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**BEFORE THE
SURFACE TRANSPORTATION BOARD**

234445

ENTERED

**Office of Proceeding
June 20, 2013**

Ex Parte No. 431 (Sub No. 4)

**Part of Public
Record**

REVIEW OF THE GENERAL PURPOSE COSTING SYSTEM

**JOINT COMMENTS OF
THE AMERICAN CHEMISTRY COUNCIL; THE CHLORINE INSTITUTE; THE
FERTILIZER INSTITUTE; AND THE NATIONAL INDUSTRIAL TRANSPORTATION
LEAGUE**

I. INTRODUCTION AND STATEMENT OF INTEREST

The American Chemistry Council, The Chlorine Institute, The Fertilizer Institute, and The National Industrial Transportation League (collectively the “Interested Parties”) hereby submit these Joint Comments in response to the February 4, 2013 Notice of Proposed Rulemaking (“Notice”) issued by the Surface Transportation Board (“STB” or “Board”) in the above-captioned proceeding (“*EP431-4*”), as supplemented by the April 25, 2013 decision. In the Notice, the Board has proposed to adjust how the Uniform Railroad Costing System (“URCS”) calculates certain system-average unit costs to better reflect railroad operations and to automatically reflect economies of scale as shipment size increases, without needing to apply the so-called “make-whole” adjustment that is part of the current URCS formulation. The Board also has proposed various related changes to URCS in order to produce more accurate movement costs.

The Interested Parties are trade associations that represent a multitude of member companies which tender bulk commodities for transportation by rail. Their member companies rely upon the STB to ensure reasonable rates, which are determined according to multiple

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standards and processes that depend upon the URCS. They have a strong interest in the accuracy of URCS and ensuring that the proposed changes do not inadvertently distort the URCS variable costs contrary to the Board's stated objective to "produce more accurate costs and [] more accurately reflect the current state of rail industry operations."¹

In this proceeding, the Interested Parties are greatly concerned that the Board's proposals have not been more fully developed and analyzed, and that those proposals are predicated upon flawed assumptions that will distort the URCS calculations and lead to less accurate results. Although the Interested Parties believe that the Board's objective in *EP431-4* is laudable, the proposals in the Notice have not been tested, are not based upon any empirical studies or analyses, and have potentially radical impacts upon the calculation of variable costs that the Board has not demonstrated to be more accurate than the current URCS. The Board has simply expressed a "belief" that its proposals would produce more accurate costs without testing whether that actually is true for any real-world movements. There are no studies or analyses in *EP431-4* to support that belief.

Given that the current URCS factors were developed through structured and methodical studies and were tested and validated using empirical data, any attempt to update or modify the existing formulae and/or factors on the basis of anything less than the same level of analysis cannot be definitively shown to improve the accuracy of the URCS model.² Indeed, there are many flaws in the logic underlying the Board's proposals that illustrate this point. Many of those flaws can be attributed to the interactive nature of the URCS formula, which requires that changes be evaluated in their entirety and not on a piecemeal basis as the Board has proposed in *EP431-4*.

¹ *EP431-4*, Notice, p. 10.

² *Mulholland V.S.* at 11.

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The Interested Parties submit their comments primarily through the attached Verified Statement of Robert D. Mulholland, Vice President of L.E. Peabody & Associates, Inc. (“Mulholland V.S.”). Mr. Mulholland provides context for his testimony by first describing the myriad ways in which the Board uses URCS variable costs in carrying out its regulatory responsibilities, discussing the importance of developing empirical analyses to confirm that the Board’s proposals actually “would result in more accurate movement costs,”³ and describing the Board’s proposals. After providing this background, Mr. Mulholland addresses significant deficiencies and/or flaws in the Board’s proposals. The remainder of these comments summarize Mr. Mulholland’s conclusions.

II. THE VITAL ROLE OF URCS IN THE RAIL REGULATORY REGIME

Because URCS variable costs play a vital role in the Board’s performance of its regulatory responsibilities, it is imperative that the Board be sure that its proposals function as intended to improve the accuracy of URCS. Below is a summary of the multiple regulatory roles played by URCS:

- First, URCS variable costs are used to determine if the Board has jurisdiction to even consider whether a rail rate is reasonable by determining whether the defendant rail carrier possesses “market dominance” over the movement to which a challenged rate applies. It is used in the quantitative market dominance calculation of the jurisdictional threshold and again in the qualitative market dominance calculation using the recently-adopted Limit Price Methodology (“LPM”).⁴ URCS also is used to calculate the Revenue Shortfall Allocation Method (“RSAM”) ratio that is part of the LPM.⁵
- Second, in rate cases decided under the Three Benchmark standard, URCS is used to calculate both the RSAM and the $R/VC_{>180}$ benchmarks. It also is used to calculate the R/VC ratios that go into the R/VC_{Comp} benchmark.⁶
- Third, in stand-alone cost (“SAC”) cases, URCS is essential to the allocation of cross-over traffic revenue under the Average Total Cost (“ATC”) methodology; to the

³ EP431-4, Notice, p. 1.

⁴ Mulholland V.S. at 3-6

⁵ *Id.* at 6 n.13.

⁶ *Id.* at 6-7.

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distribution of excess revenue under the Maximum Markup Methodology (“MMM”); and to determining the prescribed rate, which is calculated from a maximum prescribed R/VC ratio.⁷

- Fourth, in Simplified-SAC cases, URCS is essential to all the same elements as in SAC cases described above.⁸
- Fifth, URCS would play a role in determining the eligibility of shippers to use competitive switching, as proposed in Ex Parte No. 711, *Petition for Rulemaking to Adopt Revised Competitive Switching Rules*, because the two primary tests under consideration are the RSAM and an R/VC ratio above 240%.

The role of URCS has become even more critical ever since the Board prohibited parties from making movement-specific adjustments to develop variable costs in STB Ex Parte No. 657, *Major Issues in Rail Rate Cases* (served Oct. 30, 2006), because there is no opportunity to correct any distortions in the URCS calculations.⁹

Although the Board’s proposed changes to URCS would affect multiple critical aspects of all the aforementioned regulatory responsibilities, the Board has not taken any steps to quantify the impacts of its proposals upon any of these regulatory functions that depend upon URCS or to assess whether those impacts truly reflect a more accurate determination of variable costs.

III. ANALYSIS OF THE BOARD’S PROPOSALS

The Board’s proposals in *EP431-4* fall within two broad categories. First, there are changes to the calculation of system-average unit costs in URCS Phase II. Second, there are changes to the calculation of individual movement variable costs in Phase III. Mr. Mulholland discusses multiple deficiencies in those proposals, points out potential pitfalls, and identifies areas that require more thorough investigation. The Interested Parties discuss the Phase II and

⁷ *Id.* at 8-9.

⁸ *Id.* at 9.

⁹ The Interested Parties are not advocating a return to the era of movement-specific adjustments. That would be time and cost prohibitive now that URCS is used in the ATC and MMM calculations, neither of which existed during the era of movement-specific adjustments that involved only the quantitative market dominance calculation for just the challenged rate.

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Phase III proposals separately in the following subsections. But first, the Interested Parties address the importance of conducting studies and empirical analyses of the proposed changes and their impacts, without which the Board has put the cart before the horse in this proceeding.

A. **The Lack of Empirical Analysis**

The *EP431-4* Notice is most notable for the lack of any studies or empirical analyses to support the Board's proposals. The Board has not attempted to determine the impact of its proposals or how its proposals interact with the portions of URCS that would remain unchanged. The Board merely has expressed its untested "belief" that its proposals would produce more accurate results by better reflecting economies of scale as shipment size increases. That belief is based upon certain assumptions and expressions of logical reasoning, and little else. This is troubling to the Interested Parties.

In contrast, using data provided by the Board in this proceeding, Mr. Mulholland demonstrates the impact of the Board's proposed changes. First, he calculates that the average impact on one-car waybill shipments for eastern, western, and shortline railroads individually would increase variable costs by 9-70 percent, with a weighted average of 20 percent.¹⁰ Second, for a single movement that the Board included in the sample data set provided to parties in this proceeding in the April 25 Decision, Mr. Mulholland shows that the proposed changes to URCS would increase that movement's variable cost by 12%.¹¹

These results, however, are inconsistent with the expectations expressed by the Board in a report to Congress on URCS dated May 27, 2010. In a discussion of the make-whole adjustment, the Board suggested that a study of the make-whole adjustment could reveal that the

¹⁰ Mulholland V.S. at 30-31.

¹¹ Mulholland V.S. at 17. This differential would be much greater but for the fact that another Board proposal to allocate 1/80th of all mileage-related costs to carloads moving in non-unit train service. But this too is an unfounded adjustment. *Id.*

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current URCS is causing an upward distortion of single-car variable costs.¹² Apparently, the Board has not conducted and is not proposing to conduct the referenced study. Moreover, the Board's proposed changes in *EP431-4* appear to increase single-car variable costs even more, not decrease them. Although the Board briefly mentions this Report to Congress in the Notice, at page 2, it makes no reference to the expectations expressed in that report, does not propose to conduct the study advocated in the report, does not acknowledge the opposite effect that its proposals would have on single car variable costs, and does not attempt to explain this discrepancy.

This discrepancy should immediately raise red flags around the Board's proposals. Have rail operations changed that much since the adoption of URCS? Is the current URCS that inaccurate? Has the Board fully considered distortions caused by its proposed piecemeal modifications to a highly interactive URCS formula? This illustrates the importance of quantifying the impact of the Board's proposals and ascertaining whether the resulting differential is justified.

The current URCS formulas were developed through such structured and methodical studies and were tested and validated using empirical data.¹³ Therefore, any attempt to modify the existing system based upon a less rigorous process would be arbitrary. Moreover, the Board's proposals to modify the URCS in *EP431-4* without such special studies is a decided departure from past practice in which the Board declined to adopt changes to URCS when it could not undertake the special studies needed to implement them.¹⁴ It also is a departure from past practice in which the Board solicited public comment from stakeholders on how best to

¹² *Id.* at 16.

¹³ Mulholland V.S. at 11.

¹⁴ Mulholland V.S. at 11, *quoting* Ex Parte No. 431 (Sub No. 2), *Review of the General Purpose Costing System*, slip op. at 3 (served April 6, 2009).

