

COVINGTON & BURLING LLP

225916

1201 PENNSYLVANIA AVENUE NW
WASHINGTON, DC 20004-2401
TEL 202 662 6000
FAX 202 662 6291
WWW COV COM

BEIJING
BRUSSELS
LONDON
NEW YORK
SAN DIEGO
SAN FRANCISCO
SILICON VALLEY
WASHINGTON

MICHAEL L ROSENTHAL
TEL 202 662.5448
FAX 202 778 5448
MROSENTHAL@COV.COM

October 22, 2009



BY HAND

The Honorable Anne K. Quinlan
Acting Secretary
Surface Transportation Board
395 E Street, SW
Washington, DC 20423

Re: Docket No. 42114, *US Magnesium, L.L.C. v. Union Pacific
Railroad Company*

Dear Secretary Quinlan:

Enclosed for filing *under seal* in the above-reference matter are the original and ten copies of the Highly Confidential version of Union Pacific's Rebuttal Evidence, three compact discs containing an electronic copy of the Highly Confidential version, and three compact discs containing Union Pacific's Highly Confidential electronic workpapers.

We have separately enclosed for filing in the Board's *public docket* the original and ten copies of a Redacted version of Union Pacific's Rebuttal Evidence, and three compact discs containing an electronic copy of the Redacted version.

Additional paper copies of this filing are also enclosed. Please return date-stamped copies to our messenger.

Thank you for your attention to this matter.

Sincerely,

Michael L. Rosenthal

Enclosures

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**BEFORE THE
SURFACE TRANSPORTATION BOARD**

US MAGNESIUM, L.L.C.,

Complainant,

v.

UNION PACIFIC RAILROAD COMPANY,

Defendant.



Docket No. 42114

REBUTTAL EVIDENCE OF UNION PACIFIC RAILROAD COMPANY

J. MICHAEL HEMMER
LOUISE A. RINN
TONYA W. CONLEY
Union Pacific Railroad Company
1400 Douglas Street
Omaha, Nebraska 68179
Telephone: (402) 544-3309
Facsimile: (402) 501-0129

LINDA J. MORGAN
MICHAEL L. ROSENTHAL
DEREK LUDWIN
Covington & Burling LLP
1201 Pennsylvania Avenue, N.W.
Washington, D.C. 20004
Telephone: (202) 662-6000
Facsimile: (202) 662-6291

Attorneys for Union Pacific Railroad Company

October 22, 2009

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**BEFORE THE
SURFACE TRANSPORTATION BOARD**

US MAGNESIUM, L.L.C.,)	
)	
Complainant,)	
)	
v.)	Docket No. 42114
)	
UNION PACIFIC RAILROAD COMPANY,)	
)	
Defendant.)	

REBUTTAL EVIDENCE OF UNION PACIFIC RAILROAD COMPANY

In accordance with the procedural rules for Three-Benchmark cases set forth in *Simplified Standards for Rail Rate Cases*, STB Ex Parte No. 646 (Sub-No. 1) (STB served Sept. 5, 2007), Union Pacific Railroad Company (“UP”) hereby submits its Rebuttal Evidence in this challenge by US Magnesium, L.L.C. (“USM”) to the reasonableness of UP’s rates for transporting chlorine from Rowley, Utah, to Sahuarita, Arizona, and Eloy, Arizona.

UP’s Rebuttal Evidence is in five parts. Part I provides an overview of the issues that are addressed in this filing. Part II explains why the Board should conclude that UP’s “final offer” comparison groups are “most similar in the aggregate to the issue movements.” *Simplified Standards* at 18. Part III explains why the Board should adjust the “presumed maximum lawful rates” to account for two “other relevant factors”: first, the requirement that UP install Positive Train Control (“PTC”); and second, the fact that the challenged rates are common carrier rates, whereas all of the movements in the comparison groups occurred under contract rates. *Id.* at 22. Part IV presents the maximum rates for the issue traffic based on UP’s final offer comparison

groups, as adjusted to account for the “other relevant factors.” Finally, Part V summarizes UP’s conclusion that the challenged rates are reasonable.

UP’s rebuttal evidence is supported by a Verified Statement from Robert G. Worrell, Senior Assistant Vice President - Chemicals for UP, who refutes USM’s claims regarding UP’s process of setting rates for TIH materials. *See* Appendix A. UP’s rebuttal evidence is also supported by a Verified Statement from Dr. Marius Schwartz, Professor of Economics at Georgetown University, who explains why USM’s justifications for adopting an all-TIH comparison group are inconsistent with the economic underpinnings of the Three-Benchmark method and demonstrates that USM’s criticisms of his opening testimony regarding the recovery of PTC costs from TIH shippers are incorrect. *See* Appendix B. In addition, UP’s rebuttal evidence is supported by a Verified Statement from Michael R. Baranowski, a Senior Managing Director at FTI Consulting, Inc., who demonstrates that UP’s proposed PTC adjustment produces similar results under a wide range of assumptions. *See* Appendix C. Finally, UP’s rebuttal evidence regarding railroad costing issues, the identification of the comparison groups, and the calculation of the maximum reasonable rates in this proceeding is verified by Benton V. Fisher, a Senior Managing Director at FTI Consulting, Inc. *See* Appendix D.

I. INTRODUCTION

If the Three-Benchmark method works as intended, the Board will find the challenged rates to be reasonable. The Three-Benchmark method is designed to compare the challenged rates with rates charged for comparable traffic. Stated simply, if the challenged rates are consistent with rates that are being charged for comparable traffic, they are presumed to be reasonable. The evidence in this case demonstrates that the challenged rates are indeed consistent with rates that are being charged for comparable traffic, and USM has not overcome

the presumption of reasonableness. In fact, UP has shown that rates even higher than the challenged rates would be reasonable.

UP, USM, and the TIH Shippers supporting USM¹ have each submitted argument and evidence establishing that USM's rates are consistent with rates UP is charging other chlorine shippers.

First, UP's evidence establishes that the challenged rates were designed to bring USM's rates up to market levels and close the gap between the rates UP is charging other chlorine shippers and the rates UP was charging USM. *See* UP Op. at 14-16; UP Reply, Worrell Reply V.S. at 10-11.

Second, USM has reviewed the extensive discovery materials produced by UP and has found nothing to indicate that its rates are inconsistent with rates UP is charging other chlorine shippers. To the contrary, USM's expert witness agreed with UP that USM's rates had fallen below the levels UP is charging other chlorine shippers and that UP was trying to "shrink or eliminate that gap." USM Op., O'Connor V.S. at 6.

Third, the TIH Shippers do not dispute that USM's rates are consistent with those of other chlorine shippers. Instead, they assert that the rates paid by other shippers are not evidence of reasonableness because UP is "market dominant." TIH Shippers Reply at 3-5. However, the TIH Shippers are wrong. In fact, the rates paid by other chlorine shippers are the *best* evidence of reasonable rates under the Three-Benchmark method, which is specifically

¹ The Chlorine Institute, The Fertilizer Institute, and the American Chemistry Council (collectively, "TIH Shippers") filed a "Joint Reply to the Opening Evidence of Union Pacific Railroad Company." They also filed a motion asking the Board to accept their reply. UP does not object to the motion.

designed to compare rates “of only captive traffic over which the carrier has market power.” *Simplified Standards* at 17.

Indeed, the Three-Benchmark method does produce results that are in accord with the acknowledged facts in this case. UP’s evidence proves that the challenged Sahuarita rate is presumptively reasonable, the challenged Eloy rate is moderately above the presumptive maximum, and both rates are plainly below maximum reasonable levels after accounting for “other relevant factors.” *See infra*, pp. 35, 63.

USM tries to avoid the Three-Benchmark result by urging the Board to (i) select final offer comparison groups that are dissimilar to the issue movements, (ii) disregard the statutory mandate that UP install PTC, (iii) ignore the difference between contract rates and common carrier rates, and (iv) make an unjustified downward adjustment to the presumed maximum lawful rates. We addressed the unjustified adjustment sought by USM in our Reply. *See* UP Reply at 23-35. With regard to the other three points:

The Board should select UP’s “final offer” comparison groups. UP’s final offer comparison groups are more similar in aggregate to the chlorine traffic at issue in this case than USM’s because UP’s comparison group traffic consists of more similar commodities, moving under more similar cost conditions.

Regarding the issue of similar commodities, UP’s final offer comparison groups consist entirely of chlorine movements. By contrast, USM included almost no chlorine traffic in its proposed comparison groups. Instead, USM’s comparison groups consist almost entirely of anhydrous ammonia traffic, along with a few movements of other TIH materials:

- USM’s final offer comparison group for the challenged Sahuarita rate consists of 162 movements: 143 anhydrous ammonia, 9 hydrogen fluoride, 8 ethylene oxide, and 2 chlorine. Chlorine therefore accounts for

only 1 percent of the proposed comparison group. *See* USM Rebuttal, Hillenbrand Rebuttal V.S., Exhibit_(KNH-15).

- USM’s final offer comparison group for the challenged Eloy rate consists of 89 movements: 70 anhydrous ammonia, 8 ethylene oxide, 7 hydrogen fluoride, and 4 chlorine. Chlorine therefore accounts for only 4 percent of the proposed comparison group. *See id.*, Exhibit_(KNH-14).

Neither USM nor the TIH Shippers dispute UP’s showing that chlorine and other TIH materials are in different product markets, have different risk profiles, differ in their susceptibility to transportation by other modes, and differ in their susceptibility to product substitution. *See* UP Op. at 22-29. As discussed in more detail below, these differences between chlorine and other TIH materials are critical when applying the Three-Benchmark method, and USM offers no valid explanation for ignoring these important differences.

With regard to the issue of similar cost conditions, UP’s and USM’s final offer comparison groups both include movements with different cost characteristics than the issue traffic. However, USM’s comparison groups contain many movements for which the R/VC ratios developed from Waybill Sample data do not reflect UP’s markups over its variable costs, and thus do not provide a “useful indicia of the lawful contribution to [UP’s] fixed and common costs.” *Simplified Standards* at 83. Moreover, contrary to USM’s claims that UP selected comparison group traffic with an overly broad range of cost characteristics, UP’s comparison group traffic has a narrower range of costs than does USM’s, and UP’s comparison group traffic has costs that are, on average, more similar to the costs of the issue traffic than USM’s.

For these and other reasons discussed in Part II, UP’s final offer comparison groups are “most similar in aggregate to the issue movements.” *Id.* at 18.

The Board should not disregard UP’s obligation to install PTC. USM and the TIH Shippers urge the Board to adopt a position that is fundamentally unfair: While UP is legally bound by its common carrier obligation to transport chlorine and other TIH materials and

is legally bound by the Rail Safety Improvement Act of 2008 to spend approximately \$1.4 billion to install PTC on lines over which TIH material is transported, USM and the TIH Shippers argue that the Board should disregard those legal obligations when determining the maximum lawful rates UP may charge USM. The Board should not apply government regulation, in the form of the Three-Benchmark method, in such a way as to prevent UP from setting rates for shipping TIH that reflect the government-imposed statutory mandate to install PTC.

In fact, the Three-Benchmark method would clearly take into account UP's obligation to install PTC were it not for the problem of "regulatory lag." UP's current rates for transporting chlorine reflect an environment in which UP must install PTC. In theory, USM's current rates and R/VC ratios should be compared to the current rates and R/VC ratios of other chlorine shippers. However, UP's current rates are not reflected in the benchmarks used for this proceeding because the benchmarks are based on data from the 2004-2007 Waybill Samples. Fortunately, the Board "recognized the problem of regulatory lag and established a mechanism for addressing it on a case-by-case basis." *CSX Transp., Inc. v. STB*, 568 F.3d 236, 247 (D.C. Cir. 2009).

USM's and the TIH Shippers' primary argument for ignoring UP's obligation to install PTC is based on the misperception that the Board's rate prescription process already accounts for the problem of regulatory lag. USM and the TIH Shippers also raise unwarranted concerns about the uncertainty involved in quantifying PTC's costs and benefits. As discussed in Part III.A., the costs to install PTC will be so high in relation to any potential benefits that the challenged rates would be found reasonable even under the most conservative of assumptions.

The Board should not disregard the difference between common carrier rates and contract rates. UP's opening evidence proposed an adjustment to reflect the fact the

challenged rates are common carrier rates but all of the movements in its proposed comparison group were made under contract rates. *See* UP Op. at 63-64. USM complains that a common carrier rate adjustment would “penalize” USM and criticizes UP’s methodology as “contrary to the Three Benchmark comparability factors.” *See* USM Reply at 25-26. As discussed in Part III.B., UP’s adjustment does not penalize USM, but rather reflects well-acknowledged reasons why contract rates are typically lower than common carrier rates. Moreover, UP’s methodology is consistent with the methodology used for other calculations in *Simplified Standards*.

II. UP’S “FINAL OFFER” COMPARISON GROUPS ARE THE MOST SIMILAR IN AGGREGATE TO THE ISSUE MOVEMENTS.

To calculate the R/VC_{COMP} benchmark, the Board must select the comparison groups that are “most similar in the aggregate to the issue movements.” *Simplified Standards* at 18. More specifically, the Board must determine which comparison groups most closely reflect the demand and cost characteristics of the issue traffic, and which thus provide the best evidence as to “the degree of permissible demand-based differential pricing” and “the reasonable level of contribution to joint and common costs” with regard to the issue movements. *See id.* at 17; *see also Rate Guidelines – Non-Coal Proceedings*, 1. S.T.B. 1004, 1034 (1996) (“The R/VC_{COMP} benchmark provides a means of reflecting demand-based differential pricing principles.”).

The Board has recognized that the best way to ensure that comparison group traffic and issue traffic have similar demand characteristics is to ensure that the traffic consists of the same commodities or those in a similar product market. *See Rate Guidelines – Non-Coal Proceedings*, 1 S.T.B. at 1035 n.90 (explaining that comparison traffic “should involve a similar commodity handled in a similar product . . . market”). This means that comparison group traffic and issue traffic should consist of commodities that are the same or that are substitutes for each other. *See South-West Railroad Car Parts Co. v. Missouri Pac. R.R.*, ICC Docket No. 40073

(ICC served Dec. 12, 1988) (“*South-West Railroad Car Parts I*”) at 6; *South-West Railroad Car Parts Co. v. Missouri Pac. R.R.*, STB Docket No. 40073 (STB served Dec. 31, 1996) (“*South-West Railroad Car Parts II*”) at 7.

The Board has also recognized that it is far more critical that comparison group traffic and issue traffic have similar demand characteristics than similar cost characteristics. As the Board has explained, the Three-Benchmark method involves “comparing mark-ups over variable costs,” which means that “movements with different cost characteristics may be included in the comparison group.” *Simplified Standards* at 17; see also *South-West Railroad Car Parts I* at 8 (“Differences in transportation shipment characteristics . . . are not critical.”).

USM identifies only two ways in which some movements in UP’s final offer comparison groups are not entirely similar to the issue traffic, and both involve minor differences in cost characteristics. First, UP’s comparison groups include several movements that were rebilled, which means that URCS assigned one end of the movement a (lower-cost) interchange charge, rather than a (higher-cost) terminal charge. Second, UP’s comparison groups include movements that travel more (or fewer) miles than the issue traffic, which means that URCS assigned the movements higher (or lower) mileage-based costs. However, the Board has explained that movements with different cost characteristics may be included in a Three-Benchmark analysis because lower-cost movements will have correspondingly lower rates (and vice versa), and thus “there is no reason, *a priori*, to presume that the R/VC ratios (or their share of joint and common costs) should be different.” *Simplified Standards* at 17. USM fails to identify any reason why UP’s markups on rebilled traffic and traffic that travels longer or shorter distances than the issue traffic cannot be used to determine “the reasonable level of contribution to joint and common costs for the issue movement[s].” *Id.* at 18.

By contrast, USM's final offer comparison groups include movements that are dissimilar to the issue traffic with regard to both demand and cost characteristics, and they are dissimilar in ways that preclude their R/VC ratios from providing a "useful indicia of the lawful contribution to [UP's] fixed and common costs." *Id.* at 83.

The most significant difference involves the critical issue of demand characteristics: USM's comparison groups consist almost entirely of anhydrous ammonia traffic, even though the issue traffic in this case involves chlorine. USM does not dispute UP's evidence that chlorine is in a very different product market than anhydrous ammonia, and it does not dispute UP's evidence that chlorine and anhydrous ammonia have different risk profiles, differ in susceptibility to transportation by other modes, and differ in susceptibility to product substitution. Nor does USM provide any evidence of its own that markups on anhydrous ammonia traffic provide a useful indicia of the lawful markups on chlorine traffic. Instead, as discussed below, USM incorrectly asserts that use of chlorine-only comparison groups is precluded by the Board's decisions in *Simplified Standards* and *E.I. DuPont de Nemours & Co. v. CSX Transportation, Inc.*, STB Docket No. 42100 (STB served June 30, 2008) ("*DuPont*").

With regard to cost characteristics, USM's comparison groups include many movements that the Waybill Sample treats as being handled from origin to destination by UP, but that were actually handled over part of the route by another carrier. As discussed below, such handling carrier arrangements create the same problem that led the Board to rule that "non-defendant traffic" must be excluded from comparison groups: the R/VC ratios calculated for those movements will not reflect UP's markups over its variable costs, and thus do not provide a "useful indicia of the lawful contribution to [UP's] fixed and common costs." *Simplified Standards* at 83. Moreover, USM's comparison groups consist almost entirely of movements

handled in tank cars with different capacities and lading weights than the cars used to ship the issue traffic. USM's comparison groups also include movements handled in multiple-car shipments, even though the issue traffic moved in single-car shipments. USM is in no position to criticize UP's inclusion of rebilled movements or UP's distance criteria when nearly all of the movements in USM's comparison groups possess different cost characteristics than the issue traffic. In fact, as discussed below, UP's comparison group traffic has a narrower range of costs than USM's, and UP's comparison group traffic has costs that are, on average, more similar to the costs of the issue traffic than USM's.

In the following sections, we first correct two erroneous claims by USM about the overall structure of UP's final offer comparison groups: (i) that UP used only a single comparison group, and (ii) that UP's comparison groups are too small. We then explain in more detail why UP's comparison groups are "most similar in the aggregate to the issue movements." *Id.* at 18. Finally, we calculate the presumed maximum lawful rates and R/VC ratios for the Sahuarita and Eloy movements using UP's comparison groups.

A. USM's Criticisms Of The Number And Size Of UP's "Final Offer" Comparison Groups Have No Merit.

USM incorrectly claims that UP "chose to tender one comparison group for both [issue] movements." USM Reply at 8. UP's opening evidence explains that UP did not choose to tender a single comparison group. Rather, application of UP's selection criteria produced comparison groups for the Eloy movement and the Sahuarita movement that contain the same 24

movements. *See* UP Op. at 20. This result reflects the fact that the issue movements are basically identical, except for a 3-percent difference in distance traveled. *See id.*²

USM also incorrectly claims that UP's comparison groups "contain[] too few movements." USM Reply at 9. UP's comparison groups contain 24 movements, which is more than the 23 movements the Board used for its Three-Benchmark analysis in *E.I. DuPont de Nemours & Co. v. CSX Transportation, Inc.*, STB Docket No. 42101 (STB served June 30, 2008) ("*DuPont Nitrobenzene*"). UP's comparison groups are also similar in size to the 28-movement comparison group the Board used for its Three-Benchmark analysis of the Niagara Falls movement in *DuPont*. *See DuPont* at 15. USM never explains why UP's 24-movement comparison groups in this case are too small when a 23-movement group was sufficient in *DuPont Nitrobenzene* and a 28-movement group was sufficient in *DuPont*.

Moreover, a larger comparison group would be preferable to a smaller group only if all other factors were equal, and all other factors are not equal in this case. USM's comparison groups are larger than UP's only because they include different commodities moving under different transportation conditions than the issue traffic, as discussed in UP's Reply and in the next several sections of this Rebuttal. Under the circumstances of this case, UP's 24-movement comparison groups are vastly superior to USM's larger comparison groups.

² As UP has explained, the Eloy movement requires more switching and local service than the Sahuarita movement, but the associated cost difference cannot be quantified using Waybill Sample data, beyond the extent to which the additional switching and local service increases the total number of loaded miles. *See* UP Op. at 18 n.29; UP Reply at 38-39. The Board's *Simplified Standards* decision is quite clear that we cannot make movement-specific adjustments to URCS Phase III costs in order to recognize the particular characteristics of the Eloy movement. *See Simplified Standards* at 84.

B. UP's "Final Offer" Comparison Groups Are More Similar In Aggregate To The Issue Traffic In Terms Of Demand Characteristics.

UP's final offer comparison groups are more similar in aggregate to the issue traffic than USM's. While UP's comparison groups consist entirely of chlorine movements, USM's contain almost no chlorine movements. Chlorine represents only 1 percent of the traffic in USM's comparison group for the challenged Sahuarita rate and only 4 percent of the traffic in USM's comparison group for the challenged Eloy rate. Instead of chlorine, USM's comparison groups consist almost entirely of movements of anhydrous ammonia. *See* USM Reply, Hillenbrand Reply V.S., Exhibit_(KNH-14) & Exhibit_(KNH-15).

Table 1 illustrates that selecting USM's final offer comparison groups would mean evaluating the reasonableness of the challenged chlorine rates using comparison groups that contain almost no movements of chlorine.

