⁹⁸ CP-KCS Amended Operating Plan, Appendix T, p. 11.

An examination of the 2019 full year waybill data reveals that there is a major consumer of {{ }} at {{ }}, which is located roughly at the {{ }} of the Shreveport – Greenville line segment.⁹⁹ According to the waybill data, this customer received {{ }} loaded {{ }} shipments and dispatched {{ }} empty {{ }} cars during 2019. If one assumes {{ }} tons per car for the loads and {{ }} tons per car for the empties, this equates to {{ }} gross tons per year.¹⁰⁰ All of this traffic arrived at {{ }} from Kansas City via Shreveport and is likely a main driver for the historic drop in tonnage on this line as one moves west from Shreveport to Greenville to Wylie.

At an average of {{ }} cars per train,¹⁰¹ this volume represents {{ }} trains per year (both loaded and empty combined), {{ }} trains per month, or {{ }} trains per day. The work paper upon which the Applicants' modeled density data is based¹⁰² shows {{ }} unit trains per day. While still a {{ }} undercount, it is at least somewhat close to the historic values. That being said, this same spreadsheet lists the post-calibrated average train weight for both the Shreveport – Greenville and the Greenville – Wylie segments at {{ }} tons¹⁰³. The average loaded {{ }} train would be about {{ }} tons (at {{ }} cars at {{ }} tons per car), and an empty train would be about {{ }} tons (at {{ }} cars at {{ }} tons per car), for an average unit {{ }} train weight of {{ }} tons, based on the mix in the Base Year. With these heavy trains not traversing the segment between Greenville and Wylie, it is simply not credible that both of these segments have the same average, historic train weight. Thus, Applicants' use of the same train weight for both segments is likely another cause for

⁹⁹ See 100% CP-KCS waybill data in FD 36500 – Work Paper – HC 2019_CONSOLIDATED_CPKCS_DATA_MASTER.txt.

¹⁰⁰ See appendix B for more information on deriving tonnage numbers.

¹⁰¹ Based on the entries for Greenville subdivision in Work paper 24.1.1.3.2.3-KCS KCSM Bulk Trains per Day by Subdivision.xlsx

¹⁰² Work paper 24.1.1.3.12-TPD Bulk Base KCS.xlsx.

¹⁰³ Work paper 24.1.1.9-Trains Per Day and Gross Ton Miles.xlsx.

errors in their traffic density values for this line. Using these average train weight and trains per day values, the applicant implies annual tonnage for {{ }} traveling to/and from {{ }} of {{ }} tons, a {{ }} ton understatement.

While I will not speculate on the reasons why Applicants' density data shows an increase in tonnage as one moves from Shreveport toward Wylie, versus a decrease in the historic data, I observe that this {{ }} has sufficient volume to explain {{ }} the decrease shown in the historic data.¹⁰⁴ Once again, I believe this clearly demonstrates the flaws in Applicants' methodology, and why the resulting "modeled" density data is a poor substitute for CP's and KCS's actual 2019 density data. Furthermore, given that this traffic also would traverse the KCS mainline from Kansas City, it is quite likely this underreporting also impacts the reliability of tonnage values all the way from Shreveport, Louisiana to Kansas City, Missouri.

4.2.4 Example 4: Jacksonville, IL and the Springfield Line

In connection with CN's Responsive Application seeking divestiture of the Springfield Line, I undertook an extensive analysis of this line, including using MultiRail to develop an operating plan and to assess line densities. The results of the Springfield Line analysis from a "base year" tonnage perspective are presented in Exhibit 4-14.

¹⁰⁴ Around {{ }} tons that should terminate before Greenville are missing, which explains {{ }} of the 5.4M discrepancy in the change of tonnage at Greenville between historical data and the Applicants' calibrated tonnages, since $\frac{{{{}}}}{5.4M} = \frac{{{{}}}}{100}\%$.

Exhibit 4-14: Benchmarking of KCS Springfield Line segments
Millions of annual gross tons

Subdivision Start	Subdivision End	Historic 2019 Tonnage ¹⁰⁵	Adjusted 2019 Historic Tonnage ¹⁰⁶	Applicants' Calibrated Base Year Tonnage ¹⁰⁷	MultiRail Estimated Trailing Tonnage ¹⁰⁸	Adjusted Historic vs. Applicants' Tonnage Percent Difference	Adjusted Historic vs. MultiRail Percent Difference
Airline Jct. MO	Slater MO	10.38	9.65	6.17	{ }	-36%	{ }
Slater MO	Mexico MO	8.81	8.19	4.28	{ }	-48%	{ }
Mexico MO	Roodhouse IL	6.66	6.19	4.02	{ }	-35%	{ }
Roodhouse IL	Godfrey IL	3.82	3.55	1.05	{ }	-70%	{ }
Godfrey IL	East St. Louis	5.48	5.10	6.84	{ }	34%	{ }
Roodhouse IL	Murrayville IL	3.09	2.87	1.00	{ }	-65%	{ }
Murrayville IL	Jacksonville IL	3.06	2.85	1.33	{ }	-53%	{ }
Murrayville IL	Springfield IL	0.04	0.04	0.17	{ }	352%	{ }

The differences between the historical Base Year density data for the Springfield Line (which appears in Applicants' Exhibit 14 Part A¹⁰⁹) and the density figures reflected in their Amended Operating Plan are so extreme that it is simply not possible to give any credibility to Applicants' data, unless one assumes that the 2019 tonnage values that KCS collected in its normal course of business had no connection to reality. While my MultiRail analysis also exhibited some differences against the original Exhibit 14 Part A values, the broad indicators are that based on full year 2019 traffic data used in MultiRail, the Exhibit 14 Part A values are far closer to reality than the ones in the Amended Operating Plan.

As a further cross-check, I investigated what traffic the full year 2019 waybills showed as originating or terminating in the { }, IL area. What I found is that { } loads, and { } empties originated or terminated at { } in 2019 based on the

¹⁰⁵ CP-KCS Amended Operating Plan, Amended Exhibit 14 Part A, p. 37.

¹⁰⁶ CP-KCS Amended Operating Plan, Amended Exhibit 14 Part A, p. 37 – Tonnages adjusted by Oliver Wyman to exclude the weight of locomotives for KCS, a calculation explained in Exhibit 4-6..

¹⁰⁷ See STB Finance Docket No. 36500, EI-31353, October 28, 2021.

¹⁰⁸ See work papers for this statement "HC - Springfield Line - Applicant vs Ex 14 vs Multirail.xlsx".

¹⁰⁹ CP-KCS Amended Operating Plan, Amended Exhibit 14 Part A, p. 37.

full year waybill data supplied by Applicants.¹¹⁰ This traffic was almost all {{ }} traffic to/from Mexico via Laredo, which represents approximately {{ }} tons per year.¹¹¹

Applicants' work papers indicate that the unit {{ }} trains on the {{ }} subdivision average {{ }} cars per train¹¹², and that there were a total of {{ }} trains during the sample three-month period from 2021 that they used for KCS unit trains in preparing their Application.¹¹³ That equates to {{ }} trains per day or {{ }} trains per month. The {{ }} loaded and {{ }} empty {{ }} cars moving into and out of {{ }} during 2019 documented in the previously referenced waybill data and applying the {{ }} cars per train value yields a traffic-driven estimate of {{ }} trains per month or {{ }} unit trains per day, fully 77% higher than the {{ }} unit trains per day reflected in Applicants' density data. Applicants used a calibrated average train weight for {{ }} to {{ }} of {{ }} tons¹¹⁴, making the above {{ }} trains per day equivalent to {{ }} tons per year, versus the actual 2019 value of approximately {{ }} tons.¹¹⁵

Clearly, Applicants failed to capture accurate volumes and tonnages for these line segments, likely due to the use of unrepresentative, snapshots of unit trains and compounded by underestimating train weights. It is interesting to note that if this {{ }} data is added to the entire routing from {{ }} to Kansas City, Applicants' density values for the line would be much closer to the historic data. Furthermore, based on the waybill data, much of this traffic travels all of the way to Mexico. Accordingly, failing to account for this missing

¹¹⁰ 100% CP-KCS waybill data from work paper FD 36500 – Work Paper – HC 2019_CONSOLIDATED_CPKCS_DATA_MASTER.txt.

¹¹¹ See appendix B for more information on deriving tonnage numbers.

¹¹² Work paper 24.1.1.3.2.3-KCS KCSM Bulk Trains per Day by Subdivision.xlsx

¹¹³ Work paper 24.1.1.3.12-TPD Bulk Base KCS.xlsx

¹¹⁴ Work paper 24.1.1.9-Trains Per Day and Gross Ton Miles.xlsx.

¹¹⁵ See appendix B for more information on deriving these tonnage numbers.

{{ }} gross tons of traffic impacts the reliability of Applicants' density values for the entire KCS mainline from Kansas City, Missouri to Laredo, Texas (and beyond).

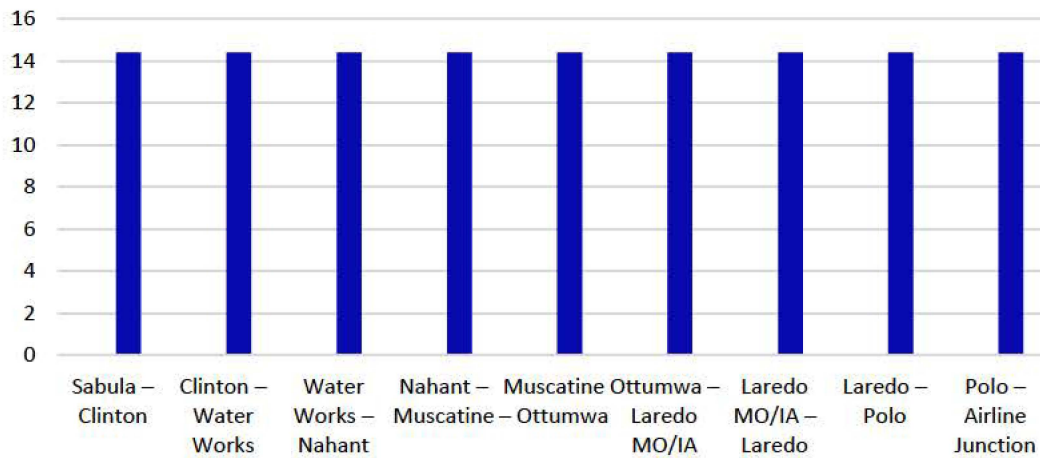
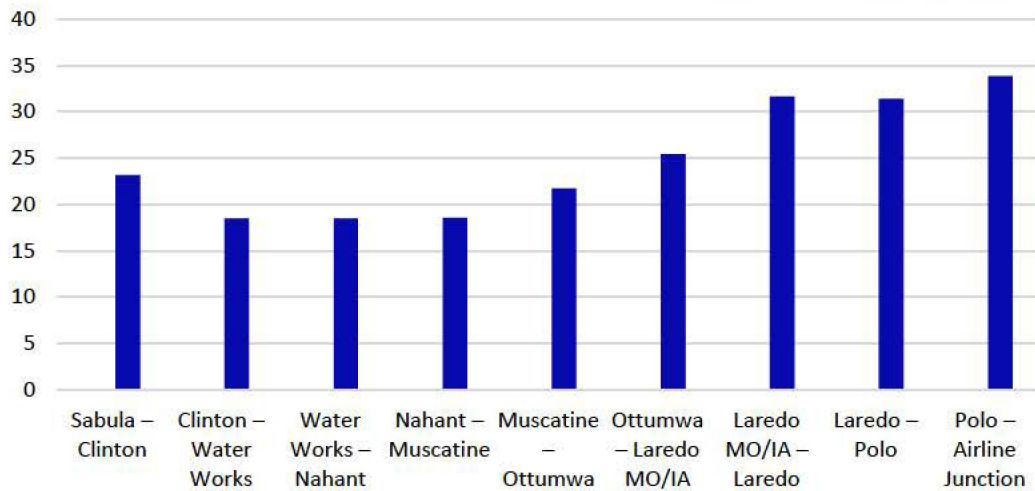
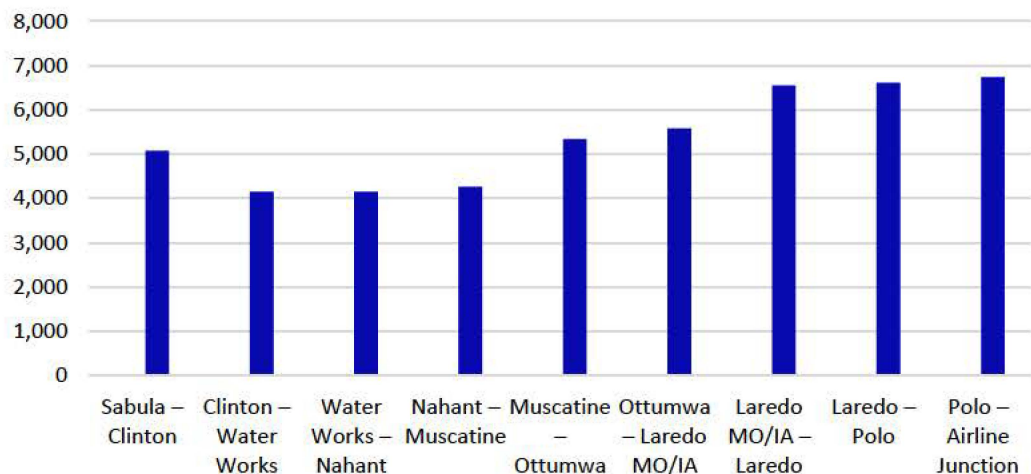
5. Post-Transaction Reported Line Segment Metrics on Key Mainlines Are Clearly Erroneous

While the errors discussed above in the base tonnage numbers are problematic, the errors in Applicants' segment-specific post-transaction tonnage values are even more concerning. In Appendix T of their Amended Operating Plan, Applicants purport to specify the transaction-related changes in both train counts and the tonnages. While some changes in total tonnage may be associated with increases in the weight of existing trains, the significant variations in the size of the total tonnage increases between adjacent line segments cannot be explained by this consideration. An examination of these values reveals a pattern of serious errors in the estimates for post-transaction tonnage increases. These errors are so substantial that a simple inspection of the tonnage values posited by Applicants make it clear that those values are totally unreliable. Exhibits 5-1 through 5-4 demonstrate this issue clearly for one of the most important and impacted lines on the entire CP-KCS network, Sabula, Iowa to Airline Junction, Missouri.

Exhibit 5-1: Sabula to Airline Junction transaction-related changes in train count and tonnage

Subdivision	Line Segment	Base Train Counts ¹¹⁶	Post-Transaction-Train Count Change ¹¹⁷	Total Post-Transaction Trains/Day ¹¹⁸	Transaction-Related Annual Tonnage Change (millions) ¹¹⁹	Total Post-Transaction Annual Tons (millions) ¹²⁰	Overall Average Train Weight ¹²¹
Davenport	Sabula – Clinton	10.00	14.40	24.40	23.13	45.21	5,076
Davenport	Clinton – Water Works	7.97	14.40	22.37	18.47	33.83	4,143
Davenport	Water Works – Nahant	7.97	14.40	22.37	18.47	33.83	4,143
Ottumwa	Nahant – Muscatine	6.09	14.40	20.49	18.54	31.85	4,259
Ottumwa	Muscatine – Ottumwa	4.3	14.40	18.70	21.68	36.45	5,340
Laredo	Ottumwa – Laredo MO/IA	3.17	14.40	17.57	25.42	35.79	5,581
Laredo	Laredo MO/IA – Laredo	3.17	14.40	17.57	31.66	42.03	6,554
Kansas City North	Laredo – Polo	3.74	14.40	18.14	31.42	43.78	6,612
Kansas City	Polo – Airline Junction	3.62	14.40	18.02	33.83	44.32	6,738
Maximum Value			14.40		33.83		6,738
Minimum Value			14.40		18.47		4,143
Percent Difference - Min to Max			0%		83%		63%

¹¹⁶ CP-KCS Amended Operating Plan, Appendix T, p. 6.¹¹⁷ CP-KCS Amended Operating Plan, Appendix T, p. 6.¹¹⁸ Calculated by adding base train counts with post-transaction train counts; See work paper for this statement “Post-transaction train weights.xlsx” for more detail.¹¹⁹ CP-KCS Amended Operating Plan, Appendix T, p. 7.¹²⁰ CP-KCS Amended Operating Plan, Appendix T, p. 7; “2017 With Merger” tonnage minus “Organic Growth” tonnage.¹²¹ Calculated by post-transaction annual tonnage / (post-transaction daily train count * 365 days); See work paper for this statement “Post-transaction train weights.xlsx” for more detail.

Exhibit 5-2: Sabula to Airline Junction transaction-related change in train count by segment**Exhibit 5-3: Sabula to Airline Junction transaction-related change in tonnage by segment****Exhibit 5-4: Sabula to Airline Junction overall average train weight post-transaction by segment**

A detailed review of the Amended Operating Plan and Applicants' traffic diversion evidence indicates that very little new traffic originates/terminates on this line, and that only one train pair (Trains 160/161) included in the 14.4 new trains per day does any work on this line.¹²² Trains 160/161 set out and pick up blocks at Nahant. Trains 260/261 also do work at Nahant, but because these represent adaptations of existing trains, they are not included in the 14.4 new trains per day identified by Applicants.¹²³ These 14.4 new trains consist of 4.4 bulk/unit trains per day¹²⁴, plus the following daily train pairs: 160/161, 162/163, 170/171, 174/175, and 176/177.¹²⁵

What is clear from Applicants' Amended Operating Plan is that no work is done by any of these trains at intermediate points between Nahant and Airline Junction. Accordingly, there is no logical reason for any of the trains to change weight while traversing the Nahant – Airline Junction segment. The same should also be true for Trains 160/161.

For the same reason, one would not expect to see any material variation in total gross tons between Nahant and Airline Junction resulting from the merger transaction. While there are some bulk trains on the line north of Muscatine, given that organic growth was excluded from these numbers, these existing trains should not experience a change in weight. That being said, Applicants report a wide range in annual tonnage increases, from a low of 18.5 million tons to a high of 33.8 million tons – an 83% variance from low to high, with the smallest changes in annual gross tons on segments with the greatest number of existing trains. Focusing just on the segment between Muscatine, Iowa and Airline Junction, Missouri, the aggregate train count varies by about 6.4% in the post-transaction case, while the increase in total gross tons varies by

¹²² CP-KCS Amended Operating Plan, Appendix I, p. 2.

¹²³ Growth train count retrieved from CP-KCS Amended Operating Plan, Appendix T, p. 6; Information on trains 260/261 retrieved from CP-KCS Amended Operating Plan, Appendix H, p. 1.

¹²⁴ Total growth trains from CP-KCS Amended Operating Plan, Appendix T, p. 6 subtracted by daily trains listed from CP-KCS Amended Operating Plan, pp. 70-71.

¹²⁵ CP-KCS Amended Operating Plan, pp. 70-71.

56% or over 12 million tons per year. All of these large variations in tonnage are simply not supported by the details of the CP-KCS operating plan or traffic studies, and clearly represent serious errors arising from the overly complex and convoluted modeling process employed by Applicants.

Applicants employed a complex methodology to estimate post-transaction increases in tonnage by line segment. Applicants portray their analysis as a well-grounded process that combined changes in the train plans as implemented in MultiRail with a set of manually identified new unit trains that were created based on merger-related traffic projections.¹²⁶ However, upon closer inspection, it appears that Applicants did not actually use tonnage values based on the traffic projections to determine post-transaction tonnage or train weights. Instead, they elected to use a convoluted process to estimate the changes in tonnage based in part on the same historic train weights used for their (flawed) Base Year tonnage estimates. As a result, Applicants' methodology generated a set of clearly erroneous values that cannot be relied upon for evaluating the operational and environmental impacts of the proposed merger. Applicants further compounded these issues in the Amended Operating Plan by making the computation of post-transaction tonnages even more complex and error prone.¹²⁷ See Appendix A for further details on this process.

5.1 Two cross-checks of Sabula-Airline Junction tonnages

A careful examination of Applicants' Amended Operating Plan and associated work papers enabled me to explicitly identify the composition of the 14.4 new trains per day on the Sabula-Airline Junction line and to estimate the incremental tonnage likely to be associated with these trains. As noted above, these additional trains consist of 4.4 bulk (unit) trains per day, and 10

¹²⁶ CP-KCS Amended Operating Plan, Appendix T, pp. 45-50.

¹²⁷ See Appendix A in this statement for further details

regularly scheduled trains. Based on the information provided by CP, one can estimate the tonnage as follows:

Exhibit 5-5: Likely annual tonnage associated with new trains on Sabula-Airline Junction line

Trains	Description	Low Estimate			High Estimate	
		Trains Per Day ¹²⁸	Estimated Avg. Train Weight ¹²⁹	Annual Million Gross Tons	Estimated Avg. Train Weight	Annual Million Gross Tons
160/161	Minneapolis IMS – Toluca: Mixed manifest & intermodal – many blocks on KCS and KCSM	2	3,500	2.56	6,000	4.38
162/163	Bensenville IMS - Wylie, TX: Primarily intermodal, some manifest	2	3,500	2.56	6,000	4.38
170/171	Toronto - Lazaro Cardenas: Primarily intermodal, some manifest	2	3,500	2.56	6,000	4.38
174/175	Bensenville IMS – Interpuerto: Mixed manifest and intermodal	2	3,500	2.56	6,000	4.38
176/177	Bensenville IMS - Lazaro Cardenas Service: Pure intermodal – CP specifies { } cars each way, with { } with associated car weights { } tons for loads, { } for empties ¹³⁰	2	{ }	{ }	{ }	{ }
Bulk Crude	Alberta – Texas: Exact frequency specified, { } tons southbound, { } tons northbound ¹³¹	{ }	{ }	{ }	{ }	{ }
Bulk Grain	Mostly Canada to Texas and Mexico: exact frequency specified, { } tons southbound, { } tons northbound ¹³²	{ }	{ }	{ }	{ }	{ }
Totals		14.40		{ }		{ }

¹²⁸ Initial 10 daily “scheduled” trains retrieved from CP-KCS Amended Operating Plan, pp. 70-71; bulk trains per day retrieved from Work paper 24.1.1.3.13-TPD Bulk Synergy Input.xlsx.

