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MULLINS LAW GROUP PLLC

Transportation Solutions for the 21st Century

2001 L Street N.W.
Suite 720
Washington, D.C. 20036

William A. Mullins
wmullins@mullinslawgroup.net
mullinslawgroup.net

Telephone: (202) 663-7850
Direct: (202) 663-7823
Facsimile: (202) 459-2115

August 23, 2024

308636

VIA E-FILING

Cynthia T. Brown
Chief of the Section of Administration
Office of Proceedings
Surface Transportation Board
395 E Street, SW
Washington DC 20423-0001

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Office of Proceedings
August 23, 2024
Part of
Public Record

Re: BNSF Railway Company – Terminal Trackage Rights – The Kansas City Southern Railway Company And Union Pacific Railroad Company,
FD 32760 (Sub-No. 46)

Ms. Brown,

By decision served on July 5, 2016, the Board granted BNSF Railway Company (BNSF) terminal trackage rights over the Rosebluff Lead, a single track, approximately nine miles in length, jointly owned by The Kansas City Southern Railway Company (KCS) and Union Pacific Railroad Company (UP) in the Lake Charles area of Louisiana. In a subsequent decision, the Board, pursuant to 49 U.S.C. § 11102(a), established conditions of use for BNSF to directly serve a LyondellBasell (Lyondell) facility at West Lake Charles, La., and set forth a procedure for setting compensation. Pursuant to that procedural schedule, the parties completed briefing regarding the compensation due to KCS, including the submission of expert reports and evidence.

In reviewing the parties' filings and workpapers, the Board identified what it viewed as an apparent error in certain data related to line-segment earnings calculations submitted by KCS and its expert Dr. Kevin Neels. By decision served November 28, 2023, the Board ordered parties to provide supplemental analysis and data, including workpapers, on several specified items to address this perceived error. (Decision No. 11). Due to the need to seek clarification of Decision No. 11, KCS (with no objections from BNSF or UP) requested a technical conference to better understand the Board's questions. By decision served January 10, 2024, the Board granted KCS's request for a staff supervised technical conference. The staff-supervised technical conference was held on June 13, 2024.

PUBLIC VERSION

MULLINS LAW GROUP PLLC

Cynthia T. Brown
August 23, 2024
Page 2 of 3

After the conference, the Board issued a revised schedule for the submission of the supplemental analysis and data as originally requested in Decision No. 11. Pursuant to that schedule, KCS's submission was due August 9, 2024. By stamp decision issued July 19, 2024, the schedule was further revised to set KCS's submission date on August 23, 2024. KCS hereby submits its comments in response to Decision No. 11.

Decision No. 11 requested KCS's experts to address the following questions:

- A. How revenues were allocated between segments (Rosebluff Lead and the rest of the movement) and how the Board's preferred revenue allocation methodology, ATC, was applied.
- B. How fixed costs per ton were allocated based on density pursuant to how ATC has been traditionally calculated.
- C. How variable and fixed costs were developed to calculate the net revenues for the line segment earnings using the Board's Uniform Rail Costing System (URCS).

In general, KCS's experts believe that due to several potential misunderstandings regarding how costs and revenues were and should have been allocated, the Board's preliminary analysis that KCS's data applying the CE methodology suggests that KCS's earnings on the full Rosebluff Lead were negative was indeed mistaken. When explained and clarified, as shown in the attached supplemental analysis prepared in response to Decision No. 11, the data shows that KCS's traffic on the Rosebluff Lead is indeed profitable under ATC. Furthermore, using the data in the record, the supplemental statement presents three alternative methods of measuring the fixed cost coverage and profitability of traffic that relies on the Rosebluff Lead. In all scenarios, the contribution generated by Rosebluff Lead traffic more than covers the fixed cost allocated to the Rosebluff Lead and is profitable.¹

Finally, as noted in Decision No. 11, in the context of direct access to local shippers via terminal trackage rights, KCS continues to maintain that the SSW Compensation methodology is inconsistent with condemnation principles and insufficient to fully compensate KCS for lost

¹ As offered by the Board, KCS's experts have provided an explanation of their previous and supplemented analysis and are submitting supporting workpapers showing how KCS's data would not produce anomalies or inconsistencies if the CE methodology were applied. KCS's experts are also resubmitting their workpapers from the previous analysis to ensure that the Board has the full set of workpapers used by Dr. Neels. The workpapers are being submitted following the procedures outlined in the Board's decision in Consumers Energy Co. v. CSX Transportation, Inc., NOR 42142, slip op. at Appendix (STB served July 15, 2015).

PUBLIC VERSION

MULLINS LAW GROUP PLLC

Cynthia T. Brown

August 23, 2024

Page 3 of 3

profits and KCS's invested capital. SSW Compensation was developed to compensate a track owner for the tenant's use of overhead trackage rights, i.e., to get from Point A to Point B. KCS knows of no instance where SSW Compensation was applied in a terminal trackage rights situation where those terminal trackage rights were not overhead in nature. Here, the terminal trackage rights are being used to increase the number of railroads serving a particular shipper from two to three.² In that context, a market-based access fee, as developed by Professor Carey, is the appropriate approach.

Sincerely,

/s/ William A. Mullins

William A. Mullins

Counsel for The Kansas City Southern Railway
Company

cc: Parties of Record

² It is important to note that Lyondell, the shipper for which the trackage rights fee is being developed for BNSF to directly serve, did not, prior to the UP/SP merger, have access to more than two carriers.

PUBLIC VERSION

**BEFORE THE
SURFACE TRANSPORTATION BOARD**

FD 32760 (SUB-NO. 46)

**BNSF RAILWAY COMPANY
– TERMINAL TRACKAGE RIGHTS APPLICATION –
THE KANSAS CITY SOUTHERN RAILWAY COMPANY AND
UNION PACIFIC RAILROAD COMPANY**

**KCS'S SUPPLEMENTARY EVIDENCE ON COMPENSATION CONCERNING BNSF'S
USE OF THE ROSEBLUFF LEAD**

EXHIBIT A

VERIFIED STATEMENT OF DR. KEVIN NEELS

PUBLIC VERSION

TABLE OF CONTENTS

I. Introduction.....	1
II. Response to the Questions Posed by the Board in the Nov. 28 Decision.....	2
A. Development of Variable and Fixed Costs (“Question C”)	3
1. Processing of the Traffic Tapes.....	4
2. Routings and Mileage.....	6
3. Additional Location Data	8
4. Calculation of Variable Costs	8
5. Allocation of Variable Costs to Rosebluff Lead Segments.....	11
6. KCS and UP Fixed Costs	12
B. Allocation of Fixed Costs per Ton (“Question B”).....	12
1. Total Fixed costs	14
2. Identification of Links with Routed Traffic	14
3. Calculation of Total Routed mileage.	15
4. Calculation of Fixed Cost per Mile	15
5. Compute Allocated Fixed Cost by Year for Each Link	15
6. Total Net Tons by Link	16
7. Compute Fixed Cost Per Ton by Railroad, Year and Link	18
C. The Allocation of Revenues Between Segments (“Question A”).....	19
III. Based on the STB’s ATC Methodology, the KCS Contribution Generated by the Rosebluff Lead is Sufficient to Cover its Associated Fixed Costs	20
IV. Failure of the Contribution Allocated to the Rosebluff Lead Under the ATC Methodology to Cover the Fixed Costs Allocated to the Rosebluff Lead Would Not Mean That the Rosebluff Lead is Unprofitable	24
A. The Fixed Cost Allocation Methodology Applied Under the ATC Has No Causal Economic Justification	25
B. Why Do My January 2021 Filed Results Make KCS’ Rosebluff Lead Profitability Look Low?	28
1. Inclusion of Switch Movements in Rosebluff Lead Density Calculations	28
2. Effect of Including BNSF-Related Switch Movements	29
3. Inconsistency Between KCS and UP Ownership Shares and Usage	30
C. Analysis of the Overall Profitability of Rosebluff Lead Traffic	32
V. Updated SSW Trackage Fee Calculation	36
APPENDIX A : Mathematical Appendix	45
APPENDIX B : Table of Programs and Key Inputs in ATC Calculation	49

PUBLIC VERSION

I. Introduction

I am Dr. Kevin Neels, an expert in regulatory economics, and in particular, Surface Transportation Board (“STB”) regulation of rail markets. At the Brattle Group, I directed the firm’s transportation consulting practice. I have more than 40 years of experience providing economic analysis, research, and consulting to a wide range of clients. These clients have included federal, state, and local transportation agencies, as well as firms in the postal, trucking, railroad, airline, and auto and aircraft manufacturing industries. My work has frequently addressed issues relating to competition, regulatory policy, and the proper relationship between the public and private sectors. I have previously submitted testimony before many different regulatory bodies, including the STB. I have also testified in international arbitrations, and state and federal courts. I have on multiple occasions submitted Verified Statements in this proceeding:

- As part of KCS’s Opening Statement and Evidence on Compensation, Concerning BNSF’s Use of the Rosebluff Lead (“KCS Opening on Compensation”), on January 26, 2021, as corrected on March 5, 2021 (“Neels Opening VS”).
- As part of KCS’ Reply Statement and Evidence on Compensation Concerning BNSF’s Use of the Rosebluff Lead, on April 12, 2021 (“Neels Reply VS”).
- As part of KCS’ Rebuttal Brief on Compensation, on May 11, 2021 (“Neels Rebuttal VS”).
- I also previously provided testimony in this proceeding in both 2015 (in collaboration with Dr. Robert Reynolds) and 2018.

In my Opening VS, I provided an overview of the SSW Compensation Methodology, discussed approaches to valuation, calculated SSW Compensation using the Capitalized Earnings approach (“CE Approach”), and explained that given the circumstances present at Lake Charles, I did not believe that SSW Compensation alone would adequately compensate KCS for BNSF

PUBLIC VERSION

acquiring direct access over the Rosebluff Lead, including specific individual shippers, as opposed to simply overhead rights for which the SSW Compensation methodology was developed and applied. In my Reply VS, I responded to the Opening VS filed by BNSF expert Michael Baranowski and updated my calculations, while in my Rebuttal VS, I responded to certain criticisms raised by Mr. Baranowski.

In this Verified Statement, I respond to questions and concerns raised by the Board in its November 28, 2023 Decision (“Nov. 28 Decision”), No. 11 in Docket No. FD 32760 (Sub-No. 46),¹ offering clarifications and present the results of an alternative trackage fee calculation for the Board’s consideration.

II. Response to the Questions Posed by the Board in the Nov. 28 Decision

The Board ordered the parties to provide supplemental analysis and data addressing three questions (summarized here for brevity):

- How revenues were allocated between segments and how ATC was applied;
- How fixed costs per ton were allocated based on density pursuant to how ATC traditionally has been calculated;
- How variable and fixed costs were developed to calculate the net revenues for the line segment earnings using the Board’s Uniform Rail Costing System (URCS).

In this Section of my Verified Statement, I answer these questions in detail. To better reflect the order in which my calculations were carried out, I answer these questions in reverse

¹ BNSF Railway Company — Terminal Trackage Rights — Kansas City Southern Railway Company and Union Pacific Railroad Company (Decision No. 11), FD 32760 (STB Served Nov. 28, 2023).

PUBLIC VERSION

order. Out of necessity, this discussion is partially repetitive of the discussion in my Opening VS. I have prepared two exhibits to complement this written description. First, I have prepared Appendix A, which lists equations that provide a formal mathematical representation of key steps in the process. Second, I have also prepared Appendix B, which presents a table that lists the workpaper files that carry out the various steps in my analysis. When applicable, I highlight the entries in this table listing the programs that carry out the specific calculations being described.