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revise the URCS before making specific proposals in a Notice of Proposed Rulemaking.¹⁵ The Interested Parties do not believe that the Board should adopt any of its proposals without conducting such studies to verify its otherwise unsupported beliefs.

B. URCS Phase II Proposals

The Board's principal proposed modifications to URCS Phase II would attribute certain cost categories to the number of shipments rather than the current attribution based upon carloads. The Board's objective is to reflect scale economies in the Phase II variable cost formulas so as to avoid the need for the "make-whole" adjustment in the Phase III calculations. To accomplish that objective the Board has made the following 6 proposals:

1. New "Shipment" Reporting Requirements;
2. Phase II Switch Engine Minute Unit Cost Calculation (per Shipment);
3. Phase III Switch Engine Minute Unit Cost Allocation (per fractional Shipment);
4. Phase II Station Clerical Cost Unit Cost Calculation (per Shipment);
5. Phase III Station Clerical Cost Unit Cost Allocation (per fractional Shipment); and
6. Elimination of Make-Whole Adjustment for Switching Cars.

As an initial matter, the Board's entire proposal depends on the ability of rail carriers to report data on shipments loaded and terminated in the form proposed by the Board. This in turn depends upon the Board's intended definition of "shipment," which is not clearly defined in the Notice.¹⁶ Because the shipment size used to develop the unit costs in Phase II drives the per-shipment unit costs, and ultimately the Phase III movement costs, a precise definition is an essential foundation for the Board's proposals.¹⁷ There currently is no standard for tracking or reporting railroad shipments, and it is unclear what data rail carriers would need to collect, and

¹⁵ Mulholland V.S. at 11-12, *citing* Ex Parte No. 431 (Sub No. 3), *Review of the Surface Transportation Board's General Purpose Costing System*, slip op. at 2 (served Oct. 1, 1997).

¹⁶ Mulholland V.S. at 19, 21-22.

¹⁷ *Id.* at 21.

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thus whether they are capable of reporting the information required to support the proposed changes.¹⁸ For example, the use of waybills to identify individual shipments is inconsistent with actual railroad operations for some traffic types, such as intermodal.

Even if the Board can clear this initial hurdle, its proposal to develop unit costs in URCS Phase II based on the number shipments, instead of cars, would create a disconnect with the URCS variability factors applied to those costs.¹⁹ The variability factors were developed based on per-car unit costs and measure the extent to which the costs associated with individual carloads vary with the movement of that traffic. Thus, applying variability factors based upon per-car costs to per-shipment costs would distort the URCS outputs.

The Board's logic as to switch engine minutes also is faulty. The Board incorrectly presumes that the time required to switch a block of cars is unrelated to the number of cars in the block. Notice at 5. Although the cost increase is not linear with the shipment size, switching costs do in fact increase as block size increases, which the Board's proposals do not recognize.²⁰

With regard to station clerical costs, the Board proposes to treat them as solely a function of the shipment, whereas the current model treats them as a function of the car for shipments of one to five cars, and as 75% a function of the car and 25% a function of the number of cars in the shipment for shipments of six or more cars.²¹ The Board does not provide any empirical basis to alter the current assumptions, like the studies performed by the agency in the past to determine how billing is actually performed and which party is responsible for creating invoices.²² Rather, the Board relies solely upon conclusive logic. Such studies are necessary before the Board could justify a change to the existing model.

¹⁸ *Id.* at 22.

¹⁹ *Id.* at 23-24.

²⁰ *Mulholland V.S.* at 18.

²¹ *Id.* at 20.

²² *Id.* at 20.

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Finally, the Board's proposal to eliminate the make-whole adjustment for the use of railroad equipment while continuing to calculate equipment unit costs for use of that equipment on a per-car basis implicitly assumes that the terminal time in URCS for railroad-owned equipment is the same for all types of trains. This is illogical and does not comport with current railroad operations and contract requirements.²³

C. URCS Phase III Proposals

In addition to changing how URCS calculates system-average unit costs in Phase II, the Board has proposed the following 5 adjustments to the URCS Phase III cost calculations:

1. Use System Average Empty-Return Ratio for Trainload Shipments;
2. Increase the Assumed Miles between I&I Switch Events for Non-Trainload Traffic;
3. Increase the Trainload Demarcation Point from 50-Car to 80-Car Shipments;
4. Eliminate the Locomotive Unit Mile ("LUM") Adjustment for Trainload Shipments; and
5. Divorce the LUM Adjustment for Non-Trainload Shipments from Actual Railroad Operations and Statistics in Favor of an Unsupported 80-Car Standard.

Mr. Mulholland has identified several problems with each of these proposals.

First, whether the Board's proposal to use the system average empty-return ratio for trainload shipments would be more accurate depends on the ratio of the equipment type used in unit train service versus non-unit train service.²⁴ Unless and until the Board attempts to make that determination, it is not possible to assess this proposal.

Second, the Board's proposal to increase the assumed miles for Inter- and Intra-train ("I&I") switching events rests entirely upon two unproven presumptions. Specifically, the Board's proposal is based solely upon the observation that the average haul for Class I rail traffic increased by 60% from 1990 to 2011. But that average includes both unit train and non-unit

²³ *Id.* at 24.

²⁴ *Mulholland V.S.* at 25.

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train traffic, of which only the latter receives I&I switching. Therefore, the Board necessarily has presumed that the ratio of unit train to non-unit train traffic has remained constant since 1990 and that the number of I&I switches on non-unit train traffic have remained constant while the length of haul has increased over time. In the absence of any showing that these presumptions are correct, the Board's proposed rationale would be arbitrary.²⁵ Furthermore, the last time the Board contemplated changes to the I&I distance in URCS, it declined to do so specifically because it lacked empirical data upon which to base the proposed change.²⁶ The Board's I&I switching proposal in *EP431-4* would be equally arbitrary without a supporting study.

Third, the Board's proposal to increase the demarcation point for trainload shipments from 50 to 80 cars is predicated on anecdotal support. Furthermore, the Board only considered global train statistics, which fails to consider that trainload shipment sizes vary significantly across commodities and geographic regions. The Board should perform a study to more accurately determine the point at which shipments are transported as trainload movements, and the variability across commodities and regions.²⁷

Fourth, the Board's proposal to eliminate the adjustment to LUM costs for trainload movements is predicated upon flawed logic. This adjustment exists in the current URCS formula because unit trains are not uniform in consist. For example, because an 80 car unit train will require less locomotive power than a 135-car train, it will incur less LUM costs.²⁸

Finally, the Board's attempt to smooth the cost function between 79-car multi-car movements and 80-car trainload movements by proposing to base all train-related costs for single and multi-car movements on 80 car trains will create a serious disconnect between the

²⁵ *Id.* at 25-26.

²⁶ *Id.* at 25-26, quoting Ex Parte No. 431 (Sub No. 2), *Review of the General Purpose Costing System*, slip op. at 5, n. 18 (served Oct. 1, 1997).

²⁷ *Id.* at 26.

²⁸ *Id.* at 26-27.

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actual non-trainload characteristics upon which the URCS Phase II unit costs are calculated and the assumed non-trainload characteristics upon which those costs are allocated in Phase III.²⁹ Mr. Mulholland has demonstrated that the Board's proposed formula cannot possibly produce accurate results.³⁰ As noted in the third point above, the 80 car mark is purely anecdotal, and it does not reflect the actual non-unit train operations of any Class I railroad, much less all of them.³¹ In addition, instead of the Board's desired smooth cost function, the STB's proposed model would have a kink at the 80 car unit-train demarcation point.³²

IV. THE ABSENCE OF ANY EMPIRICAL SUPPORT WOULD RENDER ADOPTION OF THE *EP431-4* PROPOSALS ARBITRARY AND CAPRICIOUS.

As discussed in Part III.A., above, there is an inherent lack of studies or empirical analyses to support the *EP431-4* proposals. In Parts III.B. and C., the Interested Parties have pointed to numerous instances where such analyses of the *EP431-4* proposals are critical to reasoned rulemaking. The rationale underlying the Board's proposals do not rise to the level of support underlying the Board's adoption of the URCS procedures that the Board has proposed to modify in *EP431-4*, and thus the proposals cannot be shown to be more accurate than, or superior to, the current URCS procedures. Consequently, adoption of the *EP431-4* proposals without studies or analyses to support the Board's belief that those proposals would be more accurate would be arbitrary and capricious.

Although an agency need not always provide a more detailed justification for a new rule than what would suffice if it were writing on a blank slate, it must do so when its new rule "rests upon factual findings that contradict those which underlay its prior policy." *FCC v. Fox Television Stations, Inc.*, 556 U.S. 502, 515 (2009) ("*Fox*"); *see also, Nat'l Assoc. of Home*

²⁹ *Id.* at 28.

³⁰ *Id.* at 28-30.

³¹ *Id.* at 28.

³² *Id.* at 27-28.

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Builders v. EPA, 682 F.3d 1032, 1037 (D.C. Cir. 2012) (“*EPA*”). “[A] reasoned explanation is needed for disregarding facts and circumstances that underlay or were engendered by the prior policy.” *Fox* at 517; *EPA* at 1037. Because the very URCS procedures that the Board seeks to modify were developed through structured and methodical studies and validated using empirical data, the Board may not simply modify those rules by expressing a belief that its proposals are more accurate. *See Fox* at 519 (agency action can be set aside for “failure to adduce empirical data that can readily be obtained”). The Board must demonstrate that they are in fact more accurate through an equivalent process, which it has not done or even proposed to do in *EP431-4*.

V. CONCLUSION

For all of the foregoing reasons, as detailed in the Verified Statement of Robert Mulholland, the Interested Parties believe that the Board’s proposals in *EP431-4* are not sufficiently supported to warrant any change to the existing URCS model. The Board has not conducted any studies or empirical analyses to demonstrate that its proposals would produce more accurate results than the existing URCS formulas which were developed after thorough studies and extensive testing to validate their results. Many of the Board’s proposals also are based upon flawed assumptions. In addition, they fail to consider the interactive nature of the

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URCS model, and especially how the shift from carload units to shipment units in Phase II relate to the variability factors that are based upon carload units.

Respectfully submitted,

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PUBLIC VERSION

**BEFORE THE
SURFACE TRANSPORTATION BOARD**

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Docket No. EP 431 (Sub-No. 4))	Review of the General Purpose Costing System
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Verified Statement

Of

Robert D. Mulholland

Vice President

L.E. Peabody & Associates, Inc.