¹²⁹ Low average train weight estimates assume 70 cars per train at 50 tons per car. High average train weight estimates assume 80 cars per train at 75 tons per car.

¹³⁰ Work paper 24.1.1.3.3.5.1-CPKC Growth Intermodal.xlsx: Northbound = { } loaded cars * { } tons + { } empty cars * { } tons = { } tons. Southbound = { } loaded cars * { } tons + { } empty cars * { } tons = { } tons. Average of Southbound and Northbound = { } tons.

¹³¹ Work paper 24.1.1.3.13-TPD Bulk Synergy Input.xlsx.

¹³² Work paper 24.1.1.3.13-TPD Bulk Synergy Input.xlsx.

Exhibit 5-5 provides a well-grounded estimate of the incremental tonnage likely to be associated with the proposed new trains on the Sabula-Airline Junction line, which demonstrates clearly that the Applicants' estimate of tonnage increases shown at Davenport and Ottumwa are significantly too low. Note that Exhibit 5-5 does not include the potential change in the size of any existing trains, including Trains 260/261. While it is difficult to know the exact weights of the first four train pairs listed in Exhibit 5-5, the Application espouses the principles of PSR and reflects Applicants' desire to run long trains. In that context, it is hard to conceive of CP-KCS planning to run daily train service using trains of less than 3,500 tons.

As discussed earlier, we can also look at the number of new cars traversing each line segment, as reported by the Applicants, and then apply an average car weight to estimate the annual tonnage associated with these cars. Looking at this data for the Sabula-Airline Junction line reveals the following:

Exhibit 5-6: Sabula to Airline Junction post-transaction Increase in car counts and estimated annual tonnage change

Line Segment	New Non-Unit Train Daily Cars ¹³³	New Unit Train Daily Cars ¹³⁴	Total New Post-Transaction Daily Cars ¹³⁵	Estimated Annual Tonnage Increase at 75 tons/car (millions)	Applicants' Calibrated Post-Transaction Tonnage Increase (millions)
Sabula – Clinton	{ }	{ }	1007.1	27.6	23.13
Clinton Water Works	{ }	{ }	1008.4	27.6	18.47
Water Works Nahant	{ }	{ }	1008.4	27.6	18.47
Nahant – Muscatine	{ }	{ }	1040.6	28.5	18.54
Muscatine Ottumwa	{ }	{ }	1036.9	28.4	21.68
Ottumwa Laredo MO/IA	{ }	{ }	1201.7	32.9	25.42
Laredo MO/IA Laredo	{ }	{ }	1275.62	34.9	31.66
Laredo Polo	{ }	{ }	1031.0	28.2	31.42
Polo Airline Junction	{ }	{ }	1300.8	35.6	33.83

¹³³ Work paper 24.1.1.9-Trains Per Day and Gross Ton Miles.xlsx.

¹³⁴ Work paper 24.1.1.9-Trains Per Day and Gross Ton Miles.xlsx.

¹³⁵ CP-KCS Amended Operating Plan, Appendix T, p. 8.

While Exhibit 5-6 exhibits a myriad of issues, it does reinforce that the increase in tonnage reported by Applicants for the segment between Sabula to Ottumwa is significantly low. It also indicates that the non-unit train car counts are likely incorrect in a number of cases. It is unexplainable why the non-unit car count increases by roughly {{ }} cars per day at Ottumwa, and why the Laredo-Polo car count is so low. Based on the above numbers, the {{ }} non-unit trains per day would, in theory, be carrying {{ }} to {{ }} cars per train between Sabula and Ottumwa, which does not seem consistent with the Applicants' promotion of long trains in their operating plan.

5.2 Other examples of suspect post-transaction tonnages

There are other examples of situations where the transaction-related increases in tonnage posited by Applicants reflect differences between adjacent line segments that simply cannot be explained by significant changes in train operations or large amounts of originating/terminating traffic. Exhibit 5-7 below presents several of these cases (highlighted in yellow).

Exhibit 5-7: Example suspect post-transaction tonnage variations between adjacent line segments¹³⁶

Subdivision	Line Segment	Base Train Counts ¹³⁷	Post-Transaction-Train Count Change ¹³⁸	Total Post-Transaction Trains/Day ¹³⁹	Transaction-Related Annual Tonnage <u>Change</u> (millions) ¹⁴⁰	Total Post-Transaction Annual Tons (millions) ¹⁴¹	Overall Average Train Weight ¹⁴²
Marquette	Bluff Marquette MN/IA	4.66	6.00	10.66	11.65	24.70	6,348
Marquette	Marquette MN/IA - Marquette	4.66	6.00	10.66	14.62	30.99	7,965
Chicago	Sabula Davis Jct	6.35	8.00	14.35	17.10	32.66	6,236

¹³⁶ Values highlighted and bolded will be further discussed in the ensuing paragraph.

¹³⁷ CP-KCS Amended Operating Plan, Appendix T, p. 2, 6, 10.

¹³⁸ CP-KCS Amended Operating Plan, Appendix T, p. 2, 6, 10.

¹³⁹ Calculated by adding base train count with post-transaction train count; See work paper for this statement "Post-transaction train weights.xlsx" for more detail.

¹⁴⁰ CP-KCS Amended Operating Plan, Appendix T, p. 3, 7, 11.

¹⁴¹ CP-KCS Amended Operating Plan, Appendix T, p. 3, 7, 11; "2017 With Merger" tonnage minus "Organic Growth" tonnage.

¹⁴² Calculated by post-transaction annual tonnage / (post-transaction daily train count * 365 days); See work paper for this statement "Post-transaction train weights.xlsx" for more detail.

Subdivision	Line Segment	Base Train Counts ¹³⁷	Post-Transaction-Train Count Change ¹³⁸	Total Post-Transaction Trains/Day ¹³⁹	Transaction-Related Annual Tonnage Change (millions) ¹⁴⁰	Total Post-Transaction Annual Tons (millions) ¹⁴¹	Overall Average Train Weight ¹⁴²
Chicago	Davis Jct – Randall Rd	2.93	8.00	10.93	15.59	24.55	6,154
Elgin	Randall Rd – Bensenville	3.20	8.00	11.20	17.44	27.13	6,636
Beaumont	Shreveport - Leesville	10.01	10.83	20.84	26.31	51.00	6,705
Beaumont	Leesville – De Quincy	10.31	10.83	21.15	30.61	56.12	7,270
Beaumont	De Quincy - Beaumont	8.67	10.97	19.64	25.33	46.91	6,544
Heavener	Pittsburg – Watts	14.14	12.40	26.54	30.27	72.16	7,449
Heavener	Watts – Poteau	12.29	12.40	24.69	28.19	64.25	7,130
Heavener	Poteau – Heavener	12.77	12.40	25.17	29.93	67.37	7,333
Shreveport	Heavener – De Queen	11.96	12.40	24.36	28.28	62.48	7,027
Shreveport	De Queen - Ashdown	14.48	12.40	26.88	24.91	66.19	6,746
Shreveport	Ashdown – Shreveport	11.99	12.40	24.39	36.00	70.32	7,899
Merriam Park	St. Paul – St. Paul Fordson Jct	1	3.59	4.59	0	3.08	1,838

As a cross-check against the above findings, I examined the increase in the number of cars per day selected line segments are projected to carry by Applicants as a result of the merger (not including organic growth. For example, Applicants specify that the two Marquette line segments both will see an increase of 545.1 cars per day¹⁴³, which at 75 gross tons per car is equivalent to 14.9 million tons per year. Yet we see in the Applicant's density numbers that the Bluff Marquette MN/IA segment tonnage only increases by 11.7 million tons, with the next Marquette MN/IA - Marquette segment increases by a more reasonable 14.6 tons. Likewise, De Queen Ashdown and Ashdown – Shreveport have similar increases of 1,179.6 and 1,173.3 cars per day respectively¹⁴⁴, which converts to 32.3 and 32.1 million tons per year at 75 tons per car. Yet, De Queen to Ashdown shows only 24.9 million ton increase, a clear and significant underreporting especially when compared to adjacent Ashdown to Shreveport which shows a 36.0 million ton

¹⁴³ CP-KCS Amended Operating Plan, Appendix T, p. 2.

¹⁴⁴ CP-KCS Amended Operating Plan, Appendix T, p. 10.

increase. Both of these clear misrepresentations in tonnage stem from the fluctuations in average train weights between the adjacent segments. When examined against the post-transaction train count changes between the same segments, it indicates erroneous modeling by the Applicants.

5.3 It is impossible to validate post-transaction yard counts and train counts, but they remain suspect

As discussed above, due to the use of inputs from 2020 and 2021 to create the operating plan, and Applicants' failure to clearly identify the exact traffic (including empties) that was input to MultiRail for the post-transaction case, I cannot directly validate the post-transaction operating plan. What I can confirm is that the base train counts and yard activities represent values for a mix of October 2020 and early 2021. I know this because Applicants did not even attempt to "calibrate" the 2020/2021 train counts and yard activities used in developing their Amended Operating Plan to 2019 values.¹⁴⁵ As a result, the segment-specific train counts and cars handled by yard bear no relation to CP's and KCS's actual Base Year (2019) experience.

Of course, the changes in post-transaction yard counts, train counts, and tonnages in the Amended Operating Plan should correlate to the diversion projections in Applicants' traffic studies. However, because Applicants have not identified the exact traffic that was input to the post-transaction MultiRail operating plan, there is no way to know if appropriate traffic was used.¹⁴⁶ However, the following statement in the Amended Operating Plan identifies at least one instance in which the post-transaction traffic assumed in Applicants' Amended Operating Plan may not be accurate, i.e., "Forecast intermodal movements from the Port of Lazaro Cardenas to

¹⁴⁵ A review of the CP-KCS methodologies shows that while CP-KCS tried to adjust the tonnages to match at least in aggregate the base year GTMs, no similar adjustments were made to train counts or yard activity numbers.

¹⁴⁶ While Applicants provide various traffic file inputs, including two MultiRail traffic tables (Work paper 24.1.1.3.3.2.6-MREE.TRAFFIC_COMPRESSED_017.xlsx and Work paper 24.1.1.3.3.2.9-MREE.TRAFFIC_COMPRESSED_019.xlsx), I could find no statement in filings or any of the work papers as to what these traffic files represented.

Bensenville IMS were projected at 9,521 railcar feet per day.”¹⁴⁷ I have made multiple, unsuccessful attempts to determine how CP-KCS arrived at such a high value. To the best of my knowledge, the following represents the maximal view of Lazaro Cardenas intermodal traffic projections prepared by CP-KCS:

Exhibit 5-8: New intermodal traffic projected to originate at Lazaro Cardenas, plus new perishables traffic from Southern Mexico

Description	Containers per year ¹⁴⁸	Containers per day	Daily feet of railcars @ { } ft/container ¹⁴⁹	Notes
New international intermodal traffic to Chicago	{ }	{ }	{ }	As listed in work paper
New perishables traffic to Chicago & Toronto	{ }	{ }	{ }	Assigned both Michoacán and Veracruz origin to Lazaro; { }% of traffic assumed going to Chicago
Chicago totals	{ }	{ }	{ }	
New international traffic to Kansas City & Minneapolis	{ }	{ }	{ }	As listed in work paper - this traffic should not touch Bensenville/Chicago
New perishables traffic to Kansas City & Twin Cities	{ }	{ }	{ }	Assigned both Michoacán and Veracruz origin to Lazaro; { }% of traffic assumed going to Kansas City & Twin Cities should not touch Bensenville/Chicago
K.C. & Twin Cities totals	{ }	{ }	{ }	
Subtotals	{ }	{ }	{ }	
New international traffic to Dallas	{ }	{ }	{ }	As listed in work paper hard to find a reason to associate this traffic with Bensenville/Chicago
Grand totals	{ }	{ }	{ }	

It is my understanding that there was no meaningful intermodal traffic from Lazaro Cardenas to any locations in the United States during the actual Base Year (2019),¹⁵⁰ and that the

¹⁴⁷ CP-KCS Amended Operating Plan, p. 48, ¶109.

¹⁴⁸ Work paper FD 36500 Work Paper HC Growth Initiative Calculations.xlsx.

¹⁴⁹ See work paper “HC - Oliver Wyman - Intermodal to RailCar Conversion Factor Source Compilation.pdf” for prior February 28, 2022 Van Dyke Verified statement to see calculations giving length { } ft/container

¹⁵⁰ See statement by CP-KCS as to why base year traffic through Lazaro Cardenas would not be relevant to the Board’s review of its Application: CP-KCS Amended Operating Plan, pp. 34-35, ¶83.

diversion studies did not add any new intermodal traffic from Lazaro Cardenas to locations in the northern United States. CP-KCS make it clear that the northbound direction from Lazaro Cardenas is loads only in their approach, since they detail generating empties in the southbound direction to balance this O-D pair.¹⁵¹ Using CP-KCS's 9,521 railcar feet per day number, assuming the same number of containers per day as used in the previous table, and an average railcar length of 165 feet as assumed above, provides the following estimates:

Exhibit 5-9: Estimated feet of railcar per container for northbound intermodal traffic from Lazaro Cardenas¹⁵²

Description	Containers per day ¹⁵³	CP growth cars per day ¹⁵⁴	Containers per car ¹⁵⁵	Avg. feet of railcar per container (with avg. car length @ 165 ft) ¹⁵⁶
New traffic to Chicago	{ }	{ }	{ }	{ }
New traffic to K.C. & Twin Cities	{ }	{ }	{ }	{ }
Subtotals	{ }	{ }	{ }	{ }
New traffic to Dallas	{ }	{ }	{ }	{ }
Grand totals	{ }	{ }	{ }	{ }

A range of around { } feet of railcar per container is almost { } the length one would expect for a reasonably well utilized doublestack railcar. From both this conclusion and the maximal view of Lazaro Cardenas intermodal traffic projections, it appears to me that Applicants' assertion, that they will move 9,521 feet per day of railcar from Lazaro Cardenas to Chicago, is not supported by the facts, and the actual value is at most { } of that value. It does raise questions as to overall accuracy of the traffic used in MultiRail, and thus

¹⁵¹ CP-KCS Amended Operating Plan, p. 48, ¶109.

¹⁵² See work papers for this statement "HC Lazaro growth Trains Analysis.xlsx" for how each value in the exhibit was derived.

¹⁵³ Work paper FD 36500 Work Paper HC Growth Initiative Calculations.xlsx.

¹⁵⁴ Work paper 24.1.1.3.3.5.4-Growth Plan Intermodal Loaded and Empty Rail Car Balance.xlsx.

¹⁵⁵ Containers per day divided by CP growth cars per day.

¹⁵⁶ 165 ft divided by containers per car.

brings into question the accuracy of any train counts, yard activity counts, and tonnages based on this traffic.

6. Updated Springfield Line Responsive Application Operating Plan

As a result of the submission of the Amended Operating Plan by Applicants on May 13, 2022, CN is submitting an Alternative Operating Plan for its proposed acquisition of the Springfield Line, for which I am a sponsor.¹⁵⁷ For consistency with the primary control Application, CN's Springfield Alternative Operating Plan uses the data provided by CP-KCS in their Amended Operating Plan as a starting point for many of the base statistics. *The fact that CN is producing this Alternative Operating Plan using the updated CP-KCS data should not be construed as an acknowledgement of the validity of the Base Year data or post-transaction tonnage changes proposed by Applicants. CN continues to believe that CP's and KCS's actual 2019 traffic and density data provide the most accurate measure of the effects of the proposed control transaction (and of CN's Responsive Application).*

The purpose of this Alternative Operating Plan is to provide the Board with an alternative assessment of the proposed Springfield Line divestiture using metrics that are consistent with CP-KCS base data from their May filing. In many cases, I present both our original assessment of CN's proposed operating plan and the alternative assessment based on the CP-KCS provided metrics on a side-by-side basis, so that the STB and the OEA can understand the implications of both approaches.

The Alternative Operating Plan contains the following significant changes:

¹⁵⁷ CN Springfield Line Responsive Application, February 28, 2022; CN Springfield Line Amended Responsive Application, June 9, 2022; STB Finance Docket No. 36500, Canadian Pacific Railway Ltd. – Control – Kansas City Southern, et al, Decision No. 17, April 27, 2022; CP-KCS Amended Operating Plan

- Alternative line segment tonnages for line segments associated with the Springfield line (tonnage projections for lines owned by CN did not change), with minor changes in CN-related tonnage increases from refinements to analysis and removal of organic growth factors
- Alternative train counts for line segments associated with the Springfield line (train count projections for lines owned by CN did not change), with minor changes in the train counts on a limited number of line segments based on a refinement of the analysis process
- Removal of any organic growth-related changes in tonnage or train counts from core operating plan metrics
- Updating of the KCS-owned lines in terms of train counts, tonnages, and yard volumes for purposes of environmental assessment, including using organic growth consistent with CP-KCS provided projections, and using a format similar to that used by Applicants in Appendix T of their amended operating plan
- Updating of select yard statistics for KCS-owned facilities in terms of cars handled, intermodal volumes, and multilevel volumes
- Updating of various other tables to reflect changes found in the CP-KCS Amended Operating Plan and associated text supporting these tables
- Other changes to the text to explain the differences between the CN and CP-KCS approach to assessing the operating plans and highlighting how to use the various alternative views of the operating plan for the Springfield line
- Updating of Appendix A to reflect my current understanding and analysis of the line density data prepared by CP-KCS for the Springfield line, and ensuring it is consistent with the CP-KCS amended operating plan and related metrics.

Appendix A. Applicants’ “Calibration” Process Part of a Complex, Fractured, and Fundamentally Flawed Approach

While the primary focus of this Verified Statement is to show that the CP-KCS Amended Operating Plan continues to present a deeply flawed and unreliable view of both base year and post-transaction operations, it is important to remember that Applicants used a complex, fractured, and fundamentally flawed approach to develop their Operating Plan and the various operating metrics. The many flaws in Applicants’ methodology are discussed in detail in my original Verified Statement included in CN’s Comments on the Application,¹⁵⁸ and summarized in Section 3 and 3.1 above.

This appendix provides the computational details of how Applicants developed both their base operating plan segment-by-segment tonnages and their post-transaction tonnages. Section A.1 examines the pre-transaction methodology and A.2 the post-transaction methodology. Finally, Section A.3 provides an example of how a very minor increase in diversion traffic on the Springfield Line was converted into values that are 2.5 to 6 times larger than the diversion numbers would support (the reverse is true on the Sabula-Airline Junction line, where the tonnages are understated using this same process).

A.1 Generation of density data for the base period

Based on an analysis of Applicants’ work papers related to the estimation of line densities, I developed Exhibit A-1, which attempts to distill the disjointed, illogical process followed by Applicants in generating their proposed density data for the base period.¹⁵⁹ Exhibit A-1 takes five sample line segments and walks through the complex process that Applicants used to derive

¹⁵⁸ Van Dyke First Verified Statement, Section 4.4.

¹⁵⁹ Work paper 24.1.1.9-Trains Per Day and Gross Ton Miles.xlsx; Work paper 24.1.1.9-Trains Per Day and Gross Ton Miles.xlsx; Work paper 24.1.1.3.19-Trains Per Day and Gross Ton Miles-Workin...y with Haz Breakdown (PREVIOUS SUBMISSION).xlsx; see also Van Dyke First Verified Statement, Sections 4.1 and 4.3.

gross tons per mile for each segment. Exhibit A-1 then compares Applicants' proposed density data calculations with those in the original Exhibit 14 Part A Density Data, adjusted to account for the inclusion of locomotives. As Exhibit A-1 shows, there are significant and varying fluctuations between the actual 2019 data that Applicants first presented in Exhibit 14 Part A and the Applicants' proposed density data that they now assert is a proper substitute for actual full-year 2019 densities.

Exhibit A-1: Applicants' computation of "2019 Base Tonnage" by line segment for Applicants' proposed density data¹⁶⁰

Step	Description	Sample Values				
		Godfrey - East St. Louis	Roodhouse - Murrayville, IL	Ottumwa, IA - Laredo, MO	Kendleton - Victoria, TX	Victoria - Placedo, TX
1	Obtain "base" daily non-unit (i.e., carload and intermodal) train count from MultiRail for trains traversing line segment touching at least 25% of the locations along line segment (not distance based) train plan created to match to non-representative October 2020 traffic based on adaptation of Q1 2021 operating plan ¹⁶¹	{{ }}	{{ }}	{{ }}	{{ }}	{{ }}
2	Obtain "base" daily unit train count based on the observed unit trains operated over each line segment using two different 3-4 month time periods from early 2021 for CP and KCS. Adjustments for unit trains traversing only part of line segment are unknown. Unit train samples known to under-represent oil trains on Iowa line for full year, and grain on Springfield line. ¹⁶²	{{ }}	{{ }}	{{ }}	{{ }}	{{ }}
3	Compute total base trains per day by summing unit and non-unit train counts	3.71	0.78	3.17	8.70	7.94

¹⁶⁰ Based on an analysis of work paper 24.1.1.9-Trains Per Day and Gross Ton Miles.xlsx ("Summary Sheet" tab)

¹⁶¹ See Van Dyke First Verified Statement, Sections 4.2 and 5.3. Applicants did not include the trains per day methodology document with the work papers associated with the May 13, 2022 Amended Operating Plan, and thus provide no update on the 25% rule with respect to the Amended Operating Plan. Because the MultiRail related train counts did not change between the original October 29, 2021 filing and the May 13, 2022 filing, it is logical to assume the 25% rule continues to apply.