A. Development of Variable and Fixed Costs (“Question C”)

I computed variable costs for Rosebluff Lead traffic using the Board’s URCS costing program. I computed distance traveled for each movement from results obtained by routing Rosebluff Lead movements over the Brattle Rail Network Model, whose origins and characteristics were described in my Opening Verified Statement.² Data on other movement characteristics required by the URCS program were taken from the traffic tapes provided by the parties to this proceeding.³

My calculations are based on data for calendar years 2017 and 2018. I focused on these two years because they were the two most recent years for which all of the necessary inputs to the calculation were available at the time my 2021 Verified Statement was prepared.

The sections below describe the details of this process.

² Neels Opening VS at pp. 48-51.

³ Specifically, I relied on the following sources: BNSF-LC2020-HC-0000008, BNSF-LC2020-HC-0000009, UP-COMP-014602, KCS-HC-8248. *See also* Neels Opening VS at pp. 28-29.

PUBLIC VERSION

1. Processing of the Traffic Tapes

The three railroads that are parties to this proceeding – KCS, UP, and BNSF – all provided computerized summaries of the traffic on their networks that used the Rosebluff Lead.⁴ For the most part, the movements for which the parties provided detailed data were selected because they either originated or terminated in the Lake Charles area.⁵

Because the Rosebluff Lead is an important part, but still only a part, of the Lake Charles area rail network, the computerized data files provided by the parties generally contained a mixture of traffic using the Rosebluff Lead and traffic that did not use the Rosebluff Lead. To address the question posed, therefore, I had to separate the Rosebluff Lead traffic from the non-Rosebluff Lead traffic.

The only information contained in the computer files produced by the parties that would reliably identify the subset of movements that used the Rosebluff Lead was the identity of the shipper or consignee located in the Lake Charles area. I therefore extracted all unique shipper and consignee names appearing in the traffic files. Manual review of the names on this list identified some obvious misspellings and minor naming variations. After cleaning, and based on a combination of information provided by the parties and gleaned from internet sources, I classified the listed shippers into two groups: shippers definitely located on the Rosebluff Lead

⁴ *Ibid.*

⁵ The traffic data provided by UP and BNSF contained all movements that either originated or terminated at a station code located within the Lake Charles area. These files thus contained a mixture of Lead and non-Lead traffic. The data provided by KCS included only movements either originating or terminating on the Rosebluff Lead.

PUBLIC VERSION

and shippers who were either NOT on the Rosebluff Lead or whose locations could not be definitely determined.

The list of shippers produced by this process is shown in Appendix B of my Opening Verified Statement.⁶

All three sets of traffic data included shipment characteristics, including revenues; origin, termination and interchange points; net and gross tonnage; number of cars and car type; commodity type; and car ownership.⁷ For movements involving multiple railroads, the datasets also provide that portion of revenue accruing to the reporting railroad.

Prior to processing, shipments involving multiple railroads were broken into a series of single-railroad movements. Thus, a two-railroad movement was broken into two segments: the first covering the portion of the movement from the origin to the interchange point, and the second from the interchange point to the destination. A three-railroad movement was broken into three segments: the first covering the portion of the movement from the origin to the first interchange point, the second from the first interchange point to the second interchange point, and the final segment from the second interchange point to the destination. And so on for all carriers listed in the waybill record.⁸

⁶ See Neels Opening VS at pp. 46-47.

⁷ The only exception to this general statement involved the traffic data produced by KCS, which did not include information on car ownership. However, examination of data from the confidential waybill sample for KCS movements into or out of the Lake Charles area indicated that over [] percent of the cars used in these movements were privately owned. Based on this information, I assumed that in the movements listed in the KCS traffic files, all of the cars were privately owned.

⁸ The processing and cleaning of the traffic data is performed by the scripts listed in rows [3] through [11] of Appendix B. The table provides further detail of each cleaning step.

PUBLIC VERSION

The analyses described below relied only on those single railroad segments that either originated or terminated on the Rosebluff Lead.

The processing of traffic tapes was handled by a series of R⁹ scripts that are listed in rows [3] through [11] of Appendix B. This code was provided previously to the Board and is now re-submitted along with this statement.

2. Routings and Mileage

As noted above, one of the inputs to the URCS costing program – the length of haul – was computed by routing traffic data supplied by the railroads that are parties to this proceeding over the Brattle rail network.

The Brattle Group's rail network model was developed from the National Transportation Atlas Database (NTAD) maintained by the federal Bureau of Transportation Statistics. This database includes a geocoded database of all rail lines in the United States. Information contained in the database identifies, for each rail segment, which railroad or railroads own the facility, and which railroads, if any, possess trackage rights allowing them to operate over that facility. Brattle staff merged the raw NTAD data with information drawn from a variety of other sources. The resulting network representation includes location specific information regarding ownership, trackage rights, number of tracks, measures of traffic density, and type of signaling.

The Brattle network model routes single-railroad movements using an implementation of the Dijkstra shortest path algorithm. The routing algorithm of the model selects the minimum

⁹ R is an open-source programming language designed for statistical computing and graphing. It is used widely for data analysis in academia, industry, and government.

PUBLIC VERSION

“impedance” route for each movement. The impedance of a specific network link is equal to the length of that link in miles multiplied by a term that applies a weight to the distance based on the characteristics of the link. Higher impedance links provide less desirable routing alternatives than lower impedance links. Characteristics that determine impedance include number of tracks, the type of signaling equipment present, and whether the link is owned by a Class I railroad. The parameters that define the relative weight given to each attribute in calculating impedance were selected using a nonlinear search optimization procedure that identified the values that minimized the sum of squared differences between distances generated by the network model for movements in the Waybill Sample, and the distances for those same movements recorded in the Waybill Sample.

The network model routes single-railroad movements over subnetworks of the overall U.S. railroad network that include all track owned by the railroad in question, as well as any non-owned track over which that railroad holds trackage rights. Each subnetwork also includes track owned by short line railroads that interchange exclusively with the railroad in question, as well as portions of other short line railroads that appear, according to the information contained in the traffic data and gleaned from a variety of internet sources, to have haulage agreements with the railroad whose traffic is being routed.

These data sources, and the manner in which they are applied, were described in Appendix C of my Opening Verified Statement.

PUBLIC VERSION

3. Additional Location Data

To assure the most accurate routing and costing possible, I accounted for the switch movements taking place along the Rosebluff Lead when calculating traffic density and distances for the Rosebluff Lead shipments. I understand that UP and KCS operate the Rosebluff Lead under an agreement whereby deliveries to or pickups from Rosebluff Lead shippers located in Zone 1 are handled by KCS, while UP handles deliveries to or pickups from Rosebluff Lead customers located in Zone 2. I am informed that when it becomes necessary under these operating arrangements to transfer cars between the two co-owners of the Rosebluff Lead, the transfer takes place in the Rosebluff Yard.

For line haul movements involving a handoff at the Rosebluff Yard, I calculated the distance used to compute variable cost based on a routing from the non-Lake Charles endpoint of the trip to the customer location on the Lead. Separately, for the associated switch movement I calculated the over-the-rail distance from the Rosebluff Yard to the customer.¹⁰

These adjustment to the routings are performed by the script listed in rows [15] – [18] of Appendix B. This code, which has previously been provided, is being re-submitted along with this statement.

4. Calculation of Variable Costs

I calculated the variable costs of shipments reported in the UP and KCS railroad traffic files that originated on or terminated on the Rosebluff Lead using the STB's URCS program.

¹⁰ Customer location was defined as the last point on the Rosebluff Lead touched by the shipment. This location could represent the point where a customer-owned siding connected with the Rosebluff Lead.

PUBLIC VERSION

When utilized in batch mode, the URCS costing software calculates the variable cost associated with a rail movement based on the parameters listed in Table 5 of my Opening VS. For distance (i.e., the over-the-rail mileage of the route from the origin to the destination of the shipment), I used the routed mileage computed by the Brattle Rail Network Model. Values for other parameters were readily ascertainable from the information contained in the traffic files produced by the three parties.¹¹ For movement costing purposes, I set the URCS circuitry factor to 1.0. I made no adjustments to URCS default settings in carrying out these calculations.

I also used URCS to calculate the costs of switch movements along the Lead. I calculated the lengths of these movements based on the distance from the Rosebluff Yard to the location of the Rosebluff Lead shipper. I treat them as inter-terminal movements because they involved handoffs between different railroads. All other costing parameters for these switch movements – number of cars, commodity, etc. - were taken from their corresponding line haul movements.

Information from the traffic tapes, from the output of the routing process, and on the location of the specific shipper or consignee on the Rosebluff Lead were read in by a computer program that processed this information, and produced a file containing shipment characteristics in the format required for batch input into the URCS costing program for each railroad and

¹¹ The programs that generated the batch input files for the URCS costing program are listed in rows [15] through [17] of Appendix B. These files have been produced along with this statement. Separate URCS batch file runs were conducted for 2017 and 2018 KCS Lead traffic, and for 2017 and 2018 UP Lead traffic. Outputs of these batch file runs are listed in row [25] of Appendix B.

PUBLIC VERSION

year.¹² The output of the URCS costing program provided the Rosebluff Lead traffic variable costs and URCS constant cost markup ratios used in my analysis.

The traffic data supplied by KCS and UP contained no cost data, against which to compare the accuracy of the URCS variable costs calculated in this way. However, as I noted in my original 2021 Verified Statement, it was possible for the shipments contained in the Confidential Waybill Sample to compare my calculated variable costs with the variable costs reported in the Sample. When I regressed the cost per car contained in the Sample on the cost per car calculated as described above, the estimated coefficient on calculated costs was 0.997 with a t-statistic of 461.91. This coefficient was statistically indistinguishable from 1.00. The estimated constant in this regression was -3.0, and was statistically indistinguishable from zero. From this test, I concluded that my costing procedure produced results that, at the movement level, were extremely close to those included in the waybill sample, and at an aggregated level would be essentially indistinguishable.

For movements involving a handoff at the Rosebluff Yard, I added to these URCS variable costs the switch fees paid to the carrier that handles the final delivery. I assumed that this sum represents the total variable cost to the line haul carrier for the movement between the non-Lake Charles end of the trip and the location of the Rosebluff Lead shipper or consignee.

I emphasize that this treatment of switch fees conforms to the Board's favored methodology. In its Question C, the Board asks whether I adjusted my calculation of total costs

¹² The programs listed in rows [15] through [17] of Appendix B generate the specific inputs into the URCS program.

PUBLIC VERSION

as in CSX Corp.—Control & Operating Leases/Agreements—Conrail Inc., 4 S.T.B. 75, 84 (1999) to accommodate costs that are reflected elsewhere in the SSW calculation. Based on my understanding of that decision, the adjustment to which the Board is referring is the inclusion of switching costs in the calculation of total cost.¹³ My inclusion of switch fees for any line-haul movements requiring a switch along the Rosebluff Lead comports with this decision. As highlighted in Section II.C, this calculation of variable costs flows through the rest of my SSW calculation, including my calculation of contribution (revenue minus variable cost). See Appendix A for further detail.

The computer programs that prepare the URCS batch mode input files for the calculation of variable costs are listed in rows [15] through [17] of Appendix B. They are written in Python, and have been provided along with this statement, and were also provided previously. Additionally, the R script listed in row [19] of Appendix B adds switch fees to the URCS variable costs for movements entailing a handoff at the Rosebluff Yard. This script is also provided and was also submitted previously.

5. Allocation of Variable Costs to Rosebluff Lead Segments

For variable costs, I assumed, in accordance with the provisions of the ATC methodology, that the distribution of these costs across network segments is in proportion to segment lengths. That is, I assume that the share of a movement's variable cost allocated to any one link is equal to that link's share of the total distance traversed by the movement.¹⁴

¹³ CSX Corp.—Control & Operating Leases/Agreements—Conrail Inc., 4 S.T.B. 75, 84 (1999).

¹⁴ Equation (1) provides a detailed formula for this allocation.

