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May 15, 2006

Vernon A. Williams
Secretary
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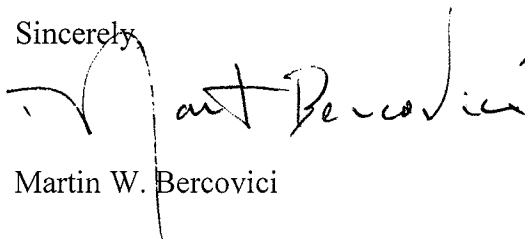
Writer's Direct Access
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Re: Rail Fuel Surcharges, STB Ex Parte No. 661

Dear Secretary Williams:

At the Board's hearing on May 11, 2006, Steve Sharp of Arkansas Electric Cooperative Corporation stated that he had just the day before received a report analyzing the extent of over-recovery of increased fuel expense for the movement of coal from the Powder River Basin to the Independence and White Bluff power plants. Chairman Buttrey invited Mr. Sharp to submit the report to the Board. That report is associated herewith.

Sincerely,



Martin W. Bercovici

Enclosure

**Rail Fuel Use and Surcharges for White Bluff and
Independence Plants**

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May 15, 2006

Rail Fuel Use and Surcharges for White Bluff and Independence Plants

I. Introduction

This report presents an analysis of rail fuel use and surcharge practices as they relate, or would prospectively relate, to shipments of Powder River Basin (PRB) coal moving to the White Bluff plant at Redfield, AR and to the Independence plant at Newark, AR.¹ Using representative information for these two plants, this report examines the degree to which fuel surcharges differ from the actual fuel cost changes experienced by the railroads (i.e., “over-recovery”). This includes consideration of the basic surcharge mechanisms, surcharge values and actual fuel costs.

It is important to note that this analysis does not disclose, discuss or depend upon any confidential information regarding any actual coal transportation contract or surcharge payments. Rather, it relies on publicly available information regarding the railroads’ surcharge practices and the circumstances of the subject movements. In some instances, the analysis may reflect the current actual situation. In other circumstances, the analysis may reflect the situation that is expected to exist upon the expiration of existing contracts.

II. Surcharge Mechanisms

The White Bluff plant is able to take delivery of coal from Union Pacific Railroad (UP) and from BNSF Railway (BNSF), while the Independence plant is effectively

¹ This report addresses normal operating conditions at these plants. It specifically does not address issues related to the actual or potential movement of coal from other sources (i.e., “substitute coal”) in response to the PRB throughput problems that arose in May 2005.

captive to UP.² This analysis therefore focuses primarily on the UP and BNSF surcharge mechanisms as they relate to these two movements.

UP's fuel surcharge is applied on a percentage basis. As described more fully in General Rule Item 690 in UP Circular 6603-C, the percentage amount is determined from the value of the Retail On-Highway Diesel Fuel (HDF) index maintained by the U.S. Department of Energy. There is no surcharge when the value is below \$1.35/gallon. At \$1.35/gallon, a surcharge of 1.5 percent is applied. The surcharge is increased by 0.5 percent for each increment of 5 cents up to \$1.60/gallon. At that level and above, the surcharge is increased by 0.75 percent for each increment of 5 cents in the index. As of April 2006, the UP surcharge was 17.0 percent, based on an index value (from February 2006) of \$2.475/gallon.³ It was scheduled to increase to 18.5 percent in May, based on an index value (from March 2006) of \$2.559/gallon.

BNSF relies on the same DOE index, but applies its fuel surcharge on the basis of car-miles.⁴ BNSF applies no surcharge when the index value is below \$1.25/gallon. At \$1.25/gallon, a surcharge of \$0.01 per car-mile is applied. Above \$1.25/gallon, the surcharge is increased by \$0.01/car-mile for each increment of \$0.06/gallon in the index value. As of April 2006, the BNSF surcharge was \$0.21/car-mile. It was scheduled to increase to \$0.22/car-mile in May.