¹⁶² CP-KCS Amended Operating Plan, p. 34, ¶82 & p.37, footnote 19.

Step	Description	Sample Values				
		Godfrey - East St. Louis	Roodhouse - Murrayville, IL	Ottumwa, IA - Laredo, MO	Kendleton - Victoria, TX	Victoria - Placedo, TX
4	Obtain the historic average train weight by line segment for across 2020 for CPRS subdivisions and across early 2021 for KCS subdivisions – CP-KCS provided spreadsheets with these values, but no known explanation of their sourcing ¹⁶³	{ }	{ { }	{ }	{ { }	{ }
5	Obtain segment distance (miles)	32.9	10.3	61.2	77.4	12.8
6	Compute “uncalibrated” “base period” daily gross ton miles using formula: [Total trains per day] x [Segment Distance] x [2020/2021 Historic Train Weight]	{ { }	{ { }	{ }	{ { }	{ { }
7	Determine the total GTMs from step 6 for each railroad (CP, KCS, KCSM) by summing across all line segments, and compare to “official” 2019 GTM value for each railroad and determine a “calibration factor” that will cause the individual values to sum to the overall “official” value ¹⁶⁴	{ { }	{ }	{ { }	{ { }	{ { }
8	Adjust the GTM values from step 6 by the calibration factor in step 7 to compute a “final” daily “calibrated” GTM base value for “base period”	616,330	28,174	1,738,217	5,785,320	576,745
9	Compute “base period” annual gross tons per mile for the line by multiplying step 8 value by 365 and dividing by the line segment length (Applicants’ proposed density data)	6,837,704	998,390	10,366,817	27,282,196	16,446,243
10	As a point of comparison, these are the adjusted 2019 gross tonnage values as published in Exhibit 14 Part A Density Data of Amended Application ¹⁶⁵	5,173,120	2,861,340	11,548,900	24,081,560	23,888,020
11	As a point of a comparison, this is the percentage difference between the computed gross tons in step 9 and the Exhibit 14 gross tons in step 10.	-24.34%	186.60%	11.40%	11.73%	45.25%

Initially, the base trains per day numbers in Steps 1-3 of Exhibit A-1, upon which the tonnages are based, were constructed by Applicants in a manner that is highly unlikely to

¹⁶³ See Work paper 24.1.1.3.5.4-Updated Weights.xlsx, Work paper 24.1.1.3.5.3-Train Weight Original KCS.xlsx, Work paper 24.1.1.3.5.2-Train Weight Original CP.xlsx.

¹⁶⁴ Work paper 24.1.1.9-Trains Per Day and Gross Ton Miles.xlsx tab “GTM Targets and Calibration”

¹⁶⁵ See amended Exhibit 14 Part A at p. 313 of Amended Operating Plan, note: tonnages adjusted to take into account locomotives by multiplying the original values by 94.4% for CP and 92.6% for KCS.

represent the actual number of trains operated on each line segment in 2019. These are the same numbers that Applicants used for their Base Year trains per day data submitted to the OEA for every line segment, and they do not reflect actual train counts from the 2019 Base Year. For the manifest and intermodal trains, the train count is taken from MultiRail, where the inputs to the process were traffic from October 2020 and train schedules from Q1 of 2021.¹⁶⁶ On the unit train side, a sample of unit trains was used from early 2021, which we know was non-representative. See the main body of this Verified Statement for examples of issues with the unit train sampling employed by CP-KCS. Furthermore, the historic tonnages used do not take train type into account and are not tied to the base period traffic or actual train design in any way.

For the manifest trains, it is my understanding that Applicants adjusted their Q1 2021 operating plan to match the observed traffic volumes from October 2020, which as discussed in the main body of this Verified Statement was not representative of full-year 2019 traffic. In theory, the use of the Q1 2021 blocking and train plan was to avoid taking credit for “efficiency gains” that will have taken place between 2019 and the approval of the merger. However, how this in any way corresponds to the Base Year 2019 actual train operations is completely unclear. Furthermore, some unknown number of trains were excluded from these counts due to CP-KCS’s “25 percent rule” (discussed further below).

At a minimum, because Applicants constructed trains per day numbers using unit train snapshots from 2021, and manifest/intermodal traffic from October 2020, it is clear that the Base Year trains per day numbers for every line segment submitted to the STB’s OEA do not in any way reflect actual 2019 train operations. As pointed out in this verified statement, the same is

¹⁶⁶ See Van Dyke First Verified Statement, Section 5.3.

true for the segment-specific Base Year tonnage numbers submitted to the STB's OEA, despite Applicants' attempt to "calibrate" the tonnage values to match 2019 aggregate gross ton miles.

These non-representative train counts were then multiplied by "historic average train weights" from 2020 for CPRS subdivisions and early 2021 for KCS subdivisions to obtain total tons on each line segment.¹⁶⁷ To the best of my knowledge, Applicants have not provided any information on how these train weights were actually generated, or why there is any reason to believe they are accurate. See the main body of this Verified Statement for additional examples of questionable train weights.

Ultimately, Exhibit A-1 does not provide any confidence that Applicants have created base period density data that fairly represent full-year 2019 values. It also raises the obvious question: *Why go through all the steps described above to create what Applicants claim is an Operating Plan that "proved to be a quite reasonable reflection of the actual GTMs" ¹⁶⁸ when actual 2019 values were readily available for the Applicants to use?*

As the developer of MultiRail, I am keenly aware of its capabilities. MultiRail is capable of generating line density values directly. If the user enters an appropriate body of traffic, including gross tons, MultiRail will generate an estimate of tonnage by line segment based on that data. In doing so, the blocking and train service plan is taken fully into account, -- there is no need to do complicated external mathematics to convert train counts and historic average weight into tonnage numbers (as described in Exhibit A-1). If Applicants had simply used their full-year 2019 traffic and included the unit trains and traffic in MultiRail, none of these complex

¹⁶⁷ Weights are obtained from work papers 24.1.1.3.5.4-Updated Weights.xlsx, 24.1.1.3.5.3-Train Weight Original KCS.xlsx, and 24.1.1.3.5.2-Train Weight Original CP.xlsx, while the discussion of them being in FD 36500 – Work Paper – HC – Gross Ton Miles, Train Miles, Train Weights and MGT - Methodology.pdf implies they are a derived value.

¹⁶⁸ CP-KCS Amended Operating Plan, p. 39.

calculations would have been necessary. And, as Exhibit A-1 graphically demonstrates, the complex set of calculations made by CP-KCS produced segment tonnage values in line 9 of the above table that vary by a wide margin from the actual, historic Base Year 2019 values (line 10) on a segment-by-segment basis. Even after the historic tonnage values for 2019 are “corrected” by taking the weight of locomotives into account,¹⁶⁹ the differences between modeled and actual values are substantial.

Applicants claim, among other things, that the discrepancy between the historic KCS traffic values they presented in the Exhibit 14 Part A density data and Applicants’ proposed density data calculations was attributable to a methodological difference: “The Operating Plan Base and Year 3 Densities assign GTMs based on the number of miles that a gross ton is moved across the segment, whereas for KCS’s and KCSM’s 2019 figures any tons touching the segment were treated as if they traversed the entire segment, resulting in considerably higher GTMs per mile in the KCS and KCSM 2019 Exhibit 14 [Part A] density figures for many segments.”¹⁷⁰ *But there is no indication in the Application or workpapers that Applicants actually adjusted KCS’s ordinary course density data to reflect only the actual miles of a segment traversed by each train.* Rather, as demonstrated in Exhibit A-1, if a train traversed at least 25 percent of the stations on a line segment, Applicants counted that train as traversing the entire line segment. Conversely, *if a train traversed less than 25 percent of the stations on a line segment, Applicants removed that train entirely from the line segment’s tonnage and train count statistics.* (See my first Verified Statement included in CN’s Comments on the Application provides further details

¹⁶⁹ STB Finance Docket No. 36500, Applicants’ Response to Decision No. 16, op. cit., which states at p. 7, ¶12: “The Operating Plan Base and Year 3 Densities exclude locomotive tons, whereas the CP, KCS, and KCSM 2019 figures (i.e., the 2019 Exhibit 14 Part A Densities) include that tonnage.”

¹⁷⁰ STB Finance Docket No. 36500, Applicants’ Response to Decision No. 16, op. cit., p. 7, ¶13.

on this issue and the resulting distortion of Operating Plan metrics.)¹⁷¹ Never do Applicants in their filing identify any instance where a train that traversed only part of a line segment was counted on a pro-rata basis.

The fractured and complex process detailed in Exhibit A-1, which used a mishmash of data sources, calibrations, and questionable assumptions, provides no credible support for the notion that Applicants' proposed density data values fairly represent full-year 2019 tonnage values by line segment.

A.2 Generation of density data for the post-transaction period

In filing their amended operating plan, Applicants updated many of their tonnage estimates in the Master Segment Table (Appendix T), and provided a new work paper detailing the development of their tonnage values.¹⁷² Superficial examination of the new work paper makes it appear to be a replacement of the prior work paper that was used for the preparation of the original October 2021 Operating Plan.¹⁷³ However, a study of the new work paper reveals that for the post-transaction values, Applicants took what was already a very complex and potentially error-prone process and made it even more complex by pulling in values from the old work paper and then manipulating those values to introduce additional distortions to the post-transaction tonnage estimates.

Based on an analysis of the Applicants' work papers discussed above, I developed Exhibits A-2 through A-6, which attempt to distill the even more disjointed process followed by Applicants in generating the Applicants' proposed density data for the post-transaction period.¹⁷⁴

¹⁷¹ Van Dyke First Verified Statement, Section 4.3.3.

¹⁷² Work paper 24.1.1.9-Trains Per Day and Gross Ton Miles.xlsx.

¹⁷³ Work paper 24.1.1.9-Trains Per Day and Gross Ton Miles.xlsx and Work paper 24.1.1.3.19-Trains Per Day and Gross Ton Miles-Workin...y with Haz Breakdown (PREVIOUS SUBMISSION).xlsx.

¹⁷⁴ Work paper 24.1.1.9-Trains Per Day and Gross Ton Miles.xlsx and Work paper 24.1.1.3.19-Trains Per Day and Gross Ton Miles-Workin...y with Haz Breakdown (PREVIOUS SUBMISSION).xlsx.

Since the process involves utilizing post-transaction “synergy” densities from the previous version of the Applicants’ proposed density data submission, Exhibits A-2 through A-6 illustrate how those numbers were calculated previously. Exhibit A-2 shows the process like Exhibit A-1 for constructing “base period” annual gross tons per mile, an input used to ultimately get incremental “synergy” annual gross tons per mile from the previous filing, which is an input into the calculations for this most recent filing.

Exhibit A-2: Applicants’ Computation of “2019 Base Tonnage” by line segment for the previous version of the Applicants’ proposed density data¹⁷⁵

Step	Description	KCS Godfrey, IL – East. St. Louis	KCS Roodhouse- Murrayville, IL	CP Ottumwa, IA- Laredo, MO	KCS Kendleton- Victoria, TX	KCS Victoria- Placedo, TX
1	Compute total base trains per day (from previous submittal)	3.66	0.56	3.17	8.47	7.71
2	Obtain historic average train weight	{ }	{ }	{ }	{ }	{ }
3	Obtain segment distance (miles)	32.9	10.3	61.2	77.4	12.8
4	Compute “uncalibrated” “base period” daily gross ton miles using formula: [Total trains per day] x [Segment Distance] x [Historic train weight]	{ }	{ }	{ }	{ }	{ }
5	Determine the total GTMs from step 4 for each railroad (CP, KCS, KCSM) by summing across all line segments, and compare to “official” 2019 GTM value for each railroad and determine a “calibration factor” that will cause the individual values to sum to the overall “official” value	{ }	{ }	{ }	{ }	{ }
6	Adjust the GTM values from step 4 by the calibration factor in step 5 to compute a “final” daily “calibrated” GTM base value for “base period”	699,872	710	1,739,105	3,895,153	618,978
7	Compute “base period” annual gross tons per mile for the line segment by multiplying step 6	7,764,535	25,166	10,372,112	18,368,617	17,650,558

¹⁷⁵ Work paper 24.1.1.3.19-Trains Per Day and Gross Ton Miles-Workin...y with Haz Breakdown (PREVIOUS SUBMISSION).xlsx.

Step	Description	KCS	KCS	CP	KCS	KCS
		Godfrey, IL – East St. Louis	Roodhouse-Murrayville, IL	Ottumwa, IA- Laredo, MO	Kendleton-Victoria, TX	Victoria-Placedo, TX
	value by 365 and dividing by the line segment length					

Exhibit A-3 shows the process for generating the base to synergy growth rate from the previous filing, another input used to ultimately get incremental synergy annual gross tons per mile from the previous filing, which is an input to the calculations for this most recent filing.

Exhibit A-3: Applicants' computation of "Base to Synergy" growth rate by line segment for the previous version of the Applicants' proposed density data¹⁷⁶

Step	Description	KCS	KCS	CP	KCS	KCS
		Godfrey, IL – East St. Louis	Roodhouse-Murrayville, IL	Ottumwa, IA- Laredo, MO	Kendleton-Victoria, TX	Victoria-Placedo, TX
1	Add MultiRail and Bulk base carloads for a combined total base carload number.	{ }	{ }	{ }	{ }	{ }
2	Add Bulk synergy growth carloads, MultiRail growth carloads, and Bulk base carloads for total synergy growth carloads.	{ }	{ }	{ }	{ }	{ }
4	Calculate growth rate from base to synergy by finding the carload rate of change between step 1 and step 2	{ }	{ }	{ }	{ }	{ }
5	Obtain "Synergy Ratio," an unexplained constant dependent on railroad	{ }	{ }	{ }	{ }	{ }
6	Calculate the final growth rate from base to synergy by multiplying the carload rate of change by the synergy ratio	{ }	{ }	{ }	{ }	{ }

As seen in steps 5 and 6 of Exhibit A-3, Applicants apply a "Synergy Ratio" to the growth rates for KCS and KCSM of 0.8 and 0.65 respectively. With no identifiable source, the purpose

¹⁷⁶ Work paper 24.1.1.3.19-Trains Per Day and Gross Ton Miles-Workin...y with Haz Breakdown (PREVIOUS SUBMISSION).xlsx.

and origin of these numbers are unclear. These potentially arbitrary multipliers serve to deflate the total synergy growth.

Of note, in calculating both the base carload number in step 1 and the synergy carload number in step 2, no effort is made to track the mix of cars between bulk, intermodal, automotive, and manifest traffic, meaning that the average car weight (train weight) effectively stays the same regardless of traffic mix in subsequent calculations.

Exhibit A-4 compares these calculated growth rates from the previous version of the spreadsheet, both with and without the “Synergy Ratio,” to the up-to-date numbers in the most recent Applicants’ proposed density data submission.

Exhibit A-4: Applicants’ “Base to Synergy” growth rates by line segment for the previous and most recent version of the Applicants’ proposed density data¹⁷⁷

	Rate	KCS	KCS	CP	KCS	KCS
		Godfrey, IL – East St. Louis	Roodhouse- Murrayville, IL	Ottumwa, IA- Laredo, MO	Kendleton- Victoria, TX	Victoria- Placedo, TX
1	New Version spreadsheet (May 13, 2022)	{ }	{ }	{ }	{ }	{ }
2	Previous Version spreadsheet (Oct. 29, 2021)	{ }	{ }	{ }	{ }	{ }
3	Previous Version spreadsheet with “Synergy Ratio” (Oct. 29, 2021)	{ }	{ }	{ }	{ }	{ }

As shown in Exhibit A-4, the growth rates between the two versions of the spreadsheets can differ, especially after the application of the “Synergy Ratio.” If the growth rates used to calculate incremental synergy annual gross tons per mile from the previous filing are out-of-date or erroneous, then plugging that value into the new calculations will yield additional errors.

¹⁷⁷ Work paper 24.1.1.3.19-Trains Per Day and Gross Ton Miles-Workin...y with Haz Breakdown (PREVIOUS SUBMISSION).xlsx.

Exhibit A-5 breaks down the calculation process for the previous filing's total synergy gross tons per mile, using the base GTM value in step 6 of Exhibit A-2 and the final base to synergy growth rate in Exhibit A-3.

Exhibit A-5: Applicants' computation of synergy annual gross tons per mile by line segment for the previous version of the Applicants' proposed density data¹⁷⁸

Step	Description	KCS Godfrey, IL – East St. Louis	KCS Roodhouse- Murrayville, IL	CP Ottumwa, IA- Laredo, MO	KCS Kendleton- Victoria, TX	KCS Victoria- Placedo, TX
1	Calculate base to synergy growth rate as per above instructions	{{ }}	{{ }}	{{ }}	{{ }}	{{ }}
2	Calculate calibrated base GTMs as per above instructions	699,871	710	1,739,105	3,895,153	618,978
3	Calculate uncalibrated Synergy GTMs from calibrated base GTMs by applying the Base to synergy growth rate	{{ }}	{{ }}	{{ }}	{{ }}	{{ }}
4	Obtain base + synergy calibration factor by finding the ratio between the predicted Synergy GTMs from the "System Model" for each railroad and comparing that to the sum of the uncalibrated synergy GTMS for each railroad from line 3	{{ }}	{{ }}	{{ }}	{{ }}	{{ }}
5	Adjust GTM values from step 3 by applying calibration factor in step 4 to the step 3 value	{{ }}	{{ }}	{{ }}	{{ }}	{{ }}
6	Effective, post-calibration growth rate	{{ }}	{{ }}	{{ }}	{{ }}	{{ }}
7	Obtain segment distance (miles)	32.9	10.3	61.2	77.4	12.8
8	Compute synergy annual gross tons per mile for the line by multiplying step 5 value by 365 and dividing by the segment distance	{{ }}	{{ }}	{{ }}	{{ }}	{{ }}

¹⁷⁸ Work paper 24.1.1.3.19-Trains Per Day and Gross Ton Miles-Workin...y with Haz Breakdown (PREVIOUS SUBMISSION).xlsx.

A calibration rate is applied to the GTMs after the application of the growth rate, resulting in a growth rate higher than initially stated, illustrated by the comparison between steps 1 and 6 in the above exhibit.

As illustrated in Exhibit A-6, the annual gross tons per mile calculated in Exhibit A-2 from the previous version of the density spreadsheet, and the previous version total synergy annual gross tons per mile calculated in Exhibit A-5 are used to determine the final incremental synergy annual gross tons per mile in the previous version of the Applicants' proposed density data. This value is plugged into the most up-to-date version of the Applicants' proposed density data to solve for synergy density and, ultimately, total growth density.

Exhibit A-6: Applicants' computation of Y3 annual gross tons per mile by line segment for the most recent version of the Applicants' proposed density data¹⁷⁹

Step	Description	KCS Godfrey, IL – East St. Louis	KCS Roodhouse- Murrayville, IL	CP Ottumwa, IA- Laredo, MO	KCS Kendleton- Victoria, TX	KCS Victoria- Placedo, TX
1	Obtain base million gross ton per mile from previous version	{ }	{ }	{ }	{ }	{ }
2	Obtain synergy million gross tons from previous version	{ }	{ }	{ }	{ }	{ }
3	Calculate Y3 incremental synergy growth from previous version by subtracting step 1 from step 2	{ }	{ }	{ }	{ }	{ }
4	Obtain base uncalibrated GTMs new version	{ }	{ }	{ }	{ }	{ }
5	Determine the total GTMs from step 4 for each railroad (CP, KCS, KCSM) by summing across all line segments, and compare to "official" 2019 GTM value for each railroad and determine a "calibration factor" that will cause the individual values to sum to the overall "official" value	{ }	{ }	{ }	{ }	{ }

¹⁷⁹ Work paper 24.1.1.9-Trains Per Day and Gross Ton Miles.xlsx.

Step	Description	KCS Godfrey, IL – East St. Louis	KCS Roodhouse- Murrayville, IL	CP Ottumwa, IA- Laredo, MO	KCS Kendleton- Victoria, TX	KCS Victoria- Placedo, TX
6	Adjust the GTM values from step 4 by the calibration factor in step 5 to compute a “final” new version daily “calibrated” GTM base value for “base period”	616,330	28,174	1,738,217	5,785,320	576,745
7	Compute new version “base period” annual million gross tons per mile for the line by multiplying step 6 value by 365 and dividing by the line segment length, and dividing that value by 1 million (used for new Applicants’ proposed density data)	6.838	1.0	10.37	27.282	16.446
8	Sum steps 3 and steps 7 to find base + synergy MGTs (used for new Y3 Applicants’ proposed density data)	{ }	{ }	{ }	{ }	{ }
9	Effective, post-calibration growth rate	{ }	{ }	{ }	{ }	{ }
10	Calculate synergy GTMs by multiplying step 8 by multiplying by 1 million and segment length and dividing by 365	{ }	{ }	{ }	{ }	{ }
11	Total Synergy Growth Carloads: Add Bulk synergy growth carloads, MREE growth carloads, and Bulk base carloads for total synergy growth carloads new version	{ }	{ }	{ }	{ }	{ }
12	Total Growth Carloads (incl Organic): Add Bulk synergy growth carloads, MREE growth carloads, Bulk organic growth carloads, growth organic carloads, and Bulk base carloads for total synergy growth carloads new version	{ }	{ }	{ }	{ }	{ }
13	Calculate the % difference between steps 11 and 12 to find the synergy to all growth conversion rate	{ }	{ }	{ }	{ }	{ }

Step	Description	KCS Godfrey, IL – East St. Louis	KCS Roodhouse- Murrayville, IL	CP Ottumwa, IA- Laredo, MO	KCS Kendleton- Victoria, TX	KCS Victoria- Placedo, TX
14	Total Growth GTMs (incl Organic): Calculate all growth precalibrated GTMs by applying the synergy to growth rate to synergy GTMs	{ }	{ }	{ }	{ }	{ }
15	Obtain all (organic, synergy, and base) GTM calibration rate by summing 14 by railroad and comparing to the expected equivalent number in the "system model" and find adjustment value to make the values in this spreadsheet match the system model	{ }	{ }	{ }	{ }	{ }
16	Total Calibrated Growth GTMs: Apply calibration rate in step 15 to GTMs in step 14 to calculate all calibrated GTMs	827,516	33,093	6,497,963	8,934,852	1,077,614
17	Calculate annual gross tons per mile for Y3 by multiplying step 16 value by 365 and dividing by the line segment length	9,180,647	1,172,708	38,754,193	42,134,637	30,728,837

As illustrated by step 8, instead of calculating synergy GTMs from the base GTMs with a carload-based growth rate, as they did in the previous version of these calculations, the Applicants added on an absolute value for incremental growth. This absolute value incremental growth was derived from a previous, now outdated, version of the work papers.