PUBLIC VERSION

6. KCS and UP Fixed Costs

The first step in calculating fixed costs was to calculate for each railroad, and for each year, total systemwide URCS variable costs. To do this, I summed for each railroad and year combination the total variable costs reported in the Confidential Waybill Sample.¹⁵ In carrying out these summations, I weighted each record by its exact expansion factor.

To compute total fixed costs, I then multiplied the total system-wide variable costs for each railroad/year combination by its corresponding URCS constant cost markup ratio minus one.¹⁶

B. Allocation of Fixed Costs per Ton (“Question B”)

The process of allocating fixed costs involved seven steps. I list them briefly here before describing each step in detail in the paragraphs that follow. First, for each railroad/year combination, I calculated total fixed costs as described above. Second, for each railroad, I identified all links over which any traffic was routed. Third, I summed the lengths of all links identified in step two to determine the total mileage over which any rail traffic moved. Fourth, I divided the total costs identified in step two for each railroad and year by the total mileage calculated for the corresponding railroad computed in step three to compute for each railroad/year combination total fixed cost per route mile. Fifth, for each railroad/year/link combination, I multiplied link length in miles by the fixed cost per mile for the corresponding

¹⁵ This calculation is elaborated by Equation (2) in Appendix A.

¹⁶ This calculation follows from the fact that $\text{Total Costs} = \text{Variable Costs} + \text{Fixed Costs}$; given that multiplying Variable Costs by the constant cost markup ratio for the given railroad and year yields the corresponding Total Costs, it follows that Fixed costs are equal to the constant cost markup ratio minus one times Variable Costs.

PUBLIC VERSION

railroad and year to compute fixed cost by railroad, year and link. Sixth, I computed for each railroad, year and link the total net tons of traffic routed over that link by an owner railroad. Finally, I divided total fixed cost per link by total net tons of traffic to compute fixed cost per ton by railroad, year and link.¹⁷

In its Question B, the Board specifically cites Mr. Baranowski's ATC calculation in another case, noting that he allocated the host railroad's fixed costs based on density to develop ATC allocations. Specifically, in his Reply Verified Statement¹⁸ in that proceeding, Mr. Baranowski explains:

I also calculated fixed costs for the NECR by multiplying the fixed to variable cost ratio from URCS to calculate NECR's variable costs, and then divided the total resulting NECR fixed costs by NECR's route miles.

...

The resulting fixed costs per mile were distributed over all net tons traversing a given NECR segment to determine URCS fixed costs for each shipment.

Without access to his workpapers or the non-public filings, it is not possible to know all of the details in Mr. Baranowski's implementation of the ATC in that matter. However, based on what is knowable from the description he offers in the public version of the 2016 filing cited by the Board, my calculation and allocation of fixed costs is consistent with Mr. Baranowski's own calculation and allocation of fixed costs in that 2016 filing.¹⁹

¹⁷ Formulas detailing this allocation of fixed cost mathematically are presented in Equations (2) through (7) of Appendix A.

¹⁸ Pan Am Southern Reply, Ex. B, Baranowski V.S. 33-37 (July 19, 2016), New England Cent. R.R. Inc. – Trackage Rights Order – Pan Am Southern LLC, FD 35842, pp. 37-38.

¹⁹ The first sentence cited above is somewhat imprecise. However, I believe that Mr. Baranowski multiplied "...the fixed to variable cost ratio from URCS **by** NECR's variable costs...", which is how I implemented my

PUBLIC VERSION

Below I describe each step in this process in detail.

1. Total Fixed costs

I described the calculation of this quantity above in my response to question C. For each railroad and year, I calculated a weighted sum of all the URCS variable costs reported in the confidential waybill sample, and then multiplied this total by the URCS constant cost markup ratio minus one to compute total fixed costs.

2. Identification of Links with Routed Traffic

I described above in my response to question C the process, whereby I used the Brattle Rail Network Model to route the traffic movements contained in the traffic tapes provided by the parties to this proceeding, and in the confidential waybill sample. For each railroad, four separate routings of traffic were carried out: one each for 2017 and 2018, for both the traffic tape data and the confidential waybill sample data. From these results I identified for each railroad the set of links over which at least one movement was routed in at least one of the four routings. Note that each of the resulting sets of links potentially included not just links owned in whole or in part by the subject railroad, but also any non-owned links accessed via trackage rights or haulage agreements.

The results of the routing are found in the workpapers listed in row [20] – [24] of Appendix B. These workpapers are submitted along with this Statement and were also provided previously.

calculation, and is consistent with my understanding of the Board's description of the ATC methodology, as provided in Major Issues in Rail Rate Cases, STB Ex Parte No. 657 (Sub-No. 1) (STB served October 30, 2006) ("Major Issues").

PUBLIC VERSION

3. Calculation of Total Routed mileage.

To compute total routed miles I summed, for each railroad, the lengths of links identified in the step described above that were owned in whole or in part by the subject railroad. For links with multiple owners (like the Lead), I divided link length by the number of owners before summing link lengths. Note that this calculation of total routed mileage did not include the mileage of links accessed under trackage or haulage agreements.²⁰

The program listed in Row [25] performs the allocation of fixed costs, the calculation of ATC, and the allocation of revenue. This script is written in R and is provided along with this statement.

4. Calculation of Fixed Cost per Mile

This calculation involved simple division. Fixed costs varied by railroad and year, while total routed mileage varied only by railroad. For each railroad/year combination, I divided total fixed costs by total routed mileage to arrive at a fixed cost per mile.²¹

5. Compute Allocated Fixed Cost by Year for Each Link

This calculation involved simple arithmetic calculations. For each link, railroad, and year, I multiplied the length of the link by the appropriate fixed cost per mile, and then multiplied this value by the share of that link owned by that railroad. Lacking specific data on ownership shares, I assumed that the ownership shares for links with multiple owners were equal

²⁰ Equation (3) Appendix A provides a mathematical definition of this calculation.

²¹ See Equation (4) in Appendix A.

to one divided by the number of co-owners. In a second step I then summed allocated fixed costs across railroads for each link.²²

For single-owner links (which constitute the vast majority of links), obviously, no summation was necessary. Jointly-owned links wound up with an allocated fixed cost equal to link length multiplied by a simple average of the fixed cost per mile values of the owner railroads.

6. Total Net Tons by Link

To compute link-specific traffic density (measured in net tons), it was necessary for each link to sum the net tonnage associated with all movements traversing that link. Because they described only traffic originating or terminating on the Lead, the traffic data provided by the three parties to this proceeding could not be used to compute link-specific traffic density.²³ For this purpose, I relied upon the 2017 and 2018 Confidential Waybill Samples. Following the same procedures described above, I split all multi-railroad waybills into single-railroad segments, and routed each of these segments separately using the Brattle Rail Network Model. As noted above, the routing process produced for each shipment a sequential list of the links traversed by that shipment.

To calculate total net tons by link and year, I attached to each link traversed in that year the number of net tons associated with each shipment from railroads that were at least partial

²² See Equation (5) in Appendix A.

²³ Because of the omission from produced traffic files of movements that neither originated nor terminated in Lake Charles, I had no way from this data source of measuring the contribution to link specific traffic density of such off-Lead traffic.

PUBLIC VERSION

owners. Then, link by link, I summed across all shipments by all railroads to arrive at the total net tonnage using each link.²⁴

I carried out this same process for the shipment data contained in the traffic files produced by the parties to this proceeding.

These traffic files contain a complete census of all shipments using the Lead.²⁵ The traffic density information for the Rosebluff Lead derived from the traffic files was, for a number of reasons, superior to that provided by the confidential waybill sample. First, for movements originating or terminating on the Lead, the traffic files represented a complete census of traffic, rather than a random sample. Second, using the shipper/consignee information contained in the traffic files, I was able to identify with precision not only which shipments used the Lead, but also their precise origination or endpoint locations on the Lead.

Note that certain movements involved a change of carrier along the Lead.²⁶ In these cases, I included in my calculation of density both the line-haul portion of the trip from its origination off-Lead to the ultimate shipper or consignee along the Lead, as well as the switch-portion of the trip, which was routed from the relevant yard (based on the location of the

²⁴ Details of this fixed cost allocation are provided in Equation (7) of Appendix A.

²⁵ The fact that the traffic files are limited to movements that originated or terminated on the Rosebluff Lead (or in the case of UP, in the Lake Charles area) had no adverse effect on my calculation of traffic density on the Lead. For off-Lead segments, I used the Confidential Waybill Sample to compute density, which is representative of *all* traffic. I used the traffic files for the density calculation for segments along the Rosebluff Lead, which, as stated above, comprise a complete census of all Lead traffic. As explained in Section II.C, I also used the traffic files when allocating revenue to the Lead segments.

²⁶ As discussed previously in Section II.A.3, I understand that KCS handles all traffic to customers in Zone 1, while UP handles all traffic to customers in Zone 2; these railroads exchange traffic at the Rosebluff Yard. BNSF exchanges traffic at UP's North Yard in Lake Charles, and further movement down the Lead is handled by KCS or UP.

exchange) to the ultimate shipper/consignee. The net effect of this modelling choice is to double-count the mileage of these movements in my calculation of traffic density. As discussed further in Section IV.B.2, this approach reflected a deliberate choice to model the fair economic value of the Rosebluff Lead to both the railroad originating the traffic and the railroad carrying the traffic.²⁷ Because the Lead is jointly owned by KCS and UP, and the operations of the two owners are intricately intertwined, I considered both the originating carrier and the carrying carrier to get an accurate understanding of operations on the Rosebluff Lead and its value.

My final calculations of net tonnage by link and by year combined information from the confidential waybill routings and the traffic file routings. Specifically, for all links on the Lead, I used traffic density as calculated using the traffic files. For all other links, I used traffic density as calculated using the confidential waybill sample.

7. Compute Fixed Cost Per Ton by Railroad, Year and Link

This final calculation involved, once again, simple arithmetic. For single-owner links, the calculations described above produced for each year a pair of values for each link based upon link length: that railroad's fixed cost per mile, and the total tonnage routed over the link. Note that this total tonnage could include tonnage carried by other railroads under trackage rights or haulage agreements. For jointly-owned links, this process produced for each year separate fixed cost per mile values for each owner railroad, but only a single value for total tonnage routed over the link. To compute fixed cost per ton I simply divided fixed costs by total tons.

²⁷ Note that, in my current calculation of trackage fees, I omit BNSF-originated traffic from my calculation of density. My treatment of switches between KCS and UP, however, remains unchanged.

C. The Allocation of Revenues Between Segments (“Question A”)

In the preceding Sections, I described the allocation of variable and then fixed costs across individual movements and links; in this Section, I explain how these allocated costs informed my allocation of revenues.

The traffic data provided in this matter reports, for all traffic originating or terminating in the Lake Charles Area, the revenue associated with each movement. As before, I limited my attention to movements that utilize the Rosebluff Lead, which I determined based on the name and location of the ultimate customer. For each of these movements, I allocated variable and fixed costs to individual segments along the Rosebluff Lead following the methodology discussed above. To compute fixed costs for a specific movement and link, I multiplied the year-specific fixed cost per ton for that link by the number of tons associated with that movement. It follows that, for any one movement, the total cost allocated to the segment is the sum of its allocated variable and fixed costs.²⁸

I then allocated revenue to Rosebluff Lead segments based on each segment’s share of total allocated costs for the movement. Specifically, for each movement, I first sum allocated total costs across all links traversed by the movement, based on its routing as determined by the Brattle Rail Network Model. The share of the movement’s revenue allocated to any one link is then the total movement-specific cost allocated to that link divided by this sum.²⁹

²⁸ See Equation (8) of Appendix A for further detail.

²⁹ Details of this allocation are displayed by Equation (9) of Appendix A.

The R script listed in line [25] of Appendix B performs the allocation of fixed costs as well as revenue to individual movements and segments.