² UP makes use of a short segment of the Missouri & Northern Arkansas Railroad (MNA) to serve the plant from its main line at Diaz, AR. UP's commercial control of this movement is discussed at length in documents presented to the Surface Transportation Board in Ex Parte No. 575. See, for example, "Comments of Arkansas Electric Cooperative Corporation" (March 8, 2006).

³ In general, the index value for a given month is applied to rail movements occurring in the second month after the month represented by the index value.

⁴ See http://www.bnsf.com/tools/prices/fuelsurcharge/pdf/coal_mileage.pdf.

III. Surcharge Values

The exact amount of the surcharge applied by BNSF for a movement to White Bluff is determined by the mileage from the origin mine. Using the Black Thunder Mine as a common point of reference, BNSF bases its surcharge for the movement to White Bluff on a distance of 1,417 miles. Assuming an average train length of approximately 132 cars, this leads to a surcharge of $(\$0.21 \times 1,417 \times 132 =)$ \$39,279 per train.

Because the UP surcharges are calculated on a percentage basis, it is necessary to specify a base rate in order to determine the surcharge amount for each movement. For the purposes of this analysis, the base rates will be approximated based on the competitive situations at the two plants.

White Bluff is a large plant (normal annual volume over 6 million tons) that is able to be served competitively by UP and BNSF. Holding aside the recent Joint Line throughput problems and fuel price levels, plants with the characteristics of White Bluff have frequently been able to achieve competitive rates in the vicinity of 8.0 mills per ton-mile. This would normally lead to an estimated rate of approximately \$11.34 per ton.⁵ However, UP holds leverage by virtue of the fact that the buildout that would permit BNSF to serve the plant has not yet been constructed. To account for this, an amortization allowance of \$0.75/ton is added to the estimate derived above to reach a final rate estimate of \$12.09/ton. Assuming 120 net tons per railcar, UP's surcharge for the movement to White Bluff is estimated to be $(\$12.09 \times 132 \times 120 \times 0.17 =)$ \$32,556 per train.

⁵ This computation is based on the mileage of the carrier with the more circuitous route (BNSF). For any given competitive mill rate level, all else equal, when there are two competing carriers the one with the more direct route has little incentive to price much below the competitive capability of the one with the more circuitous route.

The Independence plant also has a normal annual burn of over 6 million tons, but is effectively captive to UP. As discussed in a recent submission to the Surface Transportation Board by AECC in Ex Parte No. 575,⁶ Independence currently lacks viable transportation alternatives. A lower bound on its rate can therefore be approximated by applying the statutory 180 percent R/VC criterion that limits the relief the Board could provide in a hypothetical rate case. Using the variable cost determination from the TMPA/Gibbons Creek case,⁷ this suggests that the rate applicable to the Independence movement viewed in isolation is no less than \$13.74/ton.⁸ Given that this is a lower bound, the UP surcharge for the Independence movement would be at least $(\$13.74 \times 132 \times 120 \times 0.17 =)$ \$36,999.

IV. Actual Fuel Cost

The reasonableness of a particular level of fuel surcharge stems from the degree to which it reflects the actual impact of fuel price changes on actual fuel cost. This impact, in turn, is a function of the quantity of fuel used and the unit price paid. Each of these is addressed below.

a. Fuel Price

The reliance placed on the HDF index by both UP and BNSF raises immediate concerns that the fuel surcharge mechanisms may not be reflective of actual railroad fuel costs. As shown in Table 1, on-highway diesel fuel tends to be quite expensive in comparison with diesel fuel supplied to industrial users in general, and railroads in

⁶ “Comments of Arkansas Electric Cooperative Corporation” (March 8, 2006) at 5-6.

⁷ This case involved PRB unit trains largely analogous to those used in service to Independence, and found variable costs equivalent to \$0.0057 per revenue ton-mile. See Surface Transportation Board, Docket No. 42056, Texas Municipal Power Agency v.