On Behalf Of

The Interested Parties

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LIST OF EXHIBITS

<u>EXHIBIT NO.</u>	<u>EXHIBIT DESCRIPTION</u>
(1)	(2)
1	Statement Of Qualifications Of Robert D. Mulholland
2	Development of Shipment Size Used to Apply STB’s Proposed URCS Adjustments

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I. INTRODUCTION¹

I am Robert D. Mulholland, economist and a Vice President of L. E. Peabody & Associates, Inc., an economic consulting firm that specializes in solving economic, transportation, marketing, financial, accounting and fuel supply problems. I have spent most of my career of eighteen (18) years evaluating fuel supply issues and railroad operations, including railroad costs, prices, capacity, and equipment planning issues. I have conducted this work for shippers, producers, railroads, and government departments and agencies. A copy of my credentials is included as Exhibit No. 1 to this Verified Statement (“VS”).

I have been requested by Counsel for The Interested Parties to review and comment on the Surface Transportation Board’s (“STB” or “Board”) proposal to modify certain aspects of its general purpose costing system, the Uniform Railroad Costing System (“URCS”) as identified in *EP 431-4*.^{2/}

On February 4, 2013, the STB issued a Notice of Proposed Rulemaking (“NPR”) in *EP 431-4*. The STB proposes to: (1) modify certain input data for Phase II of URCS, (2) revise the methodology to calculate certain unit costs, and (3) modify certain procedures in the URCS Phase III costing program to calculate variable costs. The STB’s specific goal is to modify the efficiency adjustments applied to trainload and multiple car movements and the offsetting “make-whole” factors applied to single car and multiple car movements.

Below I discuss the proposed changes to URCS included in the STB’s NPR under the following topical headings:

- II. The STB’s Use of URCS
- III. The Need for Empirical Data and Analysis

¹ All items in this Exhibit enclosed in double brackets are {{HIGHLY CONFIDENTIAL}} Waybill Data Subject to the Protective Order in this proceeding.

² STB Docket No. *EP 431 (Sub-No. 4), Review of the General Purpose Costing System*, served February 4, 2013 (“*EP 431-4*”).

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- IV. Summary of STB's Proposed Modifications to URCS
- V. Responses to STB's Proposed Changes
- VI. Conclusions

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II. THE STB'S USE OF URCS

In URCS, a railroad's annual unit costs are developed in Phase II. Variable costs for a given movement are developed in URCS Phase III by summing the variable cost components (i.e., terminal, interchange, and other switching costs, line-haul costs, overheads, etc.) associated with that movement. In *EP 431-4*, the STB is not proposing to overhaul its entire URCS costing system. Rather the STB is proposing to alter the way some unit costs are developed in Phase II, and the way some variable unit costs are allocated to individual cars in a movement in Phase III. The STB has not quantified the impact of the changes it has proposed in isolation, let alone in concert with the myriad of other elements that will remain unchanged. The STB has not provided any indication that it assessed the impact of its proposed changes. The STB claims, without proof or any attempt at demonstration, that the variable costs attributed to all movements under its proposed changes to URCS will be "more accurate" than the costs under the current model.³

The Board is well aware of the role of URCS variable costs in performing its regulatory functions including the use of URCS in maximum reasonable rate determinations, but it is worth chronicling the critical uses of URCS costs here.

Movement variable costs are first used to determine whether the Board has jurisdiction over a common carrier rate that a shipper wishes to challenge. As established in 49 U.S.C. § 10707(a), the Board must determine whether a railroad possesses market dominance over an issue movement with a challenged rate. To find market dominance, the Board must determine that there is "an absence of effective competition from other rail carriers or modes of transportation for the transportation to which a rate applies."⁴ To make the required

³ *EP 413-4* p 1.

⁴ 49 U.S.C. 10707(a)

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determination, the Board conducts both a quantitative and qualitative review. Under the quantitative determination, a railroad “does not have market dominance over the transportation to which the rate applies if such rail carrier proves that the rate charged results in a revenue-variable cost percentage for such transportation that is less than 180 percent.”⁵ This threshold is known as the Jurisdictional Threshold (“JT”).

Prior to the Board’s decision in *EP 657*,⁶ the Board allowed the parties to make movement-specific adjustments to develop variable costs assigned to the issue movement. These movement specific adjustments reflected the characteristics specific to the movement that impacted the railroad’s variable costs. For example, the number of locomotives actually used to move the traffic would have been substituted for the system average number of locomotives associated with the type of train used to move the traffic. However, in *EP 657*, the Board did away with movement-specific adjustments to develop a railroad’s variable costs and now relies on the unadjusted URCS Phase III cost model to develop a railroad’s variable costs for all regulatory purposes. The Board reasoned that, “the analysis of proposals for movement-specific adjustments is complex, expensive, and time consuming [and] we do not believe that the use of movement-specific adjustments leads to a more accurate result than using the URCS system-wide average.”⁷ This philosophical change on the Board’s part makes it necessary that the URCS Phase III cost model—including any proposed adjustments—reflect, as closely as possible, the actual operations of all traffic handled by the railroads.

If the quantitative analysis determines that a rate charged by the rail carrier produces a revenue-to-variable cost percentage equal to or greater than 180 percent, a qualitative analysis is undertaken by the Board to determine if there are any feasible transportation alternatives that

⁵ 49 U.S.C. § 10707(d)(1)(A).

⁶ Major Issues in Rail Rate Cases, STB Ex Parte No. 657, slip op. (STB served October 30, 2006), (“*EP 657*”).

⁷ Id. pp. 50-51.

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provide effective competition. A competitive alternative is considered “effective” if it can place pressure on the rail carrier “to perform up to standards and at reasonable prices, or lose desirable business.”⁸ The STB has historically performed an ad hoc analysis of the competitive alternatives available to constrain a railroad’s rates in each issue lane. Depending upon the evidence presented and the STB’s assessment of an alternative’s ability to constrain the railroad’s rates, the STB determines if the railroad is market dominant within the issue lane.

Because of the ad hoc nature of qualitative market dominance determinations and the escalating complexity of market dominance inquiries, the STB very recently refined its approach to include an objective component for framing qualitative market dominance issues.⁹ The STB’s refinement involves a simplifying step in the existing process that the STB may use to help focus its qualitative market dominance analysis.¹⁰

The Board’s refined model incorporates a threshold screening analysis that relies on a three-step process to determine the rate representing the theoretical tipping point where market dominance is exerted for each issue movement. In the first step, the price of the potential next best competitive option to the traffic lane at issue is determined based on evidence submitted by the parties.¹¹ The STB termed this price the “Limit Price” (“LP”), and it reflects the rate up to which the railroad theoretically could charge before potentially losing some traffic to the competitive alternative. In the second step, the “LP” is divided by the issue movement’s URCS Phase III variable cost (“VC”) to determine the “LP R/VC ratio.” In the third step, the LP R/VC

⁸ *Market Dominance Determinations & Consideration of Product Competition*, 365 I.C.C. 118, 129 (1981).

⁹ STB Decision in *M&G Polymers USA, LLC v. CSX Transportation, Inc.*, STB Docket No. 42123 (served Sept. 27, 2012), (“*M&G*”); *Total Petrochemicals & Refining USA, Inc. v. CSX Transportation, Inc.*, STB Docket No. 42121 (served May 31, 2013) (“*TPP*”).

¹⁰ The Board’s model was proposed in *M&G*, and comments were submitted by the involved parties and other interested parties, but the case settled before a Decision was issued. The Board implemented the same model in *TPI* and in so doing addressed the comments submitted in *M&G*.

¹¹ The Board’s model relies completely on the use of valid estimates of competitive option prices, and is therefore open to gaming.

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ratio is compared to the defendant railroad's most recently calculated 4-year average RSAM¹² ratio.¹³ The Board will further review each lane where the LP R/VC ratio falls slightly below or slightly above the RSAM percentage, for “intangible qualities that bear on the alternative’s ability to effectively constrain the rate at issue.”¹⁴ Thus, the entire model relies on the URCS Phase III variable costs to make both the quantitative and the qualitative market dominance determinations.

Beyond the market dominance determinations, URCS variable costs underpin several critical analyses in all three of the Board’s maximum rate vehicles—Three-Benchmark (“3BM”), Stand-Alone Cost (“SAC”), and Simplified SAC (“SSAC”)—available for shippers to challenge the reasonableness of common carrier rates established by the railroads.

The first step in the STB’s 3BM analysis is to calculate the revenue-to-variable cost ratio (“R/VC”) for the issue movements. The VC used in this calculation is the unadjusted URCS Phase III costs. Next, comparable movements are identified from the most recent four years of the STB’s Waybill Sample data. After the group of comparable movements has been selected, the R/VC ratio for each comparable movement is calculated, again using unadjusted URCS Phase III variable costs. This factor is known as the R/VC_{Comp} . Next, the average R/VC for all potentially captive traffic is calculated.¹⁵ This calculation is equal to the average R/VC ratio for

¹² Revenue Shortfall Allocation Methodology (“RSAM”) – RSAM “measures the average markup that the railroad would need to charge all of its potentially captive traffic in order for the railroad to earn adequate revenues.” Docket No. EP 689 (Sub – No. 3), *Simplified Standards for Rail Rate Cases – 2010 RSAM and R/VC Calculations*, decided February 24, 2012, page 1 (“*Simplified Standards*”).

¹³ The RSAM ratio is also derived based on the URCS costs and revenues associated with a subset of each railroad’s traffic base. Furthermore, if the STB’s proposed changes to Phase III are implemented, it would need to go back and recalculate URCS for the last 4 years in order to properly restate RSAM and R/VC_{Comp} . If it did not do so, comparing the revised published numbers to moves costed with the current Phase III procedures would create an apples and oranges situation. For the STB to make the required restatement, the railroads would need to restate the QCS for the 4 years prior to the year the Board’s proposed changes take effect.

¹⁴ September Decision in *M&G*, p. 4. May Decision in *TPI*, p. 4.

¹⁵ This ratio is actually calculated by the Board in an annual release under Ex Parte No. 689 (Sub – No. 3), *Simplified Standard For Rail Rate Cases – RSAM and $R/VC_{>180}$ Calculations*.