III. Based on the STB's ATC Methodology, the KCS Contribution Generated by the Rosebluff Lead is Sufficient to Cover its Associated Fixed Costs

In the Nov. 28 Decision, the Board wrote that, upon its preliminary review, “the data submitted by KCS suggests that KCS’s earnings on the full Rosebluff Lead were negative under the traditional CE approach,” as “KCS earned less revenue than its total costs.”³⁰ During the Technical Conference, held on June 13, 2024, the Board staff representative indicated that this conclusion was based on Board staff’s review of a workpaper filed by BNSF Witness Michael Baranowski, namely “Restated Neels CE Results-c2.xlsx,” but was unable to provide further detail. Given the limited information provided, the basis for the Board’s concern as expressed above remains somewhat unclear. In this section of my Verified Statement, I demonstrate that my results do in fact indicate that KCS generates positive earnings on the Lead. I also note that one unnecessary complication (as elaborated below) and one error in Mr. Baranowski’s workpaper (as explained in footnote 38YY) may have contributed to the conclusion reached by the Board.

In the cited workpaper, Mr. Baranowski presents a summary of some intermediate outputs from my analysis. Those intermediate outputs are themselves the output of a modified

³⁰ See Nov. 28 Decision, at 7.

PUBLIC VERSION

version of a computer program I submitted as part of my workpapers.³¹ The intermediate outputs in question are allocated revenues, allocated variable costs, and a variable Mr. Baranowski labels “Fixed Costs.”³² In the tab titled “Calculations”, Mr. Baranowski calculates sums, by year over both railroads, of the allocated revenue, allocated variable cost, and fixed cost.³³ Mr. Baranowski calculates a “Contribution / Earnings” variable, where earnings is equal to contribution less fixed cost, and contribution refers to a combined Rosebluff Lead contribution for KCS and UP. He also calculates KCS’ share of earnings excluding (all) switch moves. None of these earnings values are negative.³⁴ Mr. Baranowski does not, however, calculate a KCS-specific earnings value that includes switch moves. When I adjust Mr. Baranowski’s workpaper to calculate a KCS-specific earnings total that includes switch movements using the tab “R Output” and Mr. Baranowski’s methodology of summing over the “source” railroad rather than the “carrying” railroad, I obtain a negative value for earnings, which may be what the Board is referring to with the statement that “KCS earned less revenue than its total costs.”³⁵

Rather than correcting a calculation that may or may not be what the Board is relying on, I present a simple calculation that should reassure the Board that my results generate allocated KCS earnings on the Rosebluff Lead that are positive.³⁶ First, I sum the revenues and variable

³¹ Specifically, Mr. Baranowski’s modification of my workpaper was subsequently produced by him as “NEELS-WP-HC-0346_BARANOWSKI_REPLY_OUTPUT.R.” The resulting outputs are saved to the “R Output” tab of the “Restated Neels CE Results-c2.xlsx” workpaper.

³² See columns AA-AC in the tab “R Output” of “Restated Neels CE Results-c2.xlsx.”

³³ See rows 19-21 in the tab “Calculations” of “Restated Neels CE Results-c2.xlsx.”

³⁴ See row 24 in the tab “Calculations” of “Restated Neels CE Results-c2.xlsx.”

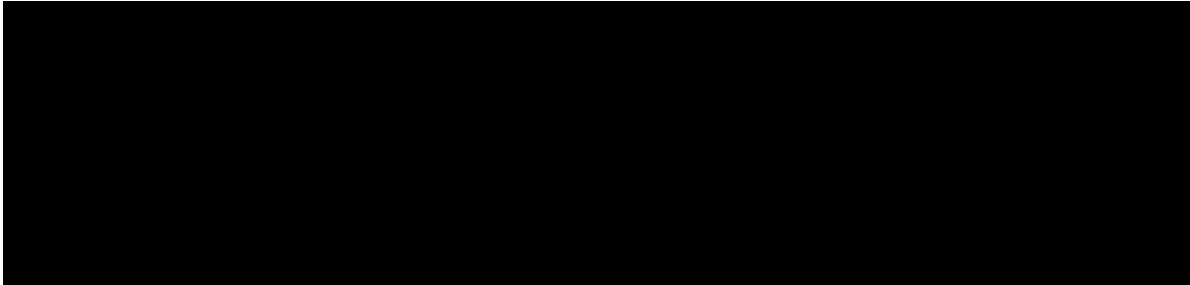
³⁵ See Nov. 28 Decision, at 7.

³⁶ I follow the Board’s statement and present calculations for the entire Rosebluff Lead (and not just the segments needed to access Lyondell). An alternative version of this Table, where the calculation is limited to the Lyondell segments, but which reaches the same conclusion, is provided in tab “Summary w Lyondell” of workpaper “NEELS-WP-HC-0501.xlsx.”

PUBLIC VERSION

costs allocated to Rosebluff Lead segments over the KCS portions of moves on the Rosebluff Lead. This set of moves includes both the linehaul portions of moves from the KCS traffic tapes, and the switch portions of those moves from the UP traffic tapes wherein UP relied on a KCS switch move to access a customer location in Zone 1.³⁷ Columns [A] and [B] of Table 1 presents the KCS revenues and variable costs, respectively, allocated to Rosebluff Lead segments under my ATC calculation, for each of the two years I analyzed.

Table 1: Calculation of KCS Earnings Allocated to the Rosebluff Lead
[[



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Sources and notes:

[A]: Calculated from the KCS and UP Traffic Tapes. *See* Section II.C.

[B]: Calculated using URCS. *See* Section II.A.5.

[C] = [A] - [B].

[D]: Calculated as the sum of URCS as the variable cost for all movements in the given year, multiplied by the URCS constant cost markup ratio minus one, multiplied by the share of link miles to system miles. *See* Section II.B.4.

[E] = [C] - [D].

³⁷ In Mr. Baranowski's workpaper, he sums not over the operating carrier but over the source carrier (*i.e.*, the carrier in whose traffic tape file the movement appears). Thus, to calculate KCS contribution he adds to the contribution associated with KCS line haul movements the contribution earned by UP on switch movements it carries for KCS to Zone 2 customers. In my opinion, this calculation is incorrect, and is inconsistent with my calculation of ATC, and may be partially responsible for Board's finding of negative allocated earnings for KCS. This calculation by Mr. Baranowski is the error I referred to in the main text.

PUBLIC VERSION

Next, I calculate KCS' share of allocated fixed cost, which for a given segment or set of segments is relatively simple. As I explain in Section II.B.5, for both 2017 and 2018 I calculate a KCS network-level allocated fixed cost per mile.³⁸ Given that KCS is a 50% owner of the Rosebluff Lead, calculating the KCS share of allocated fixed cost for a given segment (or set of segments) is as simple as multiplying the route miles of the segment by this allocated fixed cost per mile, and then dividing by two. Doing so indicates that KCS' share of allocated fixed cost for the Rosebluff Lead was \$[[REDACTED]] in 2017 and \$[[REDACTED]] in 2018.³⁹ Those numbers are reported in column [D] of Table 1.

Column [C] of Table 1 presents allocated contribution (allocated revenue minus allocated variable costs), while column [E] provides allocated earnings (allocated contribution less allocated fixed costs). KCS earnings allocated to the Rosebluff Lead are positive in both years – in other words, the KCS revenues allocated to the Rosebluff Lead exceed the allocated total costs borne by KCS.⁴⁰

³⁸ This calculation takes account of the partial ownership of track.

³⁹ Alternatively, if one focuses solely on the Lyondell segments, KCS' share of allocated fixed cost was \$[[REDACTED]] in 2017 and \$[[REDACTED]] in 2018. See the tab "Summary w Lyondell" of workpaper NEELS-WP-HC-0501.xlsx.

As reported in his workpaper, Mr. Baranowski instead calculates KCS fixed costs by summing *afc* (a movement-link-level variable) over links and KCS traffic tape movements. See column I in the tab "R Output" of "Restated Neels CE Results-c2.xlsx". See also, lines 333-336 of "NEELS-WP-HC-0346_BARANOWSKI_REPLY_OUTPUT.R." This portion of his calculation is what I refer to as "an unnecessary complication" in the main text above.

In principle, summing *afc* should generate an allocated fixed cost total that is equivalent to the link-level fixed costs one starts with, for any given set of links. However, there are at least two factors that make that equivalence less than straightforward in the current context, with two owners sharing unequally in fixed costs and Rosebluff Lead traffic. First, the fixed cost I used in calculating *afc* is the total link fixed cost for all owners, rather than the railroad-specific fixed cost (as described in Section II.B.5). Second, each railroad owner's recovery of *afc* is not tied to their share of each link's fixed cost, but to traffic levels.

⁴⁰ Table 1 is based on the full Rosebluff Lead, corresponding to the language in the concern as articulated by the Board. An alternative version of this Table, where the calculation is limited to the Lyondell segments, but which reaches the same conclusion, is provided in the tab "Summary w Lyondell" of workpaper NEELS-WP-HC-0501.xlsx.

IV. Failure of the Contribution Allocated to the Rosebluff Lead Under the ATC Methodology to Cover the Fixed Costs Allocated to the Rosebluff Lead Would Not Mean That the Rosebluff Lead is Unprofitable

In its Nov. 28 Decision the Board stated that:

“In the course of reviewing the parties’ filings and workpapers, the Board has identified an apparent error in certain data submitted by KCS and its expert Dr. Kevin Neels. The data suggests negative KCS earnings from the Rosebluff Lead, which appears to be neither consistent with the record, nor supported by the parties’ workpapers.”⁴¹

Although it was not clear from that decision what exactly the error referred to in this statement was, it appears likely that it may relate to the question of whether, under the ATC methodology, the contribution allocated to the Rosebluff Lead for KCS is sufficient to cover the fixed costs allocated to the Rosebluff Lead. In the calculations submitted with my March 2021 Revised Verified Statement, the KCS contribution allocated to the Lead was positive both for 2017 and 2018, and more than sufficient to cover the allocated fixed costs. However, it was true that the ability of allocated contribution to cover allocated fixed costs disappeared if one ignored the KCS contribution associated with switch movements, which Mr. Baranowski characterized as “artificial.”⁴²

Because of the possibility that the Board’s concerns arise from a perceived inability of allocated contribution to cover allocated costs, it is worthwhile to examine from a conceptual perspective exactly what such an outcome implies. As I will show, coverage of ATC fixed costs

⁴¹ See Nov. 28 Decision, at 1-2.

⁴² See Baranowski Verified Statement, April 12, 2021, at 4.

PUBLIC VERSION

by ATC contribution is not, in my opinion, the correct way to calculate the value or the profitability of the Rosebluff Lead to KCS. I emphasize here that all of the results described below are simply summaries of some of the outputs from my original ATC calculation.

A. The Fixed Cost Allocation Methodology Applied Under the ATC Has No Causal Economic Justification

It is widely accepted in economics that there is no non-arbitrary way to allocate fixed costs. Variable costs are, by definition, those costs which change in response to change in the level of output. This association demonstrates a causal relationship between the products and the costs, and also provides a way of measuring the magnitude of these costs. In contrast, fixed costs do not change with changes in output and have no such causal association. Thus, there is no non-arbitrary way of computing the amount of fixed cost associated with a particular product or unit of output.

While the practice of allocating fixed costs to specific products or units of output is widespread in business, the rationale for such allocations is not because individual units of output “cause” those fixed costs. Rather, fixed costs are allocated to products in order to inform pricing decisions and assure that, collectively, the revenues generated by the sale of those products are sufficient to cover the fixed costs of the business. As the Board is well aware, if price never covers more than variable costs, the business will quickly fail. As the Board is also aware, setting rates based on a uniform markup over variable costs can result in substantial inefficiencies capable of harming both the seller and the customer.

PUBLIC VERSION

A clear implication of these considerations is that allocation of fixed costs reflect not causation, but rather, efforts to plan for coverage of those costs. Careful analysis of the ATC methodology indicates that, as with normal business practice, its allocation of fixed costs is motivated, to a large extent, by cost coverage, rather than just cost causation.