**TABLE 1
COMPOSITION OF USM'S FINAL OFFER COMPARISON GROUPS**

Commodity	Sahuarita		Eloy	
	Number of Records	% of Comp. Group	Number of Records	% of Comp. Group
Anhydrous Ammonia	143	88%	70	79%
Hydrogen Fluoride	9	6%	7	8%
Ethylene Oxide	8	5%	8	9%
Total, Non-Chlorine	160	99%	85	96%
Chlorine	2	1%	4	4%

As UP observed in its reply, the ratio of chlorine to anhydrous ammonia in USM's comparison groups is all the more remarkable because Waybill Sample data from 2004-2007 show that chlorine accounted for more than 38 percent of UP's TIH movements and anhydrous ammonia accounted for only about 31 percent of UP's TIH movements. *See* UP

Reply at 9 & n.1. In other words, USM's comparison groups are not even representative of UP's TIH traffic.

UP's opening and reply evidence explained why the theory underlying the Board's reliance on the R/VC_{COMP} benchmark requires the selection of comparison groups that consist entirely of chlorine movements: no other commodity is similar enough to chlorine such that meaningful information about the appropriate demand-based differential pricing levels for chlorine could be derived by comparing R/VC ratios for movements of that commodity with R/VC ratios for movements of chlorine. *See* UP Op. at 22-29; UP Reply at 8-13.

UP's opening evidence established that chlorine is in a very different product market than anhydrous ammonia and other TIH materials handled by UP and discussed additional reasons why R/VC ratios for commodities other than chlorine shed no light on the appropriate rates for chlorine movements. *See* UP Op. at 26-28. Using data from government safety studies, UP demonstrated that chlorine's toxicity and dispersion properties make it an especially dangerous commodity to transport by rail, even as compared with other TIH materials. *See id.* at 7-9. UP also showed, using data from the Chlorine Institute and The Fertilizer Institute, that shippers of chlorine have relatively fewer modal alternatives to rail transportation. *See id.* at 27-28. UP further showed that while there are few product substitutes for chlorine, there are a number of product substitutes for anhydrous ammonia (many of which are less hazardous to ship than anhydrous ammonia). *See id.* at 28.

UP's evidence on all of these points stands unchallenged. Neither USM nor the TIH Shippers dispute UP's evidence that chlorine and other TIH materials handled by UP are in different product markets, have different risk profiles, differ in susceptibility to transportation by other modes, and differ in susceptibility to product substitution. USM offers no valid criticism

of UP's decision to use chlorine-only comparison groups or any evidence that would justify the Board's selection of all-TIH comparison groups in this proceeding.

1. USM's Claims That Board Precedent Precludes The Selection Of UP's Chlorine-Only Comparison Groups Are Incorrect.

USM's main argument against the selection of UP's chlorine-only comparison groups is that "the Board has previously determined in *DuPont* that a chlorine-movement only comparison group does not comply with . . . the comparability factors of the *Simplified Standards*." USM Reply at 10. USM also claims that the Board's *DuPont* decision addressed and rejected all of the arguments UP has made for distinguishing chlorine from anhydrous ammonia and other TIH commodities. *Id.* at 10-11. However, even a cursory review of the *DuPont* decision makes clear that USM's claims are false. The Board's decision in *DuPont* resulted from CSX's admissions that its chlorine pricing was "driven primarily by risk avoidance and mitigation considerations, not by profit maximization considerations," and that CSX was pricing chlorine "beyond what would otherwise be commercially justifiable." *DuPont* at 8-9. The Board therefore concluded that "a comparison group drawn exclusively from traffic that the railroad concedes is being priced to discourage the traffic would not, in our view, provide a reasonable measure of the share of joint and common costs (and thus the maximum R/VC levels) that should be borne by the issue chlorine movements." *Id.* at 9.

Moreover, USM's claim that the *DuPont* decision foreclosed the use of chlorine-only comparison groups is inconsistent with the Board's own representations to the D.C. Circuit Court of Appeals. In the Board's *Simplified Standards* reply brief, which was filed after the *DuPont* decision, the Board represented to the Court that a "railroad may tender a 'comparison group' drawn exclusively from movements of liquid chlorine" and that "the railroad could argue its comparison group was superior." Joint Brief of Respondents Surface Transportation Board

and United States of America at 40, *CSX Transp., Inc. v. STB*, No. 07-1369 (D.C. Cir. Feb. 18, 2009). The Board's brief confirms that the *DuPont* decision reflected the specific circumstances of that case, rather than any sort of broad rejection of chlorine-only comparison groups as a general matter.

UP's reply evidence explained why the Board's *DuPont* decision does not apply to this case. Specifically, UP's Senior Assistant Vice President - Chemicals testified that UP's chlorine rates reflect UP's assessment of market-level rates for chlorine. See UP Reply, Worrell Reply V.S. at 10-11. Mr. Worrell also testified that UP recently entered into new contracts with each of its top chlorine shippers, with the exception of USM. See *id.* at 9. Dr. Schwartz testified that he found no support for USM's claims that UP was seeking to "de-market" TIH commodities, and that UP's pricing appears to reflect an effort to increase profits, rather than an effort to de-market chlorine and other TIH materials. See *id.*, Schwartz Reply V.S. at 4-7. In fact, USM's Vice President, Chemicals and By-Products testified that, before the current dispute, UP's rates had been "generally reasonable and fair to USM," and USM's expert witness testified that UP's pricing reflected a strategy "to maximize profits." USM Op., Kaplan V.S. at 6; *id.* O'Connor V.S. at 7. In short, there is no evidence that UP is pricing chlorine at levels "beyond what would otherwise be commercially justifiable." *DuPont* at 9.

USM argues that the Board must disregard UP's evidence that chlorine is in a different product market than other TIH commodities because UP's introduction of such evidence was "contrary to the Board's desire to keep 'product and geographic evidence associated with particular movements' out of Three Benchmark cases." USM Reply at 11 (quoting *Simplified Standards* at 22). However, UP's evidence is not the type of evidence about which the Board expressed concern. In *Simplified Standards*, the Board was concerned that

parties might engage in costly and complicated arguments about the existence of product or geographic competition for particular movements in attempting to justify exclusion of those movements from comparison groups. *See Simplified Standards* at 22; *see also* Joint Brief of Respondents Surface Transportation Board and United States of America at 42, *CSX Transp., Inc. v. STB*, No. 07-1369 (D.C. Cir. Feb. 18, 2009) (explaining that allowing such evidence would open the door to “massive discovery to investigate the degree of product or geographic competition for all possible comparison movements in the Waybill Sample, a colossal number of movements”). The Board plainly did not seek to preclude parties from offering evidence on the critical issue of whether comparison group traffic involved similar commodities and demand elasticities. *See Simplified Standards* at 17.

UP has not introduced any impermissible “product or geographic evidence associated with particular movements.” *Id.* at 22. Rather, UP has introduced evidence that chlorine is in a different product market than anhydrous ammonia and other TIH materials – evidence that relates directly to the issue of whether chlorine and other TIH materials are similar commodities that can be presumed to have similar demand elasticities. *See* UP Op. at 24-25; UP Reply at 7; *Rate Guidelines – Non-Coal Proceedings*, 1 S.T.B. at 1035 n.90; *South-West Railroad Car Parts II* at 7. Accordingly, there is no basis for USM’s claim that *Simplified Standards* precludes UP from offering product-market evidence to support the selection of its proposed chlorine-only comparison groups.

2. USM Offers No Evidence To Justify The Selection Of Its All-TIH Comparison Groups.

In its opening evidence, USM offered no explanation for its selection of an all-TIH comparison group, other than the claim that it was “[f]ollowing the Board’s application of this comparability factor in *DuPont*.” USM Op. at 17. However, as discussed above, the

DuPont decision plainly does not preclude the Board from finding that a chlorine-only comparison group is superior based on the record in this case.

In its reply evidence, USM makes two feeble attempts to argue that shipments of chlorine and other TIH materials have sufficiently similar degrees of demand elasticity for purposes of applying the Three-Benchmark method. First, USM claims that “UP treats all TIH shipments as having the same demand elasticity.” USM Reply at 12. Second, USM claims that all TIH materials have sufficiently similar degrees of demand elasticity under criteria set forth by the Board. *See id.*, Hillenbrand Reply V.S. at 18. Neither claim is correct, and thus neither provides a basis for preferring USM’s all-TIH comparison groups over UP’s chlorine-only comparison groups.

a) UP Does Not Treat All TIH Shipments as Though They Have the Same Demand Elasticity.

USM attempts to bolster its assertion that UP treats all TIH shipments as having the same demand elasticity by recycling its claims that UP is “de-marketing” TIH. *See* USM Reply at 12.³ However, as discussed above and in UP’s reply evidence, UP is not in fact de-marketing TIH, the data do not support USM’s claims that UP is de-marketing TIH, and USM’s own statements are inconsistent with its claims that UP is de-marketing TIH. *See* UP Reply at 28-35; *id.*, Worrell Reply V.S. at 2-9; *id.*, Schwartz Reply V.S. at 1-7.⁴

³ USM initially used its de-marketing claims in an attempt to justify an increase in the limit on relief in this case. *See* USM Op. 24-25. UP showed that, in addition to being false, USM’s claims would not logically justify the result sought by USM. *See* UP Reply at 40.

⁴ The TIH Shippers repeat USM’s false “de-marketing” claims and make the additional false claim that “UP has presented TIH shippers with ‘take it, or leave it’ rates.” TIH Shippers Reply at 4-5. Mr. Worrell refuted the “de-marketing” claims in his reply verified statement, and he refutes the claims about “take it, or leave it” rates in his accompanying rebuttal verified statement. As Mr. Worrell explains, UP puts a great deal of effort into developing pricing proposals that it believes reflect market conditions, but it always remains willing to engage in a (continued...)

Moreover, USM's claim that UP treats all TIH shipments as having the same demand elasticity is untrue. As Mr. Worrell explains in his accompanying rebuttal verified statement, UP does not treat all TIH materials similarly in the context of pricing decisions. All TIH shipments do present certain common issues for UP because they all involve commodities that are risky to transport and that are subject to similar regulatory requirements (including the new mandate to install PTC). As a result, UP sometimes discusses TIH-related issues without differentiating among specific TIH commodities. However, pricing decisions involve more specific considerations of risks and costs, and they also require an understanding of the dynamics and details of particular product-market and transportation-market conditions. *See* Worrell Rebuttal V.S. at 12. In fact, UP's two most significant TIH commodities in terms of volume, chlorine and anhydrous ammonia, are so different that they are marketed by different teams within UP (one responsible for industrial chemicals, the other responsible for fertilizers), and the two teams report to different assistant vice presidents. *See id.* at 2; *see also* UP Op. at 26-27.

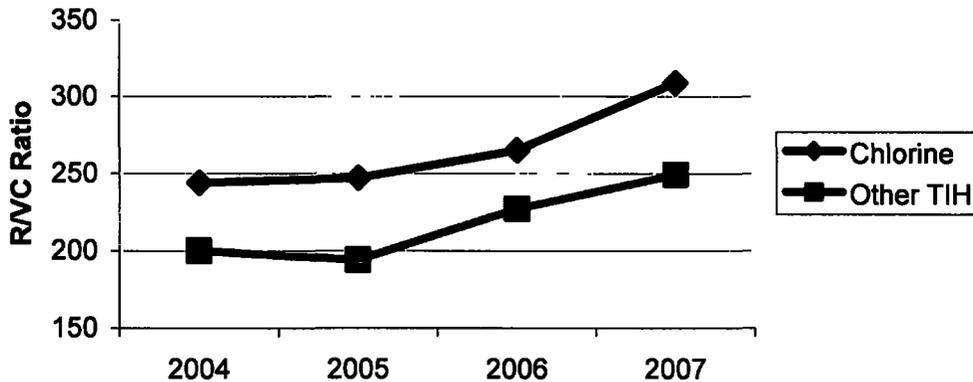
USM's claim that UP treats all TIH shipments as having the same demand elasticity is also refuted by the Board's Waybill Sample data. If UP treated all TIH shipments as having the same demand elasticity, they should all move at approximately the same markup over variable costs. However, as illustrated below in Chart 1, the Waybill Sample data show that

dialogue with its customers and consider reasons why lower rates might be appropriate. *See* Worrell Rebuttal V.S. at 2.

The TIH Shippers also claim that UP tried to "de-market" TIH through liability provisions in its TIH rules tariff that led to a lawsuit by the Chlorine Institute and American Chemistry Council. *See* TIH Shippers Reply at 4 n.2. In reality, the tariff contained confusing provisions that the trade associations misconstrued, and they voluntarily dismissed their suit after UP clarified the tariff.

UP's chlorine traffic moved at a significantly higher average markup than UP's other TIH traffic in each year from 2004 through 2007.⁵

CHART 1
UP MARKUPS ON CHLORINE VERSUS OTHER TIH



Finally, USM's reliance on its "de-marketing" claims to justify the selection of its all-TIH comparison groups also suffers from a fatal flaw in logic. If USM's claims that UP was de-marketing all TIH were true, neither of its own comparison groups would "provide a reasonable measure of the share of joint and common costs (and thus the maximum R/VC levels) that should be borne by the issue chlorine movements." *DuPont* at 9. In other words, if USM's "de-marketing" claims were true, the Board could not conduct a meaningful Three-Benchmark analysis in this case.

In sum, USM provides no support for its claim that UP treats all TIH shipments as having the same degree of demand elasticity, a claim that is directly contradicted by both the testimony in this proceeding and by the data from the Board's Waybill Sample.

⁵ See UP Rebuttal Highly Confidential electronic workpaper "UP TIH CWS 2004 2007 - Rebuttal.xls."

b) Board Precedent Does Not Support USM's Treatment of All TIH Materials as Having a Sufficiently Similar Degree of Demand Elasticity.

Mr. Kim Hillenbrand, one of USM's expert witnesses, states in his reply verified statement that he included all TIH commodities in USM's final offer comparison groups because he concluded that they "have similar degrees of demand elasticity." USM Reply, Hillenbrand Reply V.S. at 18. Mr. Hillenbrand purports to base this conclusion on his belief that the "TIH commodities in the USM R/VC_{COMP} groups are all rail dependent traffic" and "are subject to UP's market power." *Id.* Mr. Hillenbrand apparently focused on rail dependency and market power because the Board discussed how those concepts provided a basis for making presumptions about demand elasticity of comparison traffic in *Rate Guidelines – Non-Coal Proceedings*. *See id.* (quoting *Rate Guidelines – Non-Coal Proceedings*, 1 S.T.B. at 1035 n.90).

However, Mr. Hillenbrand ignores the critical first part of the Board's discussion: namely, the recognition that "the comparison traffic should involve a similar commodity handled in a similar product (and perhaps geographic) market." *Rate Guidelines – Non-Coal Proceedings*, 1 S.T.B. at 1035 n.90. The Board's discussion makes clear that the process of developing an appropriate comparison group must begin with traffic that involves a commodity similar to the issue traffic. *See id.* Only after identifying traffic involving a similar commodity does one ask whether the traffic is rail-dependent. *See id.* In other words, rail-dependency is a necessary, but not a sufficient, condition for presuming that the comparison traffic and issue traffic have similar degrees of demand elasticity. *See id.*; *see also South-West Railroad Car Parts II* at 7 ("The traffic at issue is sufficiently different from iron and steel scrap movements that we cannot assume that the demand elasticity would be sufficiently similar for the two sets of traffic.").

Moreover, even with respect to the issue of rail-dependency, Mr. Hillenbrand offers no data to support his conclusion that the TIH commodities in USM's comparison groups are all equally dependent on rail transportation. He does not address the existence of modal alternatives for anhydrous ammonia, ethylene oxide, or hydrogen fluoride – the non-chlorine TIH commodities in USM's comparison groups. Likewise, he fails to rebut (or even address) UP's specific evidence that a large percentage of anhydrous ammonia moves by modes other than rail. *See* UP Op. at 27-28 & n.42. Instead, Mr. Hillenbrand simply assumes that all traffic moving at R/VC ratios above 180 percent can be presumed to be equally rail-dependent, and then asserts that all traffic moving at R/VC ratios above 180 percent can be presumed to have sufficiently similar demand elasticity for purposes of the Three-Benchmark method. However, the Three-Benchmark method's emphasis on the R/VC_{COMP} benchmark, and the parties' extensive efforts to develop appropriate comparison groups, would serve little purpose if all traffic moving at R/VC ratios above 180 percent could be presumed to have sufficiently similar demand elasticity for purposes of the Three-Benchmark method.

In his rebuttal verified statement, Dr. Schwartz explains that Mr. Hillenbrand's discussion of demand elasticity "ignores three of the four key determinants of a shipper's elasticity of demand for rail services." Schwartz Rebuttal V.S. at 17. As Dr. Schwartz testifies, economic analysis identifies four important factors that influence elasticity of demand for rail service, and they relate closely to the nature of the commodity at issue: demand for the commodity; the availability of alternatives to rail for shipping the commodity; the share of the shipper's total cost of producing the commodity attributable to rail service; and the elasticity of supply of complementary inputs used to produce the commodity. *See id.* at 14-15. He explains that "[a] priori, when the challenged rate involves movements of chlorine these relevant factors

are likely to be most similar – and, therefore, also the rail-demand elasticity is likely to be most similar – in a comparison group comprised of other chlorine movements over similar distances.”

Id. at 15.

Dr. Schwartz also explains that the Board’s approach to the Three-Benchmark method, and more specifically, the Board’s approach to the R/VC_{COMP} benchmark, recognizes the importance of these factors. *See id.* at 16. He observes that “the factors listed in [*Rate Guidelines – Non-Coal Proceedings*] are consistent with the determinants of rail elasticity.” *Id.* at 17. Dr. Schwartz notes that UP addressed these factors when explaining its reasons for selecting a chlorine-only comparison group rather than a comparison group that included movements of other TIH materials. *See id.* (citing UP Op. at 22-28). By contrast, Dr. Schwartz observes, USM’s “comparable group selection fails to address three of the four key factors,” and with respect to the fourth, Mr. Hillenbrand merely asserts that all TIH material is rail dependent traffic, without any recognition that “differences in the degree of rail dependence, i.e., in the scope for input substitutability, can have a significant effect on the demand elasticity for rail service.” *Id.* at 18. Dr. Schwartz thus concludes that “Mr. Hillenbrand and USM have offered no convincing basis to reverse the expectation that, when the traffic at issue is chlorine, a comparison group comprised of other chlorine movements will do a better job of controlling for factors that affect the shipper’s demand for rail service than a group dominated by non-chlorine traffic.” *Id.* at 19.

C. UP’s “Final Offer” Comparison Groups Are More Similar In Aggregate To The Issue Traffic In Terms Of Cost Characteristics.

USM’s final offer comparison groups suffer from two distinct flaws relating to cost characteristics. First, they include many movements that should have been excluded because the R/VC ratios developed from Waybill Sample data do not reflect UP’s markups over

its variable costs, and thus they do not provide a useful indicia of lawful markups on the issue traffic. Second, almost all of the traffic moved under different cost conditions than the issue traffic. Consequently, UP's comparison groups are more similar in aggregate to the issue traffic in terms of cost characteristics.

1. USM's "Final Offer" Comparison Groups Include Many Movements That Do Not Provide A Useful Indicia Of Lawful Markups On The Issue Traffic.

USM's final offer comparison groups include many movements for which the R/VC ratios developed from Waybill Sample data do not provide reliable evidence of the issue traffic's maximum reasonable rates. USM claimed in its opening evidence that its initial comparison groups contained only movements that originated and terminated on UP. *See* USM Op. at 16. However, UP's reply showed that USM's initial comparison groups actually included a substantial amount of traffic that was moved by, and terminated on, San Pedro Railroad – the short line that serves Curtiss, Arizona – under a handling carrier arrangement with UP. *See* UP Reply at 20-22.

USM's final offer comparison groups suffer from the same problem as the initial comparison groups. USM's Sahuarita and Eloy comparison groups both include 58 movements of anhydrous ammonia that were handled by San Pedro Railroad: 52 movements from Enid, Oklahoma, to Curtiss; 5 movements from Chaison, Texas, to Curtiss; and 1 movement from Donaldsonville, Louisiana, to Curtiss. These movements constitute 36 percent of USM's Sahuarita comparison group and 65 percent of USM's Eloy comparison group.⁶

⁶ *See* USM Reply, Hillenbrand Reply V.S., Exhibit_(KNH-14) & Exhibit_(KNH-15).

USM could have determined from publicly available data that UP did not handle the 58 movements from their origins to Curtiss.⁷ UP's system map, which is available on UP's website, shows that UP does not serve Curtiss.⁸ In addition, Board decisions show that Southern Pacific Transportation Company, a predecessor of UP, sold its line from Benson, Arizona, to and beyond Curtiss to SWKR Operating Company, Inc. ("SWKR"), and that SWKR later sold the line to its current owner, San Pedro Railroad Operating Company, LLC ("SPROC"). *See San Pedro R.R. Operating Co., LLC – Acquisition & Operation Exemption – SWKR Operating Co.*, STB Finance Docket No. 34430 (STB served Nov. 21, 2003); *SWKR Operating Co. – Acquisition & Operating Exemption – Southern Pac. Transp. Co.*, ICC Finance Docket No. 32620 (ICC served Dec. 23, 1994).⁹

The movements handled by SPROC should not be included in the comparison groups for this case because their R/VC ratios do not reflect UP's markup over its variable costs of handling the movements from origin to destination. The Waybill Sample data show the Enid to Curtiss traffic as moving over the entire route on UP, and thus the variable costs in the Waybill Sample were calculated using UP's system-average variable costs for the entire route. However, UP's system-average variable costs are not the correct measure of the variable costs incurred for the portion of the movement between Benson and Curtiss because SPROC, not UP, handled the traffic over that portion of the route. UP has argued that the correct measure would

⁷ USM was on notice that the Board "will select the comparison group based on information contained in the Waybill Sample released to the parties at the outset of the case and other publicly available information." *Simplified Standards* at 83.