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all traffic with R/VC ratios at or above 1.80 for the defendant railroad, again based on URCS variable costs. This factor is known as the $R/VC_{>180}$. Next, the average R/VC that would need to be earned on all potentially captive traffic for the defendant railroad to achieve revenue adequacy (by the Board's standards) is calculated.¹⁶ This factor is known as the RSAM. As with the other factors discussed above, this number is based on URCS Phase III variable costs. After all the relevant R/VC factors are established, the R/VC_{Comp} is multiplied by the ratio of the defendant railroad's RSAM and $R/VC_{>180}$ four-year averages. Then the mean and standard deviation for the adjusted R/VC ratios for the comparable group is calculated. Finally, using the mean and standard deviation, the 90% confidence interval around the estimate of the mean is calculated to determine the upper boundary of the mean for the comparable group which becomes the threshold for determining if a rate is unreasonable.

The Board's proposed changes to URCS would modify every step in the 3BM analytical framework, yet the Board has made no effort to quantify or assess the potential impact of these changes.

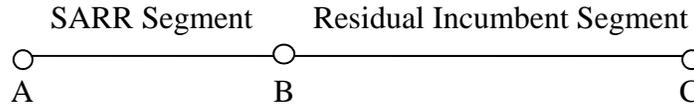
In Stand-Alone Cost ("SAC") cases, after JT is established and market dominance is determined, the complainant must develop a hypothetical stand-alone railroad ("SARR") that would enter the market (free of barriers to entry and exit) to serve the issue traffic and any other traffic that shares the facilities constructed by the SARR. The complainant then develops a SARR network configuration and operating plan to serve the selected traffic, and construction and operating costs associated with those items. Next, the complainant develops a forecast of the revenues that would be earned on the traffic group over the 10-year analysis period. In most cases, the traffic selected for inclusion in the SARR traffic group includes cross-over traffic. Cross-over traffic is traffic that moves over the constructed SARR facilities and over the residual

¹⁶ Id.

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incumbent’s facilities to stations that are not served by the SARR. Figure 1 below shows an example cross-over traffic movement.

Figure 1
Example of SARR Cross-Over Movement



Prior to *EP 657*, the revenues on cross-over traffic were divided between the SARR and the residual incumbent based on the relative mileage associated with the segments.¹⁷ In *EP 657*, the Board introduced a new methodology for allocating revenue to the SARR and residual incumbent. The new method is known as the Average Total Cost (“ATC”) methodology. In the ATC framework, the variable costs associated with each of the cross-over traffic segments are calculated using the residual incumbent’s unadjusted URCS Phase III costs. In addition, the fixed costs associated with the segments are calculated based on the residual incumbent’s costs and densities. As such, the URCS Phase III variable costs are the major driver of the revenue divisions calculated in a SAC analysis. The Board’s proposed changes to URCS would impact the ATC revenue divisions in the SAC analytical framework, yet the Board has made no effort to quantify or assess the potential impact of these changes.¹⁸

After the total costs that will be borne by the SARR and the total revenues that will accrue to the SARR over the SAC analysis period are quantified, the results are run through the Board’s discounted cash flow (“DCF”) model to determine whether and the extent to which

¹⁷ Along with an additive for originating or terminating the traffic

¹⁸ In a separate, ongoing rulemaking proceeding (*EP 715*), the Board is considering whether restrictions to certain classes of cross-over traffic should be imposed. The principal reason the Board cited for its consideration of this drastic change to the SAC framework is its concern that certain costs are not appropriately captured by or reflected in the URCS variable cost procedures and formulae. Although the Board has not endeavored to determine the impact of its proposed changes in this proceeding on the ATC formula, the proper course of action is to determine whether adjustments to the URCS formula are warranted, and if so, to test and then impose the required adjustments. If the URCS costing model produces accurate results, the Board’s stated concern in *EP 715* is moot and there is no reason to restrict the use of crossover traffic in SAC cases.

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revenues exceed costs (including a reasonable return on investment). If the SARR revenues exceed the SARR costs, the excess revenues are distributed to the SARR traffic group on a movement-specific basis using the Board's Maximum Markup Methodology ("MMM"). Under MMM, the R/VC ratio for each SARR movement is calculated and the variable costs are based on the URCS Phase III cost model. The excess revenues are distributed to the movements with the highest R/VC through an iterative process until revenue equilibrium is attained. Therefore, SARR movements with relatively higher R/VC ratios receive rate relief while SARR movements with relatively lower R/VC ratios do not. The Board's proposed changes would impact the MMM revenue distribution model in the SAC analytical framework, yet the Board has made no effort to quantify or assess the potential impact of these changes.

After the MMM model is run, the equilibrium R/VC is known. The maximum reasonable rate for the issue traffic is then set at the higher of the JT level or the MMM R/VC, unless the MMM R/VC exceeds the challenged movement R/VC. The Board's proposed changes would impact the JT level, the MMM R/VC, and the challenged movement R/VC, yet the Board has made no effort to quantify or assess the potential impact of these changes.

Simplified SAC cases also incorporate the same JT, ATC, and MMM components as SAC analyses, but some of the other assumptions and calculations are made differently. The Board's proposed changes would impact the same components of the SSAC analysis as the SAC analysis, the impact of which is not known.

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III. THE NEED FOR EMPIRICAL DATA AND ANALYSIS

The Board states that the changes it proposes to URCS “would result in more accurate movement costs.”¹⁹ However, the Board makes no demonstration that its proposed changes are based on analysis of empirical data or that its process considered any alternatives apart from those included in its NPR. On April 25, 2013,²⁰ the STB issued a Decision in response to the AAR’s March 4, 2013 petition requesting any materials underlying the Board’s proposed changes. Included in that decision was a statement that the following data would be made available to interested parties:

1. The uncosted 2011 Waybill Sample;
2. The source code used to cost the Waybill Sample;
3. The intermediate outputs that result from using the source code when costing the Waybill Sample;
4. The costed 2011 Waybill Sample;
5. A spreadsheet of a small record set that serves as an example of how the make-whole adjustment is calculated. This small record set manually calculates the make-whole adjustments and shows that those calculations match the costs calculated using the Waybill costing process; and
6. Descriptions of changes in the calculations of certain Phase III line items to reflect the Board’s new proposals.

All of the data and programs provided by the Board pertain to the existing URCS costing program. The Board provided no studies of the impact of its proposed changes. Therefore, the Board’s declaration that its changes will produce “more accurate” results is still unsupported. This is a major departure from Board precedent as it relates to making changes to URCS. In EP431-2,²¹ the Board considered several changes but only implemented a few of them,

¹⁹ EP431-4, NPR, p. 1.

²⁰ This Decision corrects the Decision served on the same date, regular release, by adjusting the due dates for comments.

²¹ Review of the General Purpose Costing System, EP431 (Sub-No. 2), served October 1, 1997.

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specifically because it was unable to conduct the special studies required to validate its considered changes.

“As for the other changes that were proposed and issues raised regarding the regression data base, we conclude either that the record does not support the proposed changes or that resources are not available to undertake the studies needed to implement the proposed changes.”²²

The question of whether and how the present set of algorithms and assumptions underlying the URCS calculations should be updated to reflect current operations, productivity, and synergies is valid. The current factors were developed through structured and methodical studies and were tested and validated using empirical data. Updating or otherwise changing the existing formulae and/or factors based on anything other than structured and methodical studies will not definitively improve the accuracy of the URCS costing model.

The Board proposes to eliminate the Ex Parte 270 (Sub-No. 4)²³ adjustments currently used in the URCS Phase III cost model (the so-called “efficiency adjustments”) because it does not believe their incorporation into the URCS formula produces accurate results. Although the efficiency adjustments were developed a number of years ago, these adjustments were developed based on empirical data for rail operations.

Though the STB has now provided some data that will allow parties to conduct their own limited studies, the STB did not provide any empirical studies to support its proposed changes. The STB proposes to substitute a new set of arbitrary assumptions and default inputs for the extant set of assumptions and inputs, which are based on long-standing analyses and/or precedents. The Board does not appear to have sought input from industry stakeholders in developing its proposed changes. This is another departure from prior Board precedent. In

²² EP431-2 (October 1, 1997), p. 3.

²³ ICC, Ex Parte No. 270 (Sub-No. 4), Investigation of Railroad Freight Rate Structure – Coal, served March 14, 1975 (345 I.C.C. 71).

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EP431-3,²⁴ the Board declared that it was “instituting this proceeding and holding a hearing to receive public comment on how best to revise the existing URCS model. Parties are specifically encouraged to address whether and how the Board could [improve or update 13 specific URCS functions, formulae, and processes].”²⁵ The Board then held a public hearing in which interested parties could offer input and perspective before it decided on a slate of specific proposed changes.

There are several assumptions and underlying analyses²⁶ incorporated in Phase II of URCS that the Board has not even mentioned—much less addressed—in *EP 431-4*. The interactive nature of the URCS formula requires that changes to it should be evaluated in their entirety and not on a piece-meal basis as the Board proposes to do here.

²⁴ Review of the Surface Transportation Board’s General Purpose Costing System, EP431 (Sub-No. 3), served April 6, 2009 (“*EP 431-3*”).

²⁵ EP431-3, p. 2.

²⁶ For example, variability percentages associated with individual cost components, distribution of costs among the relevant service categories, etc.

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IV. SUMMARY OF STB'S PROPOSED MODIFICATIONS TO URCS

The overriding purpose of the Board's proposed adjustments is to eliminate the "make-whole" adjustment that is applied to single-car and multiple-car shipments²⁷ and the efficiency adjustments that the make-whole adjustments were designed to offset. The STB has articulated "two primary concerns with how the make-whole adjustment is currently applied by URCS"²⁸ and it apparently believes the adjustments produce inaccurate results. As discussed in more detail below, the Board's proposed changes include the introduction of new, completely unsupported cost-allocation functions that clearly distort the URCS Phase III costing algorithms. The introduction and proposed use of distorting formulae belies the STB's claim that its proposed changes will produce more accurate results.