The ATC method was first proposed by the Board in 2006 in Ex Parte 657 as an alternative to the use of the Modified Straight-Mileage Prorate (MSM) methodology for allocating revenue to different segments of a movement in SAC cases.⁴³ MSM largely allocated the revenues associated with a movement to the different track segments traversed by that movement in proportion to their relative lengths.⁴⁴ In proposing the ATC method, the Board noted that MSM “fails to take into account the defining characteristic of the railroad industry – economies of scale, scope and density.”⁴⁵ In the SAC context, the MSM created opportunities to game the system when designing an SARR. Under the MSM approach when high density segments carrying large amounts of crossover traffic were included in the SARR, they allocated large amounts of revenue, potentially skewing the outcome of the SAC test.

In describing how its proposed ATC method was to be implemented, the Board stated:

The ATC method calculates the average total cost per ton associated with the segments at issue. It does so by first calculating the railroad’s system-average variable cost per ton using unadjusted URCS. It then uses the URCS system-average fixed cost and system-wide route miles to derive a system-average fixed cost per route mile. This calculation, when

⁴³ See Major Issues.

⁴⁴ MSM called for the addition of a 100-mile block or credit for the additional costs of originating or terminating the traffic. Otherwise, it called for a mileage-based approach to revenue allocation. *Ibid.*, at 25.

⁴⁵ *Ibid.*

PUBLIC VERSION

combined with the actual route miles and traffic tons of the segment in question, is used to derive the average fixed cost per ton of that segment.⁴⁶

Although this statement calls for the *calculation* of the average fixed cost of the different segments, the process it describes for doing so is a simple mechanical allocation that takes no account of obvious cost differences between high-density and low-density segments. Consider, for example, a route segment of high-density mainline track. It is likely to rest upon a wider right-of-way, and to contain two or three tracks designed and built to accommodate higher-speed traffic. In contrast, a low-density feeder line is more likely to involve a single track resting upon a narrow right-of-way. The fixed cost allocation mechanism built into the ATC treats the two categories of track identically. This method also ignores the fact that many fixed costs cannot be associated with *any* specific segment of right-of-way – headquarter costs, for example.

Despite these shortcomings, the ATC method in practice works better than MSM as it accurately reflects important cost coverage considerations. In contrast to a low-density segment, a high-traffic-density segment can draw upon a much larger pool of revenues to cover its costs. From this perspective, it makes eminent sense that a high-density segment would have a smaller cost-coverage claim on the revenues of any single movement than a low-density segment.

When viewed from a cost-coverage or cost-recovery standpoint, it is clear that the special circumstances surrounding terminal track, like the Rosebluff Lead, justifies an even greater claim on the revenues of the traffic it generates than the ATC method provides. The Rosebluff Lead provides the *only* means of rail access to a large group of high-volume shippers. Closure of the Rosebluff Lead would eliminate not just the share of Rosebluff Lead traffic revenue assigned to

⁴⁶ *Ibid*, at 34.

PUBLIC VERSION

Rosebluff Lead traffic under the ATC method, but all the revenue associated with that traffic. For this reason, in a very real sense, the Rosebluff Lead has a primary claim on all of the revenues associated with Rosebluff Lead traffic.

As I show below, viewed as a whole, the Rosebluff Lead traffic appears to be very profitable for KCS. And if the Rosebluff Lead traffic is profitable, so is the Rosebluff Lead itself.

B. Why Do My January 2021 Filed Results Make KCS' Rosebluff Lead Profitability Look Low?

As I have noted above, statements made by the Board indicate a concern on its part that my prior work in this matter implies that the Rosebluff Lead is not profitable for KCS. As I have also noted, I firmly believe that the Rosebluff Lead is, in fact, profitable, and have presented results and calculations supporting this belief.

Nonetheless, there are some aspects of my implementation of the ATC methodology that cause my calculation of the contribution generated by the Rosebluff Lead to be lower than it might be otherwise. In this section, I discuss these aspects of my work to ensure the Board has a full understanding of them.

1. Inclusion of Switch Movements in Rosebluff Lead Density Calculations

As I noted in both my Opening Verified Statement, and in the answers presented above to the questions posed by the Board in its Nov. 28 Decision, in our effort to depict accurately movements along the Lead, I took into account the switch movements routinely carried out by KCS and UP on the Lead. These included switch movements to and from the North Yard by UP

PUBLIC VERSION

for BNSF shipments involving customers on the Lead, as well as UP switch movements between the Rosebluff Yard and Zone 2 customers, and KCS switch movements between the Rosebluff Yard and Zone 1 customers. All these movements were accounted for in my calculations of the traffic density of the various segments of the Lead.

In calculating Rosebluff Lead traffic density, I also accounted for line haul movements on the Rosebluff Lead. In routing these movements, I included all segments between the off-Lead endpoint of the movement and the location of the Rosebluff Lead customer. Including the full line haul routing in this way had the effect, for shipments involving switch movements as described above, of double-counting their contribution to Rosebluff Lead traffic density.

I understood that this double-counting could have the effect of reducing the amount of revenue allocated to the Rosebluff Lead. However, I believed that it was necessary to include the full routing from shipper to consignee in my revenue allocation in order to capture fairly the economic value generated by the Rosebluff Lead. Conversely, given the complex and important role played by the switching activities on the Rosebluff Lead, I did not feel that I could simply ignore them. I understood that the net effect of their inclusion might be to depress the amount of revenue ultimately allocated to the Lead. However, because the net effect of this decision would be to push my results in a conservative direction, I felt this decision was defensible.

2. Effect of Including BNSF-Related Switch Movements

Although I included BNSF-related switch movements in my calculation of traffic density on the Lead, I did not include in my calculation of Rosebluff Lead-related revenue any allocation either of BNSF line-haul revenue, or any switch fees paid by BNSF. I was hard-pressed to come

PUBLIC VERSION

up with any legitimate reason for assigning to the Rosebluff Lead any revenues associated with a party with no ownership stake in the Rosebluff Lead and who makes no payment to KCS for access to the Rosebluff Lead, and who obtains their access to the Rosebluff Lead traffic via either haulage rights on UP or via a switch fee paid to UP.

In reconsidering this decision in light of the Board's comments and questions, I have decided that it was a mistake to include BNSF traffic in the calculation of Rosebluff Lead traffic density. As I have noted elsewhere in this statement, one of the most important, if not the primary, reason why the ATC method produces useful and meaningful results is that it captures the important reality that, in covering its costs, a high-density route segment can draw upon the revenues of a large pool of traffic. However, this statement does not apply to KCS for BNSF's traffic on the Rosebluff Lead, and for UP it applies only to the extent allowed by the provisions of the agreements entered into between BNSF and UP, which were implemented in order to secure approval of UP's acquisition of SP and to provide BNSF access via the so-called Lake Charles condition.

In light of these considerations, I now believe that the correct approach is simply to ignore the BNSF traffic in computing the traffic densities used in the ATC revenue allocations. Below I present results based on this corrected approach.

3. Inconsistency Between KCS and UP Ownership Shares and Usage

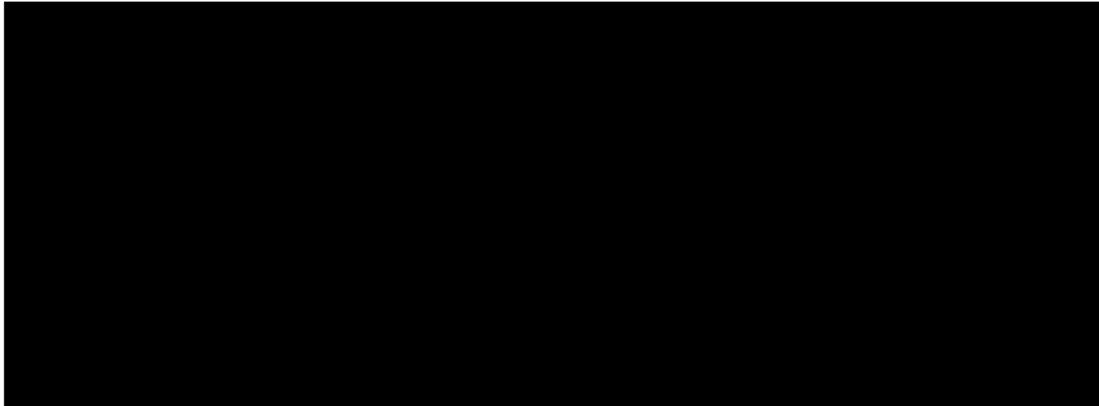
A third factor that has the effect of reducing the apparent profitability of the Rosebluff Lead to KCS is the inconsistency between KCS and UP ownership shares and traffic shares. KCS and UP each have a 50 percent ownership interest in the Lead. However, their respective

PUBLIC VERSION

shares of traffic on the Rosebluff Lead are far from equal, as the table below (from my Opening Verified Statement) makes clear.

Table 2: Rosebluff Lead Car Counts by Originating Railroad, 2017-2018

[[



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Source and notes:

Traffic tapes produced by each of the three railroads in this proceeding. I isolated Rosebluff Lead traffic based on shipper and consignee names. Includes local traffic.

As stated above in my responses to the questions posed by the Board, for links with multiple owners, I calculated fixed cost per mile as an ownership share-weighted sum of the fixed costs per mile of the owner railroads. The amount of total link fixed cost calculated in this way for a specific owner railroad is equal to total fixed cost for the link divided by the railroad's ownership share. The implication of this process for the Rosebluff Lead is that both KCS and UP are assigned the same total fixed cost for each of the links on the Rosebluff Lead, despite the fact that UP's traffic on the Rosebluff Lead is more than double that of KCS. As a result, each of the smaller number of KCS Lead movements has a higher burden of Rosebluff Lead fixed costs to cover.

PUBLIC VERSION

I am not arguing that these unequal outcomes for the two owners are inappropriate or erroneous. Rather they seem to follow directly from the provisions of the ATC method, as modified to accommodate a situation with multiple right of way owners.

C. Analysis of the Overall Profitability of Rosebluff Lead Traffic

In light of the preceding discussion regarding the suitability of ATC results as a test for whether KCS's Rosebluff Lead earnings are positive, in this short section I propose three alternative measures of the profitability of Rosebluff Lead traffic. The first compares the total contribution of KCS movements⁴⁷ using the Rosebluff Lead against KCS' share of the fixed costs allocated to the Rosebluff Lead by the ATC methodology. The second compares the contribution of these movements with the result obtained by multiplying their variable costs by KCS' systemwide fixed to variable cost ratio. Finally, I consider the profitability of the Rosebluff Lead using an expanded measure of allocated fixed cost that accounts for the allocated fixed cost per ton for ALL segments traversed by this traffic. All three of these analyses indicate that traffic utilizing the Rosebluff Lead is highly profitable.

I first analyze whether the contribution generated by KCS movements along the Rosebluff Lead covers the KCS fixed costs allocated to the Rosebluff Lead. In Table 3 below, I show in row [1] of column [A] that in 2017, KCS movements utilizing the Rosebluff Lead generated approximately [[REDACTED]] worth of contribution. In contrast, rows [5] and [6] of this column demonstrate that segments serving the Lyondell facility are allocated approximately [[REDACTED]] in KCS fixed costs, while the entire Rosebluff Lead accounts for [[REDACTED]] in

⁴⁷ For this analysis, I use "KCS movements" to denote movements from the KCS traffic tapes.

PUBLIC VERSION

allocated KCS fixed costs.⁴⁸ Column [B] reports similar numbers for 2018. This analysis demonstrates that the KCS contribution of movements relying on the Rosebluff Lead far outweighs its allocated fixed costs.