Organic growth volume and total growth volume are also calculated as a function of this questionable synergy GTM value imported from an outdated filing, as shown in steps 11 through 14.

Of note, for both the Total Synergy Growth Carloads in step 11 and Total Growth Carloads in step 12, average car weight stays the same regardless of any changes to traffic mix on the line.

The effect of this approach is to create distortions in the post-transaction tonnage numbers that can cause tonnages to be understated (as in the case of the Sabula to Airline Junction, Missouri line), or overstated (as in the case of the Springfield line where the process introduces significant levels of “phantom” merger related growth, as detailed in the next section). Section A.3 below presents a compressed look at the Springfield line for selected segments, where a volume increase of only 5-6 cars per day produced tonnage increases of as much as a 1.18 million tons/year. (See also the Godfrey-East St. Louis column in the above exhibits.)

To summarize, Applicants’ calculations of post-transaction density in connection with the Amended Operating Plan are overly complex, utilize arbitrary adjustments such as the “Synergy Ratio,” while falling back on outdated calculations from their previous filing. I can only speculate as to why Applicants did not simply replace their density spreadsheet with a new one – perhaps to prevent the “synergy” growth numbers from changing too much between filings?

A.3 Distorted post-transaction tonnages on selected Springfield Line subdivisions

Exhibit A-7 below presents a compressed view of the process to estimate the tonnage increases resulting from increases in post-transaction “synergy growth” traffic on selected segments of the Springfield Line. By “synergy growth,” CP-KCS means growth as a direct result of the merger, excluding organic growth. What you will see in the below examples is that a 5-6 car per day volume increase due to synergy growth was transformed into tonnage increases in the range of 0.5 million to 1.2 million per year. A 6 car increase, at 75 tons/car, would normally result in an annual tonnage increase of less than 0.2 million tons per year. However, due to a myriad of factors, including likely underreporting of the number of cars on each line segment in the CP-KCS work papers, possible errors in train counts, inconsistencies in the train weights applied, and a variety of “calibration factors” and other adjustments, this fairly modest volume

increase became significantly overstated. It clearly demonstrates how using such a complex process can fall apart when there are inconsistencies in data which is being independently sourced from multiple places and time periods.

Exhibit A-7 organizes the estimation process into four phases as follows:

- A) Compute the “previous submission,” “base period,” “calibrated” tonnage for each line segment using the October 29, 2021 logic/values
- B) Compute the “previous submission” applicable “growth rate” for estimating the increase in tonnage on the line segment relative to the base period tonnage using the October 29, 2021 logic/values
- C) Compute the “previous submission,” “post-transaction,” “calibrated,” “synergy” tonnage for each line segment (with no organic growth) using the October 29, 2021 logic/values
- D) Compute the “new submission,” “calibrated,” “synergy” tonnage for each line segment (with no organic growth) by applying the incremental tonnage increase found in the “previous submission” process to the “new submission” base tonnage (creating the May 13, 2022 values)

Exhibit A-7: Applicants’ computation of post-transaction “synergy” tonnage values for select Springfield Line segments¹⁸⁰

Step	Description	Roodhouse-Godfrey, IL	Godfrey - East St. Louis	Kansas City - Slater	Slater - Mexico	Mexico - Roodhouse
1A	Compute total base trains per day	1.52	3.66	2.45	1.56	1.84
2A	Obtain historic average train weight	{ }	{ }	{ }	{ }	{ }
3A	Obtain segment distance (miles)	40	32.9	97.2	67.9	88.4
4A	Compute “uncalibrated” “base period” daily gross ton miles using formula: [Total trains per day] x [Segment Distance] x [Historic train weight]	{ }	{ }	{ }	{ }	{ }
5A	Determine the total GTMs from step 4A for each railroad (CP, KCS, KCSM) by summing across all line segments, and compare to “official” 2019 GTM value for each railroad and determine a “calibration factor” that will cause the individual values to sum to the overall “official” value	{ }	{ }	{ }	{ }	{ }

¹⁸⁰ See work papers for this statement “HC- Springfield Synergy Growth Calculations.xlsx”

Step	Description	Roodhouse- Godfrey, IL	Godfrey - East St. Louis	Kansas City - Slater	Slater - Mexico	Mexico - Roodhouse
6A	Adjust the GTM values from step 4A by the calibration factor in step 5A to compute a "final" daily "calibrated" GTM base value for "base period"	121,601	699,872	1,553,324	690,914	821,078
7A	Compute "base period" annual gross tons per mile for the line segment by multiplying step 6A value by 365 and dividing by the line segment length (October 2021)	1,109,611	7,764,535	5,832,957	3,714,046	3,390,198
1B	Add MultiRail and Bulk base carloads for a combined total base carload number.	{ }}	{ { }}	{ }}	{ { }}	{ { }}
2B	Add Bulk synergy growth carloads, MultiRail growth carloads, and Bulk base carloads for total synergy growth carloads.	{ }}	{ { }}	{ }}	{ { }}	{ }}
3B	Calculate growth rate from base to synergy by finding the carload rate of change between step 1B and step 2B	{ }}	{ }}	{ }}	{ { }}	{ }}
4B	Obtain "Synergy Ratio," an unexplained constant dependent on railroad	{ { }}	{ }}	{ { }}	{ }}	{ { }}
5B	Calculate the final growth rate from base to synergy by multiplying the carload rate of change by the synergy ratio (October 2021)	{ }}	{ }}	{ }}	{ { }}	{ }}
6B	New Version Synergy Growth Rate (for comparison) (May 2022)	{ }}	{ }}	{ { }}	{ }}	{ { }}
1C	Calculate uncalibrated Synergy GTMs from calibrated base GTMs by applying the Base to synergy growth rate in Step 5B to the base GTMs from Step 6A	{ }}	{ }}	{ { }}	{ }}	{ { }}
2C	Obtain base + synergy calibration factor by finding the ratio between the predicted Synergy GTMs from the "System Model" for each railroad and comparing that to the sum of the uncalibrated synergy GTMS for each railroad from line 3	{ }}	{ }}	{ { }}	{ }}	{ { }}
3C	Adjust GTM values from step 1C by applying calibration factor in step 2C to the step 1C value	141,034	806,205	1,765,349	795,608	947,481
4C	Effective, post-calibration growth rate	{ { }}	{ { }}	{ }}	{ { }}	{ }}

Step	Description	Roodhouse- Godfrey, IL	Godfrey - East St. Louis	Kansas City - Slater	Slater - Mexico	Mexico - Roodhouse
5C	Compute synergy annual gross tons per mile for the line by multiplying step 3C value by 365 and dividing by the segment distance (October 2021)	1,286,937	8,944,219	6,629,140	4,276,835	3,912,109
1D	Obtain base million gross ton per mile by dividing Step 7A by 1,000,000 ("Previous Submission" - revised in new submission)	1.110	7.765	5.833	3.714	3.390
2D	Obtain synergy million gross tons per mile by dividing Step 5C by 1,000,000 ("Previous Submission" - revised in new submission)	1.287	8.944	6.629	4.277	3.912
3D	Calculate year 3 incremental synergy growth from previous version by subtracting step 1D from step 2D (exact value used in new submission, based on growth from October 2021 submission)	0.177	1.180	0.796	0.563	0.522
4D	Number of Synergy growth cars per year (line 2B minus line 1B multiplied by 365)	{ }	{ }	{ }	{ }	{ }
5D	Effective gross weight per car of new synergy growth cars (line 3D times 1,000,000 divided by 4D)	{ }	{ }	{ }	{ }	{ }
6D	Effective gross weight of base period cars (line 1D times 1,000,000 divided by 1B times 365)	{ }	{ }	{ }	{ }	{ }

Appendix B. Underreporting of Unit Trains¹⁸¹

B.1 Description

Applicants claim on page 37 of their Amended Operating Plan, “For trains that operate on demand rather than in accord with set schedules, the Operating Plan Team analyzed data on actual CP and KCS on demand trains operated during early 2021,” and in a footnote below elaborate that “In both cases, the period analyzed was the most recent three-month period at the time of the study (February-May for KCS, March-June for CP).”¹⁸² For KCS segments, this is a 93-day period of traffic through which they derived their bulk trains per day, and for CP segments, a 90-day period of traffic served the same function.

However, upon investigation, I find that these time periods understate actual train counts in some cases. In addition, for the bulk trains examined, train weights are also undervalued in the spreadsheet used to compute line segment densities.¹⁸³ This combination of understated train counts and undervalued train weights leads to significantly lower and misleading tonnage for these bulk trains. Below I highlight three separate cases where I find this to be true.

B.2 {{ }} trains traveling from/to {{ }}, IL

Based on the 93-day period Applicants examine for train traffic on KCS lines, there are {{ }} unit {{ }} trains that travel either from or to {{ }}, IL.¹⁸⁴ This amount suggests {{ }} unit {{ }} trains per day travel to or from {{ }}, IL (or about {{ }} trains per month). Using the average base train weight post-calibration for the

¹⁸¹ See work papers for this statement “HC – Comparing Bulk Trains – 2019 Waybill vs. Applicant Filing.xlsx” for how each value in Appendix B was derived.

¹⁸² CP-KCS Amended Operating Plan, p. 37.

¹⁸³ Work paper 24.1.1.9-Trains Per Day and Gross Ton Miles.xlsx.

¹⁸⁴ Work paper 24.1.1.3.12-TPD Bulk Base KCS.xlsx.

{{ }}, IL – {{ }}, IL segment of {{ }} tons¹⁸⁵ provides an annual gross tonnage of {{ }} million tons.

Looking at raw waybill data, there are {{ }} carloads of unit {{ }} that travel to or from {{ }}, IL in the full year 2019.¹⁸⁶ I calculated that the average weight of a unit {{ }} car on the {{ }}, IL – {{ }}, IL segment is {{ }} tons based on the mix of loaded and empties,¹⁸⁷ meaning that actual 2019 gross tonnage for {{ }} trains traveling to or from {{ }}, IL is {{ }} million tons. Assuming that {{ }} trains in the {{ }} subdivision have on average {{ }} cars per train,¹⁸⁸ this would also mean that {{ }} {{ }} trains per days (or {{ }} {{ }} trains per month) travel to or from {{ }}, IL.

Applicants' assumptions regarding both train traffic and train weight clearly undervalue tonnage and train counts, understating annual tonnage by {{ }} million tons ({{ }}% understatement) and trains per month by {{ }} trains ({{ }}% understatement).

Exhibit B-1: Comparing actual 2019 waybill data to Applicants' computation of "2019 Base Tonnage" by line segment for Applicants' proposed density data for {{ }} trains traveling to/from {{ }}, IL

	Actual 2019 Waybill data	CP's Amended Operating Plan	Absolute Difference	Percent understatement
Carloads for full 2019 year	{{ }} ¹⁸⁹	n/a		
Carloads per train	{{ }} ¹⁹⁰	n/a		
Train count for examined 3-month period	n/a	{{ }} ¹⁹¹		

¹⁸⁵ Work paper 24.1.1.9-Trains Per Day and Gross Ton Miles.xlsx.

¹⁸⁶ Data from FD 36500 – Work Paper – HC – 2019_CONSOLIDATED_CPKCS_DATA_MASTER.txt aggregated by total carloads per origin, destination, railroad, traffic category.

¹⁸⁷ Data from FD 36500 – Work Paper – HC – 2019_CONSOLIDATED_CPKCS_DATA_MASTER.txt aggregated by total carloads per origin, destination, railroad, traffic category.

¹⁸⁸ Work paper 24.1.1.3.2.3-KCS KCSM Bulk Trains Per Day by Subdivision.xlsx.

¹⁸⁹ Data from FD 36500 – Work Paper – HC – 2019_CONSOLIDATED_CPKCS_DATA_MASTER.txt aggregated by total carloads per origin, destination, railroad, traffic category.

¹⁹⁰ Work paper 24.1.1.3.2.3-KCS KCSM Bulk Trains per Day by Subdivision.xlsx.

¹⁹¹ Work paper 24.1.1.3.12-TPD Bulk Base KCS.xlsx.

Trains per day	{ }	{ }		
Trains per month	{ }	{ }	{ } trains	{ }%
Average weight per carload	{ } ¹⁹²	n/a		
Average weight per train	{ }	{ } ¹⁹³	{ } tons	{ }%
Base MGT	{ }	{ }	{ } tons	{ }%

B.3 { } trains traveling from/to { } in { }, TX

Based on the 93-day period CP-KCS examines for train traffic on KCS lines, there are { } { } trains that travel either from or to the { } in { }, TX.¹⁹⁴ This amount suggests { } { } trains per day travel to or from { } (or about { } trains per month). Using the average base train weight post-calibration for the Greenville, TX Shreveport, LA segment of { } tons¹⁹⁵ provides an annual gross tonnage of { } million tons.

Looking at raw waybill data, there are { } carloads of { } that travel to or from { } in the full year 2019.¹⁹⁶ For these trains, I calculated that the average weight of a { } car on the Greenville, TX Shreveport, LA segment is { } tons based on the mix of loads and empties,¹⁹⁷ meaning that actual 2019 gross tonnage for { } trains traveling to or from { } is { } million tons. Assuming that { } trains in the Greenville subdivision have on average { } cars per train,¹⁹⁸ this would mean that { } { }

¹⁹² Using the actual split of loaded and empty cars from 2019 waybill data, with the assumptions that average empty cars weigh 35 tons and average loaded cars 140 tons.

¹⁹³ Work paper 24.1.1.9-Trains Per Day and Gross Ton Miles.xlsx.

¹⁹⁴ Post-calibrated base average train weight (Column BD) from Work paper 24.1.1.3.12-TPD Bulk Base KCS.xlsx.

¹⁹⁵ Work paper 24.1.1.9-Trains Per Day and Gross Ton Miles.xlsx.

¹⁹⁶ Data from FD 36500 – Work Paper – HC – 2019_CONSOLIDATED_CPKCS_DATA_MASTER.txt aggregated by total carloads per origin, destination, railroad, traffic category.

¹⁹⁷ Data from FD 36500 – Work Paper – HC – 2019_CONSOLIDATED_CPKCS_DATA_MASTER.txt aggregated by total carloads per origin, destination, railroad, traffic category.

¹⁹⁸ Work paper 24.1.1.3.2.3-KCS KCSM Bulk Trains Per Day by Subdivision.xlsx.

trains per days (or {{ }} {{ }} trains per month) travel to or from the {{ }}.

Applicants by their assumptions of both train traffic and train weight clearly undervalue tonnage and train counts, understating annual tonnage by {{ }} million tons ({{ }}% understatement) and trains per month by {{ }} trains ({{ }}% understatement).

Exhibit B-2: Comparing actual 2019 waybill data to Applicants' computation of "2019 Base Tonnage" by line segment for Applicants' proposed density data for {{ }} trains traveling to/from {{ }}, TX

	Actual 2019 Waybill data	CP's Amended Operating Plan	Absolute Difference	Percent understatement
Carloads for full 2019 year	{{ }} ¹⁹⁹	n/a		
Carloads per train	{{ }} ²⁰⁰	n/a		
Train count for examined 3-month period	n/a	{{ }} ²⁰¹		
Trains per day	{{ }}	{{ }}		
Trains per month	{{ }}	{{ }}	{{ }} trains	{{ }}%
Average weight per carload	{{ }} ²⁰²	n/a		
Average weight per train	{{ }}	{{ }} ²⁰³	{{ }} tons	{{ }}%
Base MGT	{{ }}	{{ }}	{{ }} tons	{{ }}%

B.4 Unit petroleum trains traveling through Sabula, IA to Airline Jct, MO

Based on the 90-day period Applicants examine for train traffic on CP lines, there are {{ }} unit petroleum trains that travel through Sabula, IA and then through Airline Jct, MO.²⁰⁴ This amount suggests {{ }} unit petroleum trains per day travel on this line (or about {{ }} trains per month). Taking the average base train weight post-calibration for all nine

¹⁹⁹ Data from FD 36500 – Work Paper – HC – 2019_CONSOLIDATED_CPKCS_DATA_MASTER.txt aggregated by total carloads per origin, destination, railroad, traffic category.

²⁰⁰ Work paper 24.1.1.3.2.3-KCS KCSM Bulk Trains per Day by Subdivision.xlsx.

²⁰¹ Work paper 24.1.1.3.12-TPD Bulk Base KCS.xlsx.

²⁰² Using the actual split of loaded and empty cars from 2019 waybill data, with the assumptions that average empty cars weigh 21 tons and average loaded cars 143 tons.

²⁰³ Post-calibrated base average train weight (Column BD) from Work paper 24.1.1.3.12-TPD Bulk Base KCS.xlsx.

²⁰⁴ Work paper 24.1.1.3.12-TPD Bulk Base CP.xlsx.

segments between Sabula, IA and Airline Jct, MO and their weighted average using segment miles provides an average train weight on this line of {{ }} tons,²⁰⁵ translating to an annual gross tonnage of {{ }} million tons.

Flowing trains on MultiRail using raw waybill data indicates that {{ }} carloads of unit train petroleum traveled between Sabula, IA and Airline Jct, MO in full-year 2019.²⁰⁶ For this traffic, I calculated that the average weight of a unit train petroleum car on all these segments is {{ }} tons,²⁰⁷ meaning that actual 2019 gross tonnage for unit petroleum trains traveling through Sabula to Airline Jct is {{ }} million tons. Assuming that unit petroleum trains in the seven subdivisions have on average {{ }} cars per train,²⁰⁸ this would also mean that {{ }} unit petroleum trains per days (or {{ }} unit petroleum trains per month) travel between Sabula, IA and Airline Jct, MO.

Applicants' assumptions regarding both train traffic and train weight clearly undervalue tonnage and train counts, understating annual tonnage by {{ }} million tons ({{ }}% understatement) and trains per month by {{ }} trains ({{ }}% understatement).

²⁰⁵ Work paper 24.1.1.9-Trains Per Day and Gross Ton Miles.xlsx.

²⁰⁶ Data from FD 36500 – Work Paper – HC – 2019_CONSOLIDATED_CPKCS_DATA_MASTER.txt aggregated by total carloads per origin, destination, railroad, traffic category.

²⁰⁷ Data from FD 36500 – Work Paper – HC – 2019_CONSOLIDATED_CPKCS_DATA_MASTER.txt aggregated by total carloads per origin, destination, railroad, traffic category.

²⁰⁸ Section 3.5 in _FD 36500 Work Paper HC Trains Per Day – Methodology, p. 7.

Exhibit B-3: Comparing actual 2019 waybill data to Applicants' computation of "2019 Base Tonnage" by line segment for Applicants' proposed density data for petroleum trains traveling through Sabula, IA to Airline Jct, MO

	Actual 2019 Waybill data	CP's Amended Operating Plan	Absolute Difference	Percent understatement
Carloads for full 2019 year	{ } ²⁰⁹	n/a		
Carloads per train	{ } ²¹⁰	n/a		
Train count for examined 3-month period	n/a	{ } ²¹¹		
Trains per day	{ }	{ }		
Trains per month	{ }	{ }	{ } trains	{ }%
Average weight per carload	{ } ²¹²	n/a		
Average weight per train	{ }	{ } ²¹³	{ } tons	{ }%
Base MGT	{ }	{ }	{ } tons	{ }%

²⁰⁹ Data from FD 36500 Work Paper HC 2019_CONSOLIDATED_CPKCS_DATA_MASTER.txt aggregated by total carloads per origin, destination, railroad, traffic category.

²¹⁰ Section 3.5 in _FD 36500 Work Paper HC Trains Per Day Methodology, p. 7.

²¹¹ Work paper 24.1.1.3.11-TPD Bulk Base CP.xlsx.

²¹² Assuming a 50/50 split of empties and loaded with empties weighing 40 tons and loaded weighing 140 tons.

²¹³ Post-calibrated base average train weight (Column BD) from Work paper 24.1.1.3.12-TPD Bulk Base KCS.xlsx.

Appendix C. Previously Cited Concerns Remain Valid

I also have been asked to review and comment on whether the Applicants' Amended Operating Plan submitted on May 13, 2022²¹⁴ substantially changed any of the comments I previously made in my first Verified Statement submitted as part of CN's comments on February 28, 2022.²¹⁵ In addition to the lack of an identifiable base year for the operating plan and to the misleading tonnage and train counts outputs that result from Applicants' use of disparate data and convoluted modeling logic, which I detailed above, I find that the Amended Operating Plan submitted by CP-KCS is also fundamentally flawed and unreliable for the reasons I explained in my first Verified Statement. Exhibit C-1 below highlights some of the additional issues I had originally identified and explains the key impacts (if any) of the May 13 submission on my original conclusions.