⁸ *See* <http://www.uprr.com/aboutup/maps/sysmap.shtml>. UP's density charts, which UP produced to USM in discovery, also contain no information regarding the line from Benson to Curtiss.

⁹ These decisions are available on the Board's website.

be the handling fee it pays SPROC. Board precedent suggests that the correct measure would be variable costs calculated using Western Region URCS. *See Kansas City Power & Light Co. v. Union Pac. R.R.*, STB Docket No. 42095 (STB served May 19, 2008) (“*KCPL*”) at 8. Whichever costing approach is correct, it is clear that the R/VC ratios developed using UP’s system-average variable costs will not reflect the correct measure of UP’s variable costs, or UP’s markups over its variable costs, and thus they do not provide a “useful indicia of the lawful contribution to [UP’s] fixed and common costs” for these movements to Curtiss. *Simplified Standards* at 83.¹⁰

2. Almost All Of The Traffic In USM’s “Final Offer” Comparison Groups Has Different Cost Characteristics Than The Issue Traffic.

In its reply evidence, USM criticizes UP’s decision to limit potentially comparable movements to movements that are shown in the Waybill Sample as moving in tank cars that hold under 22,000 gallons of product, and it claims that including movements in higher-capacity tank cars “has very little impact on the comparability analysis.” USM Reply at 14. USM further criticizes UP’s decisions to use a 400-mile range for selecting comparable movements and to include rebilled movements, while purporting to show that the traffic in USM’s final offer comparison groups has a narrower range of cost characteristics than the traffic in UP’s final offer comparison groups. *See id.* at 12-14; *id.*, Hillenbrand Reply V.S. at 12-16. USM asserts that its comparison groups are superior because UP’s selection criteria produced “a wide variation of the associated movements’ variable costs.” USM Reply at 13.

¹⁰ In fact, Board precedent indicates that these movements should be treated as interline movements for costing purposes, *see KCPL* at 8, and USM agrees that interline movements should be excluded from the comparison groups in this case, *see USM Op.* at 16.

As discussed below, USM's decision to disregard differences in tank car capacity means that the cost characteristics for almost all of the traffic in USM's final offer comparison groups are significantly different than those of the issue traffic. Moreover, when USM's approach of comparing variable costs per ton-mile is applied to the actual movements in the competing comparison groups, the traffic in UP's comparison groups proves to have a narrower range of costs than does the traffic in USM's and to have costs more similar to the costs of the issue traffic.

a) USM's Decision to Disregard Tank Car Capacity Has a Significant Impact on the Cost Characteristics of USM's "Final Offer" Comparison Groups.

UP's final offer comparison groups are more similar to the issue traffic than USM's final offer comparison groups because nearly all of the movements in USM's comparison groups have different cost characteristics than the issue traffic. The issue traffic moves in tank cars that transport less than 22,000 gallons of product with a lading weight of 90 tons per car. *See* UP Op. at 17; USM Op., Hillenbrand V.S. at 7, Table II. All of the traffic in UP's comparison groups is chlorine traffic that moves in the same car type, and all but one of the movements has a lading weight that is within one ton of the issue traffic's lading weight.¹¹ By contrast, only 2 of the 162 movements in USM's Sahuarita comparison group and 4 of the 89 movements in USM's Eloy comparison group move under those same cost conditions. Instead, 99 percent of the traffic in USM's Sahuarita comparison group and 96 percent of the traffic in

¹¹ *See* UP Rebuttal Highly Confidential electronic workpaper "UP Comparison Group - Final.xls."

USM's Eloy comparison group consists of non-chlorine traffic that moves in cars transporting 22,000 or more gallons of product with average lading weights of 78 tons per car or less.¹²

USM's witness on costing issues, Mr. Hillenbrand, tries to downplay the significance of USM's decision to include movements in larger tank cars by claiming that the cost difference between movements in smaller and larger cars is, on average, "only around 4%." USM Reply, Hillenbrand Reply V.S. at 14. However, Mr. Hillenbrand's calculations artificially assume that shipments in smaller and larger cars all have lading weights of 90 tons (like the issue traffic). In fact, *none* of the traffic in USM's comparison groups moving in the larger cars has a lading weight of 90 tons per car. When Mr. Hillenbrand's calculations are restated to reflect the actual car capacities and lading weights of the traffic contained in USM's comparison groups, the difference between the cost per ton-mile for movements in the larger and smaller tank cars jumps from approximately 4 percent to approximately 14 percent.¹³ UP is not claiming that this cost difference alone justifies rejection of USM's proposed comparison groups, but USM's decision to include in its comparison groups movements in larger tank cars and different lading weights creates a more significant difference between the cost characteristics of movements in its comparison groups and the cost characteristics of the issue traffic than USM would have the Board believe.

¹² See USM Reply workpapers "Exhibit_(KNH-14) - Highly Confidential.xls" and "Exhibit_(KNH-15) - Highly Confidential.xls."

¹³ See UP Rebuttal Highly Confidential electronic workpaper "Tank Car Analysis Restated - Rebuttal.xls."

b) The Traffic in UP's "Final Offer" Comparison Groups Has a Narrower Range of Costs, and Is More Similar on Average to the Issue Traffic, Than the Traffic in USM's "Final Offer" Comparison Groups.

USM's criticisms of UP's decision to use a 400-mile range for selecting comparable movements and to include rebilled movements do not withstand scrutiny. Moreover, USM is patently incorrect when it claims that the traffic in its final offer comparison groups has a narrower range of variable costs than the traffic in UP's final offer comparison groups. Furthermore, the average variable cost per ton-mile of traffic in UP's comparison groups is more similar to the issue traffic's costs than the traffic in USM's.

USM claims that UP "wrongly" included rebilled movements in its comparison groups because rebilled movements will have lower costs than non-rebilled movements, assuming all other factors are held equal. USM Reply at 14; *see also id.*, Hillenbrand Reply V.S. at 12-13. USM claims that the cost difference "distorts the R/VC_{COMP} result in favor of UP," USM Reply at 14, because the "lower cost of rebilled movements would result in a higher R/VC ratio," *id.*, Hillenbrand Reply V.S. at 13.

USM is wrong. The Three-Benchmark method is designed to compare *markups* over variable costs, and thus "movements with different cost characteristics may be included in the comparison group." *Simplified Standards* at 17. As the Board has explained, lower-cost movements can be expected to have correspondingly lower rates, and thus "there is no reason, *a priori*, to presume that the R/VC ratios (or their share of joint and common costs) should be different." *Id.* That is why the Board has said that "if a complainant challenged the rate for a 6-car to 25-car movement, it may argue for the inclusion of a comparable movement of a 50-car to 110-car unit train by another potentially captive shipper." *Id.* In short, USM has not identified

any reason why rebilled traffic cannot be used “to determine the reasonable level of contribution to joint and common costs for the issue movement[s].” *Id.* at 18.¹⁴

USM also claims that UP was wrong to use a 400-mile range for selecting comparable movements, but it provides no valid reason for preferring a shorter range in this case. *See* USM Reply at 12-13. As UP explained in its reply evidence, UP does not believe that there is any single, inherently correct, mileage range that should be used in all Three-Benchmark cases. *See* UP Reply at 17. UP used a 400-mile range in this case because we believe that the resulting comparison group reflects a more acceptable sample size than a smaller range, without creating an undue risk of a feedback effect. *See id.*¹⁵ In fact, UP could have produced even more favorable results for itself had it adopted the 200-mile range proposed by USM: UP’s Sahuarita comparison group would have consisted of 13 chlorine movements and produced a presumed

¹⁴ As UP explained in its opening and reply evidence, when a rail carrier rebills an interline movement, it issues the shipper a separate bill reflecting the carrier’s rate for its portion of the interline movement, and thus the carrier’s revenue that appears in the Waybill Sample reflects only the rate charged to the shipper by that carrier. In other words, movements that were rebilled by UP are not subject to the type of mileage-based allocation of revenue among carriers that led the Board to exclude “non-defendant traffic” from comparison groups. *See* UP Reply at 19-20; UP Op. at 21.

¹⁵ Mr. Hillenbrand misunderstands the Board’s and UP’s concern about a feedback effect. He claims that UP attempted to justify using a broader mileage range as a way to avoid a feedback effect. *See* USM Reply, Hillenbrand Reply V.S. at 15. In fact, a broader mileage range creates a greater risk of a feedback effect. *See Simplified Standards* at 73-74. However, as UP explained in its reply evidence, a 400-mile range strikes a reasonable balance between sample size and risk of a feedback effect, given the facts of this case. *See* UP Reply at 17. In particular, the risk of a feedback effect is low because a 400-mile range captures just 24 of the 556 chlorine movements in the 2004-2007 Waybill Sample data that meet UP’s other selection criteria. *See* UP Rebuttal Highly Confidential electronic workpaper “UP TIH CWS 2004 2007 - Rebuttal.xls.”

maximum lawful R/VC ratio of 495 percent; its Eloy comparison group would have consisted of 13 chlorine movements and produced a presumed maximum lawful R/VC ratio of 478 percent.¹⁶

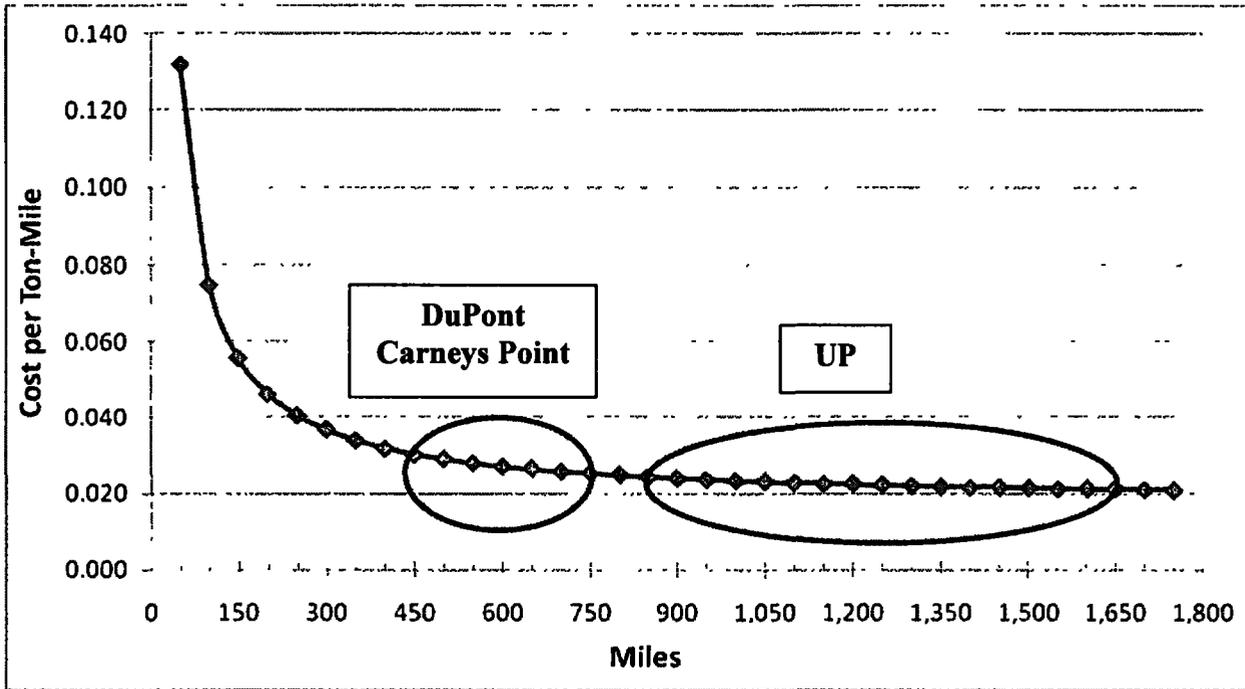
USM claims that UP's 400-mile range "produces a wide variation of the associated movements' variable costs," which is "contrary to the requirement[s]" of *Simplified Standards*. USM Reply at 13. However, USM's calculations in support of that claim do not reveal any meaningful information about the actual differences between the competing final offer comparison groups. Rather than use the actual mileages of movements in the comparison groups, USM's expert "rounded each of the actual mileages for the shortest and longest movement in each R/VC_{COMP} groups to the nearest 50 miles." USM Reply, Hillenbrand Reply V.S. at 15. Then, rather than use actual car types and lading weights, he "computed the average cost per mile" of large-capacity and small-capacity cars, again artificially assuming 90-ton lading weights for each. *Id.* In short, Mr. Hillenbrand simply illustrated the obvious point that movements drawn from a larger mileage range will have a wider range of costs per ton-mile, assuming all other factors are equal. His calculations reveal nothing about the actual range of costs per ton-mile for the movements in the competing comparison groups, in which all other factors clearly are not equal.

Moreover, although Mr. Hillenbrand asserts that UP's use of a 400-mile range compares unfavorably to the 150-mile range that the Board accepted in *DuPont*, in fact, Mr. Hillenbrand's own cost calculations show that a 150-mile range around movements of the length

¹⁶ See UP Rebuttal Highly Confidential electronic workpaper "UP Comparison Group at 300 and 200 Miles - Rebuttal.xls." These calculations are slightly different from those presented in UP's reply evidence (see UP Reply at 17) because USM has adopted UP's calculation of the number of loaded miles that the issue traffic travels to Sahuarita and Eloy (see USM Reply, Hillenbrand Reply V.S. at 7).

found in *DuPont* actually exhibit a broader range of variable costs per ton-mile than UP's 400-mile range produces for the issue traffic in this case, as shown in Chart 2.¹⁷

CHART 2
UP VARIABLE COSTS PER TON-MILE AT 50-MILE INCREMENTS
(Cost in \$)



Furthermore, when USM's approach of comparing variable costs per ton-mile is applied to the actual movements included in the competing final offer comparison groups, the traffic in UP's comparison groups proves to have a narrower range of costs than the traffic in USM's comparison groups.¹⁸ Table 2 shows the range of variable costs per ton-mile for the actual movements in the competing comparison groups based on the year in which the traffic

¹⁷ Chart 2 is based on the data in Mr. Hillenbrand's workpapers reflecting 90-ton single-car movements of chlorine in tank cars that transport less than 22,000 gallons of product. See USM Reply electronic workpaper "Tank Car Analysis.xls."

¹⁸ See UP Rebuttal Highly Confidential electronic workpaper "Tank Car Analysis Restated - Rebuttal.xls."

moved.¹⁹ This result demonstrates that USM introduced more variation into its comparison groups by including anhydrous ammonia traffic moving in cars with different capacities and lading weights than UP introduced by including chlorine traffic drawn from a larger mileage range and rebilled movements.

TABLE 2
RANGE OF VARIABLE COSTS PER TON-MILE IN THE UP AND USM
FINAL OFFER COMPARISON GROUPS
(Minimum and Maximum Cost in \$)

<u>Year</u>	<u>USM-Sahuarita</u>			<u>USM-Eloy</u>			<u>UP-Sahuarita/Eloy</u>		
	<u>Min.</u>	<u>Max.</u>	<u>Range</u>	<u>Min.</u>	<u>Max.</u>	<u>Range</u>	<u>Min.</u>	<u>Max.</u>	<u>Range</u>
2004	0.0179	0.0324	81%	0.0179	0.0324	81%	0.0166	0.0180	9%
2005	0.0188	0.0371	97%	0.0188	0.0371	97%	0.0194	0.0213	10%
2006	0.0180	0.0255	42%	0.0180	0.0250	39%	0.0193	0.0227	17%
2007	0.0227	0.0266	17%	0.0215	0.0263	22%	0.0204	0.0227	12%

As Table 2 shows, if the superior final offer comparison groups in terms of cost conditions are the ones with the narrowest range of variable costs, then UP's are clearly superior.

Finally, when USM's approach of measuring variable costs per ton-mile is applied to the movements in the competing final offer comparison groups, the traffic in UP's comparison groups proves to be more similar, on average, to the issue traffic than the traffic in USM's.²⁰ Table 3 shows the range of variable costs per ton-mile and the average variable costs

¹⁹ In other words, the variable cost per ton-mile for each movement in the comparison group was drawn from the costs in the Waybill Sample, which were calculated using UP's URCS costs that correspond to the year in which the traffic moved.

²⁰ See UP Rebuttal Highly Confidential electronic workpaper "Tank Car Analysis Restated - Rebuttal.xls."

per ton-mile of the actual traffic in the competing comparison groups when costs are calculated on a comparable basis.²¹

TABLE 3
AVERAGE VARIABLE COSTS PER TON-MILE AND RANGE OF COSTS
IN THE UP AND USM FINAL OFFER COMPARISON GROUPS
(Calculated using 2007 URCS, indexed to 1Q 2009)

	Minimum	Maximum	Range	Average	Difference From Issue Traffic
USM-Sahuarita	\$0.0187	\$0.0437	134%	\$0.0261	18%
USM-Eloy	\$0.0187	\$0.0437	134%	\$0.0260	18%
UP-Sahuarita/Eloy	\$0.0192	\$0.0236	23%	\$0.0213	-3%
Issue Traffic	\$0.0220	\$0.0221		\$0.0220	

As Table 3 shows, if the superior final offer comparison groups are the ones with costs per ton-mile that are most similar on average to the movements in the comparison groups, then UP's are clearly superior.

D. Calculation Of The Presumed Maximum Lawful Rates.

For the reasons discussed above, the Board should select UP's final offer comparison groups as the "best comparison group[s]" because they "provide[] the best evidence as to the reasonable level of contribution to joint and common costs for the issue movement[s]." *Simplified Standards* at 18. Under the Three-Benchmark method, once the comparison groups have been selected, the next step is to apply the RSAM and R/VC_{>180} benchmarks to each

²¹ The costs for each movement were calculated using 2007 URCS, indexed to the first quarter of 2009, so they could be compared on a common basis with the costs for the issue traffic.

movement in the comparison groups, and then calculate a confidence interval around the estimate of the mean of the “adjusted comparison group[s].” *Id.* at 21.

In this case, UP’s RSAM for the four-year period from 2004 to 2007 is 326 percent; UP’s $R/VC_{>180}$ for that period is 231 percent.²² Accordingly, UP adjusted the R/VC ratio of each movement in its final offer comparison groups by 1.41. UP then calculated the mean and standard deviation of the R/VC ratios for the adjusted comparison groups and constructed a confidence interval based on the comparison group sample size and standard deviation.

UP is submitting workpapers showing the calculations described above.²³ The calculations also reflect USM’s acceptance of UP’s calculation of the loaded miles for each movement. The results of these calculations are summarized in Table 4.

²² See *Simplified Standards For Rail Rate Cases – 2007 RSAM and $R/VC_{>180}$ Calculations*, STB Ex Parte No. 689 (STB served May 12, 2009), Tables I & II.

²³ See UP Rebuttal Highly Confidential electronic workpaper “UP Comparison Group - Final.xls.”

TABLE 4
PRESUMED MAXIMUM LAWFUL RATES AND R/VC RATIOS

	Sahuarita	Eloy
1Q09 Per Car Rate (UP Tariff)	\$10,410	\$13,396
1Q09 Variable Cost Per Car	\$2,485	\$2,549
1Q09 Actual R/VC Ratio	4.19	5.26
Presumed Maximum R/VC Ratio	4.33	4.33
Presumed Maximum Lawful Rate	\$10,760	\$11,037

Table 4 shows that the presumed maximum lawful rate for the Sahuarita movement is higher than the challenged rate, and the presumed maximum lawful rate for the Eloy movement is lower than the challenged rate. As discussed in the next Part, the Board should find both rates to be reasonable after adjusting the presumed maximum lawful rates to account for “other relevant factors.”

III. THE BOARD SHOULD ACCOUNT FOR UP’S OBLIGATION TO INSTALL PTC AND THE DIFFERENCE BETWEEN CONTRACT RATES AND COMMON CARRIER RATES AS “OTHER RELEVANT FACTORS.”

UP’s opening evidence demonstrated that the Three-Benchmark method’s presumed maximum lawful rates should be adjusted upward to reflect (i) UP’s obligation to install PTC, and (ii) the difference between contract rates and common carrier rates. *See* UP Op. at 31-65. USM and the TIH Shippers object to the PTC adjustment, and USM objects to the common carrier adjustment. In the sections below, we show that those objections have no merit.