As discussed previously, the value of Rosebluff Lead lies in the access it provides to a large set of shippers. Absent the Rosebluff Lead, all the contribution listed in row [1] of Table 3 would simply disappear. Hence, this comparison demonstrates that the KCS fixed cost allocated to the Rosebluff Lead by the ATC methodology is small relative to the corresponding allocated contribution generated by the Lead's highly profitable traffic.

In a second comparison, I compare contribution from the KCS traffic with an alternative measure of fixed costs derived from Rosebluff Lead traffic variable costs using the URCS constant cost markup ratio. In row [7] of Table 3, I calculate the total fixed cost amount calculated from the total variable cost of Rosebluff Lead movements using the URCS constant cost markup ratio for each railroad, reported in row [8]. In row [9], I multiply the total variable costs in row [7] by the constant cost markup ratio minus 1 to calculate an alternative measure of fixed costs. The fixed costs computed in this way equal approximately [[REDACTED]] and [[REDACTED]] in 2017 and 2018, respectively. Notably, these calculated fixed costs are still well below the contribution generated by Rosebluff Lead movements reported in row [1]. Hence, this comparison provides further support for the conclusion that traffic generated by the Rosebluff Lead is highly profitable.

⁴⁸ As shown in the Table 3, I estimate these fixed costs by calculating an average fixed cost per mile across KCS' entire network, and then multiplying by the distance of the Rosebluff Lead segments; I divide these fixed costs by 2 to account for the joint ownership structure with UP. See Appendix A for further detail.

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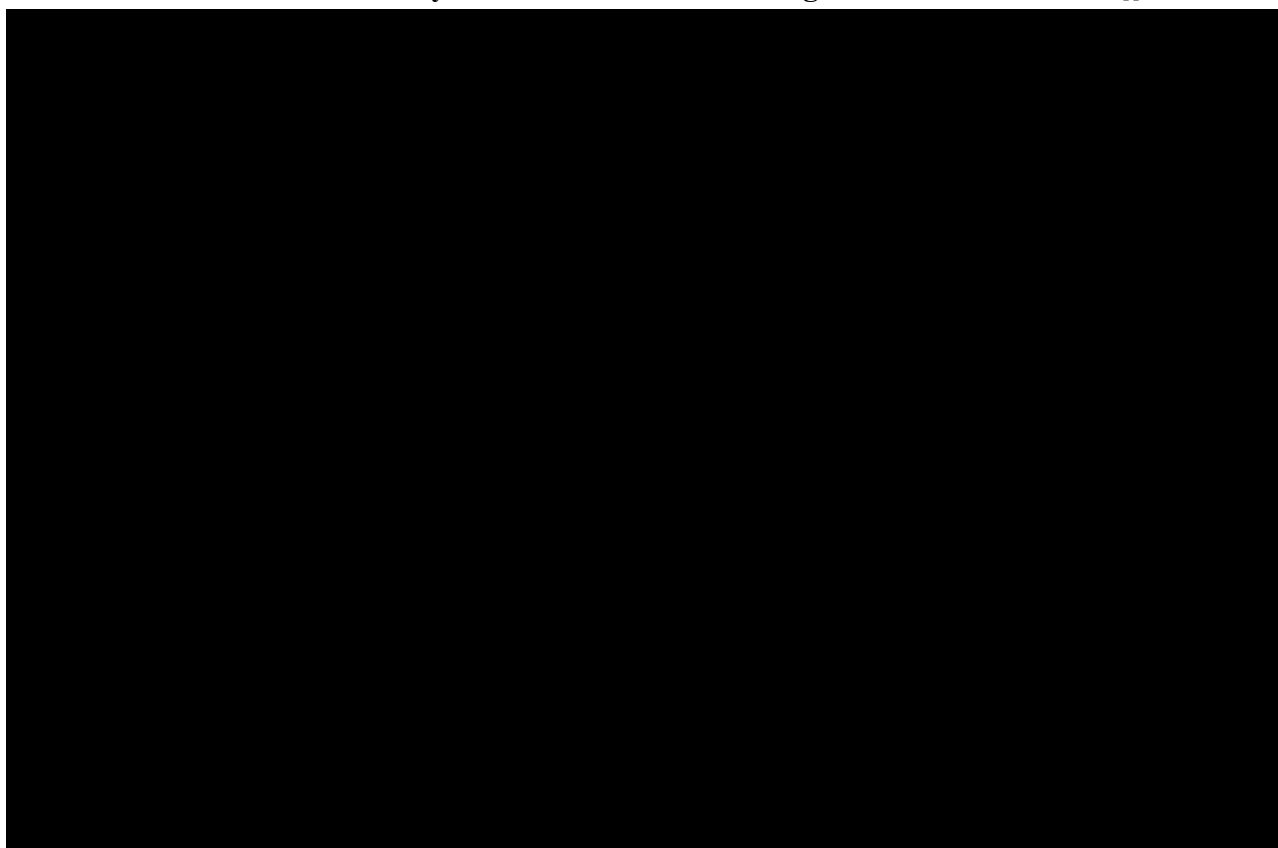
A third measure of the fixed cost associated with movements using the Rosebluff Lead sums up appropriate amounts of the segment-specific allocated fixed costs of all segments utilized by Rosebluff Lead traffic, regardless of whether those fixed costs are associated with links on the Lead or off the Lead. Recall that the ATC revenue allocation methodology assigns allocated link fixed costs to individual movements based on the movement's share of total tonnage routed over each owned link used in that movement.⁴⁹ Summing these allocated costs across all movements that utilize the Lead provides a third measure of Rosebluff Lead traffic fixed costs derived from the ATC methodology. In rows [10] and [11], I present results of this calculation, whether including or excluding BNSF from the calculation of density along the Rosebluff Lead.⁵⁰ In either BNSF scenario, the Rosebluff Lead traffic remains profitable overall.

In summary, the analysis presented in this Section indicates that traffic on the Rosebluff Lead is indeed profitable. Utilizing data on revenues and total costs, as well as fixed costs per mile from my ATC calculation, I present three alternative methods of measuring the fixed cost coverage and profitability of traffic that relies on the Rosebluff Lead; in all scenarios, the contribution generated by Rosebluff Lead traffic more than covers the fixed cost allocated to the Rosebluff Lead, or to movements using the Rosebluff Lead. Based on this analysis, I conclude that the Rosebluff Lead is profitable.

⁴⁹ See Appendix A for details on this allocation.

⁵⁰ As discussed previously, my initial submission included BNSF traffic in the calculation of total density along the Rosebluff Lead. However, for the purpose of evaluating the profitability of Rosebluff Lead traffic, their inclusion is not appropriate because they are not owners of the Rosebluff Lead, and thus contribute nothing toward coverage of fixed cost. I present both numbers here for the sake of consistency with my previous submission and note that my conclusions do not change in either case.

Table 3: Profitability of KCS Traffic Utilizing the Rosebluff Lead [1



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Sources and Notes:

All dollar values reported in thousands.

[1]: Total contribution (revenue minus variable cost) for all movements listed in the KCS traffic tapes that utilize the Lead.

[2]: Fixed cost per mile for KCS, calculated as the sum of URCS variable costs for all movements in the given year, multiplied by the URCS constant cost markup ratio minus 1, and divided by the mileage of the network.

[3]: Sum total distance of segments along the Lead serving the Lyondell facility. Note that this sum includes the total track length along the Rosebluff Yard.

[4]: Sum total distance of all segments on the Lead.

[5] = [2] x [3] / 2. Note that the fixed cost is divided by 2 to account for the joint ownership structure.

[6] = [2] x [4] / 2. Note that the fixed cost is divided by 2 to account for the joint ownership structure.

[7]: Sum of URCS variable cost for all movements that utilize the Lead.

PUBLIC VERSION

[8]: URCS total cost multiplier for KCS in the given year.

[9] = [7] x ([8] - 1).

[10]: Sum of AFC across all movements that utilize the Lead, keeping BNSF traffic in the calculation of total density along the Lead.

[11]: Sum of AFC across all movements that utilize the Lead, excluding BNSF traffic from the calculation of density.

V. Updated SSW Trackage Fee Calculation

In this final section, I present the results of an alternative trackage fee calculation for the Board's consideration. As I explained above, the SSW trackage fee results I presented in 2021 are based on an implementation of the ATC methodology that includes in the calculation of density traffic carried by UP and KCS on behalf of BNSF on its current indirect access basis, even though that traffic does not currently generate a contribution for the owners of the Lead. If, as I have argued above, the Board agrees that this disconnect artificially depresses the ATC calculation and thinks it more appropriate to exclude this traffic from the density calculation, the results that follow may be useful to the Board.

As a reminder, the most recent results I presented, in April of 2021, reflected an operating and maintenance expense of \$[[REDACTED]] per total car mile, and an interest rental component of \$[[REDACTED]] per total car mile, for a total SSW compensation of \$[[REDACTED]] per total car mile.⁵¹ In the results that follow, I make a single change, as I exclude the BNSF traffic at issue from the density in implementing the ATC methodology. All other inputs to my ATC calculation remain unchanged, including the set of moves from the 2017 and 2018 KCS and UP traffic tapes, the associated revenues and URCS-based variable costs and fixed costs, the routing results, and

⁵¹ See Neels Reply VS at Table 5 (p. 128). All numbers provided are in 2021 dollars.

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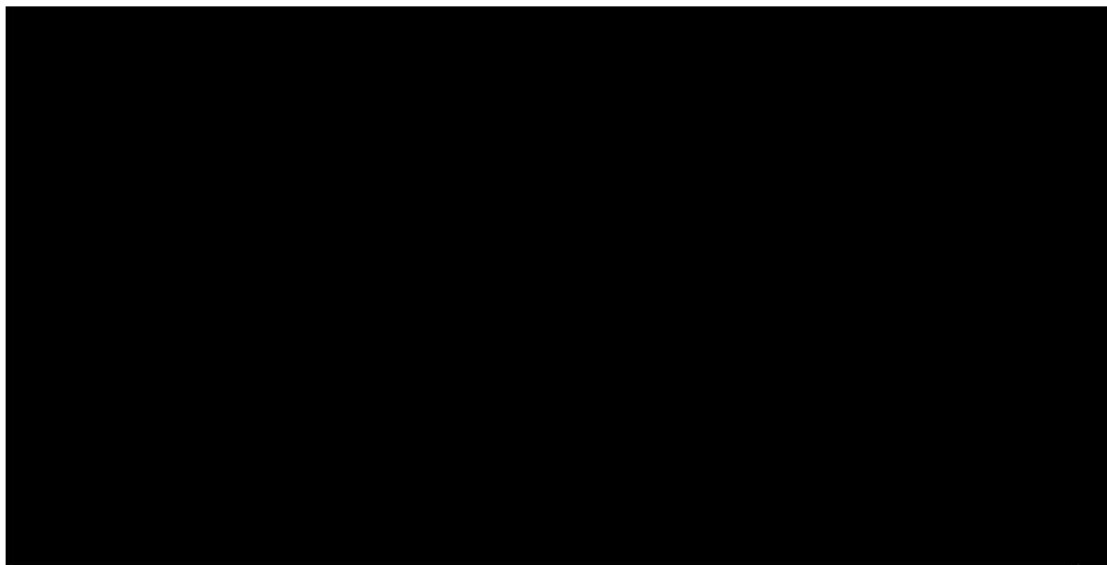
inputs to the asset value multipliers I used. The single change I make affects the interest rental component and therefore the total SSW compensation. The operating and maintenance expense remains the same as I submitted in April of 2021.

I last presented results of my implementation of the ATC methodology in my Revised Verified Statement, filed on March 4, 2021. To facilitate comparison with those results, in the current discussion I number tables to be consistent with that discussion, beginning with Table 6U, which is an updated version of Table 6 from that Verified Statement.