Exhibit C-1: Additional findings from my February 28, 2022 Verified Statement and impacts of the May 13 Submission by CP-KCS

Issue	Original Feb 28 findings ²¹⁶	Impact of the May 13 submission
Disconnect between the Operating Plan in MultiRail and the "System Model" that drives costing and other metrics	- Applicants ignored the outputs of their MultiRail operations modeling and instead used the outputs of a simplistic spreadsheet model (which they call "System Model" or "Cost Metrics Model") to calculate the merged railroads' operating metrics and expenses - Because of this, Applicants failed to generate a reliable set of operating statistics based on a unified and rigorous operations planning process, resulting in a fatally flawed operating plan and operating expense evidence	- Operating metrics and expenses are still based on the same simplistic spreadsheet model; the impacts of this flawed approach which were highlighted in my first VS are still valid - CP-KCS made a correction to the Freight Car Miles base data used in the "Cost Metrics Model," resulting in an increase of { } percent (from { } to { }) in the initial Freight Car Miles. The reason provided for this change is that CP had failed to include the Soo Line in the figures for their original submission.²¹⁷ The fact that this error occurred and was not detected by CP-

²¹⁴ STB Finance Docket 36500, Canadian Pacific Railway Limited, et al. – Control – Kansas City Southern, et al. – Amended Operating Plan (Exhibit 13), Verified Statement of Raymond A. Elphick and John F. Orr. May 13, 2022.

²¹⁵ Van Dyke First Verified Statement.

²¹⁶ Van Dyke First Verified Statement.

²¹⁷ See FD 36500 – Work Paper – HC – Cost Metrics Growth Model _ Base Year 2019.xlsx (October 2021 submission) vs. 24.1.1.5-Cost Metrics Growth Model.xlsx (May 2022 amended submission). In tab "Model", CP-KCS provide an explanation for the significant change in Freight Car Miles.

Issue	Original Feb 28 findings ²¹⁶	Impact of the May 13 submission
Use of fragmented, error-prone approach to developing pre- and post-transaction operating plans that does not yield reliable results	Applicants used a complex approach using different time periods for traffic, modeled unit trains outside of MultiRail, largely ignored MultiRail and traffic when estimating tonnages, did not use a bottom-up approach, but instead forced the operating plan to conform to external estimates of operating metrics, and applied a convoluted calibration process in a failed attempt to make the results look like they were related to the base year	KCS highlights the risks and flaws associated with the disconnect between data sources and the use of an unreliable planning process, as I highlighted in my first VS - Nothing fundamental changed in the May 13 submission, including use of disjointed data sources, modeling of unit trains outside of MultiRail, and the use of “calibration” factors to try to force the answers to conform with external CP-KCS estimates of key metrics - Some details changed, such as hand fixes to some train counts and line density values, changes in the formatting of yard handling reports, elimination of organic growth from the operating plan metrics, clarification that unit trains were taken from early 2021, not October 2020, etc. - Some things were made more complex, such as the introduction of a new spreadsheet to estimate segment level tonnages that also relies on the original spreadsheet for part of the calculations
Flawed traffic due to use of one-month traffic sample from other than the base year, and 2021 to obtain unit trains; confusion over role of organic growth	- Use of a fractured approach to developing traffic that resulting in the need to use a complex and error prone analysis process (further explored in this VS) - Applicants implied that they included organic growth in their MultiRail planning process but failed to include organic growth in their costing process - Organic growth appears to be significantly overestimated relative to the historic record, and ignored differences between merging railroads	- Traffic issues remain and are not corrected in any way in Amended Operating Plan filing; sourcing of data has been somewhat clarified - CP-KCS has clarified that it is excluding organic growth from the Operating Plan’s base numbers, and has somewhat corrected prior errors in the application of organic growth factors - Continue to use very high, systemwide growth factors, despite identified carrier specific growth rates - Cost Metrics Model outputs and resulting financial projections are largely unchanged and still do not include organic growth
Lack of modeling of yard switching activities in the Cost Metrics Model	There is no mention of any activity measures related to yard switching activity, including intermediate switching, block swaps, or intermodal lifts in the Applicants’ system model, and nothing indicates that such measures were considered in developing post-merger operating expenses	No change
Yard activity measures do not	Main comparison reports for yards are not between the base period and the	Most issues remain lack of comparisons between base and post-transaction volumes,

Issue	Original Feb 28 findings ²¹⁶	Impact of the May 13 submission
comply with filing requirements and are deceptive	post-transaction case. Instead CP-KCS presents comparisons of base to “optimized plan” and then “optimized plan” to post-transaction. Direct comparisons between base and post-transaction cases are not provided • Not all yards experiencing a 20% change in handlings are detailed • Car counts are deceptively low for intermodal facilities, due to treating all intermodal cars identically, independent of the number of platforms • Bulk traffic and block swap volumes are not detailed in main filing	except in Appendix T, and the Appendix T numbers are different from the cars handled numbers in the main operating plan yard volumes • Bulk traffic appears to be included in Appendix T yard volumes, but not in main operating plan yard volumes, and no explanation of the differences appears to be provided • Issues remain with respect to omitting block swaps, counting of intermodal cars, handling of bulk volumes, etc.
Exclusion of local trains	• Due to a “25% rule,” local trains that touched fewer than 25% of the nodes on a subdivision were excluded from the train counts, independent of the distance traversed	• Because the train counts did not change in the Amended Operating Plan filing, it is my assumption that this rule still applies. CP-KCS failed to include the methodology document that detailed this rule in the updated work papers (along with a number of other methodology documents)
Exact traffic used in MultiRail is unclear	• While a MultiRail traffic table was provided in the work papers, it was described as a sample file, and the contents did not appear to match the statistics for either the pre- or post-transaction cases	• Two new MultiRail traffic tables were provided in the new work papers, but no explanation was provided as to their contents. All references to work paper file names were removed from the methodology document detailing how the traffic was prepared
Variety of specific errors identified in the traffic density and other data published as part of the operating plan	• Examples included incorrect tonnage on the Sabula-Airline Junction line, missing intermodal traffic to/from Lazaro Cardenas, impact of the “25% rule” discussed above on train counts, issues with yard counts as discussed above, and yards with significant “balance” issues between originating and terminating traffic • Also noted other issues with bad line densities, capacity issues on the NS/CSX haulage/trackage rights arrangements, and that October 2020 was not representative of full-year 2019 traffic volumes	• While the details have changed, all of these issues remain • Problems with the Sabula-Airline Junction tonnages are extensively detailed in this VS • CP-KCS acknowledges that the Lazaro Cardenas traffic is missing in their Amended Operating Plan • See prior entries in this table with respect to the “25% rule” and deceptive yard activity counts • I believe the issues with yard balance remain unaddressed • Other cited issues also remain, including density issues on other lines (as detailed in this VS), likely capacity issues with the NS/CSX services, and the non-representative nature of the October 2020 traffic
Applicants attempt to present metrics as	• Table 2 in the original operating plan filing provides a variety of statistics that	• In the Amended Operating Plan filing, the same data elements are presented in Table 3

Issue	Original Feb 28 findings ²¹⁶	Impact of the May 13 submission
arising from the operating plan that actually come from their “System Model” or other sources²¹⁸	are either sourced from the “System Model” or other analyses not tied to the operating plan²¹⁹ Original filing explicitly stated that the “growth plan” included organic growth²²⁰	- The contents of this table remain driven by the “System Model” and are not derived from the operating plan “Running Car Miles” changed due to the omission of the Soo Line in prior statistics, demonstrating how this number was not sourced from MultiRail / the operating plan, but from other external models - Intermediate handlings also changed significantly, possibly due to the Soo Line issue - References to the inclusion of organic growth appear to have been removed – and may have been in error in the original filing

The correction made by CP-KCS to base year Freight Car Miles, from {{ }} to {{ }}, a {{ }} percent change, highlights the degree to which operating statistics and the associated expenses reported by the Applicants are unreliable as a result of their disjointed and flawed modeling approach. Although Applicants do not mention this correction in the main body of their Amended Operating Plan, they state in the associated work paper that the correction is due to the “inclusion of Soo Line omitted in original [sic].”²²¹ The reason why the Soo Line (the primary US railroad subsidiary of CP) was omitted from the calculation in the original Operating Plan is that CP-KCS used “CP internal files similar to R-1” [sic].²²² Even though this specific instance was corrected in the May submission, the fact that such a considerable discrepancy could go unnoticed in the original Application highlights the degree to which reported operating metrics are disconnected from the Operating Plan and its outputs. Also,

²¹⁸ CN’s Comments on Application and Request for Conditions, February 28, 2022, p. 152.

²¹⁹ Application, Vol. 2, p. 287, Exhibit 13 Table 2.

²²⁰ Application, Vol 2., p. 286, ¶85.

²²¹ See FD 36500 – Work Paper – HC – Cost Metrics Growth Model Base Year 2019.xlsx (October 2021 submission) vs. 24.1.1.5-Cost Metrics Growth Model.xlsx (May 2022 amended submission). In tab “Model”, CP-KCS provide an explanation for the significant change in Freight Car Miles.

²²² See FD 36500 – Work Paper – HC – Cost Metrics Growth Model Base Year 2019.xlsx (October 2021 submission). Tab “Model”, cell K19.

tellingly, this change has had nearly zero impact on overall model outputs (operating metrics and operating expenses), when I would expect such a change to have flow through impacts in a properly developed operating plan. This is precisely *because* model outputs are not connected in any meaningful way to railroad operating metrics, as I have stated previously.

In conclusion, and in addition to my findings as presented in this Verified Statement, the Amended Operating Plan submitted on May 13, 2022 by CP-KCS does not address the majority of my comments submitted in my first Verified Statement of February 28, 2022 in a meaningful way.

VERIFICATION

I, Carl Van Dyke, declare under penalty of perjury that the foregoing information is true and correct. Further, I certify that I am qualified and authorized to file this statement.

Executed on this 9th day of June, 2022.



Carl Van Dyke

Exhibit 2

CN REPLY TO APPLICANTS' RESPONSE TO DECISION NO. 16

BEFORE THE
SURFACE TRANSPORTATION BOARD

STB Finance Docket No. 36500

ENTERED
Office of Proceedings
March 28, 2022
Part of
Public Record

CANADIAN PACIFIC RAILWAY LIMITED; CANADIAN PACIFIC RAILWAY
COMPANY; SOO LINE RAILROAD COMPANY; CENTRAL MAINE &
QUEBEC RAILWAY US INC.; DAKOTA, MINNESOTA & EASTERN
RAILROAD CORPORATION; AND DELAWARE & HUDSON RAILWAY
COMPANY, INC. – CONTROL – KANSAS CITY SOUTHERN, THE KANSAS
CITY SOUTHERN RAILWAY COMPANY, GATEWAY EASTERN RAILWAY
COMPANY, AND THE TEXAS MEXICAN RAILWAY COMPANY

CN REPLY TO APPLICANTS' RESPONSE TO DECISION NO. 16

Sean Finn
Olivier Chouc
CN
935 de La Gauchetière
Street West,
16th Floor
Montreal, QC H3B 2M9
CANADA

Kathryn J. Gainey
CN
601 Pennsylvania Ave,
NW
Suite 500, North
Building
Washington, DC 20004
(202) 347-7840
Kathryn.gainey@cn.ca

Raymond A. Atkins
Terence M. Hynes
Matthew J. Warren
Sidley Austin LLP
1501 K Street, N.W.
Washington, DC 20005
(202) 736-8000
ratkins@sidley.com

*Counsel for Canadian National Railway Company, Grand Trunk Corporation, and
CN's Rail Operating Subsidiaries*

Dated: March 28, 2022

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In *Decision No. 16* in this proceeding, the Board noted the “apparent inconsistency” between the segment-specific line density data in Exhibit 14 to the CP/KCS control Application (the “Exhibit 14 Density Data”) and the density data in a “Master Segment Table” that CP submitted to the Board’s Office of Environmental Analysis (“OEA”) just one day before the Application was filed (the “OEA Density Data”). The Board directed Applicants to explain this discrepancy, and “to indicate which *2019 baseline data* should be used in analyzing the environmental and transportation impacts of the Transaction.”¹

As explained below, Applicants’ March 21 response confirms that there is only one set of full calendar year 2019 baseline data before the Board—the Exhibit 14 Density Data that was created in the normal course of business. Applicants publicly explain for the first time that they have not used that full year 2019 Exhibit 14 Density Data for *anything* in their Application or in their responses to OEA’s requests for environmental information. Instead, Applicants relied exclusively on the OEA Density Data both in their Operating Plan and their environmental responses. Despite numerous representations that their density data was for the 2019 base year, however, Applicants now disclose that, in reality, the OEA Density Data is primarily derived from carload data in a *single* month (October) in a *different* year (2020). A subset of unit train data was taken from *other* months in 2019. Such a mash up of fragmented data from different years is plainly not the “full calendar year” for the 2019 base year required by the Board’s

¹ *Decision No. 16* at 3 (emphasis added).

2000 regulations.² Applicants should not be permitted to substitute the contrived and inaccurate OEA Density Data for the full year 2019 Exhibit 14 Density Data that they presented in their Application.

BACKGROUND

The Board plainly – and understandably – believed that Applicants had presented information in both the Exhibit 14 Density Data and the OEA Density Data for a *base year of 2019*. That is what Applicants have consistently represented to the Board and to the stakeholders, and indeed continue to represent today.

- In their Amended Notice of Intent to File Application submitted in September, Applicants specified that they “will use *the year 2019 as the base year* for purposes of the impact analyses to be included with the Application (which remains *the last full year* unaffected by the COVID pandemic for which data are available)”³ Applicants made the same representation in their original Notice of Intent filed in March.⁴
- In *Decision No. 3*, the Board adopted that choice to use 2019 as the base year for the impact analysis in this proceeding, as contemplated by the relevant regulation.⁵
- In submitting the OEA Density Data to the OEA on October 28th, Applicants explained that their transaction-related growth analyses “set

² 49 C.F.R. § 1180.8(a)(5) (2000).

³ See *Canadian Pacific Railway Ltd.—Control—Kansas City Southern, et al.*, STB Docket No. FD 36500, Amended Notice of Intent to File Application for Approval of Transaction Subject to 49 U.S.C. §§ 11323-25 (filed Sept. 15, 2021) at 3 (emphasis added).

⁴ See *Canadian Pacific Railway Ltd.—Control—Kansas City Southern, et al.*, STB Docket No. FD 36500, Notice of Intent to File Application for Approval of Transaction Subject to 49 U.S.C. §§ 11323-25 (filed Mar. 22, 2021) at 1.

⁵ See *Canadian Pacific Railway Ltd., et al.—Control—Kansas City Southern, et al.*, STB Docket No. FD 36500 (STB served April 21, 2021) at 3; 49 C.F.R. § 1180.4(b)(2)(ii) (2000).

2019—the last pre-pandemic year—as a starting point.”⁶ And they were repeatedly explicit in representing that the “Master Segment Table” showed baseline traffic for 2019.⁷ This is plainly the Board’s understanding of that submission.⁸

- A subsequent letter from Applicants to OEA similarly reiterated that “[a]s it did in response to Information Request No. 1, CP is providing three data sets: *actual numbers from 2019 (the last pre-pandemic year)....*”⁹
- Later, Applicants purported to “correct” CN’s assessment of anticipated traffic changes on the KCS Springfield Line through a table that substituted OEA Density Data for Exhibit 14 Density Data and labeled the OEA Density Data as reflecting “2019 ‘Base Plan’ Gross Tons”.¹⁰
- In their most recent filing, Applicants represent “all comparisons between pre-Transaction (base year 2019) traffic and post-Transaction traffic levels should begin with the *2019 ‘Base’ data* reflected both in the Master Segment Table provided to OEA [*i.e.*, the OEA Density Data] and in the workpapers that accompanied the Application (hereinafter the ‘Operating Plan Base Densities’)”¹¹

⁶ See Letter dated October 28, 2021 from Applicants to Danielle Gosselin, FD 36500, at 2.

⁷ *Id.* at 2 (“More information, *including 2019 baseline traffic*, appears in the master segment table.”) (emphasis added); *id.* at 2 (“The *2019 baseline traffic* and other information appears in the master segment table.”) (emphasis added); *id.* at 6 (“Like the other tables CP and KCS are providing, *these tables show 2019 traffic....*”) (emphasis added).

⁸ *Decision No. 16* at 2 (“CP’s submission includes a ‘Master Segment Table,’ which contains, among other things, 2019 baseline GT/M data for CP and KCS lines.”).

⁹ See Letter dated December 20, 2021 from Applicants to Danielle Gosselin, FD 36500, at 2 (emphasis added).

¹⁰ See *Canadian Pacific Railway Ltd.—Control—Kansas City Southern, et al.*, STB Docket No. FD 36500, Applicants’ Reply to Canadian National’s Description of Anticipated Responsive Application (filed Jan. 28, 2022) at 9, Table 1.

¹¹ See *Canadian Pacific Railway Ltd.—Control—Kansas City Southern, et al.*, STB Docket No. FD 36500, Applicants’ Response to Decision No. 16 (filed Mar. 21, 2022) at 2.

- Applicants’ proposed “Supplement” to the Exhibit 14 traffic density information designates the OEA Density Data Operating Plan Base Densities as the “Operating Plan Base (2019)”.¹²
- Applicants also present a new “Summary of Pertinent Density Data” which they represent as showing “in Column (1), the *2019 Operating plan Base Density* (as previously reported in the Master Segment Table and the Density Data Workpaper).” Column (1) of that Summary is, correspondingly, titled “2019 Base MGTs”.¹³

All comments on the Application and requests for conditions were due on February 28, 2022.¹⁴ CN submitted its Comments and Requests for Conditions, including a Responsive Application seeking divestiture of the Springfield Line to CN, which relied on the more accurate and reliable Exhibit 14 Density Data.

Six online public scoping meetings were held during the scoping period for the Board’s environmental review. Comments on scoping were due on January 3, 2022, and the OEA issued its Final Scope of Study on February 18, 2022, with the plan to publish the Draft Environmental Impact Statement in the spring. The Board’s *Decision No. 16* has suspended the procedural schedule pending further order of the Board while the Board addresses the two inconsistent sets of density data submitted by Applicants in the case.

¹² *Id.*, Appendix A.

¹³ *Id.* at 3 and Appendix B (emphasis added).

¹⁴ Pursuant to Decision No. 15, served February 25, 2022, the time for the Commuter Rail Division of the Regional Transportation Authority (Metra) to file comments was extended to March 15, 2022.

LEGAL STANDARD

As part of its review to determine whether to approve Applicants' major merger, the Board analyzes the projected transportation and environmental impacts of the merger. A key element in this analysis is density data, which enables the Board to assess the impacts that the proposed merger would have on existing volumes on particular line segments. The Board's 2000 regulations require Applicants to submit a "full calendar year" of density data for the base year (here, 2019).¹⁵ The Board's regulations also state that the Operating Plan should include "the anticipated traffic density and general categories of traffic (including numbers of trains) on all main and secondary lines in the system."¹⁶

Accurate base year density information, along with base year trains per day data, are also the foundation for the Board's public study of the anticipated environmental impacts of the proposed merger, so that the Board may determine if the relevant thresholds will be triggered, including merger-related increases in trains per day, rail traffic measured in gross ton miles annually, or yard activity, and the public may comment on the potential impacts.¹⁷ In this case, the OEA is preparing an Environmental Impact Statement. National Environmental Policy Act (NEPA) regulations impose an obligation to "ensure the professional integrity,

¹⁵ 49 C.F.R. § 1180.8(a)(5)(2000) ("Data shown in the density chart shall be for the latest available full calendar year preceding the filing of the application.").

¹⁶ 49 C.F.R. 1180.8(a)(1) (2000).

¹⁷ *See, e.g.*, 49 C.F.R. § 1105.7(e)(5)(i)(A) & (e)(5)(ii)(A) (requiring data on expected increase in rail traffic, measured by gross ton miles).

including scientific integrity, of the discussions and analyses in environmental documents” and to utilize “reliable existing data and resources.”¹⁸ This requirement exists to advance NEPA’s purpose to “ensure informed decision making by Federal agencies.”¹⁹

ARGUMENT

I. APPLICANTS’ CONTRIVED OEA DENSITY DATA ARE NOT FOR FULL CALENDAR YEAR AND NOT FOR 2019 AND NEITHER ARE THEIR OEA TRAINS PER DAY DATA.

In their March 21 response, Applicants attempt to leave the impression that the OEA Density Data (and, in turn, the Operating Plan Base Densities that form the basis of the Applicants’ entire Operating Plan) reflect traffic density for the base year of 2019. But that is simply not true. As Applicants eventually admit on page 9 of their filing, the OEA Density Data is ***not*** a full calendar year of 2019 traffic data, but rather a constructed data set based on a *single month* from a *different year* – October of 2020. Almost as an afterthought, Applicants explain that in reality they “built the Base Operating Plan on . . . a *representative ‘peak’ period of traffic data from October 2020.*”²⁰ Applicants’ highly-confidential workpapers shed further light on this remarkable choice, which Applicants made even though comparable data for 2019 was available: {{

}}²¹

¹⁸ 40 C.F.R. § 1502.23; *Marsh v. Oregon Nat. Res. Council*, 490 U.S. 360, 361 (1989).

¹⁹ See 40 C.F.R. § 1500.1(b).

²⁰ Applicants’ Response to Decision No. 16 at 9 (emphasis added).

²¹ See CPKC WP-HC-Traffic File – Methodology, at 3 (emphasis added).