The Burlington Northern And Santa Fe Railway Company, Decision served March 21, 2003.

particular. This likely results from the high costs associated with distribution of diesel fuel to on-highway users, which are largely avoided by railroads and other large industrial users.

Nevertheless, a closer examination of these data suggests that the HDF may produce a reasonable measure of the magnitude (in cents per gallon) of changes that occur in the price paid by railroads for diesel fuel. This is because, as shown in Table 1, there appears to be reasonably consistent relationships among HDF, railroad and industrial prices. In the 5-year period between 1999-2003, for example, prices paid by railroads for diesel fuel averaged 58.6 cents per gallon below the on-highway level, but followed fluctuations in the on-highway level with reasonable consistency. As long as the differential between the index value and the price paid is properly recognized, the HDF index is not inherently unsuited for use in the computation of rail fuel surcharges.⁹

In the specific case of the April 2006 HDF value of \$2.475/gallon, it can reasonably be inferred that the railroads are actually paying approximately (\$2.475 - 0.586 =) \$1.889/gallon for their diesel fuel. This represents an increase of \$1.226 over the level at which BNSF would apply no surcharge, and an increase of \$1.126 over the level at which UP would apply no surcharge.

b. Quantity of Fuel Used

The quantity of fuel needed to perform a specific train movement is not normally reported in any public forum. Furthermore, such information may be difficult to derive

⁸ Calculated as 1.80 x 0.0057 mills per ton-mile (variable cost net of railcar costs) x 1339 miles. Depending upon the economic performance of the "stand-alone" railroad in such a case, the prescribed rate could be considerably higher.

⁹ It is noted that anecdotal evidence appears to substantiate the accuracy of these railroad fuel price estimates. For example, in the Otter Tail rate case (STB Docket No. 42071), the parties agreed to a fuel price of \$0.7243/gallon, within a penny of the value appearing in the table for the corresponding time period (2002).

accurately from more aggregate information that may be available. This is because different types of rail traffic differ widely with respect to their fuel use.

In part, such differences relate to commodity and operational factors. For example, intermodal traffic tends to consume disproportionately large amounts of fuel due to the high speeds at which intermodal trains typically operate (i.e., to compete with intercity trucking and other railroads on service quality). Conversely, coal tends to consume lesser amounts of fuel (on a per-unit basis) because it usually moves at lesser speeds and at favorable gross weight/net weight ratios.

For PRB coal movements, there is an additional operational factor related to terrain. The PRB is located at a much higher elevation than most of the points to which PRB coal is shipped. Combined with the high density of coal and the extreme gross weight of typical PRB coal trains, the change in elevation tends to hold down fuel use compared to other traffic types. For example, the elevation of Wright, WY (in the southern end of the Basin) is approximately 5000 feet above sea level, while the elevations of Redfield and Newark, AR are 301 and 292 feet, respectively. Under favorable conditions, a loaded PRB coal train can maintain a speed around 50 mph while coasting on a downgrade of approximately 0.25 percent. All else equal, the elevation change of approximately 4700 feet equates to a largely “free ride” with respect to fuel use for approximately 350 miles of the subject loaded movements.¹⁰

On the other hand, segments of specific routes that possess high ruling grades against loads may entail very high rates of fuel usage for PRB coal trains. For example, it is believed that for a loaded 132-car train moving on the UP/BNSF line south of Denver,

¹⁰ This is offset somewhat by the need to return the empty equipment to the higher elevation, but the effect of this is comparatively minor due to the much lower weight of the empty equipment vs. the loaded train.

ascent of the 27-mile helper grade between Sedalia and Palmer Lake consumes approximately 2100 gallons of fuel. Even if this ascent requires 5 locomotives, the overall fuel use of nearly 80 gallons per train mile is substantially higher than the system average fuel consumption of 3.78 gallons per LUM for locomotives in coal service found in a recent BNSF study.¹¹ To develop reliable estimates of fuel use, it is therefore necessary to account for profile characteristics specific to the subject movements.