The main effect of removing the BNSF-originated traffic at issue from the density calculation is that each of the relevant segments on the Rosebluff Lead has less traffic over which it can recover its fixed costs. As a result, the fixed cost allocated to each ton of traffic on Rosebluff Lead segments increases. This increase in the allocation of fixed costs (relative to the case when the BNSF-originating traffic is included in the density) in turn increases the amount of revenue that is allocated to the Rosebluff Lead. As the allocation of variable costs is not affected by the change in density, excluding BNSF from the density calculation has the effect of increasing the contribution associated with Rosebluff Lead segments traversed by Lyondell movements. It does not, of course, change the total contribution generated by the Rosebluff Lead traffic. The increased Rosebluff Lead contribution is summarized in Table 6U. The increase in contribution varies by segment and year, but in aggregate, the total contribution increases by roughly [REDACTED] in both 2017 and 2018.⁵²

⁵² $100 \times ([\text{REDACTED}] / [\text{REDACTED}] - 1) \approx [\text{REDACTED}]$. Similarly, $100 \times ([\text{REDACTED}] / [\text{REDACTED}] - 1) \approx [\text{REDACTED}]$.

Table 6U: Contribution Associated with Rosebluff Lead Segments Traversed By Lyondell Movements [[



]]

Sources and Notes:

Calculated by The Brattle Group using the ATC methodology.

The next table from my March 4th Revised Verified Statement affected by this change is Table 9, in which I calculate the implied asset values for the Rosebluff Lead segments used by Lyondell Traffic.⁵³ Table 9U presents the updated results side-by-side with those from Table 9 from my March 2021 Verified Statement. Because both the relative increase in contribution and the asset value multipliers vary by owner railroad and year, the relative increase in the capital asset values also varies by choice of multiplier (enterprise value-based or WACC-based) and year. On average, removing BNSF from the density calculation increases the asset value by

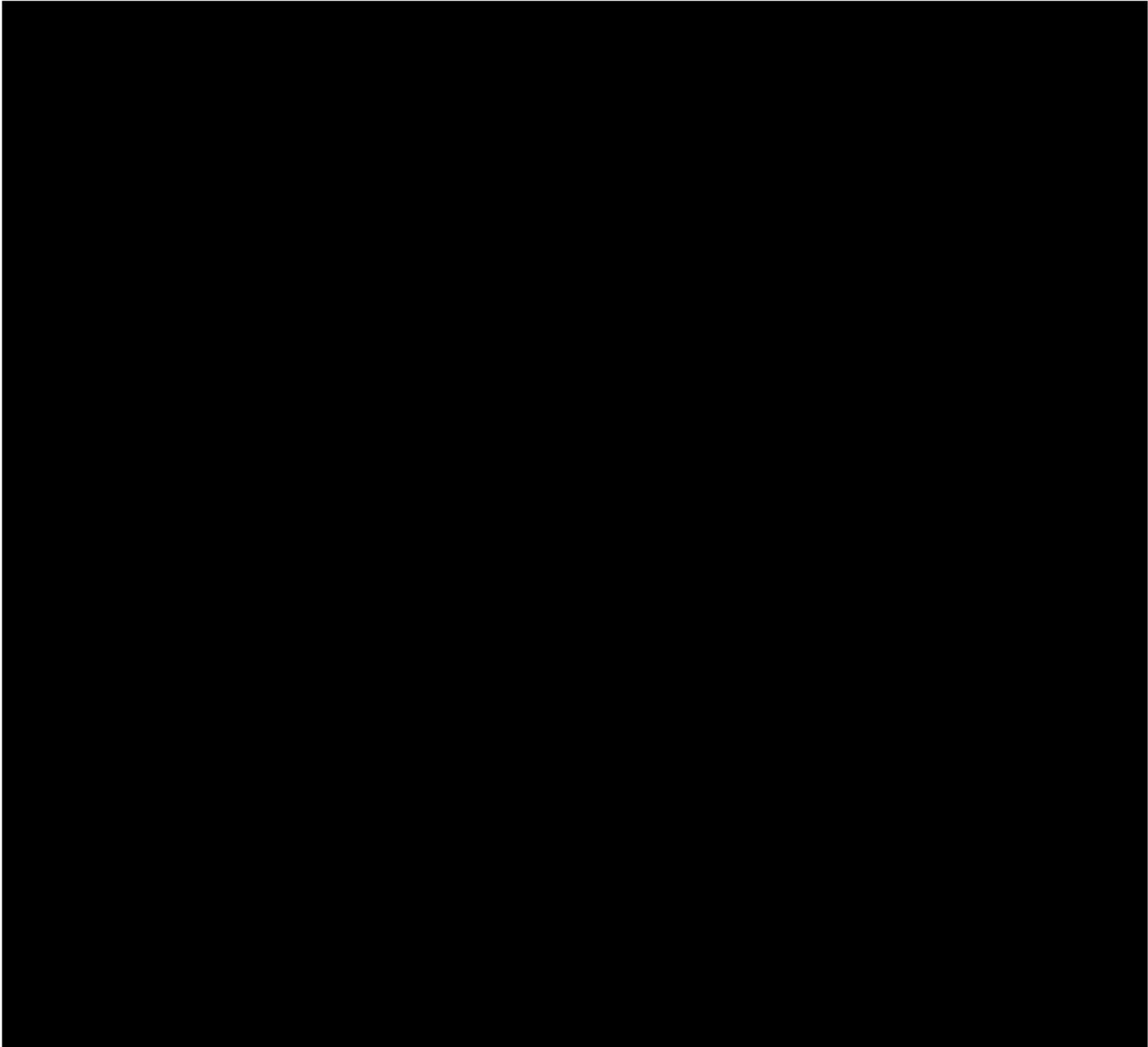
⁵³ The multipliers I use, which I developed in Tables 7 and 8 of my March 4, 2021 Revised Verified Statement, have not changed. Therefore, for the sake of brevity I do not present them here.

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approximately [[REDACTED]] when using the enterprise value-based multiplier and by approximately [[REDACTED]] when using the WACC-based multiplier.⁵⁴

⁵⁴ The percent change in the enterprise value-based asset value is calculated as $100 \times ([[REDACTED]] / [[REDACTED]] - 1) \approx [[REDACTED]]$; the percent change in the WACC-based asset value is given by $100 \times ([[REDACTED]] / [[REDACTED]] - 1) \approx [[REDACTED]]$.

**Table 9U: Calculation of Asset Values for Rosebluff Lead Segments Used by
Lyondell Traffic[]**



]]

Sources and Notes:

- [1] - [2], [4] - [5]: Calculated by the Brattle Group using the ATC methodology.
- [3] = [1] + [2]
- [6] = [4] + [5]
- [7]: Average of [3], [6]

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[8] - [11]: For each railroad and year, the multiplier is the ratio of an appropriately-scaled enterprise value to the total contribution generated by the railroad. I first calculate enterprise value using market value as of end of the respective year. I then scale enterprise value in proportion to reflect the value of below-the-wheel assets, using information from each railroad's 10-K and R-1 reports. In the case of KCS, I also scale down enterprise value to exclude that portion of assets associated with KCS Mexico. Finally, I calculate each railroad's aggregate contribution using revenues from each railroad's R-1 report and variable cost information from the Confidential Waybill Sample.

$$[12] = [1] \times [8]$$

$$[13] = [2] \times [9]$$

$$[14] = [12] + [13]$$

$$[15] = [4] \times [10]$$

$$[16] = [5] \times [11]$$

$$[17] = [15] + [16]$$

$$[18]: \text{Average of } [14], [17]$$

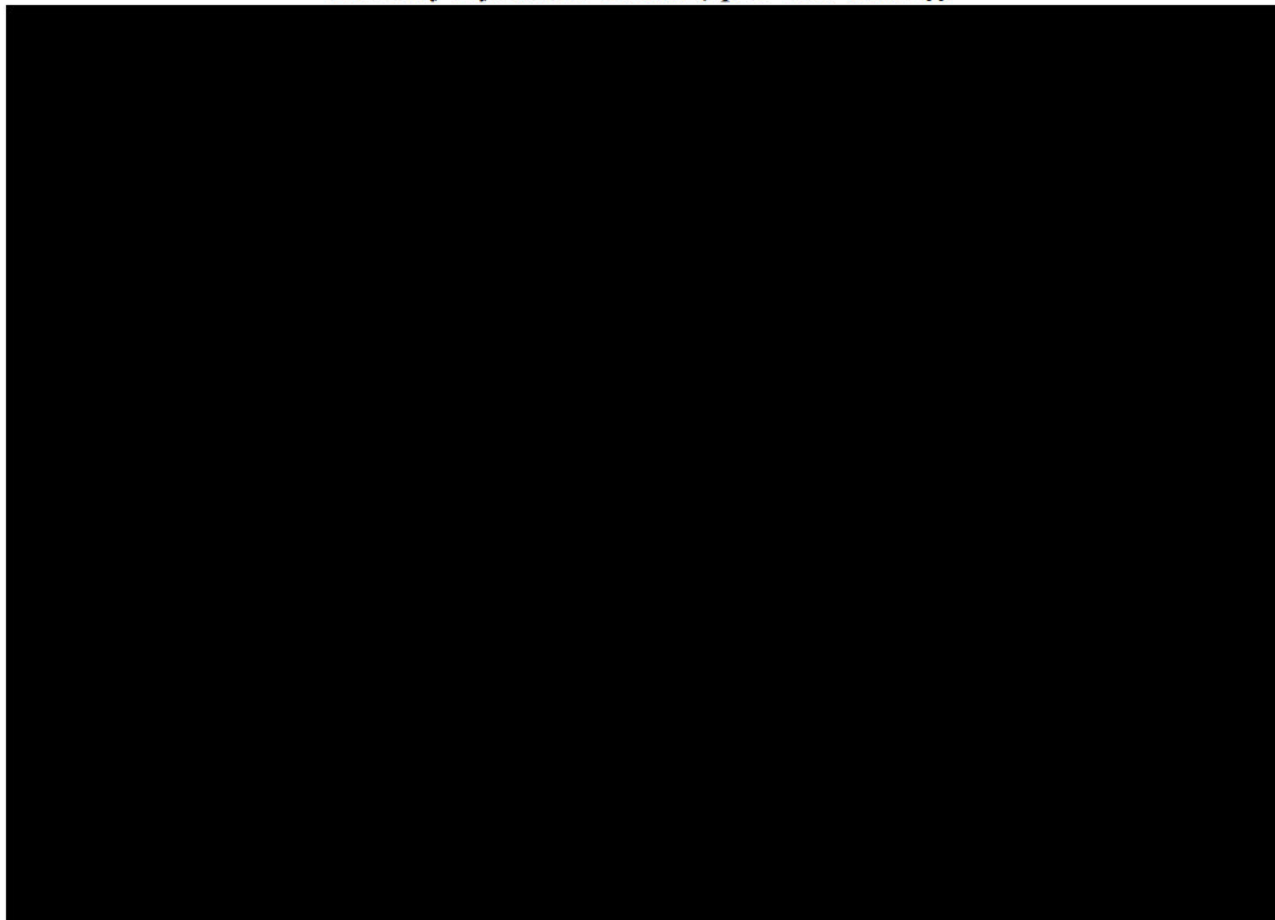
Next, in Table 10U, I annualize the capital asset values and divide by the number of loaded car miles in order to calculate a rental rate per loaded car mile. I also include the inflation adjustment as it appeared in my 2021 Verified Statements, in order to express rates based on 2017 and 2018 data in 2021 values.⁵⁵ On a same-year basis, the relative increase in the interest rental component is very similar to that in the asset values: approximately $[[\text{redacted}]]$ when using the enterprise value-based multiplier, and approximately $[[\text{redacted}]]$ when using the WACC-based multiplier.^{56, 57}

⁵⁵ At the very end of this section, I bring forward the 2021 values to 2024 dollars.

⁵⁶ The rental rate is a function of the capital asset values and the number of loaded car miles. The number of loaded car miles is not affected by the removal of BNSF from the density calculation, as I had previously excluded those car miles.