Thus, the OEA Density Data – and Applicants’ entire Operating Plan – are based on carload and intermodal traffic volumes for a single month in 2020, rather than CP’s and KCS’s actual full year 2019 traffic.²² To make matters worse, Applicants used *different* months to develop their Base Year Operating Plan for unit train (as opposed to carload) traffic data – October 2019 for CP and a different, unidentified month for KCS – although Applicants have nowhere addressed or acknowledged this in their pleadings at the Board nor in their response to the Board’s *Decision No. 16*.²³ And Applicants constructed their Base Year Operating Plan using the blocking and train service plans in effect on CP and KCS during yet *another* time period – the 1st Quarter of 2021.²⁴ The result is a contrived set of data from multiple inconsistent and unrepresentative periods that is utterly at odds with Applicants’ repeated representations to the Board that the Base Year for their Operating Plan would be 2019.

Applicants took a similar approach in contriving the base year trains per day numbers submitted to OEA for each line segment (“OEA Trains Per Day Data”). Applicants labeled their OEA Trains Per Day Data for CP and KCS line segments as “base” for 2019.²⁵ However, those numbers were again constructed on the basis of traffic data from various different one-month periods in 2020 and 2019 and

²² See CN Comments at 24-25; Elphick/Orr Deposition at 157:13 – 157:21.

²³ See Second Verified Statement of Carl Van Dyke attached as Exhibit 1 (“Second Van Dyke Verified Statement”) at 4-5.

²⁴ See Applicants’ Response to Decision No. 16 at 9 (“Applicants built the Base Operating Plan on KCS’s early 2021 operational design”).

²⁵ See EI-31353 (Applicants’ submission of “base” trains per day).

operating plan data from the 1st Quarter of 2021.²⁶ Whatever trains are included in the OEA Trains Per Day Data, it does not reflect daily trains from the 2019 base year.

Applicants now try to claim that their Application “spells out” these methodological choices, citing solely to a single sentence in a footnote that appears in the seventy-fifth paragraph of their Operating Plan, 283 pages into Volume 2 of the Application.²⁷ Here is what that sentence says:

Because of changes in KCS’s train plan from 2019 to 2020, particularly within Mexico, we made use of KCS traffic flow data for the peak month of October 2020 to provide a better match between the train plan design and the way the traffic actually flowed over the network.²⁸

From this, interested parties were apparently supposed to conclude that all of Applicants’ representations that their traffic density data represented a base year of 2019 were false, and that Applicants were relying on a contrived set of traffic density data primarily derived from a seemingly random individual month in a wholly different year. Applicants’ current assertions conflict with the explanation in the Operating Plan where Applicants explicitly claimed that the Exhibit 14 Density Data was a guide to assessing projected changes to traffic density.²⁹

²⁶ Second Van Dyke Verified Statement at 10-11.

²⁷ Applicants’ Response to Decision No. 16 at 9 (citing Application, Exhibit 13 at ¶ 75 n.4 (Vol. 2 at 2-283)).

²⁸ See STB Finance Docket 36500, *Canadian Pacific Railway, et. al.—Control—Kansas City Southern, et al.*, Application (filed Oct. 29, 2021) at Vol. 2, p. 2-283 n.4.

²⁹ See Application Vol. 2 at 308 (“The Traffic Density Charts contained in Exhibit 14 show the projected changes in train volumes, gross ton-miles, train miles and traffic density on the network.”).

Against all of this, Applicants’ current “regret that the Application did not state this more clearly” is an understatement of considerable proportion.³⁰ And it does nothing to solve the problem that the OEA Density Data submitted by Applicants is not full calendar year data for the base year 2019. Indeed, as Applicants concede, the only full calendar year data for the base year 2019, which was generated in the normal course of business, is the Exhibit 14 Density Data.

II. APPLICANTS’ CONTRIVED DENSITY DATA SUBMITTED TO THE BOARD’S ENVIRONMENTAL OFFICE AND USED IN THEIR OPERATING PLAN ARE FATALLY FLAWED.

The Second Van Dyke Verified Statement attached as Exhibit 1 shows definitively that Applicants’ OEA Density Data are not an accurate or reliable source for segment-specific line density values for the base year of 2019 that could be used to assess the transportation or environmental impacts of the proposed merger. As that statement explains, for a variety of reasons Applicants’ traffic volumes during 2020 decidedly are *not* representative of their pre-COVID (2019) traffic and operations.³¹

Nevertheless, Applicants now double down on their fatally flawed Operating Plan methodologies. They urge the Board to base its analysis (and OEA’s environmental review) of the proposed control transaction on OEA Density Data generated using those same methodologies, rather than the Exhibit 14 Density Data that accurately reflect CP’s and KCS’s 2019 real world full-year traffic and

³⁰ Applicants’ Response to Decision No. 16 at 3.

³¹ See Second Van Dyke Verified Statement at 4-6. See also CN Comments, First Van Dyke Verified Statement, Sections 5.2, 5.3.1, 6.3.1.

operations.³² Applicants offer several reasons why the OEA Density Data should be preferred. All lack merit.

First, Applicants suggest that the OEA Density Data are superior because those density values “exclude locomotive tons, whereas the CP, KCS and KCSM 2019 figures include that tonnage.”³³ However, like all Class I carriers, CP and KCS regularly report their U.S. system densities on both a “total gross tons” (with locomotives) and “trailing tons” (without locomotives) basis. Those density data can be found in the annual Analysis of Class I Railroads published by the Association of American Railroads (the “Annual Class I Analysis”). The Second Van Dyke Verified Statement sets forth the line density data reported by CP and KCS (with and without locomotive tons) for the Base Year (2019) as published in the Annual Class I Analysis.³⁴ As shown there, locomotive tons represented 7.4% of total gross ton miles for KCS in the U.S., and 5.6% of total gross ton miles for CP’s U.S. operations, during 2019.³⁵ As Mr. Van Dyke testifies, with this data, which are generated

³² Applicants acknowledge that the 2019 density figures developed in the ordinary course by CP and KCS were “appropriately included . . . in Exhibit 14.” Applicants’ Response at 4.

³³ Applicants’ Response at 7, ¶ 12.

³⁴ Second Van Dyke Verified Statement at 14-15; *see* Association of American Railroads, Analysis of Class I Railroads, 2019 (lines 700-704).

³⁵ *Id.*

annually in the normal course of business, Applicants readily could have developed consistent full-year 2019 density values for CP and KCS.³⁶

Second, Applicants purported to validate the OEA Density Data by “calibrat[ing] the modeled GTMs [Gross Ton Miles] for CP and KCS/KCSM [generated by their Operating Plan methodologies] to the system-wide GTMs actually moved on those railroads in 2019.”³⁷ While Applicants portray this “calibration” as a statistical demonstration that the OEA Density Data accurately estimate Applicants’ 2019 segment-specific density values, that exercise is essentially meaningless. In reality, Applicants’ “calibration” consisted of nothing more than arbitrarily increasing (for CP and KCS) or decreasing (for KCSM) the *aggregate system-wide GTMs* generated by their Operating Plan by a series of factors designed to make the OEA Density Data as a whole “match” each Applicant carrier’s actual 2019 *aggregate, system-wide GTMs*. Rather than applying a consistent adjustment to the historic density values for each carrier, Applicants jerry-rigged the result by utilizing different factors to ensure that the OEA Density Data matched each railroad’s actual 2019 *system-wide density figures*.³⁸

As Mr. Van Dyke explains, while system-wide data such as train-miles and crew starts are useful for certain purposes (*e.g.* costing), the Board’s evaluation of

³⁶ While Applicants express certain other concerns regarding the quality of the KCS density data, they identify no such concerns with respect to the CP density values. Second Van Dyke Verified Statement at 14.

³⁷ Applicants’ Response at 9, ¶ 16.

³⁸ See Second Van Dyke Verified Statement at 6-7.

critical issues, including the feasibility of the Operating Plan and the need for additional track capacity to maintain fluid operations, and OEA's analysis of the environmental impacts of the proposed merger, all require *accurate segment-specific line density data*. Applicants' result-oriented attempt to make the OEA Density Data (in part from a single month in 2020) appear consistent, on an aggregate basis, with the CP, KCS and KCSM aggregate 2019 density values, does nothing to reconcile the massive disconnect between the OEA Density Data and Applicants' actual Base Year line densities on a line segment basis.

As *Decision No. 16* observed, that disconnect is, in many instances, substantial. For example, the Board compared the 2019 density for KCS's Kansas City – Slater, MO segment in Exhibit 14 generated by Applicants in the normal course of business (10.376 million average GTM/Mile) with the density for that segment in the OEA Density Data (5.83 million GTM/Mile), with the OEA Density Data only 56% of the tons reflected in the Exhibit 14 Density Data). Mr. Van Dyke benchmarked the OEA Density Data against Applicants' real world 2019 densities across the eight line segments that make up CP's Ottumwa – Davenport line, eight line segments constituting KCS's Springfield Line, 16 line segments included in KCS's main line between Kansas City, MO and Laredo, TX, and the two segments of KCS's Shreveport – Wylie, TX line. *In every case, Mr. Van Dyke identified inconsistency between the OEA Density Data and the Exhibit 14 full-year 2019 data.* The differences were both positive and negative, and were as great as 58.6% on the CP line, 99% on the Springfield Line, 38% on the Kansas City-Laredo line and 35%

on the Shreveport – Wylie line.³⁹ Mr. Van Dyke compared the 2019 density for KCS’s Godfrey to East St. Louis, IL segment in Exhibit 14 (5.10 million average GTM/mile, after adjusting for locomotive tons) with the density for that segment in the OEA Density Data (7.77 million GTM/mile), with the OEA Density Data tons 52% higher than the Exhibit 14 Density Data.⁴⁰ Mr. Van Dyke’s analysis provides incontrovertible proof that the OEA Density Data do not accurately reflect the actual 2019 segment-specific line densities across virtually the entire CP and KCS US networks. This is not a surprise given Applicants’ concession that the OEA Density Data is not a full calendar year of 2019 data and instead is constructed based primarily on a single month from October 2020.

Finally, the methodological choices made by Applicants further undermine the validity of both their Operating Plan and the OEA Density Data. Applicants intentionally omitted from their Base Year Operating Plan any train in their MultiRail model that did not traverse at least 25 percent of the stations on a subdivision.⁴¹ This methodological step rendered incomplete both the trains per day and the corresponding line densities in the Operating Plan. Because the OEA Density Data are the density values “generated as part of the Operating Plan work” (Applicants’ Response at 7, ¶ 11), the OEA Density Data are likewise incorrect.

³⁹ See Second Van Dyke Verified Statement at 15-24.

⁴⁰ See *id.* at 18.

⁴¹ See First Van Dyke Verified Statement at 24-25. See also FD 36500 – Workpaper – HC – Trains Per Day – Methodology.pdf (“The train must pass by at least 25% of the subdivision’s segment stations in order to be counted on it.”)

Applicants’ claim that the Operating Plan “assign[ed] GTMs based on the number of miles that a gross ton is moved across the segment” (Applicants’ Response at 7, ¶ 13) is simply not true. Applicants’ Operating Plan methodology applied an “all or nothing” rule that included any train (and the associated tons) that traversed more than 25% of the stations on a subdivision, and excluded entirely any train (and associated tons) that did not.⁴²

Applicants made the decision to designate 2019 as the Base Year for purposes of this proceeding, stating that “[2019] remains the last full year unaffected by the COVID pandemic for which data are available.”⁴³ In *Decision No. 3*, the Board adopted that choice.⁴⁴ Having made that choice, Applicants must present an Operating Plan and segment-specific line density data that accurately reflect CP’s and KCS’s actual 2019 traffic and operations, both in their Operating Plan and submissions to the OEA for environmental review. For the reasons discussed above and in the Van Dyke Verified Statements, the OEA Density Data are utterly inconsistent with Applicants’ historic real world experience during their chosen 2019 Base Year. By contrast, the Exhibit 14 Density Data represent the full-year 2019 segment-specific densities compiled by CP and KCS in the normal course of business. Accordingly, the Board should use the Exhibit 14 Density Data in its

⁴² See Second Van Dyke Verified Statement at 13.

⁴³ See *Canadian Pacific Railway Ltd.—Control—Kansas City Southern, et al.*, STB Docket No. FD 36500, Amended Notice of Intent to File Application for Approval of Transaction Subject to 49 U.S.C. §§ 11323-25 (filed Sept. 15, 2021) at 3.

⁴⁴ See *Canadian Pacific Railway Ltd., et al.—Control—Kansas City Southern, et al.*, STB Docket No. FD 36500 (STB served April 21, 2021) at 3.

evaluation of the likely operational and environmental impacts of the proposed CPKC merger.

The OEA Density Data does not conform to the Board's requirements of a full calendar year of base year density data. Nor does the OEA Trains Per Day Data represent actual daily train counts for the 2019 base. Fundamentally, Applicants do not address the consequences to those stakeholders who would not have had access to the highly confidential workpapers that begin to reveal these realities. Such stakeholders could not know or understand Applicants' methodology choices, including that (1) the Operating Plan was based on the OEA Density Data and not the Exhibit 14 Density Data, and (2) that neither the OEA Density Data nor the OEA Trains Per Day Data reflect 2019 base year data. Detailed disclosure, review and comment would be needed to understand the consequences of Applicants' failure to use 2019 base data for OEA Density Data and OEA Trains Per Day Data, in both the transportation and environmental aspects of this proceeding.

CONCLUSION

Applicants' OEA Density Data does not provide an adequate basis to assess the transportation or the environmental impacts of the proposed merger. The Exhibit 14 Density Data does include a full calendar year of data for the 2019 base year, but the Applicants did not use it in their Operating Plan or their submissions to the Board's environmental office. Applicants should not be permitted to substitute contrived and inaccurate OEA Density Data from different time periods that do not match the base year for the full year 2019 Exhibit 14 Density Data in

their Application. Doing so would conflict with the requirement in the Board's regulation that the operating plan be based on a "full calendar year" of density data for the 2019 base year and would jeopardize the foundation of any transaction or environmental review that purported to be based upon such inaccurate information.

Respectfully submitted,

Sean Finn
Olivier Chouc
CN
935 de La Gauchetière Street West,
16th Floor
Montreal, QC H3B 2M9
CANADA

Kathryn J. Gainey
CN
601 Pennsylvania Ave, NW
Suite 500, North Building
Washington, DC 20004
kathryn.gainey@cn.ca

/s/ Raymond A. Atkins

Raymond A. Atkins
Terence M. Hynes
Matthew J. Warren
Sidley Austin LLP
1501 K Street, N.W.
Washington, DC 20005
(202) 736-8000
ratkins@sidley.com

*Counsel for Canadian National Railway Company, Grand Trunk Corporation, and
CN's Rail Operating Subsidiaries*

Dated: March 28, 2022

CERTIFICATE OF SERVICE

I hereby certify that on this 28th day of March 2022, a copy of the foregoing CN Reply to Applicants' Response to Decision No. 16 was served by first class mail or email on the service list for Finance Docket No. 36500.

/s/ Matthew J. Warren
Matthew J. Warren

Exhibit 1

Second Verified Statement of Carl Van Dyke

**BEFORE THE
SURFACE TRANSPORTATION BOARD**

FINANCE DOCKET NO. 36500

**CANADIAN PACIFIC RAILWAY LIMITED; CANADIAN PACIFIC RAILWAY
COMPANY; SOO LINE RAILROAD COMPANY; CENTRAL MAINE & QUEBEC
RAILWAY US INC.; DAKOTA, MINNESOTA & EASTERN RAILROAD
CORPORATION; AND DELAWARE & HUDSON RAILWAY COMPANY, INC. –
CONTROL – KANSAS CITY SOUTHERN, THE KANSAS CITY SOUTHERN
RAILWAY COMPANY, GATEWAY EASTERN RAILWAY COMPANY, AND THE
TEXAS MEXICAN RAILWAY COMPANY**

CN REPLY TO APPLICANTS' RESPONSE TO DECISION NO. 16

PUBLIC VERSION

Second Verified Statement of Carl Van Dyke

March 28, 2022

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1. Qualifications

My name is Carl Van Dyke. I am a Senior Advisor to and a Partner Emeritus of Oliver Wyman, a global general management consulting firm with more than 60 offices in 31 countries. My office address is One University Square Drive, Suite 100, Princeton, NJ 08540. I have been engaged in the design, development, and application of software tools to model, evaluate, and improve the operations of railroads for more than 40 years. I previously sponsored a verified statement filed with CN's February 28, 2022 Comments which provides further details of my qualifications and resume.¹

2. Assignment and Summary of Findings

I have been asked to review Applicants'² response to the Board's *Decision No. 16*, which directed Applicants to address the "apparent inconsistency" between 2019 density figures in Exhibit 14 of the Application (hereinafter the "Exhibit 14 Density Data") and the "baseline" density data provided in the "Master Segment Table" submitted to the Board's Office of Environmental Analysis (OEA) on October 28, 2021.³

Specifically, Applicants propose to use the line density values submitted to the OEA and in the supporting work papers (hereinafter the "OEA Density Data") in lieu of the values published in Exhibit 14 to the Application. Based on my review, I conclude that the Applicants' use of the

¹ STB Finance Docket No. 36500, CN's Comments on Application and Request for Conditions, February 22, 2022 (CN-13), Exhibit 2, Verified Statement of Carl Van Dyke – hereinafter "Van Dyke First Verified Statement."

² Applicants are Canadian Pacific Railway Limited, Canadian Pacific Railway Company, and their US rail carrier subsidiaries Soo Line Railroad Company, Central Maine & Quebec Railway US Inc., Dakota, Minnesota & Eastern Railroad Corporation, and Delaware and Hudson Railway Company, Inc. (collectively "CP" or "Canadian Pacific Applicants") and Kansas City Southern and its US rail carrier subsidiaries The Kansas City Southern Railway Company, Gateway Eastern Railway Company, and The Texas Mexican Railway Company (collectively "KCS" or "Kansas City Southern Applicants").

³ See STB Finance Docket No. 36500, EI-31353, October 28, 2021.

OEA Density Data will not result in an accurate representation of either the Base Year 2019 or Year 3 post-transaction density values.⁴

In essence, Applicants propose to replace the historic Base Year values that they developed in the normal course of business with questionable “2019 baseline” data derived through a fundamentally flawed modeling exercise. Use of this questionable “base year” data from the OEA submission, in combination with obviously flawed “post-transaction” line density values, would result in the use of segment-specific line densities that are inaccurate and misleading. The fundamental problems with the Applicants’ use of the OEA Density Data include the following:

- **Non-representative traffic** from a combination of single month snapshots from multiple years were used to create Base Year 2019 tonnages in the OEA Density Data. It is difficult to conceive how this could produce accurate full-year 2019 tonnages for individual line segments on the CP and KCS networks.
- **Use of “calibration” does not cure underlying methodological flaws.** Just because Applicants forced the aggregate numbers to match their target 2019 gross-ton mile (GTM) values through a “calibration” process does not make the OEA Density Data values correct for individual line segments on the CP and KCS networks. And for environmental assessment, capital planning, capacity analysis, and labor impact analysis, it is the segment-specific values that matter.
- **Fractured modeling process:** The OEA Density Data tonnages are not the outputs of a coherent MultiRail-based process as implied by Applicants, but instead come from a fractured and highly complex process that used values from a variety of independent sources, altered with various “calibration” factors, making it impossible to produce reliable, consistent results.
- **Benchmarking the OEA Density Data reveals widespread inconsistencies with Applicants’ real world 2019 density values,** directly demonstrating that the values Applicants proposed to use are not representative of actual full year 2019 tonnages on a segment-specific level.

⁴ See STB Finance Docket No. 36500, Decision No. 16, March 16, 2022.

- **Because the OEA Base Year 2019 values are unreliable, and due to methodological errors, the projections of post-transaction tonnages are also invalid and cannot be relied upon.** I demonstrate the flaws in the post-transaction tonnages in my first verified statement.⁵

3. Applicants' Use of OEA Density Data Does Not Provide an Accurate Representation of Base Year or Year 3 Density Values.

3.1 Arbitrary "2019 baseline" traffic data used by Applicants does not correspond with Applicants' actual full-year 2019 traffic and is not a representative starting point for the Application

Instead of using data from the agreed 2019 base year for this transaction, Applicants utilized a complex mix of data sources, including October 2020 data for non-unit train traffic (i.e., carload and intermodal) and two different one-month samples for unit train traffic (October 2019 for CP and an unspecified month for KCS/KCSM). In my Verified Statement of February 28, 2022, included as part of CN's Comments on the Application, I demonstrated that October 2020 is not a representative period for non-unit train traffic,⁶ and that October 2019 is not a representative period for CP unit trains.⁷ While I could not evaluate whether Applicants selected a representative month for KCS/KCSM unit trains because Applicants did not disclose what month they used, I do demonstrate in Section 3.4 below that the KCS unit trains do not accurately represent the 2019 unit traffic in at least two specific instances, likely causing the KCS mainline segment densities to be too low by millions of tons in the OEA Base Values. Specific examples cited in my original Verified Statement, and Section 3.4 of this verified statement are summarized in Exhibit 3-1 below.

⁵ Van Dyke First Verified Statement, Sections 5.1 and 6.1.

⁶ Van Dyke First Verified Statement, Sections 5.2 and 6.3.1.

⁷ Van Dyke First Verified Statement, Section 5.3.1.