In Phase II of URCS, system-wide railroad cost and operational data are disaggregated based on traffic volume to develop system-average unit costs. In Phase III of URCS, the Phase II unit costs are applied to individual movements to develop unit costs for those movements. Because railroad movements are heterogeneous, adjustments are made in the URCS Phase III costing model to reflect the different movements' relative efficiency. This includes reducing the system-average unit costs associated with certain activities for higher-volume (multiple-car and trainload) shipments to reflect the economies of scale inherent in the railroad industry. Specifically, origin and destination switching costs are reduced by 50 percent for multiple-car movements and 75 percent for trainload movements; origin and destination railroad-owned car costs that are a function of time are reduced by 50 percent; for trainload movements, interchange costs are reduced by 50 percent; and inter- and intra- train ("I&I") switching costs are excluded.

²⁷ Under the current STB's Phase III costing methodology, single car movements are defined as shipments of 1 to 5 cars. Multiple car movements are shipments of 6 to 49 cars. Trainload movements reflect shipments of 50 cars or more.

²⁸ *EP431-4*, NPR, p. 3.

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Also, locomotive unit mile (“LUM”) costs are adjusted for trainload traffic to reflect different costs associated with different train sizes. Station clerical costs are also adjusted for multiple car and trainload movements.²⁹

Because of the downward adjustments (reductions) made to the costs for efficient higher-volume movements, there is an imbalance between the adjusted Phase III costs for those movements and the pre-adjustment system-average costs for those movements. Therefore, this difference is redistributed to the less efficient lower-volume movements through the “make-whole” adjustment. The make-whole adjustment “redistributes the total savings obtained in all of the higher-volume shipments... across all of the lower volume shipments...”³⁰

The Board’s first stated concern with the application of the make-whole adjustment is not related to the make whole adjustment at all; but rather, it is related to the efficiency adjustments that the make-whole adjustment is later used to offset. Specifically, because the adjustments are developed and applied on a per-car basis based on the traffic group into which a movement is categorized, “break points” in costs exist between groups. “The system average unit cost for a 49-car multi-car shipment is noticeably higher than a 50-car trainload shipment”³¹ because of the different efficiency adjustments applied to each car in the two shipments. This results in a “relatively large difference between the unit costs of a movement on one side of a break point compared to the unit costs just on the other side of the break point.”³²

The Board’s second concern is the counterpart to its first concern. Because the shortfall redistribution (i.e. make-whole adjustment) is applied differently to single-car and multiple-car movements on a per car basis (and not applied to trainload movements), the break points

²⁹ Seventy-five percent of station clerical costs are considered a function of the car and twenty-five percent are considered a function of the shipment.

³⁰ *EP431-4*, NPR, p. 3.

³¹ *EP431-4*, NPR, p. 3.

³² *EP431-4*, NPR, p. 4.

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observed between the three groups of traffic are even more pronounced after the make-whole adjustment is applied.

To reach its stated goal of producing “more accurate results,” the STB seeks to “adjust how URCS calculates certain system-average unit costs in Phase II, thereby obviating the need for URCS to apply separate make-whole adjustments in Phase III.”³³ The STB proposes to eliminate the adjustments to multiple-car and trainload movements in URCS Phase III that are derived from the Ex Parte 270 (Sub-No. 4) analyses, and the offsetting make-whole adjustments to single-car and multiple-car shipments.³⁴ To facilitate this change, the Board also proposes to make significant adjustments to the way it calculates certain categories of system-average unit costs in Phase II, without testing or vetting any empirical data or results to justify such a drastic change. This requires adjustment to the data collection and reporting requirements the Board imposes on the Class I railroads.

³³ *EP431-4*, NPR, p. 1.

³⁴ Multiple-car shipments receive efficiency adjustments for certain cost items (e.g., terminal switching) and make-whole adjustments for other cost items (e.g., I&I switching) in URCS.

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V. RESPONSES TO STB'S PROPOSED CHANGES

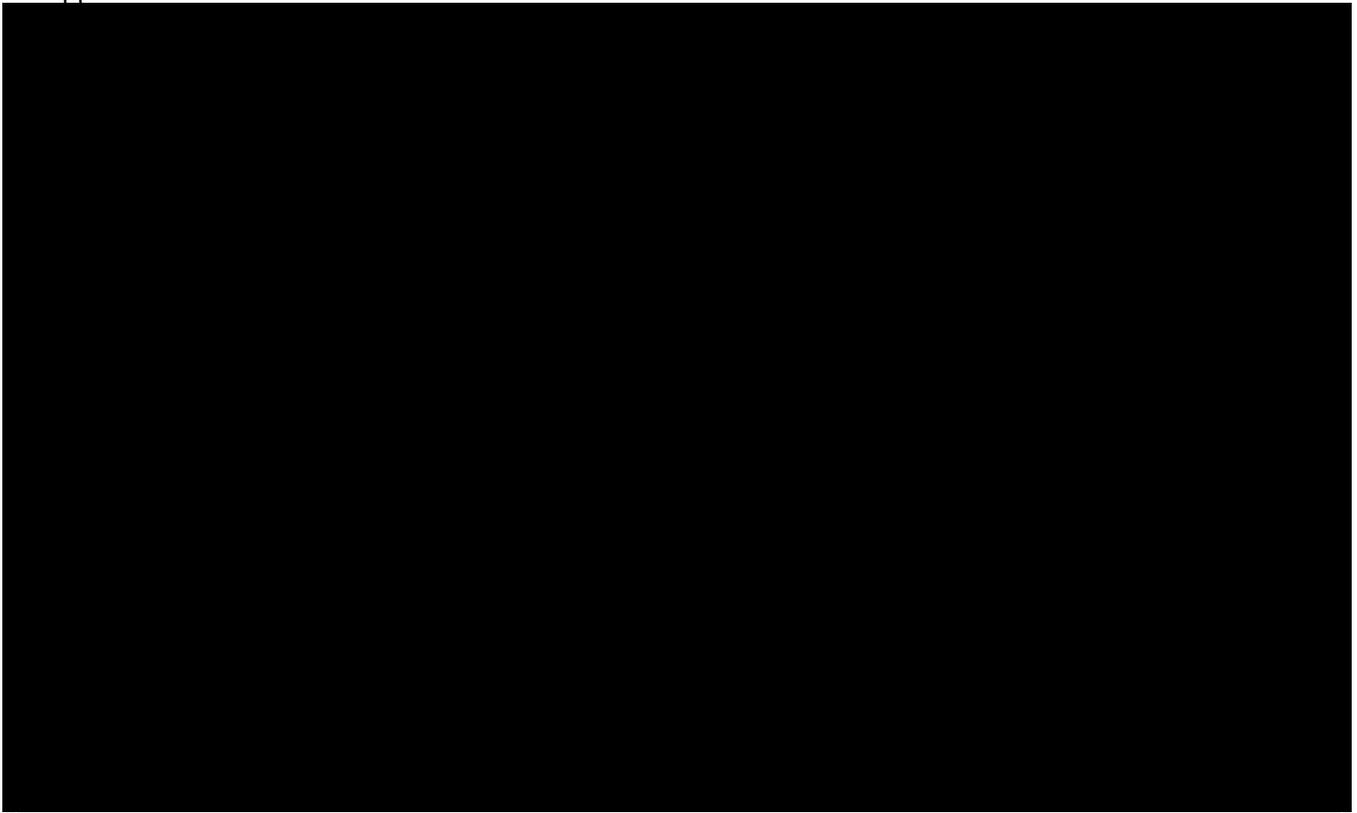
The impact of the STB's proposed changes are not documented or supported. The STB has not tested the impact of its proposed changes on individual movements, individual railroads, or any of the myriad of URCS-based analyses incorporated in its rate reasonableness determination frameworks. Due to the nature of how the URCS data is compiled and used by the STB, and how it will materially affect the outcomes of cases decided under the Board's regulatory supervision, this is a critical deficiency.

The STB submitted a report to Congress on URCS dated May 27, 2010 in which the STB discussed the make-whole adjustment.³⁵ In that discussion, the STB expressed concern that, as railroads convert more and more traffic to longer trains, there are ever fewer single car and multiple car shipments left to absorb the shortfall that is reallocated by the make-whole factor. The STB suggested that a study might reveal that the current make-whole adjustment and modern shipment practices may be resulting in an upward distortion of single-car variable costs. In its report, the STB even suggested a possible framework for modifying the make-whole factor. Not only has the Board failed to conduct the study it outlined in 2010, it failed to acknowledge it in *EP 431-4*.

As shown in Table 1 below, the Board's new proposals actually create an even greater upward adjustment in single-car variable costs—exacerbating the very problem it opined should be addressed through an adjustment to the make-whole factor in the first place. Table 1 below contains a summary of the difference between the existing and proposed revised URCS variable costs for a one-car shipment of acyclic organic chemicals (STCC 28181) on BNSF that was included in the sample data set provided by the STB.

³⁵ Surface Transportation Board Report to Congress Regarding the Uniform Rail Costing System, May 27, 2010, pp. 18-19.

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As shown in Table 1, the STB's proposed changes increase URCS Phase III costs for the BNSF single car movement by 12 percent.³⁶ Also as shown above, the Board's proposed changes dramatically increase the station clerical and SEM costs due to the imposition of per-shipment unit cost calculations and application. The overall variable cost increase would have been even greater if it were not mitigated by the STB's unsupported proposed adjustment that allocates 1/80th of all mileage-related costs to carloads moving in non-unit train service regardless of actual way and through train consist. As Table 1 demonstrates, the LUM and Train-Mile related costs for the selected car were reduced due to the Board's unfounded assumption. Nowhere in *EP431-4* has the Board attempted to assess whether adjustments of that magnitude are accurate.

³⁶ {{ [REDACTED] }}

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Below, I identify and address specific deficiencies associated with the STB's proposed changes, discuss potential pitfalls associated with their use and, where necessary, identify either more suitable alternatives or areas that should be subject to more thorough exploration before changes are implemented.

A. PROPOSED CHANGES TO THE CALCULATION OF SYSTEM- AVERAGE UNIT COSTS IN PHASE II

The STB proposes to change its treatment of certain cost categories as attributable to shipments rather than carloads. This change results in the following six (6) proposed adjustments:

1. New "Shipment" Reporting Requirements;
2. Phase II Switch Engine Minute Unit Cost Calculation (per Shipment);
3. Phase III Switch Engine Minute Unit Cost Allocation (per fractional Shipment);
4. Phase II Station Clerical Cost Unit Cost Calculation (per Shipment);
5. Phase III Station Clerical Cost Unit Cost Allocation (per fractional Shipment); and
6. Elimination of Make-Whole Adjustment.