A. USM's And The TIH Shippers' Objections To UP's Proposed PTC Adjustment Have No Merit.

In urging the Board to reject an adjustment to reflect UP's obligation to install PTC, USM and the TIH Shippers ask the Board to adopt a position that is fundamentally unfair and that ignores the very real risks and costs associated with transporting TIH materials. While UP is legally bound to transport chlorine and other TIH materials and is legally bound to spend approximately \$1.4 billion to install PTC on lines over which TIH material is transported, USM and the TIH Shippers ask the Board to disregard those obligations when it determines the maximum lawful rates UP may charge USM. Instead, they ask the Board to cap USM's current and future rates based on rates that existed in the marketplace from 2004 through 2007 – that is, before Congress required railroads to install PTC on main lines that are used to transport TIH. The Board should not apply the Three-Benchmark method in such a way as to prevent UP from setting TIH rates that reflect the statutory mandate to install PTC.

USM and the TIH Shippers offer a hodgepodge of objections to UP's proposed PTC adjustment, which can be divided into four categories. First, they argue that there is no need for an adjustment because UP's rates are already very high and the rate prescription process already accounts for any regulatory lag problem. Second, they argue that the Board should not make an adjustment because there are too many uncertainties involved in quantifying the costs and benefits of PTC. Third, they argue that it would be unfair for the Board to take into account UP's obligation to install PTC before UP has finished installing PTC. Finally, they argue that the proposed PTC adjustment unduly complicates this case.

As discussed in more detail below, the first category of objections reveals a lack of understanding about why regulatory lag presents a problem for the Three-Benchmark method. The second category of objections exaggerates the uncertainties involved in estimating the costs

to install PTC, which will be so high in relation to any potential benefits that may flow from installing PTC that the challenged rates would be found reasonable even under extremely conservative assumptions. The third category of objections ignores the serious consequences of failing to address the regulatory lag problem in this case. The fourth category of objections merely seeks to distract the Board from UP's robust showing that, if the Board considers UP's obligation to install PTC, the challenged rates clearly do not exceed a reasonable maximum.

1. UP's Proposed PTC Adjustment Is A Necessary And Appropriate Effort To Account For Regulatory Lag.

USM's and the TIH Shippers' arguments that there is no need to adjust the presumed maximum lawful rates in this case reflect fundamental misunderstandings about the regulatory lag problem and the Three-Benchmark rate prescription process.

a) USM's and the TIH Shippers' Complaints About UP's Current Rate Levels Actually Demonstrate Why Regulatory Lag Is a Significant Issue in This Case.

The claims of USM and the TIH Shippers that UP's proposed PTC adjustment is unwarranted because UP's rates for transporting TIH have increased rapidly in recent years reflect a fundamental misunderstanding of the regulatory lag problem. Indeed, USM and the TIH Shippers have their reasoning backwards: the fact that UP's rates have increased considerably over the last several years is an important reason why regulatory lag is a significant issue in this case.

"The whole purpose of the Three-Benchmark approach is to determine where the challenged rate falls in comparison to similarly situated traffic." *Simplified Standards* at 80. However, when rates have been rising rapidly, regulatory lag prevents a valid comparison because current rates are not reflected in the available Waybill Sample data. In this case, UP's rates to transport USM's chlorine will not be benchmarked against rates for other traffic that

moved in 2009 because the Waybill Sample data released by the Board do not include rates that were established in 2009; instead, they will be benchmarked against the lower rates that existed for traffic that moved from 2004 through 2007. In other words, the Board must account for the regulatory lag in the Waybill Sample so there can be a valid comparison between the challenged rates and rates for similarly situated traffic.

USM and the TIH Shippers also claim that UP's current rates for shipping chlorine and other TIH materials are not an appropriate measure of rate reasonableness because "TIH shippers have little or no choice but to ship by rail under the terms dictated by the railroads." TIH Shippers Reply at 4; *see also* USM Reply, O'Connor Reply V.S. at 10 ("UP's notion of the market seems to be defined by UP rate increase announcements followed by shipper compliance."). However, the Three-Benchmark method is specifically designed to compare rates "of only captive traffic over which the carrier has market power." *Simplified Standards* at 17. Whether or not a shipper is happy about the rates it is being charged, if the shipper is paying those rates to move traffic in the current market, the rates are relevant for purposes of a Three-Benchmark analysis. If USM believed it was inappropriate to have the challenged rates compared with current rates charged to other similarly situated shippers, it should not have invoked the Three-Benchmark method.

USM also complains that a PTC adjustment is unwarranted because it found no evidence that UP's current rates reflect an effort to recover the costs to install PTC. *See* USM Reply at 16-18; *id.*, O'Connor Reply V.S. at 10-11. However, UP's opening evidence, which was verified by Robert Worrell, UP's Senior Assistant Vice President - Chemicals, explained that UP's "[c]urrent market rates for chlorine traffic reflect UP's obligation to install PTC." UP Op. at 50. Mr. Worrell also testified in his reply verified statement that the new requirement to

install PTC is one of the factors that UP considers in negotiating rates for chlorine and other TIH materials. *See* UP Reply, Worrell Reply V.S. at 3. Mr. Worrell further testified that UP had entered into new contracts with each of its top chlorine shippers, except USM, {

} . *Id.* at 9.²⁴ Mr. Worrell confirms in his rebuttal verified statement that UP considered the potential costs associated with its obligation to install PTC when it entered into those contracts. *See* Worrell Rebuttal V.S. at 3-4.

USM argues that UP's current rates do not reflect any concern for PTC costs because UP did not discuss PTC costs in "a general business presentation to USM at the end of 2007." USM Reply, Kaplan Reply V.S. at 2. However, UP's presentation took place almost a year before Congress mandated that railroads install PTC, so the fact that UP did not discuss PTC in that presentation is meaningless. USM also claims that UP's documents produced in discovery show that, "as recently as October, 2008 UP marketing personnel knew little or nothing about PTC's potential effect on TIH rates." USM Reply at 17; *see also id.*, O'Connor Reply V.S. at 11. However, USM is referring to a single document in which UP said it could not provide a map of the UP lines affected by the PTC requirement until rules regarding PTC implementation were promulgated by the Federal Railroad Administration ("FRA"). *See id.*, O'Connor Reply V.S., Exhibit_(TOC-1).

Moreover, UP's presentation to USM demonstrates that UP was highly focused on the risks and regulatory costs associated with transporting TIH and that it was raising those issues in connection with contract negotiations. A substantial portion of UP's presentation

²⁴ The Rail Safety Improvement Act of 2008 was enacted into law on October 16, 2008. *See* Pub. L. No. 110-432, 122 Stat. 4848 (2008).

focused on safety and regulatory issues involving TIH. *See id.*, Kaplan Reply V.S., Exhibit_(HK-1) (USM discovery documents USM-SK00043-47). USM's internal communications further confirm that USM's rate negotiations with UP included discussions about allocating the risks and costs involved in transporting TIH. *See id.*, Kaplan Reply V.S., Exhibit_(HK-1) (USM discovery document USM00466). Other USM documents produced in discovery show that USM fully expected UP {

}. *See* Appendix E (USM discovery document USM00289).

Furthermore, as UP explained in its opening evidence, UP is not claiming that the new mandate to install PTC is the only reason, or even the primary reason, that its current rates for chlorine are higher than rates that shippers paid from 2004 through 2007. However, UP could not quantify all of the differences in a way that would be consistent with the rules established by the Board in *Simplified Standards*. UP developed a partial adjustment based on the requirement to install PTC because the requirement was a significant factor affecting its current rates, the requirement was not reflected in the rates or the variable costs for traffic that would be included in the comparison groups in this proceeding, and the costs to install PTC could be quantified with the necessary precision. UP also believed that USM should not be able to insulate itself from the costs to install PTC by obtaining a prescription that would cap its rates from 2009 into 2014 based on rates for traffic that moved from 2004 through 2007. *See* UP Op. at 32-33. That UP's current rates are significantly higher than the rates reflected in the 2004-2007 Waybill Samples makes regulatory lag a significant issue in this case, and UP's proposed PTC adjustment is a partial effort to account for the regulatory lag problem.

b) USM and the TIH Shippers Are Incorrect When They Claim That the Rate Prescription Process Already Accounts for Regulatory Lag.

USM and the TIH Shippers further demonstrate their misunderstanding of the regulatory lag problem when they claim that “[b]ecause the maximum rate is based upon the R/VC relationship, rather than absolute rate levels, regulatory lag is not an issue.” TIH Shippers Reply at 5; *see also* USM Reply at 22-23. USM and the TIH Shippers are plainly incorrect. If they were correct, the Board would not have acknowledged the regulatory lag problem in *Simplified Standards*, and the D.C. Circuit would not have acknowledged it in *CSX Transportation, Inc. v. STB*. *See Simplified Standards* at 85; *CSX Transp.*, 568 F.3d at 247 (upholding the Three-Benchmark method because the Board “recognized the problem of regulatory lag and established a mechanism for addressing it on a case-by-case basis”).

USM and the TIH Shippers claim more specifically that UP’s obligation to install PTC does not create a regulatory lag problem because, “as UP incurs costs associated with installing PTC, those costs will be captured in the adjusted URCS, which means that revenue will have to increase in order to maintain the prescribed R/VC ratio.” TIH Shippers Reply at 5-6; *see also* USM Reply at 22. However, as the Board explained in *Simplified Standards*, and as UP explained above, the regulatory lag problem is not that the prescribed rates will not increase to reflect future increases in variable costs; rather, the problem is that the initial, prescribed R/VC ratio is flawed because it is based on historical Waybill Sample data and thus does not include rates that reflect current market conditions. *See Simplified Standards* at 85.²⁵

²⁵ The TIH Shippers further illustrate the extent to which they misunderstand the regulatory lag problem when they assert that “[t]o the extent there might be a regulatory lag issue, it could only be implicated in the future, if the PTC costs that already have been incurred have not yet shown up in the URCS costs for the comparison group.” TIH Shippers Reply at 9. As discussed (continued...)

Moreover, even apart from their misguided belief that the regulatory lag problem relates only to the accuracy of variable cost calculations, USM and the TIH Shippers could not be more wrong when they claim that UP's costs to install PTC will be reflected "almost immediately" in USM's prescribed rates through changes in URCS. USM Reply, O'Connor Reply V.S. at 13; TIH Shippers Reply at 6.

First, rates that are based on variable URCS costs will *never* capture UP's fixed costs to install PTC. URCS will ultimately reflect changes in UP's variable costs associated with the obligation to install PTC, but UP will incur very substantial fixed costs to install PTC that will never be reflected in URCS. Approximately 60 percent of UP's costs to install PTC involve investments in signal assets (STB Road Property Account 27), for which URCS treats both the associated return on investment and depreciation costs as 50 percent variable. Approximately 10 percent of UP's costs to install PTC involve investments in communications systems (STB Road Property Account 26), for which URCS treats return on investment and depreciation costs as 56 percent variable and 80 percent variable, respectively. USM's prescribed rates would never reflect any share of the very substantial fixed costs UP will incur to install PTC.

Second, even with respect to UP's variable costs to install PTC, URCS will not assign an appropriate share of those costs to USM and the other TIH shippers that caused UP to incur those costs. Instead, URCS will spread the costs on a system-average basis across all of the traffic moving over UP's system. Neither USM nor the TIH Shippers dispute UP's evidence that most of UP's costs to install PTC are caused by the transportation of TIH, and UP has

above, the problem is not that UP's 2007 URCS costs do not reflect the costs to install PTC; the problem is that UP's current rates and R/VC ratios to chlorine shippers other than USM reflect current market conditions, including the statutory mandate to install PTC, but the rates and R/VC ratios reflected in the 2004-2007 Waybill Samples do not reflect these current conditions.

explained why it is appropriate as a matter of economic efficiency and regulatory precedent for UP's rates to TIH shippers to reflect the PTC costs caused by TIH. *See* UP Op. at 42-49; *id.*, Schwartz V.S. at 6-14.²⁶

Moreover, neither USM nor the TIH Shippers dispute that the Board's prohibition against cross-subsidies would prevent UP from recovering PTC costs from shippers that do not transport TIH. Under Board precedent, a non-TIH shipper could challenge UP's rates and construct a stand-alone railroad that did not include the costs to install PTC, as long as the stand-alone traffic group did not include passenger traffic or TIH. *See* UP Op. 45-46. Furthermore, even if UP could force non-TIH shippers to pay a portion of the costs to install PTC, allowing USM's "rates to be subsidized by other traffic" would turn the Board's "principle against cross subsidization on its head." *See id.* at 46 (quoting *PPL Montana, LLC v. Burlington N. & Santa Fe Ry.*, 6 S.T.B. 752, 757 (2003), *aff'd sub nom. PPL Montana, LLC v. STB*, 437 F.3d 1240 (D.C. Cir. 2006)).

Third, even with respect to the small share of UP's variable costs to install PTC that would be assigned to USM using system-average URCS, those costs would not be reflected in USM's rates until several years into the prescription period. USM and the TIH Shippers are

²⁶ USM claims that the reasons for allocating PTC costs to TIH shippers would not remain valid if the FRA were to accept The Fertilizer Institute's arguments "to expand the scope of rail lines on which PTC systems would be installed to cover tracks other than tracks used for TIH and passenger transportation." USM Reply at 21. However, The Fertilizer Institute's arguments actually reinforce the causal connection between PTC costs and TIH. The FRA's proposed rules would require railroads to install PTC based on traffic that moved in 2008. The Fertilizer Institute argues that the FRA should require railroads to install PTC even on lines that did not carry TIH shipments in 2008 because the proposed rules "could inhibit new markets for ammonia shipments because if ammonia was not shipped on that route in 2008, the route would not be equipped with a PTC system and, therefore, [ammonia would] not [be] permitted to travel on that line." *See* Comments of The Fertilizer Institute in Docket No. FRA-2008-0132 at 2 (Appendix F). In other words, The Fertilizer Institute recognizes the direct causal link between shipments of TIH and the requirement that railroads install PTC.

wrong when they claim that UP's costs to install PTC "will be anticipated in the indexed URCS data and reflected in the R/VC ratios associated with the maximum reasonable rates in this proceeding almost immediately." USM Reply, O'Connor Reply V.S. at 13; TIH Shippers Reply at 6. As USM and the TIH Shippers concede, none of the costs that UP incurs to install PTC in 2009 will be reflected in UP's URCS costs until UP's 2009 URCS becomes available, which could be nearly 2011. See USM Reply, O'Connor Reply V.S. at 12; TIH Shippers Reply at 6.²⁷ Because none of the costs that UP incurs to install PTC will be reflected in UP's URCS costs until late 2010 at the earliest, the Board's quarterly indexing process will not allow PTC costs to be reflected in prescribed rates before 2011.²⁸ The Board's indexing process accounts for changes in the cost levels of inputs that are already in URCS; it cannot account for the appearance of new types of costs that were never initially captured by URCS, such as costs to install PTC.²⁹ Thus, indexing UP's 2007 or 2008 URCS can never capture costs that UP did not even begin to incur until 2009.³⁰

²⁷ In this case, both parties are using 2007 URCS to calculate the costs in a challenge to 2009 rates in the forty-third week of 2009 because 2008 URCS has not been released.

²⁸ Under the procedures developed in *Oklahoma Gas & Electric Co. v. Union Pacific Railroad*, STB Docket No. 42111 (STB served July 24, 2009), for updating rate prescriptions, after the 2009 URCS would be released at the end of 2010, UP could not publish rates based on 2009 URCS before the end of January 2011. See *Oklahoma Gas & Electric* at 11 n.16.

²⁹ USM and the TIH Shippers complain that the Board's indexing process is too generous to railroads because it does not include a productivity factor. See USM Reply, O'Connor Reply V.S. at 13; TIH Shippers Reply at 6-7. However, regardless of its merits, that complaint merely reinforces the point that indexing accounts for changes in cost levels, not changes in the types of costs that railroads incur.

³⁰ USM and the TIH Shippers are entirely off-base when they claim that the regulatory lag problem was resolved by the Board's recent decisions in *Oklahoma Gas & Electric, supra*, and *Western Fuels Association, Inc. v. BNSF Railway*, STB Docket No. 42088 (Sub-No. 1) (STB served July 27, 2009). See USM Reply at 23-24; TIH Shippers Reply at 5-7, 9. Those decisions did not change the Board's rate prescription methodology, so they could not eliminate the regulatory lag problem that the Board acknowledged in *Simplified Standards*. Rather, in those (continued...)

Finally, USM and the TIH Shippers are being disingenuous when they claim UP has conceded that PTC costs will be reflected in URCS. *See* USM Reply, O'Connor Reply V.S. at 11-12; TIH Shippers Reply at 9. UP's opening evidence anticipated possible arguments that a PTC adjustment would create a double-counting of PTC costs because a small fraction of PTC costs would eventually appear in the system-average URCS variable costs used to calculate prescribed rates. *See* UP Op. at 61-62. UP explained that double-counting should be a non-issue in this case, because USM's rates would be found reasonable based on 2007 URCS, which did not reflect any costs to install PTC. *See id.* UP also observed that any potential problem was years away, since its 2007 and 2008 URCS would not reflect any PTC costs, and the Board would likely resolve any issues before January 2011, which is the very earliest that 2009 URCS could be used in calculating prescribed rates. PTC costs were reflected in URCS through its rulemaking in *Class I Railroad Accounting and Financial Reporting – Transportation of Hazardous Materials*, STB Ex Parte No. 681 (STB served Jan. 5, 2009). *See* UP Op. at 62.³¹ UP certainly never suggested that relying on URCS and the Board's rate prescription process would overcome the regulatory lag problem and allow it the opportunity to recover an appropriate share of its PTC costs from USM.

cases, the Board explained how its decisions to express rate prescriptions as R/VC ratios made it appropriate to establish and adjust prescribed rates using the most recent URCS, indexed to reflect current cost levels. *See Oklahoma Gas & Electric* at 10-11; *Western Fuels* at 8, 10.

³¹ USM observes that the Board is also considering a more comprehensive review of URCS and thus may pursue a single, comprehensive proceeding to address these issues. *See* USM Reply, O'Connor Reply V.S. at 13-14. USM's observation does nothing to undermine UP's basic point, which is that the Board is already in a position to resolve any potential double-counting long before it would affect any actual rate prescription.

2. USM And The TIH Shippers Exaggerate The Uncertainties Involved In Accounting For UP's Obligation To Install PTC As An "Other Relevant Factor."

USM and the TIH Shippers argue that the Board should reject UP's proposed PTC adjustment because the costs are too uncertain and because UP's calculations did not address the potential benefits of PTC. However, the insistence of USM and the TIH Shippers on a perfect accounting of PTC costs and benefits ignores the context of this case. Contrary to the claims of USM and the TIH Shippers, UP is not "asking the Board to adopt a mechanism in this Three-Benchmark case" by which UP's estimated PTC costs "would be allocated, in advance to USM and all other TIH shippers." USM Reply at 19. UP is simply asking the Board to take into account its costs to install PTC when determining whether the two challenged rates are reasonable. As UP discusses below, and as demonstrated in the accompanying verified statement of Michael Baranowski, the costs to install PTC will be so high in relation to any potential benefits that the challenged rates would be found reasonable even under the most conservative assumptions. If the Board finds the challenged rates to be reasonable, it has no reason to proceed any further and identify the outer limits of reasonableness, at least not with the precision demanded by USM and the TIH Shippers.

In the sections below, UP first addresses arguments about the uncertainties associated with PTC's costs. UP then addresses arguments that it did not account for the potential benefits of PTC. Finally, UP presents the results of several alternative calculations to demonstrate that the challenged rates would be found reasonable even under extremely conservative assumptions about the costs and benefits of installing PTC.

a) UP's Costs to Install PTC Are Sufficiently Certain for Purposes of the Proposed PTC Adjustment.

UP's opening evidence demonstrated that UP's costs to install PTC by 2015 will be approximately \$1.4 billion. UP's evidence provided a detailed, track-specific analysis of installation costs on the lines on which UP will likely be required to install PTC, based on the FRA's proposed rules for implementing the statutory mandate to install PTC. UP's cost estimates were not generated for this litigation. They are the result of a systematic effort by UP, undertaken in the course of business, to calculate the costs it will incur to comply with the congressional mandate to install PTC. They reflect the actual data that UP is using for business planning purposes. *See* UP Op. at 38-41.

USM and the TIH Shippers suggest various reasons why UP's cost estimates are speculative, but none of them justifies disregarding entirely UP's costs to install PTC.

First, USM and the TIH Shippers argue that UP made no commitment to install PTC anywhere except the Los Angeles Basin. *See* USM Reply at 19; TIH Shippers Reply at 8. However, USM and the TIH Shippers cannot dispute that the Rail Safety Improvement Act of 2008 requires UP to install PTC on all main line over which it transports passenger traffic or TIH by December 31, 2015. *See* 49 U.S.C. § 20157(a). USM asserts that "it is not unreasonable to anticipate" that the Act may be amended "given the magnitude of the Act's potential scope." USM Reply at 22. However, the "magnitude of the Act's potential scope" is precisely the reason why the Board must take PTC costs into account in this proceeding, rather than ignore them based on USM's entirely unfounded speculation about some "further amendment." *Id.*

Second, USM argues that UP's cost estimates are not sufficiently definite because they are based on FRA's proposal to identify lines on which railroads must install PTC using 2008 traffic data, and the FRA's final rules may require a different approach. *See id.* at 20-22.