For the purposes of this report, the subject movements have been broken down into segments that are relatively homogeneous with respect to fuel use. For each segment, a fuel use rate level (measured in gallons per train-mile) is applied that reflects the profile and operating characteristics of the segment.

Fuel use rate levels used in this analysis include the following:

Segment Type	Fuel Use (gallons per train-mile)
Loaded Movements	
- "Riverside" smooth flat/downgrade	6.5
- Slight undulation	10.0
- Moderate undulation	15.0
- High undulation/ascent	20.0
- PRB Joint Line (north of Shawnee Junction)	30.0
Empty Movements	7.5

<i>System Average</i>	<i>11.34</i>

These fuel use rates have been developed on the basis of prior simulations involving the subject segments or other segments with comparable profile characteristics. They appear to be consistent with the 3.78 gallon per LUM found by BNSF (see above), which

¹¹ See Surface Transportation Board, Docket No. 42057, Public Service Company of Colorado (d/b/a Xcel

suggests a “system average” fuel consumption of 11.34 gallons per train-mile for a prototypical PRB train powered by three locomotives.

To estimate total fuel use for a given segment, the applicable fuel use rate is multiplied by the length of the segment. The segment results are then summed to produce movement-level fuel use estimates. Details of this analysis are presented in Table 2.

To use these results in assessing fuel surcharge practices, it is necessary to account for unplanned operational problems and delays that in practice may add to fuel consumption on individual movements. Given that such problems and delays typically affect the duration of a movement rather than the required physical work effort, it is believed that a contingency factor of 5 percent is more than adequate to account for such considerations. The results of this analysis are shown in Table 3.

V. Discussion and Conclusions

1. As of April 2006, the BNSF mileage-based surcharge applicable to the White Bluff movement appears to recover approximately \$4,270 per train more than the cost impact of higher fuel prices. This represents 10.9 percent of the calculated surcharge.
2. The UP percentage-based method charges more for captive shipments than for competitive ones, at least to the extent that the former pay higher base rates. As of April 2006, the UP method appears to recover approximately \$3,802 per train more than the cost impact of higher fuel prices on the White Bluff movement. This represents 11.7 percent of the calculated surcharge. For the Independence movement, the UP methods appears to recover at least \$8,277 per train more than

Energy) v. The Burlington Northern And Santa Fe Railway Company, Decision served June 8, 2004, Appendix C, Section A.3.a.

the cost impact of higher fuel prices. This represents at least 22.4 percent of the calculated surcharge.

3. For these two plants, the combined over-recovery is at least \$5.0 million per year at the surcharge levels applied in April 2006.
4. It is important to ensure that if any action is taken with respect to fuel surcharge practices, such action should preserve incentives for rail carriers to improve fuel efficiency. Engineer training, more efficient locomotives, development of improved operating techniques, network and profile improvements, railcar design improvements, tactical traffic planning, MOW improvements, etc., if implemented, can mitigate the impacts of fuel price increases by reducing fuel use. To the extent that fuel surcharges place the incidence of fuel price fluctuations on rail customers, it is important to ensure that carrier incentives to pursue fuel efficiency improvements are not lost.

Table 1

Diesel Price Levels by Use (current year cents per gallon)

Year	On-Highway ¹²	Industrial.	Railroad ¹³
1999	112.1	64.5	55.5
2000	149.1	99.0	87.5
2001	140.1	90.7	85.5
2002	131.9	82.6	73.3
2003	150.9	100.4	89.3
2004	181.0	131.9	U
2005	234.0	186.0	U

U - Unavailable

¹² For On-Highway and Industrial values, see U.S. Department of Energy, "Petroleum Marketing Monthly", Table 16 – U.S. No. 2 Diesel Fuel Prices by Sales Type at http://www.eia.doe.gov/pub/oil_gas/petroleum/data_publications/petroleum_marketing_monthly/current/txt/tables16.txt.