The STB's proposal to change its treatment of certain cost categories as attributable to shipments rather than carloads is based on its stated position that the time required for switching a block of cars is unrelated to the number of cars in the block.³⁷ Although the cost increase is not linear with the size of the shipment, switching requirements (and cost) do increase as block size increases. For example, it consumes more fuel and takes longer to push a cut of 5 cars over the hump in a hump yard with a switch locomotive than it takes to push a single car³⁸ over the same hump. Therefore, the STB's proposal is built on a shaky foundation. This logic applies to the

³⁷ EP 431-4, NPR, p. 5.

³⁸ Assuming the six cars in the example are of comparable gross weight.

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Board's proposed cost calculations for switching at origin and destination, interchange switching, I&I switching, intraterminal switching, and interterminal switching.

The STB proposes to adjust the way URCS calculates unit costs associated with switch engine minutes ("SEM.") In the current model, SEM unit costs are calculated to reflect an average SEM cost per car in URCS Phase II. In URCS Phase III, the unit costs are applied to the cars in a shipment, and then adjusted based on the applicable efficiency or make-whole adjustment. Under the Board's proposal, SEM unit costs would be calculated to reflect an average SEM cost per shipment in URCS Phase II. In URCS Phase III, a fraction of the unit costs would be applied to each of the cars in a shipment based on the total number of cars in the shipment being costed. There would be no efficiency or make-whole adjustments in URCS Phase III.

To facilitate this proposed change in the URCS Phase II calculations, the Board proposes to amend the reporting railroad requirements in Forms STB-54 and QCS. Specifically, the Board "would require information on shipments loaded and terminated."³⁹

There are several problems with this proposal. Most importantly, the STB has not adequately defined the term "shipment" in this context, and the railroads' interpretation of the term may be inconsistent or incongruous with the (unstated) intended definition. In fact, the shipment size used to restate the unit costs developed in URCS Phase II and applied in URCS Phase III is a major driver of the differences between the costs developed using the Board's proposed model and the costs developed using its current model (as in Table 1 above). The Board is proposing to change certain of the E-Table unit costs⁴⁰ calculated in URCS Phase II

³⁹ *EP431-4*, NPR, p. 5.

⁴⁰ These include E1L1xxC1 (station clerical costs), E2L1xxC25 (SEM per industry switch event), E2L1xxC26 (SEM per interchange switch event), E2L1xxC29 (SEM per I&I switch event), E2L1xxC27 (SEM per

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from a per car basis to a per shipment basis, and then apply them back to shipments under Phase III. Under the current model, these unit costs are developed and applied on a per-car basis.

For example, in the current model, station clerical costs for single car movements are considered a function of the individual car. For multiple-car and trainload movements, station clerical costs are considered 75 percent a function of the individual car and 25 percent a function of the number of cars in the shipment. The STB proposes to regard station clerical costs as 100 percent a function of the shipment. This adjustment is arbitrary and based entirely on an unproven “belief” that, “operationally, there is little difference in the administrative costs between shipments of different sizes.”⁴¹ A proper study of station clerical costs would require a determination of how billing is actually performed and which party is responsible for creating invoices (i.e., railroad or shipper).⁴²

In the current model, the station clerical unit costs are developed in URCS Phase II on a per-car basis. For a one-car shipment, the per-car Phase II station clerical costs are applied to the car in Phase III. For a three-car shipment, the per-car Phase II station clerical costs are applied to each of the three cars in Phase III. Therefore, the station clerical costs for the three-car shipment are three times greater than the station clerical costs for the one-car shipment.

In the proposed revised model, the station clerical unit costs would be developed in URCS Phase II on a per-shipment basis. The denominator in the Phase II URCS calculation would be reduced⁴³, and the unit cost would be increased. This would result in fewer units and

intraterminal switch event), E2L1xxC28 (SEM per interterminal switch event) *See EP431-4*, April 25, 2013 Decision, Appendix A.

⁴¹ *EP431-4*, NPR, p. 7.

⁴² The Board and its predecessor have performed similar studies in the past. For example, in the so-called “Burden Study” (Interstate Commerce Commission, Rail Revenue Contribution By Commodity and Territory for the Year 1972, Statement No. 153-72, April 1975), the ICC staff adjusted system average station billing costs to reflect the multiple car shipments of coal, which reduced the station billing costs to reflect those carriers predominantly handling bulk commodities.

⁴³ By definition, there are fewer shipments than carloads.

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greater unit costs. For the example one-car shipment, the entire per-shipment Phase II station clerical costs would be applied to the car in Phase III. For the example three-car shipment, one third of the per-shipment Phase II station clerical costs would be applied to each of the three cars in Phase III. Therefore, the station clerical costs for the three-car shipment would be the same as the station clerical costs for the one-car shipment.

The shipment size used to develop the unit costs in Phase II drives the per-shipment unit costs, and ultimately the Phase III movement costs. Thus, establishing both a precise definition of a “shipment” which is applied uniformly across all railroads as it relates to the Board’s proposed changes and a valid means by which to track and measure railroad “shipments” is a major issue—and one that the Board has completely failed to address.

The railroads do not currently report data on the number of shipments in any of the quarterly or annual reports that they submit to the STB, and on which the STB relies to make its Phase II unit cost calculations. In its NPR, the Board has said that, to support its proposed changes, “the Form STB-54⁴⁴ would require information on shipments loaded and terminated, while the Form QCS⁴⁵ would require information on the number of shipments. For the purposes of both forms, a “shipment” would be defined as a block of one or more cars moving under the same waybill from origin to destination.”⁴⁶

The use of waybills to identify individual shipments is clearly inconsistent with actual railroad operations for at least some traffic types. Specifically, intermodal trains often operate as unit trains although the individual containers moving on them are billed under separate waybills. In the case of an 80-car, 4-unit-per-car intermodal train operating between the Port of Long

⁴⁴ Annual Report of Cars Loaded and Cars Terminated.

⁴⁵ Quarterly Report of Freight Commodity Statistics.

⁴⁶ See EP 431-4 NPR, p. 5.

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Beach and Chicago, it would clearly be incorrect to consider each of the 320 container units moving together on the train as individual shipments.

In addition to properly defining “shipments” for use in developing unit costs and calculating movement costs in URCS, the Board must also consider the railroads’ means for collecting and reporting the data on “shipments” that would be required to implement the Board’s proposed changes. At present, there is no standard for tracking or reporting railroad “shipments.” If the Board’s definition of “shipment” cannot be supported by data that are available to and collected by the railroads, the railroads will not be capable of reporting the information required to support the Board’s proposed changes. If the railroads are unable to provide the data required to make the Board’s preferred calculations, its proposed model is doomed to mechanical failure, regardless of whether its theory is sound.

To develop an estimate of shipment size for purposes of evaluating the impact of the Board’s proposed changes on individual movements, I started with the sample waybill moves included in the Board’s “Small Example” data set⁴⁷ that it provided to interested parties in this case. The Board’s Small Example data set contains 509 sample waybill segments (8,433 car/container segments) operating over all seven Class I railroads and several short line and regional carriers in the east and west. When the waybill sample records are expanded using the theoretical expansion factor, the data set is shown to represent 11,946 waybill segments (42,699 car/container segments). I have accepted this data set for purposes of testing the impact of the Board’s proposed changes.

To estimate shipment size, I first isolated the intermodal traffic included in the data set. As discussed above, most of the included intermodal records reflected the railroads’ common practice of waybilling each unit individually regardless of the operations associated with the

⁴⁷ See STB work paper “EP431_Make Whole Example_2011.xlsx.”

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movement. However, for some records (primarily on UP and CSXT), individual waybill records were associated with multiple intermodal units. I calculated the weighted average number of units per waybill for these waybill records, and used that average number as an estimate of the shipment size for intermodal traffic.

Next, I evaluated the non-intermodal traffic. I calculated the weighted average number of cars per waybill for these waybill records, and used that average number as an estimate of the shipment size for non-intermodal traffic. Finally, I applied the intermodal shipment size I developed as described above to all intermodal shipments that were waybilled individually and then calculated a weighted average shipment size for all movements included in the “Small Example” data set. The resulting shipment size was 6.7 cars/containers per shipment.⁴⁸ Exhibit No. 2 shows the calculations I made to arrive at this estimate. I used this shipment size estimate to restate the Phase II unit costs based on the Board’s proposed changes and then applied them to the studied movements using the Board’s proposed Phase III model changes.

Another nuance the Board failed to consider is that the development of unit costs in URCS Phase II based on the presumed number of shipments is inconsistent with the variability factors applied to those costs, which were developed based on number of cars. The variability factors are applied to specific cost components and are calibrated to reflect the extent to which individual cost components vary with traffic levels. For example, the variability factor for fuel is near 1.0, reflecting the fact that most of the fuel costs assigned to a carload movement will not be incurred if the carload doesn’t move. Stated differently, nearly all fuel costs attributed to a carload movement are variable. General and administrative (“G&A”) costs have a much lower variability factor, because the G&A functions performed by the railroad company will be

⁴⁸ I do not necessarily believe that the 6.7 car/container shipment size is accurate, but I developed it using the data set provided by the STB in this case record and have applied it as a means to gauge the impact of the Board’s proposed changes on the example moves provided by the Board in support of its proposed changes.

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performed whether or not an individual carload movement occurs. The variability factors were developed based on the current model, which incorporates per-car unit costs and unit cost application. They represent the extent to which the costs associated with individual carloads vary with the movement of that traffic.

Furthermore, because the divisor for SEM for some of the accounts in the URCS D2 table is based on 5 year averages, the STB would need the QCS restated on a shipment basis for the last 5 years in order to properly update the divisor. The STB will need 5 years of “shipments” data to fully implement its proposed changes to Phase II.

In addition to the changes discussed above, the STB also proposes to eliminate the URCS Phase III efficiency/make-whole adjustment for the use of railroad equipment while continuing to calculate equipment unit costs for the use of railroad equipment on a per-car basis. Stated differently, the proposed model would assume that the terminal time in URCS for railroad-owned equipment is the same for all types of trains-i.e., four days for each origin or destination terminal. This implicit assumption is illogical and does not comport with current railroad operations and contract requirements. For example, many trainload movements have a fixed time period allowed at each terminal which is frequently 4 or 5 hours per terminal.