However, UP carries significant volumes of TIH materials on many of its lines, and no fine-tuning of the FRA's proposed rules would allow UP to avoid the substantial costs of complying with Congress's mandate to install PTC on "its main line over which poison-or toxic-by-inhalation hazardous materials . . . are transported." 49 U.S.C. § 20157(a)(1). In fact, the FRA's final rules might well increase UP's PTC costs. As USM also observes, The Fertilizer Institute has asked the FRA to require railroads to install PTC on more than just the lines that were used to transport TIH or passenger traffic in 2008 so that its members will be able to ship their TIH traffic over even more routes in the future. *See* USM Reply at 21-22.

Third, USM argues that UP's workpapers supporting the proposed PTC adjustment reflect "a range of uncertainty in the costs." *Id.*, O'Connor Reply V.S. at 15. In fact, USM is referring to a workpaper in which UP indicated that its PTC costs used in the adjustment might be *understated*. {

}³²

Fourth, USM claims that UP's cost estimates disregard the possibility that some of the costs to install PTC on UP's lines will be paid from public funds. *See* USM Reply at 22 n.43. However, UP used extremely conservative assumptions to allocate PTC costs between TIH traffic and passenger traffic, and it assumed that substantial public funding would be available to

³² *See* UP Opening Highly Confidential electronic workpaper "PTC Investment Summary - Open.xls," Tab for "Wayside Signal Costs."

pay for PTC costs associated with commuter traffic and Amtrak traffic, even though Amtrak's public positions demonstrate that it would resist such payments. *See* UP Op. at 57-58.

Ultimately, USM and the TIH Shippers cannot dispute that UP will incur significant costs to install PTC by December 31, 2015. UP has provided its best estimate of these costs, which should be entitled to special weight because it is based on information developed in the ordinary course of business. Moreover, the Board need not endorse any one specific estimate of UP's PTC costs for purposes of this case. As discussed in more detail below and in the verified statement of Mr. Baranowski, even in an extreme scenario in which UP's PTC costs are \$400 million less than UP's estimate – that is, even if they are in fact 30 percent less because of changes in the FRA's approach, or due to unexpected costs savings, or for some other reason – USM's rates still would be found reasonable after applying UP's proposed PTC adjustment.

b) The Potential Benefits of PTC Are Too Small to Affect the Proposed PTC Adjustment.

The Board should reject the TIH Shippers' argument that UP's proposed PTC adjustment is incomplete because UP "fail[ed] to include countervailing costs savings to offset its estimated cost increases." TIH Shippers Reply at 9; *see also* USM Reply, O'Connor Reply V.S. at 15. UP's opening evidence directly addressed the primary business benefit to railroads that is most often discussed in conjunction with PTC – the ability to increase railroad capacity – and explained why that benefit would not be available with the "overlay" PTC system that it must install to comply with the congressionally-mandated deadline for installing PTC. *See* UP Op. at 36-37. The TIH Shippers claim that evaluating the "comparative costs and benefits of different forms of PTC" would "unduly complicate a Three-Benchmark case." TIH Shippers Reply at 10. However, there is no need for any complicated analysis to understand that an

overlay PTC system cannot increase track capacity because it does not remove the constraints on train operations imposed by existing signal systems; in fact, it can only degrade capacity because it imposes additional operating constraints. *See* UP Op. at 37. The FRA has explained this point quite clearly:

“It should be noted that while moving block (‘standalone’) PTC has the potential to increase railway capacity and reduce headways, the integrated mode (or an overlay PTC system) cannot increase capacity – it can only degrade capacity and headway (due to braking algorithm margin and system delays), because it imposes additional constraints beyond those imposed by the conventional signaling system.”

Federal Railroad Administration, *North American Joint Positive Train Control Project* (Apr. 2009) at 17.³³

The TIH Shippers also argue that UP has not accounted for the potential safety benefits to railroads associated with PTC – that is, benefits from the reduced risk of accidents involving TIH and non-TIH traffic. *See* TIH Shippers Reply at 10-11. However, UP excluded PTC’s potential safety benefits from its analysis because it was clear that they would be vastly outweighed by the future annual expense of maintaining its PTC system, which UP also excluded for the sake of simplicity. *See* UP Op. at 41. .

In fact, the FRA has systematically studied the costs and benefits of installing PTC, and its conclusions emphatically support UP’s view that the costs to maintain PTC will vastly outweigh any potential safety benefits. In its economic analysis of its proposed rules, the FRA estimated the annual safety benefits that would potentially accrue to railroads from installing PTC, including reduced casualties, equipment damage, track damage, hazardous

³³ Available at <http://www.fra.dot.gov/downloads/Research/ord0940.pdf>.

materials clean up, evacuations, loss of lading, wreck clearing, and train delays – the same types of benefits identified by the TIH Shippers. *See* Federal Railroad Administration, *Positive Train Control Systems: Economic Analysis* at 144-45 (July 10, 2009) (“*FRA Economic Analysis*”).³⁴ The FRA also estimated the level of annual costs that would be required to maintain the new PTC systems. *See id.* at 118. The FRA then compared those costs and the benefits and concluded that the former would far outweigh the latter: “Once PTC is fully implemented, annual maintenance costs will be approximately \$860 million, and the annual railroad accident prevention benefits will be approximately \$90 million.” *Id.* at 144.

The FRA’s study confirms that, by excluding both maintenance expenses and potential safety benefits from its analysis, UP’s proposed PTC adjustment is incomplete only in that it *understates* the costs associated with PTC. Moreover, as discussed in the next section and in the verified statement of Mr. Baranowski, even in an impossible scenario in which UP’s potential safety benefits are not offset by the costs to maintain the new system, USM’s rates would still be found reasonable after applying the proposed PTC adjustment.

c) The Challenged Rates Would be Found Reasonable Under a Wide Range of Assumptions About the Costs and Benefits of Installing PTC.

UP does not believe there is any merit to USM’s and the TIH Shippers’ arguments that UP’s PTC adjustment does not correctly account for the costs and benefits associated with PTC. However, even if USM’s and the TIH Shippers’ criticisms had some validity, they would not affect the ultimate outcome in this case: USM’s rates still would be found reasonable even if UP’s costs to install PTC were substantially lower than its estimate of approximately \$1.4

³⁴ Available at http://www.fra.dot.gov/downloads/PTC_%20RIA_%20Final.pdf.

billion, and even if UP’s potential safety benefits from PTC would not be offset by the costs of maintaining PTC.

Mr. Baranowski addresses a series of alternative cost/benefit scenarios in his accompanying rebuttal verified statement. His analyses show that even in the most extreme scenario – one in which UP’s costs to install PTC are 30 percent lower than its estimate *and* UP’s potential safety benefits are not offset by maintenance costs – USM’s rates would still be found reasonable under each of the alternative approaches UP proposed to account for its costs to install PTC – *i.e.*, the “revenue need alternative” and the “revenue supplement alternative.” These results are shown in Table 5.

**TABLE 5
MAXIMUM REASONABLE RATES
ADJUSTING FOR \$1 BILLION IN PTC COSTS
AND OFFSETTING SAFETY-RELATED BENEFITS³⁵**

	Sahuarita	Eloy
1Q09 Per Car Rate	\$10,410	\$13,396
Maximum Rate, With Modified Revenue Need Adjustment	\$14,338	\$14,708
Maximum Rate, With Modified Revenue Supplement Adjustment	\$13,936	\$14,315

Because UP’s PTC adjustment produces the same result under a wide range of assumptions regarding PTC costs and benefits, the Board need not decide whether the assumptions reflected in UP’s opening evidence are precisely correct. For purposes of this case,

³⁵ See Baranowski Rebuttal V.S. at 7, Table 3.

the Board need only determine that the challenged rates are reasonable after taking into account UP's costs to install PTC as an "other relevant factor."

3. The Board Should Allow UP The Opportunity To Recover An Appropriate Contribution To Its PTC Costs From USM.

In addition to their other flawed arguments in opposition to the proposed PTC adjustment, USM and the TIH Shippers claim that accounting for UP's obligation to install PTC as an "other relevant factor" before UP has finished installing PTC would be unfair, contrary to precedent, and is unnecessary to allow UP to recover its costs to install PTC. However, USM and the TIH Shippers are wrong with respect to each of those claims.

a) Accounting for UP's Obligation to Install PTC in This Case Is Fair to USM, Other TIH Shippers, and UP.

As UP explained in its opening evidence, the rates it currently charges other chlorine shippers already reflect the congressional mandate to install PTC, and it would be unfair to UP and other TIH shippers for the Board to let USM take advantage of the regulatory lag problem and obtain a prescription that would cap its rates from 2009 into 2014 based on market conditions that existed from 2004 through 2007. UP Op. at 50-51.

USM argues that it would be unfair for the Board to account for UP's costs to install PTC in this case because it could stop shipping over the lines at issue before UP installs PTC, and thus it may never benefit from PTC. *See* USM Reply at 21. However, USM is far more likely than UP to benefit from PTC. UP is being required to spend approximately \$1.4 billion to install PTC, and most of that expense arises because UP is required to carry TIH. UP will not generate a return on its investment in PTC; it will not be able to attract or accommodate additional traffic by installing PTC. In fact, the overlay PTC system that UP must install to meet the statutory deadline will tend to decrease its capacity. *See* UP Op. at 52. UP also faces the risk that it will never recover the full cost of installing PTC if market conditions do not allow it to

increase rates high enough, or if USM and other TIH shippers reduce the volumes of TIH materials that they ship on UP. The FRA recognizes that the costs to install PTC will “far exceed the benefits” and that, at least from the railroads’ perspective, PTC “does not make a lot of sense financially.” *FRA Economic Analysis* at ii, 144.

By contrast, USM never actually claims that it might stop shipping chlorine over the lines at issue before UP installs PTC. To the contrary, USM’s evidence shows that the company must continue shipping substantial volumes of chlorine to pursue its primary business of producing magnesium, and that it must have the flexibility to ship chlorine over a wide variety of routes to a wide variety of destinations. *See* USM Op., Kaplan V.S. at 8-9.³⁶ In fact, USM chlorine shipments will likely grow in the future as part of a recent arrangement with Allegheny Technologies Incorporated (“ATI”). ATI is building a facility adjacent to USM’s facility in Rowley. USM will provide ATI with magnesium, which ATI will use to produce titanium. ATI will then return magnesium chloride, a by-product of its titanium production, to USM, which will then produce more magnesium and more chlorine.³⁷ USM’s documents show that USM { . . . }.

See Appendix E (USM discovery documents USM00347 & USM00468). USM has no serious argument that it will not benefit from PTC.

Moreover, Board precedent will allow USM to increase UP’s costs to install PTC dramatically by insisting that UP transport chlorine to new destinations over lines that would not

³⁶ *See also* US Magnesium, LLC, Comments in Opposition and Request for Order Compelling UP to Provide Common Carrier Rates at 2-3 & Verified Statement of Dr. Howard Kaplan at 3-8, *Petition of Union Pacific Railroad Company for a Declaratory Order*, STB Finance Docket No. 35219 (Mar. 23, 2009).

³⁷ *See* Tim Gille, *Allegheny Manager Banking on US Mag*, Toole Transcript Bulletin Online (Mar. 12, 2009) (Appendix G).

otherwise carry any TIH. *See Petition of Union Pac. R.R. for a Declaratory Order*, STB Finance Docket No. 35219 (STB served June 11, 2009). USM would have absolutely no incentive not to inflict these costs on UP unless UP can reflect those costs in the rates it charges USM. *See UP Op., Schwartz V.S.* at 15-16 (discussing the importance of using price signals to “avoid upfront PTC investments on routes where TIH shippers would not be willing to pay the PTC costs”).

b) Accounting for UP’s Obligation to Install PTC in This Case Is Not Contrary to Board Precedent.

The TIH Shippers also argue that the Board’s *CF Industries* case precludes the agency from establishing rates that reflect “investments not yet made and assets that are not in place.” TIH Shippers Reply at 8 (quoting *CF Indus., Inc. v. Koch Pipeline Co., L.P.*, 4 S.T.B. 637, 662 (2000)). However, *CF Industries* involved an application of the Board’s revenue adequacy constraint, and the quoted language reflects the Board’s conclusion that, under the revenue adequacy constraint, a revenue-adequate carrier’s need for funds to replace and maintain its assets periodically over the next twenty-five years did not justify charging rates that were “greater than what the revenue adequacy constraint would permit.” *CF Indus.*, 4 S.T.B. at 661.

UP is not trying to justify rates that are greater than what the Three-Benchmark method would permit. Under the Three-Benchmark method, the Board’s benchmarks are used to calculate “presumed maximum lawful rates,” but they produce results that are much less precise than those produced by Constrained Market Pricing constraints, such as the revenue adequacy constraint, and thus adjustments to account for other relevant factors, including the regulatory lag problem, are an integral part of the Three-Benchmark method. *See Simplified Standards* at 22, 77, 85.

UP is also faced with a very different situation than the defendant in *CF Industries*. In *CF Industries*, the defendant had “the opportunity – and like other businesses, the

burden of risk – to attract needed capital at currently prevailing rates to replace and maintain its assets.” *CF Indus.*, 4 S.T.B. at 662. UP does not have the same opportunity to attract the needed capital at currently prevailing rates to fund its installation of PTC. As UP’s opening evidence explained, government-mandated spending on PTC is unlike other capital investments because it will not generate a return for UP – that is, UP will not be able to attract or accommodate additional traffic by installing PTC. *See* UP Op. at 52. Thus, unlike the defendant in *CF Industries*, UP cannot borrow against the promise of future income to fund its costs to install PTC. *See id.* The Board’s decision in *CF Industries* does not preclude the agency from accounting for UP’s government-mandated obligation to install PTC in determining whether the challenged rates exceed a reasonable maximum.

c) Accounting for UP’s Obligation to Install PTC in This Case Helps Provide an Appropriate Opportunity for UP to Recover Its PTC Costs.

The TIH Shippers assert that “there will be ample opportunity for UP to recover its PTC costs *after* those costs are known and have been incurred.” TIH Shippers Reply at 8 (emphasis in original). However, UP cannot afford to wait until after it has installed PTC for the opportunity to recover its costs. If UP had to wait to raise its rates, and if the higher rates or other market changes led shippers to curtail their TIH shipments, the Board could not force shippers to pay for PTC – UP would be left without any recourse. *See* UP Op. at 52-53. Moreover, as Dr. Schwartz explained in his opening verified statement, spreading recovery of the

costs to install PTC over time is a more economically efficient approach and will cause less distortion in the market. *See id.*, Schwartz V.S. at 17-19.³⁸

The Board should encourage UP to recover its PTC costs when market conditions are favorable in furtherance of the national policy “to allow, to the maximum extent possible, competition and demand for services to establish reasonable rates for transportation by rail” and “to promote a safe and efficient rail transportation system.” 49 U.S.C. §§ 10101(1), (3). In addition, Congress is requiring UP to install PTC, so in considering whether to allow UP the opportunity to recover its PTC costs at this time, the Board should take special account of Congress’s direction to assist carriers in attaining revenue levels adequate “to provide a flow of net income plus depreciation adequate to support prudent capital outlays.” *Id.* § 10704(a)(2)(A).

4. Accounting for UP’s Obligation to Install PTC As An “Other Relevant Factor” Would Not Unduly Complicate The Three-Benchmark Method.

USM’s and the TIH Shippers’ final argument against accounting for UP’s obligation to install PTC is that it would unduly complicate the process. *See* USM Reply at 24; TIH Shippers Reply at 10. However, UP’s proposed PTC adjustment is a straightforward effort to comply with the Board’s instruction that parties “quantify the impact” of “other relevant factors’ on the presumed maximum lawful rate.” *Simplified Standards* at 22.

USM and the TIH Shippers complain that the PTC adjustment is unduly complicated because it requires parties to engage in a detailed analysis of the costs and benefits of PTC. *See* USM Reply, O’Connor Reply V.S. at 15-16; TIH Shippers Reply at 10. However, UP has clearly documented its costs estimates, explained why it is unnecessary to perform a

³⁸ In his accompanying rebuttal verified statement, Dr. Schwartz refutes USM’s entirely unfounded assertion that the economic principles that encourage spreading of PTC cost recovery do not apply because UP’s rates are above its marginal costs. *See* Schwartz Rebuttal V.S. at 6-9.

detailed analysis of benefits, and showed that the PTC adjustment would produce the same basic result under a broad range of assumptions about the costs and benefits of PTC. *See supra*, pp. 46-53.

USM also complains that the PTC adjustment creates the risk of “SAC-creep” in Three-Benchmark cases because UP used a discounted cash flow (“DCF”) model to calculate its adjustment. USM Reply at 24. USM asserts that “[t]o accept this proposed modification would in effect probably eliminate the existing Three Benchmark methodology and merge it into the SSAC methodology, while moving SSAC closer and closer to the complexity of SAC.” *Id.*, O’Connor Reply V.S. at 16. In fact, USM’s complaints about “SAC-creep” and the elimination of the Three-Benchmark method are pure nonsense. The DCF model is a well-established economic tool that UP used to comply with the Board’s requirement that parties “quantify the impact” of any adjustment to account for “other relevant factors.” *Simplified Standards* at 22.

Finally, USM argues that UP’s PTC adjustment unduly complicates the Three-Benchmark analysis because it does not account for a decline in UP’s “revenue need” from 2004 through 2008. *See* USM Reply, O’Connor Reply V.S. at 17-18. However, this argument actually highlights the need for a PTC adjustment: 2004-2007 Waybill Sample data do not reflect UP’s new need for revenue as a result of its new obligation to install PTC. As UP explained in its opening evidence, the current benchmarks do not reflect either its current higher rates or its current higher revenue need, and thus it is doubly disadvantaged unless the Board accounts for the costs to install PTC. *See* UP Op. at 51 n.56.

B. USM’s Objections To UP’s Common Carrier Rate Adjustment Have No Merit.

UP’s opening evidence explained that one reason why USM’s rates should be at the top of the range for UP rates for chlorine is because they are common carrier rates, not

contract rates. *See* UP Op. at 63. UP also observed that Board precedent recognizes that contract rates are typically lower than common carrier rates because railroads are willing to accept lower rates in return for the stability, flexibility, and relief from regulatory burdens provided by contractual relationships. *See id.* (citing cases). The Board most recently recognized the difference between contract rates and common carrier rates in *Simplified Standards*, stating that “holding everything else constant, a comparison group that consists of just common carrier traffic will be selected over a group that includes contract traffic.” *Simplified Standards* at 83.

USM first claims that UP did not propose the common carrier rate adjustment as an “other relevant factor” but rather as “an add-on offered outside of the parameters of the Three Benchmark Methodology outlined in *Simplified Standards*.” USM Reply at 25. This assertion is entirely incorrect. UP plainly proposed the common carrier rate adjustment as an “other relevant factor.” *See* UP Op. at 2 (discussing UP’s two adjustments for “other relevant factors”).

USM next claims that “as the Board knows, and noted in *Simplified Standards*, the distinctions that existed between contract and common carrier transportation that existed two decades ago are almost non-existent.” USM Reply at 26. However, as support for this proposition, USM cites only the Board’s conclusion that “one cannot assume that contract rates provide no useful information as to the maximum lawful rate of the challenged movement.” *Id.* (quoting *Simplified Standards* at 83).³⁹ Indeed, UP is not challenging USM’s use of contract rates in comparison groups; UP is arguing that an adjustment is appropriate if a comparison

³⁹ USM also misleadingly cites a statement in which the Board merely acknowledged claims by shippers “that common carrier traffic and contract traffic are increasingly similar.” *See id.* at 26 n.53 (quoting *Simplified Standards* at 82).

group consists entirely of contract rates. Moreover, UP's evidence shows that there is a difference between contract and common carrier rates – if there were no difference, USM would not be resisting an adjustment.

USM next claims that UP's proposed adjustment is "inaccurate and flawed" because it is based on the use of a "simple average." *Id.* However, UP used a simple average in an effort to highlight the fact that the distinction between contract and common carrier rates holds true across a broad range of commodities. As the Board observed in *Simplified Standards*, when performing this type of comparison, the "most natural starting point is to weight all observations equally." *Simplified Standards* at 75.

USM's expert, Mr. Hillenbrand, claims that UP's use of simple averages could, in theory, allow a small number of movements within commodity groups to skew the result, and he offers an alternative that accounts for volume. USM Reply, Hillenbrand Reply V.S. at 22. However, Mr. Hillenbrand's calculation is the one that skews the result by giving undue weight to movements of just one commodity that moves in extremely high volumes – coal. Were coal removed from Mr. Hillenbrand's calculation, his adjustment would jump from { } percent to { } percent – which is much closer to UP's proposed { } percent adjustment.⁴⁰

Mr. Hillenbrand also asserts that the "RSAM and R/VC_{>180} Benchmarks contains [sic] common carrier rates which means that [sic] RSAM ÷ RVC_{>180} [sic] revenue need adjustment will account for the difference in common carrier and contract rates." USM Reply,

⁴⁰ See UP Rebuttal Highly Confidential electronic workpaper "Common Carrier Adjustment - Rebuttal.xls." Removing coal from a calculation designed to identify the difference between contract and common carrier rates is particularly appropriate in light of UP's use of Circular 111 common carrier rates during the period at issue. As the Board recognized, UP's Circular 111 rates had many of the characteristics of a traditional contract. See *Kansas City Power & Light Co. v. Union Pac. R.R.*, STB Docket No. 42095 (STB served July 26, 2006) at 1.