⁵⁷ The percent change in the enterprise value-based rental rate is calculated as $100 \times ([\text{redacted}] / [\text{redacted}] - 1) \approx [\text{redacted}]$; the percent change in the WACC-based rental rate is calculated as $100 \times ([\text{redacted}] / [\text{redacted}] - 1) \approx [\text{redacted}]$.

**Table 10U: Calculation of Interest Rental Component of Rosebluff Lead Segments
Used by Lyondell Traffic, per Car Mile []**



]]

Sources and Notes:

[1], [6]: Contribution generated by Rosebluff Lead links needed to service Lyondell/Equistar, as calculated using the ATC method by The Brattle Group.

[2] = [1] * STB-calculated industry WACC for 2017 (10.04%).

[3], [8]: Car-miles on the relevant links. Limited to those movements included in the ATC calculation from the KCS and UP traffic tapes.

[4] = [2] / [3]

[5] = [4] * 2017 Inflator calculated using the STB's Inflation-Adjusted Index (1.14).

[7] = [6] * STB-calculated industry WACC for 2017 (12.22%).

[9] = [7] / [8]

[10] = [9] * 2017 Inflator calculated using the STB's Inflation-Adjusted Index (1.08).

[11]: Average of [5], [10]

[12]: Calculated from Routing Results.

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[13] = [11] x [12]. Minor differences due to rounding.

Finally, in Table 11U I present an updated calculation of the SSW compensation total resulting under this alternative implementation of the ATC methodology. All in all, the SSW compensation total increases from \$[[REDACTED]] per total car mile to \$[[REDACTED]], an increase of approximately [[REDACTED]].⁵⁸

Table 11U: SSW Compensation Methodology Summary [[REDACTED]]

Table content is redacted.

]]

Sources and Notes:

[1]: Provisionally set to zero, as discussed in Section VIII.A.

[2]: See calculations in Table 3.

[3]: See calculations in Table 10.

⁵⁸ The percent change in this total compensation is given by $100 \times ([[REDACTED]] / [[REDACTED]] - 1) \approx [[REDACTED]]$.

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[4]: Ratio of total car miles per loaded car miles, from Table 3. Calculation is described in Section VIII.B, and is provided in my workpapers.

$$[5] = [3] / [4]$$

$$[6] = [1] + [2] + [5]$$

$$[7] = [6] \times 2024 \text{ inflator calculated using the STB's Inflation-Adjusted index (1.08).}$$

APPENDIX A: Mathematical Appendix

In this writeup I will lay out the formulas underlying the ATC calculation of Rosebluff Lead revenue.

The exposition that follows assumes that all linehaul movements are single railroad. In other words, I will assume that we are talking here about what I refer to as “half trips.” I break line haul trips involving multiple railroads into separate single railroad movements. Thus, for a two-railroad movement, one half trip would correspond to the segment from origin to interchange point, while the second half trip would correspond to the segment from interchange point to destination.

The goal of this section is to explain how I calculate link-level contribution. At a high level, this calculation requires calculation of link-level costs for a particular movement, and allocating revenues based on the distribution of these costs across links. The contribution of a specific link along a given movement is the difference between this allocated revenue and the allocated variable cost.

I understand that the ATC methodology sometimes requires an additional step in situations in which the contribution calculated for a specific link is negative. To simplify the exposition below, I assume that no such secondary adjustments are necessary.

First, I introduce some notation:

r is an index of railroads

J_r denotes the set of line-haul movements associated with a particular railroad, and $j \in J_r$ is an index of line haul movements. Note that movements are railroad-specific.

k is an index of links, and K denotes the set of all links.

S_j denotes the set of links associated with a movement j

The first step in this calculation is to allocate movement-level variable costs to links. Let c_j denote the URCS variable cost of a particular movement,⁵⁹ and let m_k denote the length of a given link in miles. It follows that the link-level variable cost is

$$c_{jk} = c_j \left(\frac{m_k}{\sum_{k' \in S_j} m_{k'}} \right). \quad (1)$$

This equation allocates variable costs to each link used in a movement based on that link's share of the movement's total mileage.

The next step is to allocate fixed costs to individual movements and links; this calculation consists of several steps. First, I define network-wide fixed costs as

$$F_r = f_r \sum_{j \in J_r} c_j, \quad (2)$$

where f_r is the URCS constant cost markup ratio for the given railroad (and year) minus one.^{60, 61}

⁵⁹ For moves requiring a switch movement on the Rosebluff Lead, c_{jk} is the sum of URCS variable cost for the linehaul movement, plus the switch fee paid by the linehaul carrier to the railroad carrying out the switch move.

⁶⁰ Generally, the notation in this appendix ignores the time dimension for the sake of brevity.

⁶¹ The notation used here assumes that I observe the universe of movements for each railroad. In reality, I observe only a subsample of movements. Thus, when performing this calculation in practice, I multiply each movement's variable cost by its associated expansion factor. The resultant sum should reasonably estimate each railroad's total variable cost.

From there, I define the railroad's average fixed cost per mile, and towards that end, define the total routed mileage along the network:

$$M_r = \sum_{k \in K} O_{rk} \times Z_{rk} \times m_k , \quad (3)$$

where O_{rk} is an indicator variable equal to 1 if the railroad r is at least a partial owner of the link k and 0 otherwise, and Z_{rk} is an indicator variable taking a value of 1 if a link has any traffic routed over it (in either year), and 0 otherwise.⁶² It follows that a railroad's average fixed cost per mile is given by

$$FCPM_r = F_r / M_r . \quad (4)$$

Using this fixed cost rate, I calculate the total fixed cost of a given link:

$$F_k = \sum_r G_{rk} \times FCPM_r \times Z_{rk} \times m_k . \quad (5)$$

where G_{rk} denotes railroad r 's ownership share of the link k . In words, this formula means that the fixed cost for a link with multiple owners is an ownership-weighted average of the owning railroads' fixed costs per mile, multiplied by the link's length.

The problem now becomes one of determining how much individual movements contribute toward coverage of this total fixed cost. Towards this end, define an indicator variable D_{jk} equal to 1 if link k is included in the set of links for movement j , and 0 otherwise. The full tonnage of each shipment w_j is credited in full to each link for which the railroad is a (partial or sole) owner:

⁶² For non-Lead traffic, I rely on the Confidential Waybill Sample, which is representative but not exhaustive of a railroad's total traffic. Hence, the total costs I calculate represent only a portion of a network's total traffic; to mitigate bias in my calculation of fixed cost per mile, I use only the portions of the network that have routed traffic based on the Brattle Network Model.

$$w_{jk} = w_j \times D_{jk} \times O_{rk} . \quad (6)$$

Following the provisions of the ATC methodology, I then allocate the total allocated fixed cost of a particular link to an individual movement based on its share of that link's total tons. That is,

$$FC_{jk} = F_k \left(\frac{w_{jk}}{\sum_r \sum_{j' \in J_r} w_{j'k}} \right) . \quad (7)$$

With both variable and allocated fixed costs now defined at the link and movement level, I generate the total assigned cost of traversing a link for a particular movement.

$$TC_{jk} = c_{jk} + FC_{jk} \quad (8)$$

The movement's revenue is then allocated to specific links based on the distribution of total cost across the movement.⁶³ Specifically,

$$R_{jk} = R_j \left(\frac{TC_{jk}}{\sum_{k' \in S_j} TC_{jk'}} \right) . \quad (9)$$

Link contribution for a specific movement is then,

$$T_{jk} = R_{jk} - c_{jk} . \quad (10)$$

⁶³ For switch moves, the revenue is simply the switch fee. The variable cost associated with the switch portion of the move is calculated from URCS, as described in my Opening VS.

APPENDIX B: Table of Programs and Key Inputs in ATC Calculation

Row	Bates Number	Description
Computer Programs		
[1]	NEELS-WP-HC-0322-REV	Sets up the Python environment (packages, directories, etc.)
[2]	NEELS-WP-HC-0323-REV	Sets up the R environment (packages, directories, etc.)
[3]	NEELS-WP-HC-0324	Creates a mapping of half-trips to full movements.
[4]	NEELS-WP-HC-0325	Cleans KCS traffic tape data and splits movements into half-trips.
[5]	NEELS-WP-HC-0326-REV	Adds Brattle Rail Network routing information to the KCS traffic tapes.
[6]	NEELS-WP-HC-0327-REV	Isolates revenues from the KCS traffic tapes to movements that use the Lead.
[7]	NEELS-WP-HC-0328-REV	Splits UP traffic tape data into half-trips.
[8]	NEELS-WP-HC-0329-REV	Adds Brattle Rail Network routing information to the UP traffic tapes.
[9]	NEELS-WP-HC-0330-REV	Isolates revenues from the UP traffic tapes to movements that use the Lead.
[10]	NEELS-WP-HC-0331-REV	Splits BNSF traffic tape data into half-trips.
[11]	NEELS-WP-HC-0332	Isolates BNSF traffic to movements that use the Lead.
[12]	NEELS-WP-HC-0333-REV	Creates a mapping of AAR car types as listed in the traffic tapes to STB car types as listed in the Waybill to URCS car types.
[13]	NEELS-WP-HC-0334	Creates a mapping of the commodity codes (STCCs) in the traffic tapes to URCS commodity codes.
[14]	NEELS-WP-HC-0335-REV	Flags certain trip characteristics in railroad traffic tape data such as movement type and haulage agreement between Zone 1 and Zone 2.
[15]	NEELS-WP-HC-0336-REV	Prepares input files using the BNSF traffic tapes to be batch run through URCS.
[16]	NEELS-WP-HC-0337-REV	Prepares input files using the KCS traffic tapes to be batch run through URCS.
[17]	NEELS-WP-HC-0338-REV	Prepares input files using the UP traffic tapes to be batch run through URCS.
[18]	NEELS-WP-HC-0340-REV	Combines individual railroad traffic tape data with movement-level URCS variable costs, modifies routings for on-Lead traffic to account for ultimate shipper/consignee location, and identifies movement segments and mileage.
[19]	NEELS-WP-HC-0346	Splits movements along the Lead into their component parts; calculates total density along Lead movements; allocates fixed costs based on density and variable cost based on mileage; calculates ATC and allocates revenue accordingly.
Outputs from the Brattle Rail Network Model		
[20]	NEELS-WP-HC-0360-REV	Routed paths from the Brattle Rail Network Model. These paths list the individual segments comprising the route, as well as the total routed length of the movement.
[21]	NEELS-WP-HC-0350-REV	Routed paths between areas around the Rosebluff Lead and from the lead to shipper/consignee location.
[22]	NEELS-WP-HC-0351-REV	A dataset of aggregated variable costs and total tons at the railroad-segment level using paths as generated by the Brattle Rail Network Model and data from the Confidential Waybill Sample.
[23]	NEELS-WP-HC-0352-REV	A dataset of aggregated variable costs and total tons at the railroad-segment level using paths as generated by the Brattle Rail Network Model and data from the Confidential Waybill Sample. Note that, to be included in this dataset, a railroad must be an owner (partial or full) of a given segment.
[24]	NEELS-WP-HC-0357-REV	A dataset listing the distance of each segment in the national rail network, based on NTAD.
Outputs from URCS		
[25]	NEELS-WP-HC-0420 - NEELS-WP-HC-0425	Outputs of the URCS cost model, run in batch mode using the inputs created by programs listed in lines [15] - [17].
Other		
[26]	NEELS-WP-HC-0354	A workbook containing the locations of customers along the Lead, as well as switch fees between carriers.

Notes:

[4], [7], [10]: Half-trips are single-carrier portions of a multi-carrier movement. Movements that entail only one carrier are unchanged; movements that entail two carriers are split into two, distinct single-carrier movements: one from the origin to the interchange point, and one from the interchange to the destination. And so on.