B. PROPOSED CHANGES TO THE CALCULATION OF MOVEMENT VARIABLE COSTS IN PHASE III

In addition to the elimination of the efficiency/make-whole adjustments, the STB proposes to make the following five (5) adjustments to the URCS Phase III cost calculation formulae:

1. Use System Average Empty-Return Ratio for Trainload Shipments;
2. Increase the Assumed Miles between I&I Switch Events for Non-Trainload Traffic;
3. Increase the Trainload Demarcation Point from 50-Car to 80-Car Shipments;

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4. Eliminate the LUM Adjustment for Trainload Shipments; and
5. Divorce the LUM Adjustment for Non-Trainload Shipments from Actual Railroad Operations and Statistics in Favor of an Unsupported 80-Car Standard.

First, the Board proposes to replace the current URCS Phase III default assumption that all cars moving in trainload service have an empty return ratio of 2.0 with an assumption that the empty return ratio for trainload movements will reflect the average for the type of car and car ownership as shown in Table E2 of URCS Phase II. The STB has not attempted to demonstrate that its proposal to modify the empty return ratio for trainload movements to reflect the system average empty return ratio for the applicable car type and car owner would produce more accurate results than the current default empty return ratio for the affected movements. Whether the results would be more accurate or not is dependent on the ratio of the equipment type used in unit train vs. non-unit train service—a determination the Board has not even attempted to make.

Second, the STB proposes to modify the URCS Phase II factor for the frequency of I&I switching activity from once every 200 miles to once every 320 miles for non-intermodal, non-trainload movements. The STB's proposed modification of the assumed line-haul mileage between I&I switching events for non-unit train traffic is admittedly arbitrary. The STB proposes to increase the default mileage from the current 200 miles to a modified 320 miles—a 60% increase. The STB bases its proposed change on its observation that the average haul for Class I traffic increased by 60% between 1990 and 2011. The STB's proposed adjustment rests completely on the unproven presumption that both the ratio of unit train to non-unit train traffic, and the number of I&I switches on non-unit train traffic have remained constant while the length of haul has increased over time. To develop a reasonable update to the I&I cost allocation formula, the STB must conduct a study to determine the I&I switching requirements and activity for all trains. It has not done so. This approach directly contradicts the STB's approach the last

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time the Board contemplated changing the I&I formula, when it chose not to make adjustments specifically because it had no empirical data upon which to base a change.

Absent any basis for estimating the amount of I&I switching associated with intermodal traffic, we have no choice but to continue to apply the same I&I switching factor that we currently use. [Hall criticizes the level at which the I&I switching cost is currently set, because it reflects the 50 year-old assumption that cars receive I&I switching every 200 miles. We agree that this figure appears to be outdated--not only for intermodal traffic, but for all the non-trainload traffic to which it is applied. However, without conducting a special study, we have no other figure to use in its place.]⁴⁹

Third, the STB proposes to change the definition of trainload (and non-trainload) shipments with respect to the number of cars in the shipment. Specifically, the STB proposes to increase the trainload shipment demarcation point from 50 to 80 cars. The STB offers only anecdotal support for this change, and importantly it only considered global train statistics in settling on its chosen cut-off point. The STB failed to consider that trainload shipment sizes vary significantly from commodity to commodity, and from region to region. The STB should perform a detailed study to determine the point at which shipments are transported as trainload movements, including the extent to which this point varies from commodity to commodity or region to region. Furthermore, the STB's proposal does not address whether or not way train costs are to be applied to shipments of 79 or fewer cars. Because the Board proposes to treat these shipments as non-trainload shipments, I presume that way train costs will be applicable to shipments of 1 to 79 cars in the proposed new model as they are for shipments of 1 to 49 cars in the current model. In other words, for a 60-car shipment, way train costs that do not apply under the current model would apply under the proposed model.

Fourth, the STB proposes to eliminate the adjustment to LUM costs for trainload movements. In the existing system, the LUM costs for a trainload shipment are adjusted based

⁴⁹ EP 431-2 (October 1, 1997), p. 5 and footnote 18.

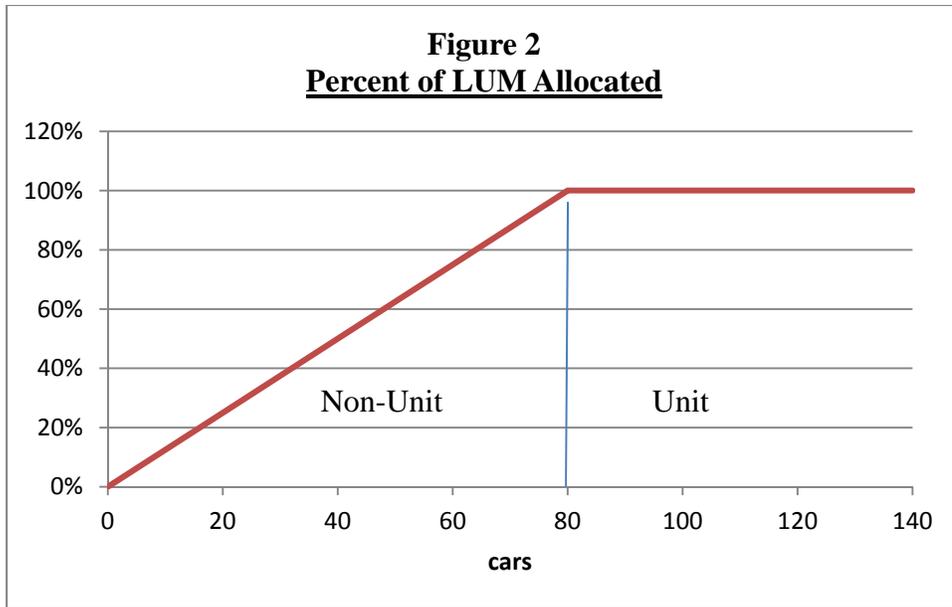
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on the relationship of the trailing weight for the train being costed to the system average trailing weight for unit trains as developed in URCS Phase II. The STB's proposal to eliminate this adjustment is based on its statement that, "by definition, a trainload shipment has no other shipments that should share the LUM costs of that train." This statement misses the point. The adjustment is meant to account for the fact that unit trains are not uniform in consist. An 80-car unit train will require less locomotive power (i.e., fewer locomotives) than a 135-car unit train (assuming both move over similar terrain at similar speeds), and will therefore incur less LUM costs than the longer, heavier train. Proof of the STB's faulty logic can be found in its proposed treatment of LUM costs for non-trainload traffic, which is inconsistent with its proposed treatment of LUM costs for trainload traffic.

Fifth, The STB proposes that all train-related costs for single-car and multiple-car movements will be based on a train of 80 cars. As justification for this adjustment, the STB states that, "whenever practical, we seek a smooth cost function, such that there is no large cost discrepancy between a 79-car multi-car movement and an 80-car trainload movement."⁵⁰ Yet, the STB's model ensures that the smooth cost function it seeks will have a kink at the 80-car mark. Shipments from 1-to-79 cars will be allocated LUM costs based on a presumed 80-car train (declining cost function), while shipments of 80 or more cars will be allocated LUM costs based on a flat line function. Figure 2 below shows the shape of the STB's proposed cost function.

⁵⁰ EP431-4, NPR, p. 10.

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The STB’s proposed changes with respect to its treatment of LUM costs for non-trainload traffic will create a serious disconnect between the actual non-trainload characteristics upon which the URCS Phase II unit costs are calculated and the assumed non-trainload characteristics upon which those unit costs are allocated in Phase III. The STB’s proposed divisor of 80 cars for train-related costs is not supported by any empirical data, and more importantly it is not reflective of the actual non-unit train operations of any of the Class I railroads, much less all of them. Consider two hypothetical railroads: Railroad A, whose manifest trainloads actually average 50 cars, and Railroad B, whose manifest trainloads actually average 100 cars. In the existing model, the LUM allocation is based on the ratio of car weight to train weight, but for purposes of this discussion, we will assume, as the STB did, that “most cars are homogenously loaded at or near the maximum weight.”

Under the existing model, each car on an average train composed of 50 one-car shipments would be allocated 1/50 (2%) of the LUM costs on Railroad A, while each car on an average train composed of 100 one-car shipments would be allocated 1/100 (1%) of the LUM costs on Railroad B. In the proposed model, each of the 50 one-car shipments on the average

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Railroad A train would be allocated 1/80 (1.25%) of the LUM costs. This means that for Railroad A, 62.5% (50 x 1.25%) of the train’s LUM costs would be allocated to the cars, while 37.5% (100% - 62.5%) of the train’s LUM costs would not be allocated to any of the cars, so the LUM-related costs for all of the cars would be understated using the Board’s proposed formula. For railroad B, each of the 100 one-car shipments on the average Railroad B train would also be allocated 1/80 (1.25%) of the LUM costs. This means that for Railroad B, 125% (100 x 1.25%) of the train’s LUM costs would be allocated to the cars, so the LUM-related costs for all of the cars would be overstated using the Board’s proposed formula. Table 2 below shows the impact of applying the Board’s formula to movements on Railroad A and Railroad B.

Table 2
Impact of Applying the Board’s Assumed 1/80 LUM Cost Formula to All Non-Trainload Shipments Regardless of the Railroads’ Actual Average Train Consist Data

Item	Railroad A	Railroad B
(1)	(2)	(3)
1. Assumed Average Cars per Non-Unit Train	50	100
2. Assumed Average Locomotives per Non-Unit Train	2	3
3. Assumed Phase II Cost per LUM	\$5.00	\$5.00
4. Assumed Movement Miles	1000	1000
5. Assumed ER Ratio	2.0	2.0
6. Train LUM Costs 1/	\$20,000	\$30,000
7. Studied Shipment Size (Cars)	1	1
8. Studied Shipment Weight (Tons)	100	100
9. Proposed Formula Per-Car Allocation Percent 2/	1.25%	1.25%
10. Proposed Formula Per-Car Allocation Amount 3/	\$250	\$375
11. Proposed Formula Total Costs Allocated 4/	\$12,500	\$37,500
12. Proposed Formula Over (Under) Allocation 5/	(\$7,500)	\$7,500

1/ L2 x L3 x L4 x L5

2/ L7 / 80

3/ L9 x L6

4/ L10 x L1

5/ L11 – L6

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As shown above, the Board's proposed formula cannot possibly produce accurate results unless the railroads subject to the formula all average precisely 80 cars per non-unit train. This is a fatal flaw. Consider a one-car, 100-ton gross weight interline shipment moving over BNSF and NS in manifest service in 2011. The BNSF average through train weight for 2011 was 5,616 tons, which is 22% greater than NS average through train weight of 4,603 tons for 2011.⁵¹ The portion of the LUM costs attributed to the car while it moved on BNSF would have been far different than the portion of the LUM costs attributed to the car while it moved on NS, because BNSF trains and NS trains do not have identical consists on average. Under the Board's methodology, the portion of the LUM costs attributed to the car while it moved on BNSF and NS (and any other railroad) would be 1/80th, regardless of the actual train statistics for trains moving on the respective systems.