Hillenbrand Reply V.S. at 22. However, Mr. Hillenbrand never explains why he thinks the Board's revenue adequacy adjustment also accounts for difference between common carrier and contract rates, and we cannot understand the basis for his claim.

Finally, USM argues that the Board should reject UP's proposed common carrier rate adjustment because UP's inclusion of all commodity groups is "contrary to the Three Benchmark comparability factors." USM Reply at 27. However, an adjustment based only on movements of chlorine would have produced an adjustment that was substantially higher than UP's proposed { } percent adjustment.⁴¹

The principles underlying UP's common carrier rate adjustment are sound, and UP's specific proposal is consistent with the Board's directions in *Simplified Standards*.

IV. CALCULATION OF MAXIMUM REASONABLE RATES

On reply, UP and USM each accepted the other party's opening evidence regarding the number of miles that the issue traffic travels from Rowley to Eloy and Sahuarita. UP's calculations below are based on the number of miles used in its opening evidence.⁴²

As UP explained in its opening evidence, it has developed two possible approaches the Board could use to account for its obligation to install PTC when establishing the maximum lawful rates that UP can charge USM for the issue movements: the "revenue need alternative" and the "revenue supplement alternative." The results produced by the two approaches are consistent, but they reflect slightly different ways of conceptualizing the need to

⁴¹ See UP Rebuttal Highly Confidential electronic workpaper "Common Carrier Adjustment - Rebuttal.xls."

⁴² As UP adopts USM's mileage calculations, and USM accepted UP's indexing, UP and USM agree on the URCS variable costs for the issue traffic, indexed to the first and second quarters of 2009. See USM Reply, Hillenbrand Reply V.S. at 6 n.6 (accepting UP's indexing).

account for UP's obligation to install PTC. The revenue need alternative reflects the idea that the Three-Benchmark method's $RSAM \div R/VC_{>180}$ adjustment does not reflect UP's additional need for revenue associated with the mandate to install PTC. The revenue supplement alternative reflects the idea that the Three-Benchmark method's presumed maximum lawful rate should be increased to allow UP the opportunity to recover an appropriate share of its costs to install PTC from TIH shippers on a per car-mile basis. *See* UP Op. at 55-60.

Table 6 below presents UP's final calculations of (i) actual First Quarter 2009 ("1Q09") rates for the issue traffic; (ii) the presumed maximum lawful 1Q09 rates for the issue traffic; and (iii) the presumed maximum lawful 1Q09 rates, including an adjustment to account for UP's obligation to install PTC and a common carrier rate adjustment.

**TABLE 6
 MAXIMUM REASONABLE RATES
 AFTER ADJUSTING FOR COSTS TO INSTALL PTC AND
 APPLYING THE COMMON CARRIER RATE ADJUSTMENT⁴³**

	Sahuarita	Eloy
1Q09 Per Car Rate (UP Tariff)	\$10,410	\$13,396
“Presumed Maximum Lawful Rate”	\$10,760	\$11,037
Maximum Rate, Adjusted to Reflect Revenue Need and Common Carrier Adjustment	{ }	{ }
Maximum Rate, Adjusted to Reflect Revenue Supplement and Common Carrier Adjustment	{ }	{ }

V. CONCLUSION

UP’s evidence demonstrates that when all relevant factors are considered, the challenged rates are reasonable. Accordingly, the Board should dismiss USM’s complaint.

⁴³ See UP Rebuttal Highly Confidential electronic workpaper “UP PTC RSAM Revenue Adj Calculations - Rebuttal.xlsx.”

Respectfully submitted,



LINDA J. MORGAN
MICHAEL L. ROSENTHAL
DEREK LUDWIN
Covington & Burling LLP
1201 Pennsylvania Avenue, N.W.
Washington, D.C. 20004
Telephone: (202) 662-6000
Facsimile: (202) 662-6291

J. MICHAEL HEMMER
LOUISE A. RINN
TONYA W. CONLEY
Union Pacific Railroad Company
1400 Douglas Street
Omaha, Nebraska 68179
Telephone: (402) 544-3309
Facsimile: (402) 501-0129

Attorneys for Union Pacific Railroad Company

October 22, 2009

CERTIFICATE OF SERVICE

I, Michael L. Rosenthal, certify that on this 22nd day of October, 2009, I caused copies of the Highly Confidential and Public versions of the Rebuttal Evidence of Union Pacific Railroad Company to be served by hand on:

Thomas W. Wilcox
Jason M. Setty
GKG Law, P.C.
Canal Square
1054 31st Street, N.W., Suite 200
Washington, DC 20007



Michael L. Rosenthal

A

REBUTTAL VERIFIED STATEMENT

OF

ROBERT G. WORRELL

My name is Robert G. Worrell. I am Senior Assistant Vice President – Chemicals for Union Pacific Railroad Company (“UP”). I verified the portions of UP’s opening evidence relating to the market for transporting chlorine, the transportation characteristics of the issue traffic, and the background history of the rates being challenged in this proceeding by US Magnesium, L.C.C. (“USM”). I also submitted a verified statement in connection with UP’s reply evidence in which I addressed the inaccurate claims in USM’s opening evidence that UP is “de-marketing” TIH materials and that UP engaged in “gaming” when it established the challenged rates to Sahuarita and Eloy.

I am submitting this rebuttal verified statement to address the inaccurate claims in USM’s reply evidence and the reply arguments of three chemical and fertilizer industry groups that (i) UP treats all TIH materials as though they are the same when we make pricing decisions, and (ii) UP has not considered the potential costs associated with its obligation to install Positive Train Control (“PTC”) when we have entered into new contracts to transport TIH materials.

First, USM and the industry groups are wrong when they claim that UP treats all TIH materials the same when we make pricing decisions. We price chemical product movements based on customer-specific, product-specific, and market-specific information. As I also explained in my reply verified statement, we expend substantial resources to understand the dynamics and the details of the market demand for the products in question, what the shipper’s transportation alternatives are, and what other market and business environment related influences are and how they factor into the viability of a customer’s product within its markets.

We then use that information and knowledge to establish pricing that in our judgment reflects product and transportation market conditions.

I also reject the claims of the chemical and fertilizer industry groups that we price TIH materials on a “take-it-or-leave-it” basis. We put a great deal of effort into developing pricing proposals that we believe reflect market conditions, but we are always willing to engage in a dialogue with our customers and consider reasons why lower rates might be appropriate.

TIH shipments do present certain common issues for UP. As I also explained in my reply verified statement, all TIH shipments are highly risky to transport and are subject to similar, costly regulatory requirements, including extraordinary costs such as those that will be associated with requirements to install PTC. At UP, in the context of understanding and dealing with many general issues, we often discuss certain TIH-related issues without differentiating among specific TIH materials. However, pricing decisions require a more specific focus on the dynamics and details of actual product markets and transportation market conditions associated with particular TIH commodities. In fact, product market and transportation market conditions associated with UP’s two most significant TIH commodities in terms of volume – chlorine and anhydrous ammonia – are so different that they are marketed by different teams within UP, one responsible for industrial chemicals, the other responsible for fertilizers, and the two teams report to different assistant vice presidents.¹

¹ This division of marketing responsibility within the Chemicals group may cause confusion for people who are not familiar with UP’s internal operations. For example, documents and analyses created by the team responsible for plastics and industrial chemicals – the team that reports to me – often refer to “TIH” without expressly indicating that they do not include anhydrous ammonia. One example is the “First Quarter 2008 Business Review” that USM included as an exhibit in its opening evidence. *See* USM Op., O’Connor V.S., Exhibit_(TOC-4). The document includes a page that provides figures regarding revenues and (continued...)

Second, USM is misguided when it claims that UP does not consider the costs associated with our obligation to install PTC when we enter into new contracts to transport TIH materials. In fact, one of the reasons why UP's markups on chlorine and other TIH materials appear higher than markups on other traffic is that the true costs to railroads of carrying TIH traffic – particularly the costs associated with the potential risks and liability – cannot be captured in current costing methodologies as realized costs; instead, as realistically anticipated costs, they are imbedded in our price development analyses and affect our requirement for higher rates and margins more than rates for commodities or products that are not burdened with these extraordinary anticipated costs.²

As I explained in my reply verified statement and earlier in my rebuttal, our pricing proposals for TIH commodities take into consideration all the information we can gather about current and future costs associated with handling TIH. These include costs to implement new safety measures, including the new requirement to install PTC. More specifically, UP is ever attentive to the prospect of incurring new costs, such as those involved with the new requirement to install PTC, and how these costs are to be integrated into new contract proposals to TIH shippers. This has been particularly true for chlorine and the other TIH commodities marketed by my team, after Congress required that railroads install PTC. We cannot know precisely what the costs to install PTC will be, and we do not have any type of fixed formula for

profitability of "TIH Chemicals," but the figures do not reflect information about anhydrous ammonia.

² We also incur higher-than-average preventive costs for movements of TIH, as discussed in the portions of UP's opening evidence that I sponsored. *See* UP Op. at 18-19. These higher costs are also considered in our pricing decisions. My understanding is that the Board's costing methodology uses system-average costs in measuring markups for the traffic at issue, which is another reason why UP's markups on TIH materials appear higher than markups on other traffic.

assigning a particular share of the costs to TIH shippers, but the costs to install PTC, like the costs of other safety measures, are an important consideration in trying to set rates that will allow us to cover our costs of handling the business, and then earn a reasonable return.

VERIFICATION

I, Robert G. Worrell, declare under penalty of perjury that the foregoing Statement is true and correct to the best of my knowledge. I further certify that I am qualified and authorized to file this Statement.

Executed on October 22, 2009.

/s/Robert G. Worrell
Robert G. Worrell

B

REBUTTAL VERIFIED STATEMENT

OF

MARIUS SCHWARTZ

1. Introduction and Overview of Conclusions

My name is Marius Schwartz. On behalf of Union Pacific Railroad Company (UP), I filed a verified statement in both the opening round and reply round of this proceeding.¹ My opening verified statement describes my qualifications and includes a copy of my curriculum vitae.

In this rebuttal round, UP has asked me to respond to various criticisms of my opening verified statement made by Mr. Tom O'Connor, an expert for US Magnesium, L.L.C. (USM).² I demonstrate in Section 2 below that Mr. O'Connor's criticisms either (a) mischaracterize my analysis or (b) reflect basic misunderstandings of the relevant economic principles. Accordingly, my original two conclusions stand intact: that, based on economic efficiency, "there are strong reasons (1) to allow railroads an opportunity to charge higher rates to TIH shippers than to shippers of other freight in order to recover PTC costs, and (2) to encourage railroads to implement such rates before they complete their investments in PTC."³

I have also been asked to evaluate, in light of the economic theory underlying the Three Benchmark method used by the Surface Transportation Board ("STB" or "Board"), whether Mr. Kim Hillenbrand, another expert for USM, has adequately addressed differences in shippers'

¹ See Opening Evidence of Union Pacific Railroad Company, Appendix B (Aug. 24, 2009) ("Schwartz V.S.") and Reply Evidence of Union Pacific Railroad Company, Appendix B (Sep. 22, 2009) ("Schwartz Reply V.S.").

² See Complainant's Reply Evidence, Part II – III, Reply Verified Statement of Tom O'Connor (Sep. 22, 2009) ("O'Connor Reply V.S."), pp. 4-10.

³ Schwartz V.S., p. 1.

demand elasticity for UP's rail service when justifying his selection of a comparison group comprised mainly of non-chlorine TIH commodities.⁴ Mr. Hillenbrand states that all TIH commodities "have similar degrees of demand elasticity" for purchasing rail transportation but his sole justification is that "they are all rail dependent traffic ... and subject to UP's market power."⁵ In Section 3, I explain why Mr. Hillenbrand's reasoning is insufficient, and I reach the following conclusions:

1. The Ramsey Pricing principle underlying the Board's Three Benchmark method prescribes that a properly selected comparison group should include commodity movements that are expected to have a similar elasticity of demand for the railroad's service as the traffic at issue.
2. Economic analysis identifies several important determinants of the elasticity of derived demand for any input, including for rail transportation, notably:
 - the elasticity of demand by the shipper's customers for its commodity;
 - the shipper's scope for substitution away from rail transportation; and
 - cost conditions in the production of the shipped commodity.
3. A priori, for chlorine traffic these relevant factors are likely to be most similar — hence the rail-demand elasticity is likely to be most similar — in a comparison group comprised of other chlorine movements over similar distances.
4. The Board recognizes the importance of such demand-side factors in constituting an appropriate comparable group, and it identifies pragmatic proxies for when commodities are "similar" for purposes of the Three Benchmark method.

⁴ See Complainant's Reply Evidence, Part II – II, Reply Verified Statement of Kim N. Hillenbrand (Sep. 22, 2009) ("Hillenbrand Reply V.S."), especially pp. 17-19.

⁵ Hillenbrand Reply V.S., p. 18.

5. By contrast, Mr. Hillenbrand asserts that chlorine and other TIH commodities have similar degrees of demand elasticity for rail service merely because they “are all rail dependent traffic ... and subject to UP’s market power.” That generic assertion ignores potentially important variations in the factors influencing demand elasticity *within* the class of all potentially captive traffic and does not satisfy economic principles or address the factors identified by the Board.

2. Mr. O’Connor’s Criticisms

Mr. O’Connor begins with the assertion that my opening testimony was “unrelated to the basic rate reasonableness issues.”⁶ However, I understand that the STB’s Three Benchmark method permits parties to present evidence of “other relevant factors” that should affect the Board’s rate reasonableness determinations, and UP asked me to address (1) whether it would be reasonable and appropriate for railroads to charge higher rates for TIH traffic than for other freight traffic in order to recover PTC costs; and (2) the appropriate timing for recovering such costs. In my opening statement, I explained why the permissible level and timing of rates is likely to affect economic efficiency, and my understanding is that the Board considers economic efficiency as an important element in determining the reasonableness of rates. My testimony, therefore, squarely addressed issues relevant to the Board’s analysis in this case.

Mr. O’Connor further asserts that my analysis does not apply in this case because I relied upon “the conventional theory of consumer surplus and producer surplus” and consumer surplus supposedly applies only in a competitive market.⁷ It is well accepted, however, that the concepts of producer surplus and consumer surplus apply regardless of whether a market is perfectly

⁶ O’Connor Reply V.S., p. 5.

⁷ O’Connor Reply V.S., p. 6.

competitive, monopolized, or somewhere in between.⁸ Mr. O'Connor's criticism reflects basic misunderstandings about economics.⁹

Let me now refute Mr. O'Connor's specific criticisms of my original two conclusions.

2.1 Why a Large Portion of PTC Costs Is Attributable to TIH Traffic

Mr. O'Connor argues that I simply accepted "the UP assumption that TIH shippers will bear 100% of the costs of installing PTC," and "the UP claim that a 'substantial portion' of PTC costs are caused by TIH."¹⁰ This mischaracterizes my analysis.

Regarding the share of PTC costs that TIH shippers *will* bear, I made no prediction. That is clearly for the Board to decide. Regarding the share that *should* be recovered, I explained why there are strong reasons on economic efficiency grounds to permit railroads to charge higher rates for TIH traffic than for other traffic in order to recover PTC costs from TIH shippers because "a large portion of PTC costs is properly viewed as being caused by TIH shipments."¹¹

Mr. O'Connor simply ignores the analysis in Section 1.1 of my statement. There, I explained that from an economic standpoint costs are "caused" by a service (or group of

⁸ For example, the standard textbook references cited in fn. 1 of my opening verified statement use producer surplus and consumer surplus to analyze the loss in economic efficiency from monopoly relative to competition. See W. Kip Viscusi, Joseph E. Harrington, Jr., and John M. Vernon, *Economics of Regulation and Antitrust*, Fourth Edition, MIT Press, 2005, pp. 82-84; Michael L. Katz and Harvey Rosen, *Microeconomics*, Third Edition, Irwin McGraw-Hill, 1998, pp. 426-428; and Richard E. Just, Darrell L. Hueth, and Andrew Schmitz, *Applied Welfare Economics and Public Policy*, Prentice-Hall, 1982, pp. 215-217. See also Jean Tirole, *The Theory of Industrial Organization*, MIT Press, 1988, pp. 66-68; and Walter Nicholson, *Intermediate Microeconomics*, Eighth Edition, Dryden, 1999, pp. 296-299.

⁹ In a similar vein, Mr. O'Connor (Reply V.S., p. 7) misapprehends fn. 6 on p. 6 of my opening verified statement as supposedly illustrating "defective use of assumptions" because it discusses "the equilibrium price at which the producer and the consumer are in balance." In fact, fn. 6 illustrates the role of prices in providing signals to consumers and producers by using a familiar example, the competitive equilibrium. The role of prices in providing price signals extends, of course, beyond the competitive setting, as I explained on pp. 6-10 of my opening verified statement.

¹⁰ O'Connor Reply V.S., p. 6, 1st ¶; and p. 9, 1st ¶.

¹¹ Schwartz V.S., p. 4.

services) if those costs are incurred to provide that service and could be avoided otherwise. I also explained why a large portion of prospective PTC costs is caused by TIH traffic, based on several points discussed in the Notice of Proposed Rulemaking (NPRM) issued by the Federal Railroad Administration (FRA) on the deployment of PTC systems.¹²

Mr. O'Connor also claims that my conclusion regarding TIH shipments causing much or most of the PTC costs is "at variance with his [i.e., my] observation that prior to the passage of the RSIA, freight railroads were already planning deployments of PTC, thus indicating broader benefits."¹³ In fact, I explicitly contrasted the new requirement to deploy PTC with the railroads' prior plans. Here is what I actually said:

Second, prior to the RSIA, freight railroads "continued to plan very slow deployments of PTC system technologies" despite the apparent technical successes of some prototype systems. (NPRM, p. 16.) Safety or other benefits notwithstanding, the railroads on their own apparently would *not* have adopted PTC systems nearly as widely or as fast as required by the RSIA (be it due to high capital costs or to a desire to evolve systems that would have additional functionalities). Therefore, the prospective PTC investment is largely caused by the RSIA's requirements governing lines that carry passengers or TIH traffic, prompted by a desire to avoid collisions that involve either type of traffic. (Schwartz V.S., p. 5.)

Mr. O'Connor adds that I further "dilute[ed]" my conclusion that TIH shippers should bear a large share of PTC costs by recognizing that "... the prospective PTC investment is largely caused by the RSIA's requirements governing lines that carry passengers or TIH traffic."¹⁴ That assertion, however, omits a key part of my discussion, in which I addressed the relative role played by passenger traffic and TIH traffic:

¹² Schwartz V.S., pp. 4-5, citing Department of Transportation, Federal Railroad Administration, 49 CFR Parts 229, 234, 235, and 236 [Docket No. FRA-2008-0123, Notice 1], Positive Train Control Systems.

¹³ O'Connor Reply V.S., p. 9.

¹⁴ O'Connor Reply V.S., p. 9.

Furthermore, the FRA estimates that of the 69,000 track miles that carry either passengers or TIH traffic, only 6,000 miles carry just passengers, and 18,000 carry both passengers and TIH. The remaining 45,000 miles—almost two thirds of the total 69,000—are freight only and the PTC obligation applies solely because of TIH traffic. (NPRM, p. 55.)

Thus, even if all the PTC costs on the dual passenger-and-TIH lines were assigned to passenger traffic and none to TIH, the cost of PTC on two thirds of the total miles would still be incurred solely because of TIH traffic. Prima facie, this suggests that a large portion of all PTC costs is caused by TIH traffic. (Schwartz V.S., pp. 5-6.)

Taken in context, my comments confirm my conclusion that it is appropriate to permit railroads to charge higher rates for TIH traffic than for other traffic in order to recover a substantial share of PTC costs from TIH shippers.

In sum, Mr. O'Connor's claim that I merely adopted UP's assumptions about the cause of PTC costs is unfounded and rests on mischaracterizations and selective citations of my testimony. Nothing in Mr. O'Connor's criticisms actually calls into question the validity of my conclusions.