¹³ Source: U.S. Department of Transportation, Bureau of Transportation Statistics, "National Transportation Statistics 2006", Table 3.8 - Sales Price of Transportation Fuel to End Users, citing Association of American Railroads, *Railroad Facts* (annual issues). See http://www.bts.gov/publications/national_transportation_statistics/2006/html/table_03_08.html.

Table 2

Development of Direct Fuel Use Estimates

Segment	Miles	Fuel Use Rate (gallons/train-mile)	Total Fuel Use (gallons)
BNSF - White Bluff			
Black Thunder Mine - Shawnee Jct.	81	30.0	2,430
Shawnee Jct. - Northport	144	6.5	936
Northport - Alliance	34	20.0	680
Alliance - Table Rock	429	10.0	4,290
Table Rock - Kansas City	140	6.5	910
Kansas City - Thayer	345	15.0	5,175
Thayer - Jonesboro	80	10.0	800
Jonesboro - plant	164	10.0	1,640
Return	1378	7.5	10,335
Total			27,196
UP - White Bluff			
Black Thunder Mine - Shawnee Jct.	81	30.0	2,430
Shawnee Jct. - S. Morrill	111	10.0	1,110
S. Morrill - Gibbon	285	6.5	1,853
Gibbon - Fairbury	104	10.0	1,040
Fairbury - Topeka	118	15.0	1,770
Topeka - Kansas City	68	6.5	442
Kansas City - Wagoner	238	15.0	3,570
Wagoner - plant	264	10.0	2,640
Return	1262	7.5	9,465
Total			24,320
UP - Independence			
Black Thunder Mine - Shawnee Jct.	81	30.0	2,430
Shawnee Jct. - S. Morrill	111	10.0	1,110
S. Morrill - Gibbon	285	6.5	1,853
Gibbon - Fairbury	104	10.0	1,040
Fairbury - Topeka	118	15.0	1,770
Topeka - Kansas City	68	6.5	442
Kansas City - Wagoner	238	15.0	3,570
Wagoner - plant	334	10.0	3,340
Return	1165	7.5	8,738
Total			24,293

Table 3

Summary of Fuel Surcharge Analysis

	BNSF-White Bluff	UP-White Bluff	UP-Independence
Direct Fuel Use ¹⁴	27,196 gallons	24,320 gallons	24,293 gallons
Add 5% Allowance for Delays/Contingencies	1,360 gallons	1,216 gallons	1,215 gallons
Total Fuel Use	28,556 gallons	25,536 gallons	25,508 gallons
Actual Fuel Price at Zero Surcharge Level	\$0.663/gallon	\$0.763/gallon	\$0.763/gallon
Total Fuel Cost at Zero Surcharge Level	\$18,933 per train	\$19,484 per train	\$19,463 per train
Total Fuel Cost at Current Price Level	\$53,942 per train	\$48,238 per train	\$48,185 per train
Fuel Cost Increase at Current Price Level	\$35,009 per train	\$28,754 per train	\$28,722 per train
Surcharge Amount at Current Price Level	\$39,279 per train	\$32,556 per train	\$36,999+ per train
Over-recovery	\$4,270 per train	\$3,802 per train	\$8,277+ per train
Annual over-recovery ¹⁵	\$1.75 million	\$1.56 million	\$3.40+ million

¹⁴ Source: Table 2.

¹⁵ Recent public information indicates a combined annual coal volume of approximately 13 million tons for the White Bluff and Independence plants. Historical data based on FERC Form 423 reports indicate that the annual volumes for these two plants are approximately equal. Therefore, it is assumed that the annual volume for each plant is 6.5 million tons (delivered in 132-car trains carrying 120 net tons per car, as in Section III, above).