Furthermore, the STB's assumption that "most cars are homogenously loaded at or near the maximum weight" is dubious, particularly as it relates to traffic moving on manifest trains, which often carry a mix of loaded and empty cars, and multiple equipment types of various tare weights and capacities.

C. MANIFESTATION OF PROPOSED CHANGES

In response to requests for data, the STB provided an example data set wherein it manually applied the current URCS Phase III costing adjustments, including the make-whole adjustment. Table 3 below shows an estimate of the impact of applying the proposed model to the single car waybill shipments⁵² included in the STB's provided sample data set, and a comparison of the application of both models.

⁵¹ URCS Phase III, E2L213C1.

⁵² Shipments of 1 to 5 carloads, which are costed as "SC" shipments under the Board's current URCS model.

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Table 3
Impact of STB's Proposed Changes on One-Car Shipments
Included in STB's "Small Example" Data Set

<u>Item</u> (1)	<u>Percent Cost Increase</u> (2)
1. Eastern Class I Carriers	9%
2. Western Class I Carriers	22%
3. Shortline and Regional Carriers 1/	70%
4. Weighted Average	20%

1/ Based on regional URCS

Source: Work paper "sc comparev3 testv3.xlsx".

As shown in Table 3 above, for one-car shipments, the URCS Phase III variable costs increased by an average of 20% under the Board's proposed changes. As in Table 1 above, the increase would have been even greater if it were not mitigated by the STB's unsupported proposed adjustment that allocates 1/80th of all mileage-related costs to carloads moving in non-unit train service regardless of actual way and through train consist. The STB claims to be pursuing more accurate results through its proposed changes, but this result seems to contradict the STB's 2010 statements that it believed variable costs were being over-allocated to single car shipments under the current model.

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VI. CONCLUSIONS

The Board's desire to make its formula and procedures simpler and more transparent is understandable, but its proposal for achieving that goal is misguided. Railroad operations are complex and heterogeneous. Whatever costing methodology is used must be calibrated to recognize these truths. The observation of steps in variable costs attributed to movements in different traffic groups does not, by itself, indicate a problem with the costing model. The Board's proposed changes may well result in less accurate results for many shipments, and it would be reckless to implement them in the absence of any proof that they actually achieve the Board's desired result. Adjustments may well be warranted, but any adjustments should be based on empirical data and analyses that reflect actual operational and cost changes as the shipment size changes, not simply on a desire to make things straight forward and simple.

The Board has not adequately defined the term "shipment" and has not offered any proof that the railroads have the ability to capture and report data in a way that would support its unstated definition. Properly defining "shipment" cannot be a strictly theoretical exercise because the implementation of the shipment-based adjustments is ultimately a mechanical process that depends on accurate and reliable data. Nor can the definition of "shipment" be left to individual carriers to determine, or the URCS model will cease to be uniform.

The STB's proposed changes will impact certain components created in the development of URCS Phase II unit costs and the methodology for calculating variable costs in URCS Phase III. No consideration was given to the impact these changes will have on overall variability or other unchanged elements in URCS. A better approach would be to perform this analysis as part of the overall revision to URCS costing. Furthermore, the Board has not expressed that it has even considered the impact of its proposed changes on the multiple URCS-based analyses that

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underpin its rate reasonableness and revenue adequacy determination models. Before any changes are made, all components of costs and the development of the underlying variability factors should be analyzed simultaneously using a comprehensive analytical framework.

STATEMENT OF QUALIFICATIONS

ROBERT D. MULHOLLAND

My name is Robert D. Mulholland. I am an economist and a Vice President of the economic consulting firm of L. E. Peabody & Associates, Inc. The firm's offices are located at 1501 Duke Street, Suite 200, Alexandria, Virginia 22314, 760 E. Pusch View Lane, Suite 150, Tucson, Arizona 85737, and 7 Horicon Avenue, Glens Falls, New York 12801.

I am a graduate of George Mason University's School of Public Policy from which I obtained a Master's degree in Transportation Policy, Operations & Logistics and Bowdoin College from which I obtained a Bachelor of Arts degree in Government and Legal Studies. I have been employed by L. E. Peabody & Associates, Inc since 2008 and from 1995-2004. From 2004-2006, I was the staff economist for the Office of Freight Management and Operations of the Federal Highway Administration ("FHWA") of the United States Department of Transportation ("USDOT"). From 2006-2008, I worked for ICF International as a consultant in the transportation group.

The firm of L. E. Peabody & Associates, Inc. specializes in analyzing matters related to the rail transportation of all commodities. As a result of my extensive economic consulting experience since 1995 and my participation in and support of maximum-rate, rail merger, service dispute, reasonable practices, and rule-making proceedings before various government bodies, I have become thoroughly familiar with the major rail carriers in the United States. This familiarity extends to subjects of railroad service, costs

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and revenues, capacity, traffic prioritization, operations, and contracts and tariff terms that historically have governed the movement of commodities by rail.

As an economic consultant, I have directed and conducted economic studies and prepared reports for freight carriers, shippers, federal agencies, the U.S. Congress, associations, and other public bodies dealing with transportation and related economic issues. Examples of studies I have participated in include organizing and directing traffic operations and cost analyses in connection with single and multiple car movements and unit train operations for various commodities, rail facilities analyses, rate and revenue division analyses, and other studies dealing with freight transportation markets for many commodities over various surface modes throughout the United States. Through conduct of these studies I have become familiar with the operating practices and accounting procedures utilized by railroads in the normal course of business.

I have inspected and studied railroad terminal facilities used in handling various commodities to collect data that were used as a basis for the determination of traffic and operating characteristics for specific movements handled by rail.

I have developed economic and operational studies relative to the rail transportation of coal on behalf of electric utility companies, including analyses of the relative efficiency and costs of railroad operations over multiple routes. The results of these analyses have been used to assist shippers in the development and negotiation of rail transportation contracts that optimize operational efficiency and cost effectiveness.

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I have developed numerous variable cost calculations utilizing the various formulas employed by the Surface Transportation Board (“STB”) for the development of variable costs for common carriers, with particular emphasis on the basis and use of the Uniform Railroad Costing System (“URCS”). I have utilized URCS costing principles since the beginning of my career with L. E. Peabody & Associates Inc. in 1995.

I have presented written testimony before the STB. This testimony has been related to the development of evidence including rail traffic volume and revenue forecasts, cross-over traffic revenue divisions, and train operations in several maximum reasonable rate proceedings on behalf of coal and chemicals shippers, and the development of evidence including rail fuel consumption and cost determinations in an unreasonable practice proceeding.

I have supported the negotiation of transportation contracts between shippers and railroads. Specifically, I have conducted studies concerning transportation rates based on market conditions and carrier competition, movement specific service commitments, and specific cost-based rate adjustment provisions.

I have conducted different economic analyses regarding rail transportation matters for dozens of electric utility companies located in all parts of the United States, and for major associations, including the Chlorine Institute, the American Chemistry Council, the Chemical Manufacturers Association, the National Industrial Transportation League, and the Western Coal Traffic League. In addition, I have assisted numerous government agencies in analyzing and solving various transportation-related problems.

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In the Western rail merger that resulted in the creation of the present Union Pacific Railroad Company, I reviewed the railroads' applications including their supporting traffic, cost and operating data and developed detailed evidence supporting requests for conditions designed to maintain the competitive rail environment that existed before the proposed merger.

While employed at FHWA, I was a member of the USDOT inter-agency working group that drafted the National Freight Policy. In addition, I served on the USDOT Freight Gateway Team, a group headed by the Undersecretary for Policy and composed of one representative from each of the surface modal agencies.

While employed at ICF International, I directed and conducted numerous analyses of the rail and trucking industries for federal transportation agencies including the Federal Railroad Administration ("FRA"), the Federal Motor Carrier Safety Administration ("FMCSA"), and the FHWA, including analyses of the current rail and trucking industries and forecasts of future trends in both industries.

2011 STB Small Example Waybill Data Analysis -- Shipment Size Estimate

<u>Item</u> (1)	<u>STB Small Example Records</u> (2)	<u>Small Example Record Carloads</u> (3)	<u>Average Cars/Units per Example Record 1/</u> (4)	<u>Expanded Waybills</u> (5)	<u>Expanded Carloads</u> (6)	<u>Average Cars/Units per Waybill 2/</u> (7)	<u>Restated Expanded Waybills</u> (8)	<u>Estimated Shipment Size 3/</u> (9)
Intermodal Traffic								
1. 1-Unit Waybills	146	146	1.0	5,840	5,840	1.0	288 4/	20.3
2. All others	166	4,713	28.4	992	20,132	20.3	992	20.3
3. Total	312	4,859	15.6	6,832	25,972	3.8	1,280	20.3
Non-Intermodal Traffic								
4. 1-Car Waybills	113	113	1.0	4,520	4,520	1.0	4,520	1.0
5. All others	84	3,461	41.2	594	12,207	20.6	594	20.6
6. Total	197	3,574	18.1	5,114	16,727	3.3	5,114	3.3
All Traffic								
7. 1-Car/Unit Waybills	259	259	1.0	10,360	10,360	1.0	4,808	2.2
8. All others	250	8,174	32.7	1,586	32,339	20.4	1,586	20.4
9. Total	509	8,433	16.6	11,946	42,699	3.6	6,394	6.7

1/ Column (3) ÷ Column (2)

2/ Column (6) ÷ Column (5)

3/ Column (6) ÷ Column (8)

4/ Column (5) ÷ Line 2, Column (7)

SOURCE: Work paper "EP431_Make Whole Example_2011 CARx v1.xlsx"