2.2 Why Recovery of PTC Costs Should Begin Before the Costs Are Incurred

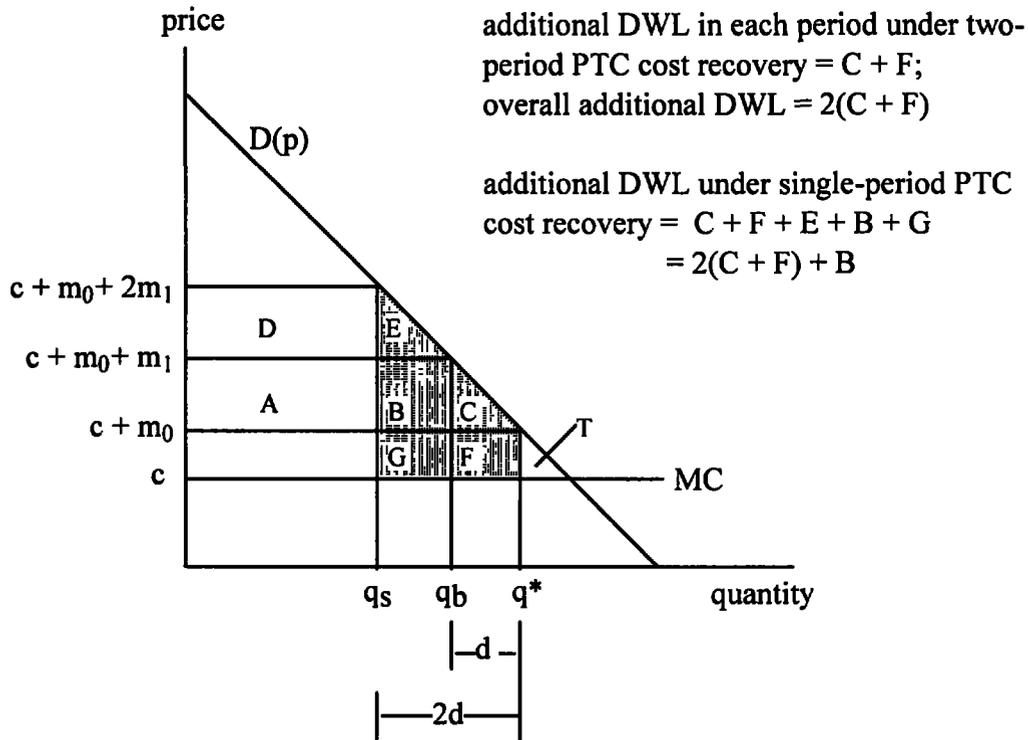
Section 2 of my opening verified statement provided two reasons why adopting higher rates for TIH shipments in advance of completing their investments in PTC can promote economic efficiency. Those reasons can be summarized as follows: "(a) it [adopting charges in advance of completing investments] can help avoid some investments whose costs would outweigh the corresponding benefits; and (b) for investments that will be made, it promotes recovery of their cost in a way that is less distortionary by spreading the recovery over a longer period." (Schwartz V.S., p. 22.)

To illustrate point (b), the advantages of spreading the recovery over a longer period, I included a simple graph (Figure 1) in my opening testimony that demonstrated the overall

efficiencies of this approach. Rather than challenging the overall point, Mr. O'Connor suggests that the graph can be ignored because it is drawn with price initially equaling marginal cost. (O'Connor Reply V.S., p. 18.)¹⁵ As I made clear in my opening verified statement, however, I had intentionally simplified the graph so as to avoid extraneous complexity and focus on an "underlying logic [that] is much more general." (Schwartz V.S., p. 19.) As I wrote, "In reality, of course, railroads must price above marginal cost to recover other fixed costs beyond PTC; but this extension would complicate the graph without altering the qualitative analysis below." (Schwartz V.S., pp. 19-20.)

To dispel any doubt, I have re-drawn below the original Figure 1 under the alternative assumption that the railroad's price initially exceeds marginal cost. As demonstrated in the accompanying analysis, the qualitative results of my original analysis are unchanged (and the reader who understands the logic from the prior illustration can skip the next paragraph).

¹⁵ Mr. O'Connor does not appear to dispute my point (a), so I have no need to discuss it further.



The only difference between the new graph and the original Figure 1 is that the initial price (i.e., before any PTC recovery) now is $c + m_0$, which includes a margin m_0 above the marginal cost level c . This causes the initial quantity q^* to be lower than the first-best level, where the demand curve intersects marginal cost, thereby causing an initial loss in overall welfare (total surplus) equal to the area of triangle T (the area under the demand curve but above marginal cost, from the first-best level to the lower level q^*). As in my original formulation, suppose that PTC costs can be recovered by charging an additional margin m_1 in both periods. Then output drops by d in both periods, from q^* to q_b , and the *additional* welfare loss (or deadweight loss, DWL) from PTC recovery is the area $C + F$ in each period, for a total DWL across both periods of $2(C + F)$. Instead, consider imposing twice the added markup, $2m_1$, only in the second period. The drop in quantity is now twice as large, $2d$, bringing second-period quantity to $q_s = q^* - 2d$. In the first period, there is no added welfare loss from PTC recovery.

But in the second period the additional loss now equals the larger area $C + F + E + B + G$. Since $E = C$ and $G = F$, the second period DWL from PTC recovery is $2(C + F) + B$, which exceeds the total DWL under two-period PTC recovery by the area B . As in the original analysis, this additional loss reflects the fact that loading a higher margin onto a single period depresses successively more valuable units of output. And, as in the original analysis, there is a further loss from single period recovery: under the maintained assumption that a margin m_1 in each of two periods would just suffice to recover the PTC cost, charging a single-period margin $2m_1$ would *not* suffice because output — the “tax base” — is depressed by more.¹⁶ Thus, the necessary one-period extra margin exceeds $2m_1$, thereby depressing quantity by more than $2d$ and magnifying the welfare loss.

Finally, although Mr. O’Connor (Reply V.S., p. 10) tries to dismiss my argument for commencing PTC recovery in advance of the investments, it is hardly uncommon to raise funds for capital investments ahead of time, and without the benefit of complete certainty about the relevant magnitudes. Moreover, as I showed, commencing PTC recovery in advance of the investments is an economically sound approach that should be encouraged.

3. Comparable Traffic Group: Chlorine Only vs. All TIH

I have also been asked to address whether Mr. Kim Hillenbrand, another expert for USM, has adequately addressed differences in shippers’ demand elasticity for UP’s rail service when justifying his selection of a comparison group comprised mainly of non-chlorine TIH commodities. As I discuss below, I conclude that he has not done so.

¹⁶ Two-period recovery yields revenue-minus-variable cost of $2(m_1q_b) = 2m_1(q^* - d)$, since $q_b = q^* - d$. Charging a margin $2m_1$ in a single period yields $2m_1(q_s)$. Since $q_s = q^* - 2d$, the single-period net revenue is $2m_1(q^* - 2d)$, less than from adding a margin m_1 in both periods.

3.1 The Three Benchmark Method, Ramsey Pricing, and Elasticity of Demand for Rail Service

The Board explains its Three Benchmark method for judging the reasonableness of a challenged rate in its *Simplified Standards* decision and discusses much of the underlying logic in its 1996 decision in *Rate Guidelines – Non-Coal Proceedings* (“*Non-Coal Guidelines*”).¹⁷ Based on these and other documents, my understanding of the Board’s goals and approach is as follows.

In regulating rates under the Three Benchmark method, the Board considers both economic efficiency and equity.¹⁸ Regarding economic efficiency, the Board is guided by the principles of Ramsey pricing, which I discuss below.¹⁹ Although equity and fairness considerations are inherently more elusive, the Board’s Three Benchmark approach can be interpreted as asking whether unconstrained Ramsey pricing would require certain traffic to pay an unreasonably high share of the railroad’s joint and common cost. The natural starting point for judging reasonableness, therefore, is to ask whether the challenged rate is substantially higher than would be prescribed by Ramsey principles.

Ramsey prices are a set of rates that accomplish two goals: (a) *revenue adequacy* — they raise sufficient revenue to cover total cost, the variable costs as well as the joint and common costs; and (b) *constrained efficiency* — subject to achieving revenue adequacy, the Ramsey rates minimize the loss of economic efficiency that arises from having to price some services above the firm’s marginal cost of providing those services in order to cover joint and common costs.²⁰

¹⁷ *Simplified Standard for Rail Rate Cases*, STB Ex Parte No. 646 (Sub-No. 1) (STB served Sept. 5, 2007); *Rate Guidelines – Non-Coal Proceedings*, 1 S.T.B. 1004 (1996).

¹⁸ For an explanation of the term “economic efficiency” see Schwartz V.S., pp. 1-2.

¹⁹ See *Non-Coal Guidelines*, p. 1007 (describing Ramsey pricing principles as “the cornerstone” of the Board’s “rate reasonable tenets for the railroad industry”).

²⁰ For further discussion of Ramsey pricing and literature references see Schwartz V.S., pp. 17-18.

Goal (a) entails finding a suitable *level* of rates. Goal (b) entails finding a suitable rate *structure*, using the familiar inverse-elasticity principle: higher margins above marginal cost should be charged for services whose demand for rail service is less elastic (less price sensitive), because a given proportional increase in price will then cause a smaller proportional loss of quantity than when demand is more elastic.²¹

How might we assess whether a challenged rate is higher than the level prescribed by Ramsey pricing? Suppose we compared the margin (measured as the ratio revenue/variable cost) for the traffic at issue against the average margin computed across all of the railroad's potentially captive traffic (that is, traffic with a revenue/variable cost ratio above 180%) and found the former margin to be higher. This would *not* establish that the challenged rate exceeds the Ramsey level for two conceptually distinct reasons, tracking the two goals noted above: revenue adequacy and constrained efficiency.

First, the average margin on all of the railroad's potentially captive traffic may be insufficient to cover the railroad's total cost, thereby violating the revenue adequacy condition for Ramsey pricing. In the Three Benchmark method, the Board tackles this issue by computing an adjustment factor, equal to the ratio of (i) the uniform margin that would be *needed* across all

²¹ In the familiar case where demands for the regulated firm's services are independent (each depends only the rate charged for that service) and the firm's marginal cost (MC) of providing any service depends only on the quantity of that service, the Ramsey price for any service j satisfies the inverse-elasticity rule $(P_j - MC_j)/P_j = k/e_j$, where e_j is the absolute value of the elasticity of demand for service j , and k is a number ranging between 0 and 1 whose exact level will depend on the size of the fixed cost that must be covered. To illustrate, if the fixed cost is zero, then the Ramsey markup on any service is also 0, yielding the first-best output levels; if $k = 1$, only unconstrained monopoly pricing for all services would cover the railroad's fixed costs. (If there is interdependence in the demands for the services or the marginal costs, the pricing formula is modified to reflect such linkages.) The prior formula can be rearranged as $P_j/MC_j = e_j/(e_j - k)$. The dependent variable is now the ratio of price to marginal cost (instead of the gap between them as a proportion of price), which also increases as elasticity e_j decreases (in the relevant case where $k > 0$). Since marginal cost is not observed, as an approximation to P_j/MC_j the Board uses the ratio of total revenue from service j to total variable cost of providing it: R_j/VC_j . Dividing numerator and denominator by the total quantity of service j transforms the comparison into one of *average* revenue to average variable cost: AR_j/AVC_j .

potentially captive traffic to achieve revenue adequacy to (ii) the average margin actually *charged* across this traffic. Ratio (i) is known as RSAM (Revenue Shortfall Allocation Method) benchmark, while (ii) is known as the $R/VC_{>180}$ benchmark.

Second, even if the goal of revenue adequacy has been met (or the adjustment factor is applied), there remains the key issue of setting the *rate structure* to achieve constrained efficiency. That is, it is entirely consistent with Ramsey principles for the margin on the traffic at issue to exceed the average margin across all potentially captive traffic if the relevant conditions differ significantly for the traffic at issue.

In the Three Benchmark method, the Board tackles this issue by using a *subset* of all potentially captive traffic as the comparison group against which the reasonableness of the challenged rate will be tested. This comparison group must control for two types of differences, for conceptually different reasons.

Railroad's marginal cost. A suitably selected comparison group must control for biases in approximating marginal costs that may arise from using data on average variable costs. The Board's URCS data do not measure each service's marginal cost, so the service's estimated average variable cost is used as an approximation (and the estimate itself may be imperfect because it is based on system-average costs, as the Board has recognized). Thus, because the Ramsey-prescribed margin involves price relative to *marginal* cost, comparing the ratios of price to average variable cost (AVC) (or of total revenue to total variable cost) can overestimate the actual margin of price to marginal cost for any particular traffic *relative* to the average margin on the set of all potentially captive traffic, and thereby give the wrong impression that the challenged rate exceeds its Ramsey level.²² To control for such cost-side biases, the Board

²² As an example of such a bias, suppose that: (a) the Ramsey-prescribed margin P/MC for the service at issue, indexed by "i," is equal to the average margin across the set of all potentially captive traffic,

appropriately specifies that the comparison group should include traffic that is similar to the traffic at issue in the factors that influence the railroad's marginal cost of handling the traffic.

Shipper demand for rail service. Controlling solely for cost factors is not adequate when comparing Ramsey-prescribed margins — one must also control for differences in the price-sensitivity of demand for the railroad's services across traffic types, i.e., differences in elasticities. Such differences play an essential role in determining the Ramsey markups, and controlling for them would be necessary even if there were no cost-side measurement issues. As the Board points out, the issue is not the marginal costs, but the markup over marginal costs. Indeed, the Board stresses that the role of the more refined comparison group is to control for differences in demand: “Moreover, the specific markup charged to particular traffic should reflect demand-based differential pricing principles,” adding in the very next sentence that “[t]he R/VC_{COMP} benchmark provides a means of reflecting demand-based differential pricing principles.”²³

I will now discuss some factors that affect the elasticity of demand for rail service, and then contrast the STB's approach to incorporating such factors into the comparison group selection process against the approach used by Mr. Hillenbrand and USM.

indexed by “a,” and the firm is in fact charging equal margins; but (b) the ratio of marginal cost to average variable cost, MC/AVC , is higher for the traffic at issue. By assumption, the actual margins are equal, $(P_i/MC_i) = (P_a/MC_a)$; but the estimated margin will be higher on service i: since $(P_i/AVC_i) = (P_i/MC_i) \times (MC_i/AVC_i)$ and similarly $(P_a/AVC_a) = (P_a/MC_a) \times (MC_a/AVC_a)$, it follows that if $(P_i/MC_i) = (P_a/MC_a)$ as postulated, then $(MC_i/AVC_i) > (MC_a/AVC_a)$ will imply $(P_i/AVC_i) > (P_a/AVC_a)$.

²³ *Non-Coal Guidelines*, p. 1034. The same point is also emphasized in the summary on p. 1004 (“The R/VC_{COMP} benchmark reflects demand-based differential pricing principles”) and on p. 1011 (“ R/VC_{COMP} looks at the markup (r/vc percentage) collected on traffic with demand characteristics comparable to those of the issue traffic”).

3.2 Determinants of Shippers' Elasticity of Demand for Rail Service

Economic analysis has long identified several important factors influencing the elasticity of derived demand for any input, as summarized in the Marshall-Hicks-Allen rules.²⁴ In the present case, the relevant input is rail transportation, and the demand comes from shippers. Shippers do not consume rail service as end users, but instead employ it to deliver their products to their customers down the value chain; therefore, shippers' demand for rail service is derived from the demand they face for their products. In our rail context, the Marshall-Hicks-Allen rules yield the following implications about factors that make a shipper's demand less elastic with respect to the price of rail service.

1. *Demand for shipper's commodity.* A shipper's demand for rail service will be less elastic when the elasticity of demand it faces from customers of its commodity is lower. This elasticity, in turn, will depend on the nature of uses for the shipped commodity, as well as the ability of those customers to substitute away from it to alternative commodities.²⁵ It will depend also on the degree of competition this shipper faces from other shippers of the same commodity that can serve the same customers from different geographic regions.

2. *Input substitutability.* A shipper's demand for rail service will be less elastic when there is less scope to substitute away from rail service to other transportation modes. While all traffic under the STB's rate jurisdiction is somewhat dependent on rail (is "potentially captive"

²⁴ For a clear synthesis see M. Bronfenbrenner, "Notes on the Elasticity of Derived Demand," *Oxford Economic Papers*, vol. 13, no. 3, 1961, pp. 254-261. The original sources are: Alfred Marshall, *Principles of Economics*, 8th edition, Macmillan, 1920; John R. Hicks, *The Theory of Wages*, 8th edition, Macmillan, 1932; and R.G.D. Allen, *Mathematical Analysis for Economists*, 8th edition, Macmillan, 1938.

²⁵ Indeed, to the extent that the commodity is not consumed as a final product at the next stage but is used as an input into the production of some further good, rules 2-4 governing input demand discussed shortly will apply also at that next stage.

under the $R/VC_{>180}$ standard), within this set there can be differences in the availability of alternatives to rail for different commodities.

3. *Input's share of total cost.* A shipper's demand for rail service will be less elastic when the amount spent on rail service comprises a smaller share of the shipper's total cost. This principle (Marshall's third rule) does not hold universally, but is likely to be met for potentially captive rail traffic.²⁶

4. *Supply of complementary inputs.* A shipper's demand for rail service will be less elastic when the supply of complementary inputs used by the shipper to produce its commodity is less elastic.²⁷

A priori, when the challenged rate involves movements of chlorine these relevant factors are likely to be most similar — and, therefore, also the rail-demand elasticity is likely to be most similar — in a comparison group comprised of other chlorine movements over similar distances. Specifically, Factor 1, demand for the shipped commodity, is likely to be more correlated across other chlorine movements than across movements of different commodities. Factor 2, input substitutability, is also likely to be the most similar for movements of the same commodity. Finally, factors 3 and 4 depend on the production characteristics of the shipped commodity and, hence, are most likely to be similar for chlorine, even at different locations and over movements

²⁶ The rule holds if (assuming non-negative elasticity of supply for complementary inputs), in absolute values the elasticity of final demand (covered by rule 1) exceeds the elasticity of input substitution (covered by rule 2). This condition is likely to be met for STB-overseen traffic because, by definition, the ability to substitute away from rail traffic is relatively limited. For a recent analysis of this third rule see Saul Hoffman, "A Short Note on Marshall's Third Law of Derived Demand," May, 2008, available at: <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1144053>.

²⁷ Intuitively, the rail price increase causes the shipper to reduce its demand for complementary inputs and the price it offers for such inputs. When supply of those inputs is less elastic, the quantities supplied of these inputs will fall by less than when their supply is more elastic, so the shipper's ability to produce its commodity will suffer by less — and its demand for rail service also will fall by less following the initial price increase.

of different lengths, rather than for non-chlorine commodities. As I now explain, the Board's approach recognizes the importance of these factors, as does UP's opening statement, whereas Mr. Hillenbrand overlooks most of them.

3.3 The STB's Approach vs. Mr. Hillenbrand's

The Board recognized that collecting and processing evidence is costly, and its Three Benchmark method reflects a balance between limiting the evidentiary burdens while still incorporating key factors into the comparability analysis. The most detailed articulation of this reasoning appears in *Non-Coal Guidelines*. There, the Board stressed that the "purpose of the R/VC_{COMP} test is to consider the degree of differential pricing applied to traffic with similar demand characteristics."²⁸

It added that, provided the comparison group contains a sufficient amount of traffic, "the markups applied to a similar commodity moving under similar transportation conditions can provide some rough indication of the relative degree of demand elasticity for that type of traffic" (*Non-Coal Guidelines*, p. 1035) and spelled out the meaning of "similar commodity" in footnote 90. The first paragraph of that footnote is worth quoting in full, and I have inserted letters in various places for ease of reference later:

To be similar traffic, the comparison traffic [(A)] should involve a similar commodity handled in a similar product (and perhaps geographic) market moving similar distances at an r/vc level above 180. [(B)] The comparison traffic must involve a commodity that is not readily susceptible to transportation by another available mode (at least at the distances involved in the complaint). Because rail-dependent traffic usually does not have a choice between two rail carriers for the entire move, a commodity that requires rail service is likely to be subject to a railroad's market power. [(C)] It is thus fair to presume that properly-selected comparison traffic will have a similar degree of demand elasticity.

²⁸ *Non-Coal Guidelines*, p. 1011.

The factors listed in point (A) of the quote are consistent with the determinants of rail-demand elasticity that I discussed in Section 3.2. A “similar commodity” will have similar production conditions to the one at issue, which is relevant to rules 3 and 4 (input’s share of total cost, and supply of complementary factors). Moreover, the phrase “handled in a similar product (and perhaps geographic) market” implicates the same determinants of a shipper’s elasticity of demand for rail service noted in rule 1 (demand for the shipper’s commodity). Point (B) addresses the availability of modal alternatives to rail, as in rule 2 above (input substitutability).

UP addressed these factors when it explained its reasons for selecting a chlorine-only comparison group rather than a comparison group that included movements of other TIH materials.²⁹

By contrast, Mr. Hillenbrand fails to properly address the factors set out in the *Non-Coal Guidelines*, and ignores three of the four key determinants of a shipper’s elasticity of demand for rail services. Instead, Mr. Hillenbrand simply asserts that “chlorine and all TIH commodities all have a similar degree of demand elasticity” because “they are all rail dependent traffic and ... are subject to UP’s market power”³⁰

In support of this view, Mr. Hillenbrand quotes points (B) and (C) from the quote in footnote 90 of the *Non-Coal Guidelines*, but this justification is problematic for three reasons. First, point (C) is not a factor used to identify comparable traffic: it merely states the Board’s conclusion that “*properly selected* comparison traffic” may be presumed to have “a similar

²⁹ See UP Op., pp. 22-28

³⁰ Hillenbrand Reply V.S., p. 18. The full sentence reads: “TIH commodities in the USM R/VC_{COMP} groups are all rail dependent traffic and since they are subject to UP’s market power, chlorine and all TIH commodities all have a similar degree of demand elasticity.” In addition, he writes: “I included all TIH because they have similar transportation and safety characteristics and the fact that they all have similar degrees of demand elasticity.” The transportation and safety characteristics, however, affect mainly the railroad’s cost of handling the commodities. On the key issue of a shipper’s demand elasticity for rail service his only justification is the claim in the text, which I evaluate next.

degree of demand elasticity.” Second, in referencing point (B), Mr. Hillenbrand ignores the fact that differences in the degree of rail dependence, i.e., in the scope for input substitutability, can have a significant impact on the demand elasticity for rail service.