Exhibit 3-1: Examples of impacts from Applicants using non-representative traffic data

Traffic Type	Description	Impact
Intermodal	Due to a blockade by striking teachers, the Port of Lazaro Cardenas was effectively closed during October 2020	Applicants base period is missing about { } annual loaded northbound container moves, which would cause on the order of { } million annual gross tons to not be included in the OEA Density Data ⁸
Carload	Fewer boxcar loadings on KCS/KCSM in October 2020 (when annualized) than observed for full year 2019	11% under-representation of loaded boxcar moves ⁹
Automotive	Fewer multilevel loadings on KCS/KCSM in October 2020 (when annualized) than observed for full year 2019	13% under-representation of loaded multilevel moves ¹⁰
Automotive	O-D patterns for multilevel traffic in October 2020 do not correspond to full year 2019 traffic patterns	Gains and losses of thousands of cars per year at an O-D by O-D level ¹¹
Unit Train	Virtually no unit crude oil trains moved between Alberta and Louisiana/Texas during October 2019	Instead of the 2019 average of { } oil trains/month on the Davenport-Ottumwa line, the OEA Base Values only reflect about { } oil trains/month, causing over { } million annual gross tons not to be included in the OEA Density Data for this line. ¹²
Unit Train	Virtually no unit { } trains moved between { } and Mexico in the KCS unit train “snapshot” and were thus not represented in the OEA Base Values.	Caused on the order of { } million annual gross tons not to be included in the OEA Density Data on the Springfield line, and possibly on the entire route from { } to Laredo, TX and beyond. ¹³

There is no evidence that Applicants’ use of these inappropriate October 2020 and October 2019 traffic sources yields a set of values that fairly represent actual tonnages for the full 2019 Base Year for individual line segments of CP or KCS. A far more appropriate choice would be to use actual full year 2019 traffic flows, which were available to Applicants when they prepared their Operating Plan for the merger. The use of non-representative traffic data for the Base Year could have severe consequences on the alignment of the operating plan to the base period and

⁸ Van Dyke First Verified Statement, Section 5.2.

⁹ Van Dyke First Verified Statement, Section 6.3.1.

¹⁰ Van Dyke First Verified Statement, Section 6.3.1.

¹¹ Van Dyke First Verified Statement, Section 6.3.1.

¹² Van Dyke First Verified Statement, Section 5.3.1.

¹³ See Section 3.4.2 below.

will result in invalid segment-specific metrics when compared to actual 2019 values, affecting the Board’s review of both the transportation impacts and environmental impacts of the merger.

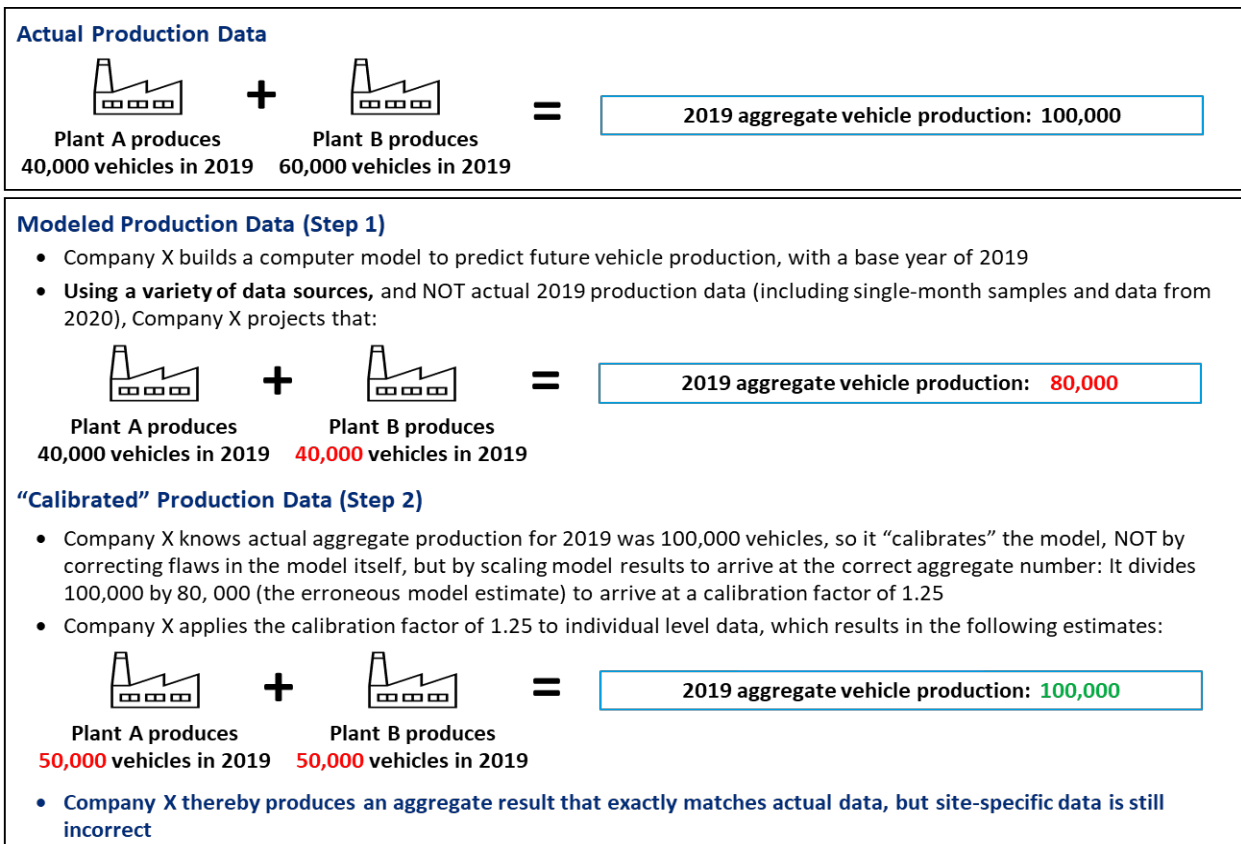
3.2 Applicants’ attempt to “calibrate” aggregate GTM values does not remedy the methodological flaws in their modeling process and could even aggravate the magnitude of those errors.

Operating metrics play different roles in assessing a transaction. Some values are appropriately viewed at an aggregate level, such as train-miles, crew starts, or GTMs, when those values are used at a system level for purposes such as costing. However, when assessing labor impacts, capital requirements, or environmental impacts by location, these metrics must be examined on a location-specific level, typically by individual line segment.

Applicants in their response to *Decision No. 16* tout that the **aggregate** GTM values in the OEA Density Data match historic values exactly, and that only “very minor calibration” adjustments had to be made to achieve that result.¹⁴ This included increasing base tonnage values by a “minor” 10.2 percent for KCS lines and 4.2 percent for CP lines; and reducing base tonnage values by a “minor” 18.2 percent on KCSM lines.

While the “calibration” exercise undertaken by Applicants mathematically guaranteed that the aggregate GTM values would match, this approach did nothing to prove the accuracy of values at the segment-specific level. To the contrary, Applicants’ modeling process resulted in highly inaccurate OEA Base Year and post-transaction comparisons at a segment-by-segment level – and no amount of “calibration” can correct for that fact. To better understand this, consider the simple hypothetical example provided in Exhibit 3-2.

¹⁴ See STB Finance Docket No. 36500, Applicants’ Response to Decision No. 16, pp. 9-10, ¶¶15-17; the “very minor calibration” comment appears at ¶16.

Exhibit 3-2: Example of distortions caused by using an “aggregate” calibration approach in modeling

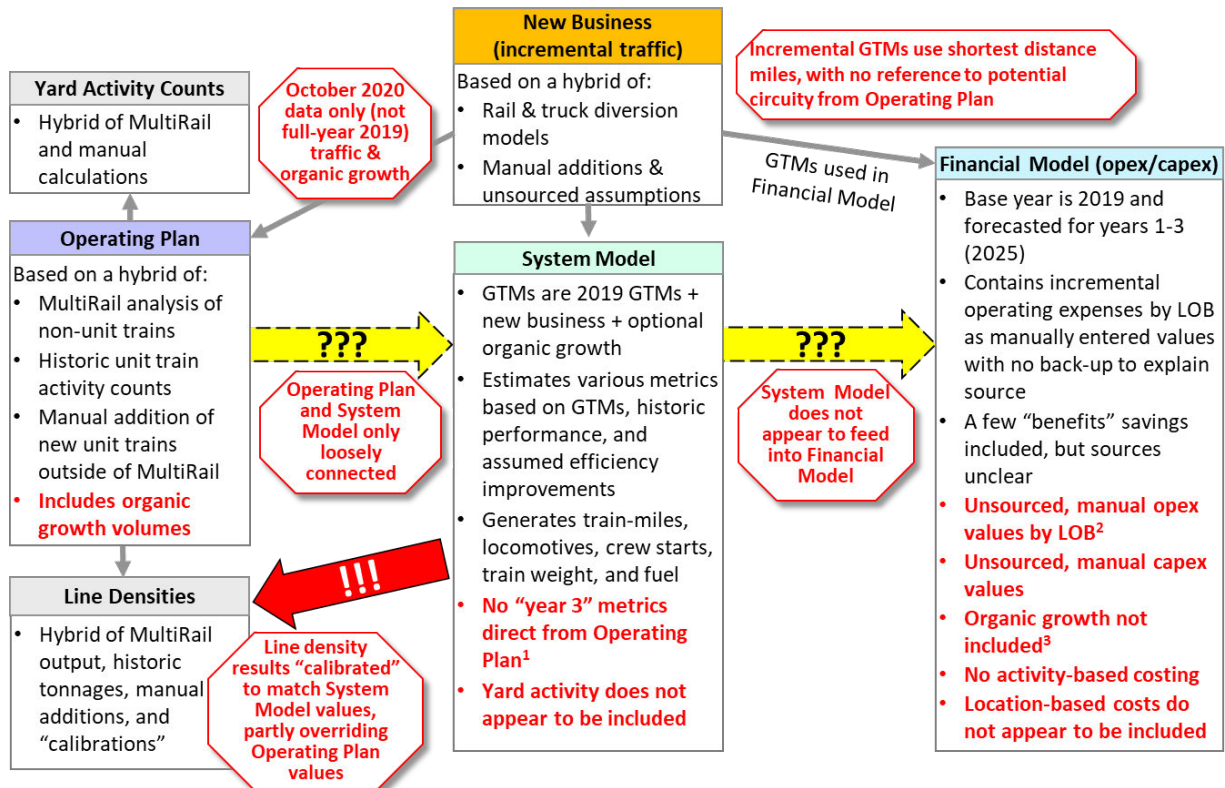
Far from “correcting” for the use of a flawed modeling process and inappropriate traffic data in the Application, the use of an aggregate calibration factor constitutes an additional threat to the integrity of tonnage values and invalidates the assessment of segment-specific impacts.

3.3 Applicants’ OEA Density Data is not the output of a sound MultiRail analysis but instead is the result of a complex, fractured, and fundamentally flawed approach.

Applicants used a complex, fractured, and fundamentally flawed approach to develop their Operating Plan and the various operating metrics. The many flaws in Applicants’ methodology are discussed in detail in my original Verified Statement included in CN’s Comments on the

Application.¹⁵ As a reminder of the Applicants' approach, Exhibit 3-3 below depicts the logic (or illogic) flow employed by Applicants.

Exhibit 3-3: Depiction of the Applicants' Modeling Process¹⁶



Applicants insist in their response to *Decision No. 16* that the OEA Density Data values were derived from a MultiRail analysis.¹⁷ But that is simply not the case. The tonnage values used by Applicants for their OEA Density Data submissions are not the result of a well-structured MultiRail analysis but instead were manufactured through a complicated process based on numerous separate data sources and "calibrations" that yielded highly suspect results.¹⁸ The changing of base values from historic CP, KCS, and KCSM actual 2019 values to the "constructed" OEA Density Data does nothing to remedy this fundamentally flawed process.

¹⁵ Van Dyke First Verified Statement, Section 4.4.

¹⁶ Van Dyke First Verified Statement, Exhibit 4-1.

¹⁷ See STB Finance Docket No. 36500, Applicants' Response to Decision No. 16, pp. 5-6, ¶¶8-9.

¹⁸ See Van Dyke First Verified Statement, Sections 4.1 and 4.3.

Based on an analysis of the Applicants' work papers related to the estimation of line densities, I developed Exhibit 3-4, which attempts to distill the disjointed, illogical process followed by Applicants in generating the OEA Density Data for the base period.¹⁹ Exhibit 3-4 takes four sample line segments and walks through the complex process that Applicants used to derive gross tons per mile for each segment. Exhibit 3-4 then compares these OEA Density Data calculations with those in the original Exhibit 14 Density Data. As Exhibit 3-4 shows, there are significant and varying fluctuations between the actual data that Applicants first presented in Exhibit 14 and the OEA Density Data that they now assert is a proper substitute for actual full year 2019 densities.

¹⁹ See CP-KCS work papers: FD 36500 – Work Paper – HC – Gross Ton Miles, Train Miles, Train Weights and MGT - Methodology.pdf and FD 36500 – Work Paper – HC – Trains Per Day and Gross Ton Miles - Working Copy with Haz Breakdown.xlsx; see also Van Dyke First Verified Statement, Sections 4.1 and 4.3.

Exhibit 3-4: Applicants' Computation of "2019 Base Tonnage" by Line Segment for OEA Density Data Environmental Filing²⁰

Step	Description	Sample Values			
		Roodhouse- Godfrey, IL	Roodhouse- Murrayville, IL	Ottumwa, IA- Laredo, MO	Water Works- Nahant, IA
1	Obtain "base" daily non-unit (i.e., carload and intermodal) train count from MultiRail for trains traversing line segment touching at least 25% of the locations along line segment (not distance based) – train plan created to match to non-representative October 2020 traffic based on adaptation of Q1 2021 operating plan ²¹	{ }	{ }	{ }	{ }
2	Obtain "base" daily unit train count based on the observed unit trains operated over each line segment using a one-month time period (October 2019 for CP, unknown for KCS). Adjustments for unit trains traversing only part of line segment are unknown. October 2019 known to under-represent oil trains on Iowa line for full year, and grain on Springfield line. ²²	{ }	{ }	{ }	{ }
3	Compute total base trains per day by summing unit and non-unit train counts	1.52	0.56	3.17	7.97
4	Obtain the historic average train weight by line segment for 2019 – sourcing unknown – obtained from external look-up – incorporates train mix? <i>Not taken from MultiRail</i>	{ }	{ }	{ }	{ }
5	Obtain segment distance (miles)	40	10.3	61.2	4.5
6	Compute "uncalibrated" 2019 daily gross ton miles using formula: [Total trains per day] x [Segment Distance] x [Historic 2019 train weight]	{ }	{ }	{ }	{ }
7	Determine the total GTMs from step 6 for each railroad (CP, KCS, KCSM) by summing across all line segments, and compare to "official" 2019 GTM value for each railroad and determine a "calibration factor" that will cause the individual values to sum to the overall "official" value	{ }	{ }	{ }	{ }
8	Adjust the GTM values from step 6 by the calibration factor in step 7 to compute a "final" daily "calibrated" GTM base value for "2019"	121,601	710	1,739,105	189,410
9	Compute annual gross tons per mile for the line by multiplying step 8 value by 365 and dividing by the line segment length (OEA Density Data)	1,109,610	25,166	10,372,112	15,363,226
10	<i>As a point of comparison, these are the 2019 gross tonnage values as published in Exhibit 14 Density Data of Application (differences exceed the 7.4% of tonnage related to locomotives on KCS and 5.6% on CP)</i>	<i>3,157,000</i>	<i>3,090,000</i>	<i>12,234,000</i>	<i>18,524,000</i>

²⁰ Based on an analysis of the work paper: FD36500 – Work Paper – HC – Trains per Day and Gross Ton Miles – Working Copy with Haz Breakdown.xlsx ("Summary Sheet" tab).

²¹ See Van Dyke First Verified Statement, Sections 4.2 and 5.3.

²² See Van Dyke First Verified Statement, Section 5.3.1 on oil trains; Section 3.4.2 below for grain trains.

Initially, it is important to note that the base trains per day numbers in Steps 1-3 of Exhibit 3-4, upon which the tonnages are based, were constructed by Applicants in a manner that is highly unlikely to represent the actual number of trains operated on each line segment in 2019. These are the same numbers that Applicants used for their base year trains per day data submitted to the STB's Office of Environmental Analysis for every line segment, and they do not reflect actual train counts from the 2019 base year. For the manifest and intermodal trains, the train count is taken from MultiRail, where the inputs to the process were traffic from October 2020, and trains from Q1 of 2021.²³ On the unit train side, a single one-month sample of unit trains was used, which we show was non-representative. See Sections 3.1 and 3.4 of this verified statement for examples of issues with the unit train sampling employed by CP-KCS.

For the manifest trains, it is my understanding that the Applicants adjusted their Q1 2021 operating plan to match the observed traffic volumes from October 2020, which as discussed in Section 3.1 above was not representative of the full year 2019 traffic. In theory the use of the Q1 2021 operating plan was to avoid taking credit for "efficiency gains" that will have taken place between 2019 and the approval of the merger. However, how this in any way corresponds to the Base Year 2019 actual train operations is completely unclear. Furthermore, some unknown number of trains were excluded from these counts due to CP-KCS's "25 percent rule" (discussed further below).

At a minimum, because Applicants constructed trains per day numbers using snapshots from 2019, 2020, and 2021, it is clear that the "base year" trains per day numbers submitted to the STB's OEA do not reflect actual 2019 base year data.

²³ See Van Dyke First Verified Statement, Section 5.3.

These non-representative train counts were then multiplied by 2019 “historic average train weights,” to obtain total tons on each line segment.²⁴ To the best of my knowledge, CP-KCS does not provide any information on how these train weights were produced, and why there is any reason to believe they are accurate. As one can clearly see in Exhibit 3-4 above from the example in Step 4 for the Roodhouse-Murrayville segment, where the average total train weight is a mere 112 tons, at least some of these values obviously lack credibility. See also the discussion in Section 3.4.4 below for another example of questionable train weights.

Ultimately, Exhibit 3-4 does not provide any confidence that Applicants have created base period density data that fairly represent full year 2019 values. It also raises the obvious question: *Why go through all the steps described above to create what Applicants claim is an Operating Plan that “very accurately reflected the actual GTMs moved in 2019”²⁵ when actual 2019 values were readily available for the Applicants to use?*

As the developer of MultiRail, I am keenly aware that MultiRail is capable of generating line density values directly. If the user enters an appropriate body of traffic, including gross tons, MultiRail will generate an estimate of tonnage by line segment based on that data. In doing so, the operating plan is taken fully into account, and there is no need to do complicated external mathematics to convert train counts and historic average weight into tonnage numbers (as described in Exhibit 3-4). If Applicants had simply used the correct traffic (full year 2019) and included the unit trains and traffic in MultiRail, none of these complex calculations would have been necessary. And ultimately the complex set of calculations used by CP-KCS produced

²⁴ Weights are obtained from an unsourced look-up in FD36500 – Work Paper – HC – Trains per Day and Gross Ton Miles – Working Copy with Haz Breakdown.xlsx (“Summary Sheet” tab), while the discussion of them being in FD 36500 – Work Paper – HC – Gross Ton Miles, Train Miles, Train Weights and MGT - Methodology.pdf implies they are a derived value (which is not the case in the Excel spreadsheet).

²⁵ STB Finance Docket No. 36500, Applicants’ Response to Decision No. 16, p. 9, ¶16.

different segment tonnage values in line 9 of the above table compared to the actual, historic Base Year 2019 values (line 10) on a segment-by-segment basis. Even if the historic tonnage values for 2019 are “corrected” by taking the weight of locomotives into account,²⁶ the differences between modeled and actual values continue to be substantial.

Applicants claim that the discrepancy between the historic KCS traffic values they presented in the Exhibit 14 Density Data and their OEA Density Data calculations was attributable to a methodological difference: “The Operating Plan Base and Year 3 Densities assign GTMs based on the number of miles that a gross ton is moved across the segment, whereas for KCS’s and KCSM’s 2019 figures any tons touching the segment were treated as if they traversed the entire segment, resulting in considerably higher GTMs per mile in the KCS and KCSM 2019 Exhibit 14 density figures for many segments.”²⁷ But there is nothing in the Applicants’ methodology to indicate the OEA Density Data represent a pro rata approach to tonnage allocation. As demonstrated in Exhibit 3-4, Applicants counted each train as either traversing the entire line segment or excluded the train entirely if the train traversed less than 25 percent of the stations on a line segment. (My original verified statement included in CN’s Comments on the Application provides further details on this issue and the resulting distortion of Operating Plan metrics.)²⁸ Never do Applicants in their filing identify any instance where a train that traversed only part of a line segment was counted on a pro-rata basis.

The fractured and complex process detailed in Exhibit 3-4, which used a mishmash of data sources, calibrations, and questionable assumptions, provides no credible support for the notion

²⁶ STB Finance Docket No. 36500, Applicants’ Response to Decision No. 16, which states at p. 7, ¶12: “The Operating Plan Base and Year 3 Densities exclude locomotive tons, whereas the CP, KCS, and KCSM 2019 figures (i.e., the 2019 Exhibit 14 Densities) include that tonnage.”

²⁷ STB Finance Docket No. 36500, Applicants’ Response to Decision No. 16, p. 7, ¶13.

²⁸ Van Dyke First Verified Statement, Section 4.3.3.

that OEA Density Data values produced through this process fairly represent full year 2019 tonnage values by line segment.

3.4 Applicants' Base Year tonnage values as reported to the OEA cannot be relied upon, as demonstrated by the benchmarking of selected values against the original 2019 values from Exhibit 14 and selected other data sources.

As demonstrated above, Applicants' flawed process provides no reason to believe that the OEA Density Data accurately represent actual 2019 densities. To confirm this, I carried out a benchmarking exercise to compare the OEA Density Data with the actual 2019 values generated in the normal course of business.