Third, and more important, Mr. Hillenbrand entirely ignores point (A). As a result, Mr. Hillenbrand’s comparable group selection fails to address three of the four key factors influencing the demand facing the shipper for its commodity. Heeding the need to consider such product-market factors puts a different light on the caveat that “*properly-selected* comparison traffic will have a similar degree of demand elasticity” (emphasis added). Thus, Mr. Hillenbrand has offered no basis to overturn the presumption that a comparison group comprised only of chlorine movements will have the most more similar elasticity of demand for rail service and is preferable in this case to a group comprised of all TIH materials.

Finally, Mr. Hillenbrand claims that the *DuPont* decision supports the selection of all TIH material as a comparison group for chlorine.³¹ However, I reviewed the *DuPont* decision, and I found nothing to support a claim that chlorine and other TIH materials are “similar” commodities in the sense of having similar elasticities of demand for rail service, which, as I have discussed, is a critical issue in the analysis. Although the Board observed in that case that “CSXT has offered no evidence that chlorine must be handled differently than any other TIH chemical moving in tank cars,” that statement addresses differences in cost factors — a necessary step in comparing margins, but not a sufficient step.³² Again, that statement does not indicate that chlorine and other TIH have similar demand elasticities.

In fact, the Board’s primary reason for using a comparison group comprised of all TIH materials appeared to be CSXT’s statement that its “price for chlorine transportation [was]

³¹ Hillenbrand Reply V.S., pp. 17-18.

³² Hillenbrand Reply V.S., pp. 18-19 (quoting *DuPont*, p. 8).

driven primarily by risk avoidance and mitigation considerations, not by profit maximization consideration.” If CSXT was pricing to drive chlorine off its system, however, then one cannot infer anything about the actual relative elasticities of chlorine and other TIH materials from CSXT’s actions. Moreover, as I discussed in my reply statement, there is no evidence that UP is “de-marketing” chlorine or other TIH materials, and thus it would be inappropriate to rely on the Board’s *DuPont* comparison group for that reason either.³³

4. Conclusions

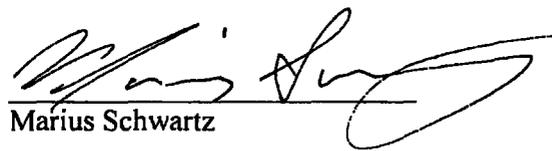
My conclusions on the two issues I was asked to address in this Rebuttal are as follows. (1) Mr. O’Connor’s criticisms are misplaced and the conclusions of my original verified statement stand. (2) Mr. Hillenbrand and USM have offered no convincing basis to reverse the expectation that, when the traffic at issue is chlorine, a comparison group comprised of other chlorine movements will do a better job of controlling for factors that affect the shipper’s demand for rail service than a group dominated by non-chlorine traffic.

³³ See Schwartz Reply V.S. at 3.

VERIFICATION

I, Marius Schwartz, declare under penalty of perjury that the foregoing Statement is true and correct to the best of my knowledge. I further certify that I am qualified and authorized to file this Statement.

Executed on October 22, 2009.


Marius Schwartz

C

REBUTTAL VERIFIED STATEMENT

OF

MICHAEL R. BARANOWSKI

My name is Michael R. Baranowski. In connection with the opening round of evidence filed in this proceeding by Union Pacific Railroad Company (“UP”), I sponsored evidence regarding the attribution of UP’s costs to install Positive Train Control (“PTC”) to movements involving Toxic Inhalation Hazard (“TIH”) materials.¹ My qualifications are described in Appendix A to UP’s opening evidence.

In this rebuttal round of evidence, I respond to arguments made by US Magnesium, L.L.C. (“USM”) and The Chlorine Institute, The Fertilizer Institute, and the American Chemistry Council (collectively, “TIH Shippers”) that the Surface Transportation Board (“the Board”) should reject UP’s proposed PTC adjustment because the costs to install PTC are too uncertain and because UP’s calculations did not address potential benefits of PTC. Specifically, USM and the TIH Shippers assert that UP’s cost figures and supporting workpapers (1) reflect specifically identified uncertainties, and (2) are incomplete by failing to account for safety-related benefits. *See* USM Reply, O’Connor Reply V.S. at 15-16; TIH Shippers Reply at 9-11. Some of these points are simply inaccurate, while others lack relevance because they ignore the fact that UP’s costs to install PTC will be so high (both in an absolute sense and in relation to any potential safety-related benefits) that the challenged rates would be found reasonable even under an extremely conservative set of assumptions.

As an example of the inaccuracies, USM’s expert states that UP’s opening evidence never explained “[h]ow much of the estimated PTC expenditure is operating expense as

¹ *See* UP Op. at 55-63.

contrasted with investment” and failed to identify “the time period the investment would be in service.” USM Reply, O’Connor Reply V.S. at 15. With regard to the first point, UP’s opening evidence and UP’s workpapers clearly indicate that my calculations included only UP’s capital investment costs, and that operating expenses related to the maintenance of PTC components were not included in calculation of the adjustment. *See* UP Op. at 41 (UP’s “calculations in this proceeding focus solely on UP’s investment cost to install PTC”).² With regard to the second point, UP’s workpapers again clearly indicate that the PTC investment will occur in increments over the 2009 to 2015 timeframe and that the investment would be amortized over the UP average asset life for the PTC investment asset categories.³

USM’s expert further states that UP’s “workpapers reflect assumptions that indicate a range of uncertainty in the costs,” purporting to identify { } in the breakdown of Wayside Signal Costs { } USM Reply, O’Connor Reply V.S. at 15. In fact, USM is referring to a workpaper in which UP had indicated that its PTC costs might be underestimated.⁴ {

² *See, e.g.*, UP Opening Highly Confidential electronic workpaper “PTC Investment Summary - Open.xlsx.”

³ Specifically, UP’s PTC investment was distributed over four separate property accounts: Account 26 – Communication Systems; Account 27 – Signals and Interlockers; Account 52 – Locomotives; and, Account 59 – Computer Systems and WP Equipment. UP average asset lives for these accounts are 33, 44, 18, and 7 years, respectively, as set forth in the “Investment” tab of UP’s Opening Highly Confidential electronic work paper “PTC DCF – Open.xls.”

⁴ *See* UP Opening Highly Confidential electronic workpaper “PTC Investment Summary - Open.xlsx” (Wayside Signal Costs page). {

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In addition to being inaccurate, the specific points raised by USM are ultimately irrelevant to the issues in this case because the challenged rates would still be found reasonable even if UP's costs to install PTC were far below UP's estimates. Indeed, as shown in Table 1 below, the challenged rates would still be found reasonable even if one assumes that UP's actual capital investment costs would be \$1 billion, rather than the approximately \$1.4 billion estimate that I used in the calculations I performed for UP's opening evidence.⁶

⁵ USM's expert also complains that the PTC adjustment is inappropriate because UP's DCF model includes a component that "provides for return of and return on investment" and thus "goes beyond recovering the cost of investment." USM Reply, O'Connor Reply V.S. at 16-17. However, my approach focused on projecting the prospective revenue adequacy shortfall resulting from the obligation to install PTC. The Board's revenue adequacy calculations consider the need for both return of and return on investment, rendering my use of the DCF model appropriate.

⁶ USM claims in its reply that UP ignored the possibility of public funding for PTC implementation. *See* USM Reply at 22 n.43. However, my analysis used extremely conservative assumptions to allocate PTC costs between TIH traffic and passenger traffic, and it assumed that substantial public funding would be available to pay for PTC costs associated with commuter and Amtrak traffic even though Amtrak's public positions demonstrate that it would resist such payments. *See* UP Op. at 57-58 and workpapers cited therein.

TABLE 1
MAXIMUM REASONABLE RATES AFTER
ADJUSTING FOR \$1 BILLION IN PTC INSTALLATION COSTS⁷

	Sahuarita	Eloy
1Q09 Per Care Rate (UP Tariff)	\$10,410	\$13,396
“Presumed Maximum Lawful Rate”	\$10,760	\$11,037
Maximum Rate, Adjusted to Reflect Revenue Need	\$15,034	\$15,421
Maximum Rate, Adjusted to Reflect Revenue Supplement	\$14,535	\$14,933

Thus, even if one assumes that – for whatever reason – the application of some sort of downward “uncertainty” adjustment of approximately 30% to UP’s installation cost figures is warranted, the challenged rates would still fall below the lawful maximum and therefore would remain presumptively reasonable.

USM and the TIH Shippers also criticize UP’s investment cost figures as “incomplete” because they fail to account for safety-related benefits generated by PTC installation. *See* USM Reply, O’Connor Reply V.S. at 15-16; TIH Shippers Reply at 9-11. However, it is clear that any such savings would be vastly outweighed by the future costs to maintain UP’s PTC system, which were also excluded from my analysis for the sake of simplicity. The FRA has systematically studied the costs and benefits of PTC, and its conclusions emphatically support the view that the costs to maintain PTC will vastly outweigh any safety benefits that would potentially accrue to railroads from installing PTC – such as reduced casualties, equipment damage, track damage, hazardous materials cleanup, evacuations,

⁷ *See* UP Rebuttal Highly Confidential electronic workpaper “UP PTC Revenue Adj Calculations – One Billion Investment.xls.”

loss of lading, wreck clearing, and train delays. *See* Federal Railroad Administration, *Positive Train Control Systems: Economic Analysis* at 144 (July 10, 2009) (estimating annual maintenance costs and benefits and concluding that “[o]nce PTC is fully implemented, annual maintenance costs will be approximately \$860 million, and the annual railroad accident prevention benefits will be approximately \$90 million”).⁸

Moreover, even if one assumes that potential safety-related benefits will not be completely offset by maintenance costs, USM’s and the TIH Shippers’ criticism ignores the fact that UP’s actual PTC installation costs themselves will be so high that the challenged rates would be found reasonable even under an aggressive set of assumptions about any such benefits. This fact is confirmed by the FRA’s study, which compared potential safety benefits to a range of investment and maintenance expense estimates under varying sets of assumptions: expected, high, and low cost estimates; 7 percent versus 3 percent discounted rates; and annualized versus 20-year discounted rates.⁹ Using the most conservative cost-to-benefit ratio that compares potential safety related savings to the low estimate for PTC investment, and substituting the Board’s 2007 railroad annual cost of capital as the appropriate discount rate, yielded a potential safety savings ratio of almost 16 percent.¹⁰ As shown in Table 2, the challenged rates still fall below the lawful maximum even assuming this level of PTC-generated safety benefits.

⁸ Available at http://www.fra.dot.gov/downloads/PTC_%20RIA_%20Final.pdf (last visited Oct. 21, 2009).

⁹ *See id.* at 145.

¹⁰ *See* UP Rebuttal Highly Confidential electronic workpaper “FRA PTC Replication.xls.”

**TABLE 2
 MAXIMUM REASONABLE RATES AFTER
 ADJUSTING FOR \$1.4 BILLION IN PTC INSTALLATION
 COSTS AND OFFSETTING SAFETY-RELATED BENEFITS¹¹**

	Sahuarita	Eloy
1Q09 Per Care Rate (UP Tariff)	\$10,410	\$13,396
“Presumed Maximum Lawful Rate”	\$10,760	\$11,037
Maximum Rate, Adjusted to Reflect Revenue Need	\$15,829	\$16,237
Maximum Rate, Adjusted to Reflect Revenue Supplement	\$15,256	\$15,677

It is therefore apparent that the challenged rates would be found reasonable even if one were to assume that actual implementation costs will be significantly lower than \$1.4 billion, or if one were to assume that maintenance costs would not be completely offset by safety-related benefits. Moreover, as shown in Table 3, this conclusion holds true even accounting for both considerations at the same time. In other words, even assuming that (1) UP’s costs to install PTC are only \$1 billion, (2) those costs are discounted by a safety savings ratio equivalent to 16 percent of PTC investment cost, and (3) no future operating expenses associated with PTC, the challenged rates still would be found reasonable.

¹¹ See UP Rebuttal Highly Confidential electronic workpaper “UP PTC Revenue Adj Calculations – Less Safety Benefits.xls.”

**TABLE 3
 MAXIMUM REASONABLE RATES AFTER
 ADJUSTING FOR \$1 BILLION IN PTC INSTALLATION
 COSTS AND OFFSETTING SAFETY-RELATED BENEFITS¹²**

	Sahuarita	Eloy
1Q09 Per Care Rate (UP Tariff)	\$10,410	\$13,396
“Presumed Maximum Lawful Rate”	\$10,760	\$11,037
Maximum Rate, Adjusted to Reflect Revenue Need	\$14,338	\$14,708
Maximum Rate, Adjusted to Reflect Revenue Supplement	\$13,936	\$14,315

I therefore conclude that the points regarding what USM and the TIH Shippers characterize as the uncertain and incomplete nature of the PTC cost estimates contained in UP’s workpapers are (1) inaccurate and (2) immaterial, in that they do not change the conclusion that the challenged rates would still be found reasonable under either of the alternative approaches UP has proposed to account for its costs to install PTC.

¹² See UP Rebuttal Highly Confidential electronic workpaper “UP PTC Revenue Adj Calculations – One Billion Investment Less Safety Benefits.xls.”

VERIFICATION

I, Michael R. Baranowski, declare under penalty of perjury that the foregoing Statement is true and correct to the best of my knowledge. I further certify that I am qualified and authorized to file this Statement.

Executed on October 22, 2009.


Michael R. Baranowski

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WITNESS QUALIFICATIONS AND VERIFICATION

Benton V. Fisher

Benton V. Fisher is a Senior Managing Director at FTI Consulting, Inc., an economic and financial consulting firm with offices located at 1101 K Street, NW, Washington, DC 20005. Mr. Fisher has been involved in various aspects of transportation consulting, including economic studies involving costs and revenues, traffic and operating analyses, and work with performance measures and financial reporting systems.

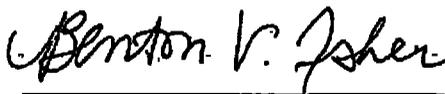
Mr. Fisher holds a Bachelor of Science in Engineering degree from Princeton University. In 1990, he served as the Deputy Controller for the Bill Bradley for U.S. Senate Campaign. In 1991, he joined Klick, Kent & Allen, Inc., which was acquired by FTI Consulting in 1998. While with the firm, Mr. Fisher has performed numerous analyses for and assisted in the preparation of expert testimony related to merger applications, rate reasonableness proceedings, contract disputes, and other regulatory costing issues before the Interstate Commerce Committee, Surface Transportation Board, Federal Energy Regulatory Commission, Postal Rate Commission, federal courts, and state utility commissions.

On opening and reply, Mr. Fisher sponsored evidence relating to Phase III URCS costing of the issue traffic movements, the identification of traffic in the proposed comparison groups, the calculation of the “presumed maximum lawful rate,” and the calculation of proposed adjustments to the “presumed maximum lawful rate.” He sponsors similar evidence in this rebuttal. A copy of Mr. Fisher’s verification is attached hereto.

VERIFICATION

I, Benton V. Fisher, declare under penalty of perjury that I have read the Rebuttal Evidence that I have sponsored, as described in the foregoing Statement of Qualifications, and that the contents thereof are true and correct to the best of my knowledge. I further certify that I am qualified and authorized to file this Statement.

Executed on October 22, 2009.


Benton V. Fisher

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Redacted

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The Fertilizer Institute

Nourish, Replenish, Grow

Patricia D. Guffain
Vice President,
Member Services

DEPT OF TRANSPORTATION

SEP 2 14

August 31, 2009

Docket Management Facility
U.S. Department of Transportation
1200 New Jersey Avenue, S.E., W12-140
Washington, D.C. 20590

RE: Docket No. FRA-2008-0132

Dear Sir/Madam:

The Fertilizer Institute (TFI) submits these comments in response to the Department of Transportation's (DOT), Federal Railroad Administration (FRA), *Notice of Proposed Rulemaking* (NPRM), issued July 21, pertaining to positive train control (PTC) systems for freight railroads transporting toxic-by-inhalation/poison inhalation materials (TIH/PIH) and for certain passenger lines.

TFI is the national trade association representing fertilizer producers, importers, wholesalers and retailers of fertilizer. TFI is the voice of the fertilizer industry whose mission is to promote and protect fertilizer from the plant where it is produced to the plants where it is used and at all points in between. Many TFI members produce, ship and receive anhydrous ammonia, a TIH material. Anhydrous ammonia is heavily dependent on rail transportation.

TFI supports implementation of PTC systems as mandated by the Railroad Safety Improvement Act of 2008, signed into law on Oct. 16, 2008. PTC systems will serve to further improve the safety and security of passenger and freight rail transportation.

However, we have some concerns:

- The Railroad Safety Improvement Act of 2008 mandates PTC for freight lines over which TIH/PIH materials will be transported and certain passenger lines. The law also gives the Secretary of Transportation the authority to determine other freight rail lines in which PTC systems should be installed for safety improvement. PTC provides meaningful benefits for all rail traffic and to maximize the potential for safety, TFI would encourage FRA to use the authority granted in the law and require PTC systems throughout the freight rail mainline system. The purpose of PTC is to avoid a collision regardless of whether the train is carrying a TIH material.

- The current atmosphere between shippers of TIH/PIH and rail carriers can be tenuous at times. For several years, the railroads have used various methods to discourage the transportation of TIH materials by rail. They have asked for relief under the common carrier obligation; they have added extra charges for TIH materials; and they have increased rail rates for TIH materials dramatically in a candid attempt to de-market TIH materials traffic. Just this week, the Union Pacific Railroad (UP) notified its ammonia customers that, because of PTC, they can expect even higher rail rates. At the same time, UP has asked the Surface Transportation Board (STB) to conclude that such higher rates on TIH traffic are "reasonable" because of mandates such as PTC. By limiting PTC systems to TIH/PIH lines, rail carriers will further pressure shippers of these materials with high rail rates and/or other restrictions.

- Last, TFI is concerned with FRA's proposal to require PTC only on railroad mainlines as determined by gross tonnage in the 2008 year traffic. We believe this could inhibit new markets for ammonia shipments because if ammonia was not shipped on that route in 2008, the route would not be equipped with a PTC system and, therefore, not permitted to travel on that rail line. Additionally, shipping patterns shift from one year to the next based on the competitive nature of fertilizer distribution, cost and supply and demand. It would be short sighted to base a system on routes using only 2008 shipments.

In conclusion, TFI supports implementation of PTC across the mainline rail network which will improve public safety and the safe transportation of TIH/PIH materials. Please contact me by telephone at (202) 515-2704 or via e-mail at pguffain@tfi.org if you have any questions.

Sincerely,



Pam Guffain

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Allegheny manager banking on US Mag

by Tim Gillie

03.12.09 - 06:30 pm



The general manager of Allegheny Technologies new \$460 million titanium plant at Rowley said yesterday his company is on track for a third-quarter opening this year, will continue ramping up production through 2010, and is banking on a relationship with US Magnesium to make the operation profitable.

Steve Knight has 28 years experience in the aluminum industry and comes to Rowley from Whitefish, Mont., where he managed an aluminum plant for 11 years. He'll oversee an operation that will combine magnesium from nearby US Magnesium with titanium tetrachloride to form titanium — for use in various industries — and magnesium chloride, which will be returned to US Magnesium for producing more magnesium.

White said that process makes the relationship between the two companies highly symbiotic.

“We would not have located in Tooele County, Utah, if it wasn't for the presence of US Magnesium,” said Knight, while speaking at a Tooele Chamber of Commerce luncheon on Wednesday. “If something should happen to them we would remain viable, but our profitability would be in question.”

The relationship between the companies is also expected to help the demand side of US Magnesium's business, which has been hard hit during the recession, resulting in the layoff of 54 workers last month.

“ATI will be a substantial customer for US Magnesium,” said Tom Tripp, technical services manager for the Rowley-based magnesium producer. “Our major market right now is the aluminum industry and automobile manufacturers. But we do have a long-term agreement with ATI and when they start production it will be very beneficial to us.”

At full capacity, the Allegheny plant is expected to produce 24 million pounds of titanium per year. However, the plant, which Knight said was entirely paid for through company cash flow, was designed to be expandable to produce another 18 million pounds of titanium per year.

The centerpiece of the multi-building complex is a massive 230,000-square-foot processing facility. Construction of the exterior of all the buildings is nearly complete machinery is being moved in, Knight said.

The company has also completed two phases of a four-phase staffing plan. At this time, there are about 12 full-time people onboard, including plant management and engineering staff, according to Knight. Phase 3 will be completed before the plant starts up, and will involve a small group of key employees that will train on the equipment and start initial production. The last phase for staffing will bring on additional operators and staff as the plant picks up production sometime in 2010.

Final staffing is expected to be around 150 people, according to Knight.

Knight described the titanium production process as being fairly clean.

“The only byproduct is the magnesium chloride, and that will go back to US Magnesium,” Knight said. “There are very few emissions.”

The plant will use water to clean machinery and will have a treatment facility to clean that wastewater. The plant will also have a water treatment plant to clean the brackish well water found on site to make it potable.

ATI has spent \$10 million in rail upgrades, as the titanium tetrachloride will come to the plant from Tennessee in rail cars.

The final product of the plant, premium-grade titanium sponge, will be shipped out by truck to other ATI facilities in Oregon, Washington, and North Carolina, where it will be converted into titanium or used in production for components for the aerospace, defense, medical, or energy industries.

Tim Gillie: tgillie@tooeletranscript.com

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