I began with the 2019 segment-specific density data presented in Exhibit 14. While Applicants have suggested that the KCS tonnage values in Exhibit 14 may contain inaccuracies,²⁹ they raise no such issues with respect to CP values, except for the inclusion of locomotives. But the inclusion of locomotive GTMs is an easy fix. GTMs with and without locomotives for KCS, CP, and the other Class I railroads are available in the annual Analysis of Class I Railroads (lines 700 through 704), albeit for US traffic only (see Exhibit 3-5). This data source shows that locomotives represented 5.6% of overall GTMs for the US operations of CP and 7.4% of GTMs for the US operations of KCS in 2019. Based on the knowledge that 5.6 percent of GTMs on CP's US lines are related to locomotives, taking 94.4 percent of the 2019 tonnage values for the CP lines, as listed in the original Exhibit 14, would produce an accurate estimate of GTMs without locomotives for CP.

²⁹ STB Finance Docket No. 36500, Applicants' Response to Decision No. 16, p. 7, ¶¶13 and 14.

Exhibit 3-5: Gross-ton-miles by railroad for 2019 from R-1 reports (U.S. lines only) ³⁰

LINE	ITEM	CSX	NS	CNGT	BNSF	KCS	CPSL	UP
700.	Locomotives	28,856,795	30,429,239	7,763,728	109,762,761	4,928,962	4,198,385	72,880,060
701.	Cars, Contents and Cabooses	386,301,629	369,908,032	126,171,491	1,158,585,109	61,737,927	70,743,019	836,209,187
702.	Passenger Trains, Cars and Contents	0	0	0	0	0	0	0
703.	Non-Revenue	2,120,408	2,810,057	1,209,914	11,191,234	32,507	428,316	10,406,772
704.	Total Gross Ton-Miles	417,278,832	403,147,328	135,145,133	1,279,539,104	66,699,396	75,369,720	919,496,019
	Percent of GTMs Due to Locomotives	6.9%	7.5%	5.7%	8.6%	7.4%	5.6%	7.9%

A similar adjustment of 7.4% percent of tonnage values in the original 2019 Exhibit 14 for KCS would address the locomotive issue there as well. However, I note that Applicants have alleged that there are other errors in the KCS Exhibit 14 tonnage measures. I therefore used MultiRail to estimate 2019 tonnage using full year 2019 traffic for the Springfield line as a cross-check. We also examined the sample unit train file that CP-KCS used to identify the base period unit trains for KCS,³¹ as well as the full year 2019 waybill file³² as additional ways to cross-check the OEA Density Data. The four examples described below show that Applicants’ “constructed” OEA line segment density values make no sense, and in fact are under reporting the base period values by millions of tons per year for many key line segments.

3.4.1 Example 1: Benchmarking of the CP line through Ottumwa and Davenport

An examination of the CP line through Ottumwa and Davenport (and associated feeder lines) reveals significant differences between the adjusted base year values published in the Application and the values in the OEA Density Data.

³⁰ Analysis of Class I Railroads, published by the Association of American Railroads (AAR).

³¹ CP-KCS work paper: FD 36500 - Work Paper - HC - KCS KCSM Bulk Train Cars Per Day by Subdivision.xlsx.

³² 100% CP-KCS Waybill data “FD 36500 – Work Paper – HC 2019_CONSOLIDATED_CPKCS_DATA_MASTER.txt” from CP-KCS work papers.

The original tonnage map for the Ottumwa-Davenport line published in the Application is shown in Exhibit 3-6 below, and my benchmarking of the OEA Density Data for these lines is presented in Exhibit 3-7.

Exhibit 3-6: 2019 tonnage map for Ottumwa-Davenport line as published in the Application³³



Exhibit 3-7: Benchmarking of selected CP line segments, Ottumwa-Davenport and feeder lines³⁴
Millions of annual gross tons

Line Segment	Segment Miles	Adjusted Exhibit 14 Tonnage (94%)	OEA Base Year Tonnage ³⁵	Tonnage Difference	Percent Diff.
Marquette-Sabula	98.0	20.00	29.18	9.18	45.9%
Davis Jct.-Sabula	61.5	9.82	15.57	5.75	58.6%
Nahant-Muscatine	24.6	14.02	13.32	-0.70	-5.0%
Muscatine-Ottumwa	82.5	16.06	14.78	-1.28	-8.0%
Ottumwa-MO/IA Laredo	61.2	11.51	10.37	-1.14	-9.9%
MO/IA Laredo-Laredo	41.1	11.46	10.37	-1.09	-9.5%
Laredo-Polo ³⁶	n/a	11.46	12.37	0.91	7.9%
Polo-Airline Jct.	42.1	11.22	10.49	-0.73	-6.5%

³³ CP-KCS Application, Volume 2, Exhibit 14 traffic density maps, pp. 508, 510.

³⁴ Oliver Wyman analysis.

³⁵ See STB Finance Docket No. 36500, EI-31353, October 28, 2021.

³⁶ Appears to be trackage rights on Union Pacific, and therefore omitted from some tables.

The benchmarking reveals consistent *underreporting* in the OEA Density Data for most of the Ottumwa line (in the range of 5-10 percent), and huge *overreporting* of tonnages, in the neighborhood of 50 percent, for the Marquette and Davis Junction lines that feed into the Ottumwa line. Unless Applicants assert that there are large errors (beyond the inclusion of locomotives) in the historic tonnage values CP generates in the normal course of business, it is clear that the OEA Density Data are not representative of actual 2019 tonnages on CP.

Rather than simply replacing the base period values with questionable ones derived from a flawed modeling process, a better approach would have been to use the actual full year 2019 CP tonnage values for the Base Year and then develop Year 3 values by adding the incremental changes from modeling to those values.

3.4.2 Example 2: Springfield Line benchmarking

As part of CN's Responsive Application seeking divestiture of the Springfield Line, I undertook extensive analysis of this line, including using MultiRail to develop an operating plan and to assess line densities. The results of the Springfield Line analysis from a "base year" tonnage perspective is presented in Exhibit 3-8.

Exhibit 3-8: Benchmarking of KCS Springfield Line segments

Millions of annual gross tons

Subdivision Start	Subdivision End	Original Exhibit 14 2019 Tonnage ³⁷	Adjusted Exhibit 14 Tonnage (93%)	OEA Base Year Tonnage ³⁸	MultiRail Estimated Trailing Tonnage ³⁹	Adjusted Exhibit 14 vs. OEA Percent Difference	Adjusted Exhibit 14 vs. MultiRail Percent Difference
Airline Jct. MO	Slater MO	10.38	9.65	5.83	{{ }}	-40%	{ }
Slater MO	Mexico MO	8.81	8.19	3.71	{{ }}	-55%	{ }
Mexico MO	Roodhouse IL	6.66	6.19	3.39	{{ }}	-45%	{{ }}
Roodhouse IL	Godfrey IL	3.82	3.55	1.11	{{ }}	-69%	{ }
Godfrey IL	East St. Louis	5.48	5.10	7.77	{{ }}	52%	{ }
Roodhouse IL	Murrayville IL	3.09	2.87	0.03	{{ }}	-99%	{{ }}
Murrayville IL	Jacksonville IL	3.05	2.84	0.43	{{ }}	-85%	{{ }}
Murrayville IL	Springfield IL	0.04	0.04	0.03	{{ }}	-37%	{{ }}

The differences between the original Exhibit 14 values and the OEA Density Data for the Base Year on the Springfield Line are so extreme that it is simply not possible to give any credibility to the OEA Density Data, unless one concludes that the tonnage values that KCS collected for 2019 in its normal course of business had no connection to reality. While my MultiRail analysis also exhibited differences against the original Exhibit 14 values, the broad indicators are that based on full year 2019 traffic data used in MultiRail, the Exhibit 14 values are far closer to reality than the ones in the OEA submission.

As a further cross-check, I investigated what traffic the full year, 2019 waybills showed as originating or terminating in the Jacksonville, IL area. What was found is that {{ }} loads, and {{ }} empties originated or terminated at Jacksonville in 2019 based on the full year waybill data supplied by CP-KCS.⁴⁰ This traffic was almost all grain traffic to/from Mexico. In

³⁷ CP-KCS Application Volume 2, Exhibit 14, page 461.

³⁸ See STB Finance Docket No. 36500, EI-31353, October 28, 2021.

³⁹ See work papers for this statement: HC – Springfield Line Tonnage Estimation Using MultiRail Methodology.pdf and HC – MultiRail Line Density Tonnage for Springfield Line.xlsx.

⁴⁰ 100% CP-KCS Waybill data “FD 36500 – Work Paper – HC 2019_CONSOLIDATED_CPKCS_DATA_MASTER.txt” from CP-KCS work papers.

total this represents approximately {{ }} million tons per year. Of this volume, approximately {{ }} million gross tons per year are going to/from Mexico via Laredo.

The CP-KCS work papers indicate that the unit grain trains on the Jacksonville subdivision average {{ }} cars/train, and that there were a total of {{ }} trains in the sample month, which equates to {{ }} trains/day or {{ }} trains per year.⁴¹ However, the work paper upon which the OEA Density Data are based never lists more than {{ }} unit trains per day for any line segment east of Slater.⁴² Based on the approximately {{ }} loaded and empty grain moves into and out of Jacksonville during 2019, applying the {{ }} cars/train value yields a traffic driven estimate of {{ }} trains/year, or {{ }} trains per month, or {{ }} unit trains/day, quite a bit higher than {{ }} unit trains/day used in the OEA Density Data.

Clearly, there was a total failure to capture the accurate volumes on the OEA Density Data for these line segments, likely caused by the use of unrepresentative, single month snapshots of the unit trains, possibly compounded by other errors. It is interesting to note that if this Jacksonville data is missing from the entire routing from Jacksonville to Kansas City, adding it in would bring the OEA numbers much closer to the historic data. Furthermore, based on the waybill data, much of this traffic travels all of the way to Mexico, and thus this missing {{ }} gross tons of traffic would impact the entire KCS mainline from Kansas City to Laredo (and beyond).

3.4.3 Example 3: KCS mainline benchmarking

A side-by-side comparison of the 2019 tonnages published in the original Exhibit 14 Density Data to the values that Applicants now propose to use from their OEA Density Data

⁴¹ See CP-KCS work paper: FD 36500 - Work Paper - HC - KCS KCSM Bulk Train Cars Per Day by Subdivision.xlsx.

⁴² See CP-KCS work paper: FD36500 – Work Paper – HC – Trains per Day and Gross Ton Miles – Working Copy with Haz Breakdown.xlsx (“Summary Sheet” tab).

submission for the KCS mainline from Kansas City to Laredo demonstrates variances that are too extreme to be credibly explained as a result of differences in the methodologies used by KCS and CP in developing line densities in the normal course of business. Exhibit 3-9 below provides a summary view of the KCS mainline values.

Exhibit 3-9: Comparison of historic 2019 tonnage from the original Exhibit 14 to the Applicants' proposed OEA Density Data for KCS mainline

Millions of annual gross tons

Segment	Historic 2019 Tonnage ⁴³	OEA Base Year Tonnage ⁴⁴	Tonnage Difference	Percent Difference
Kansas City - Pittsburg	51.3	38.0	-13.3	-26%
Pittsburg - Watts	40.8	36.9	-3.9	-9%
Watts - Poteau	38.2	33.5	-4.7	-12%
Poteau - Heavener	38.9	34.9	-4.0	-10%
Heavener - De Queen	42.0	32.4	-9.7	-23%
De Queen - Ashdown	43.0	40.5	-2.5	-6%
Ashdown - Shreveport	45.8	32.4	-13.4	-29%
Shreveport - Leesville	33.7	26.2	-7.4	-22%
Leesville - De Quincy	30.1	27.4	-2.7	-9%
De Quincy - Beaumont	33.2	23.1	-10.2	-31%
Beaumont - Houston	30.2	19.3	-10.9	-36%
Houston - Kendleton	28.3	17.7	-10.6	-38%
Kendleton - Victoria	26.0	18.4	-7.6	-29%
Victoria - Placedo	25.8	17.7	-8.2	-32%
Placedo - Robstown	25.8	17.7	-8.2	-32%
Robstown - Laredo	37.3	38.0	0.6	2%

The charts depicted in Exhibits 3-10 and 3-11 provide a graphical view of the differences in terms of both absolute values and percentages.

⁴³ CP-KCS Application Volume 2, Exhibit 14 traffic density map, p. 512.

⁴⁴ See STB Finance Docket No. 36500, EI-31353, October 28, 2021.

Exhibit 3-10: Tonnage differences between historic 2019 tonnage from the original Exhibit 14 Density Data to the Applicants' proposed OEA Density Data for KCS mainline
Millions of annual gross tons

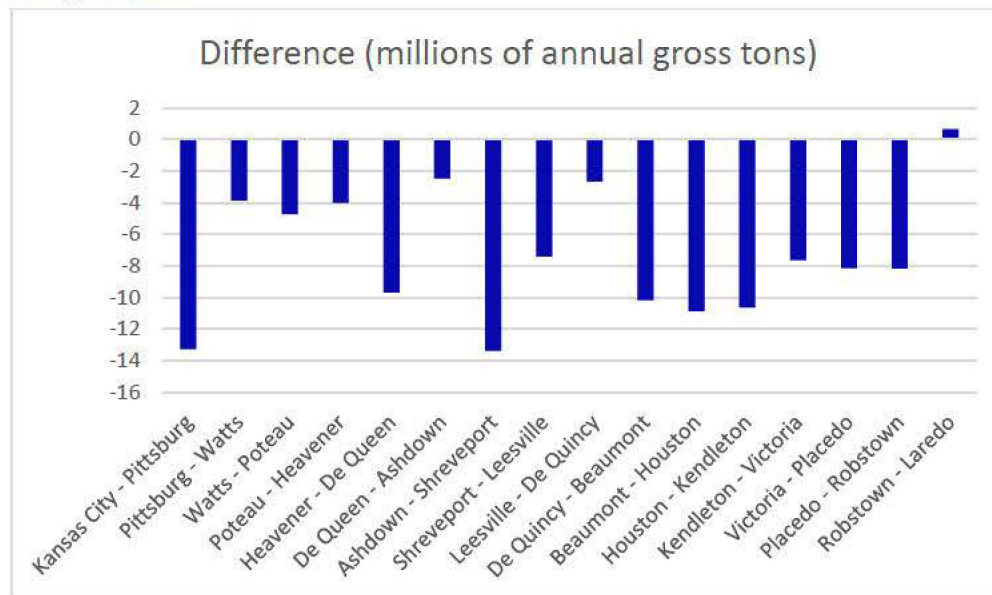
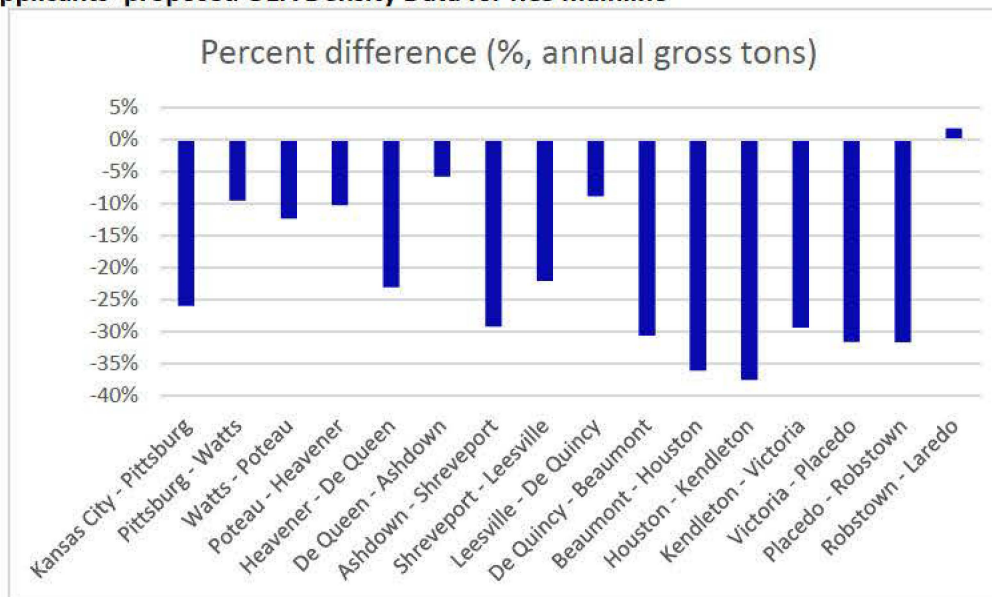


Exhibit 3-11: Percentage differences in historic 2019 tonnage from the original Exhibit 14 Density Data versus the Applicants' proposed OEA Density Data for KCS mainline



As one examines these differences, we can see a logical and consistent progression in the historic tonnages, with significant changes at Shreveport (where traffic likely disperses in many directions), and Robstown-Laredo, where interchange traffic bound to Mexico comes onto KCS.

In the base OEA Density Data we see a significant number of line segments that vary by more than 30% from the actual historic values. It is hard to believe that the KCS “normal course of business” numbers are so faulty as to result in errors of this magnitude.

It is also curious that the segments from De Quincy through Robstown in particular are massively lower in the OEA Density Data. Unlike the Meridian line, the historic 2019 values have a measured and consistent pattern to them, so it does not appear credible that the differences relative to the OEA Density Data numbers could be explained by the historic numbers overcounting traffic that moved over only a portion of each and every one of these segments, or issues of misallocation of traffic between segments. Certainly, the inclusion or exclusion of locomotives cannot explain a 30% difference in tonnage, when we know that locomotives represent approximately 7.4% of the overall GTMs on KCS. However, cumulative errors due to the use of non-representative traffic, such as the examples discussed in Section 3.3.2 above, and 3.3.4 below could yield consistent under reporting of tonnages (and train counts) of the sort demonstrated herein.

3.4.4 Example 4: Shreveport—Wylie benchmarking

Like the KCS mainline, the line from Shreveport to Wylie presents another set of questionable values. Below is a comparison of the original 2019 Exhibit 14 Density Data values to the OEA Density Data Base Year values.

Exhibit 3-12: Comparison of historic 2019 tonnage from the original Exhibit 14 to the Applicants’ proposed OEA Density Data for Shreveport to Wylie line segments

Millions of annual gross tons

Segment	Historic 2019 Tonnage ⁴⁵	OEA Base Year Tonnage ⁴⁶	Tonnage Difference	Percent Difference
Shreveport – Greenville	22.6	14.8	-7.8	-35%
Greenville - Wylie	17.7	15.9	-1.8	-10%

⁴⁵ Application Volume 2, Exhibit 14 traffic density map, p. 512.

⁴⁶ See STB Finance Docket No. 36500, EI-31353, October 28, 2021.

Of note in the above is not only the large 35% difference in tonnage on the Shreveport – Greenville segment, but the change in tonnage between the segments. In the historic 2019 data, the tonnage dropped by 4.9 million tons on the Greenville-Wylie segment relative to the Shreveport-Greenville segment, while in the OEA data we instead see an *increase* of 1.1 million tons.

An examination of the 2019 full year waybill data reveals that there is a major consumer of {{ }} at {{ }}, which is roughly at the {{ }} of the Shreveport – Greenville line segment.⁴⁷ According to the 2019 waybill data, this customer received {{ }} loaded {{ }} shipments, and dispatched {{ }} empty {{ }} cars. If we assume {{ }} tons/car for the loads, and {{ }} tons/car for the empties, this equates to {{ }} million gross tons per year. All of this traffic arrived at {{ }} from Kansas City via Shreveport and is likely a main driver for the historic drop in tonnage on this line as one moves west from Shreveport to Greenville to Wylie.

At an average of {{ }} cars per train,⁴⁸ this volume represents {{ }} trains per year (both loaded and empty combined), or {{ }} trains/month, or {{ }} trains/day. A review of the KCS “snapshot” of unit trains used for the CP-KCS base year operations shows the Greenville subdivision having only {{ }} unit trains during the sample month that was used by CP-KCS, or {{ }} unit trains/day.⁴⁹ However, the work paper upon which the OEA Density Data is based⁵⁰ shows {{ }} unit trains/day. While still a {{ }}% under count, it is

⁴⁷ See 100% CP-KCS Waybill data “FD 36500 – Work Paper – HC 2019_CONSOLIDATED_CPKCS_DATA_MASTER.txt” from CP-KCS work papers.

⁴⁸ Based on the entries for Greenville subdivision in the work paper: FD 36500 - Work Paper - HC - KCS KCSM Bulk Train Cars Per Day by Subdivision.xlsx.

⁴⁹ See FD 36500 - Work Paper - HC - KCS KCSM Bulk Train Cars Per Day by Subdivision.xlsx.

⁵⁰ See CP-KCS work paper: FD36500 – Work Paper – HC – Trains per Day and Gross Ton Miles – Working Copy with Haz Breakdown.xlsx (“Summary Sheet” tab).

at least closer to the historic values. That being said, this same spreadsheet lists the average train weight for both the Shreveport – Greenville and the Greenville – Wylie segments at {{ }} tons. The average loaded {{ }} train would be about {{ }} tons ({{ }} cars at {{ }} tons/car), and an empty train would be about {{ }} tons ({{ }} cars at {{ }} tons/car), for an average unit {{ }} train weight of {{ }} tons. With these heavy trains not traversing the Greenville – Wylie segment, it is simply not possible for both of these segments to have the same average, historic train weight. Thus, the use of the same weight for both segments is likely another cause for errors in the OEA Density Data.

While I will not speculate on the reasons why the OEA Density Data show an increase in tonnage as one moves from Shreveport to Wylie, versus a decrease in the historic data, I observe that this {{ }} has sufficient volume to explain almost the entire decrease shown in the historic data. Once again, I believe this clearly demonstrates the flaws in the OEA data, and why it is a poor substitute for the actual 2019 density data. Furthermore, given that this missing traffic uses the KCS mainline from Kansas City, it is quite likely this under reporting also impacted the tonnage values all the way from Shreveport to Kansas City.

VERIFICATION

I, Carl Van Dyke, declare under penalty of perjury that the foregoing information is true and correct. Further, I certify that I am qualified and authorized to file this statement.

Executed on this 28th day of March, 2022.



Carl Van Dyke