STB DOCKET NO. 42072

CAROLINA POWER & LIGHT COMPANY
v.
NORFOLK SOUTHERN RAILWAY COMPANY

Decided December 22, 2003

The Board finds that the complainant has established that the challenged rates (for transportation over which the defendant railroad concedes that it has market dominance) are unreasonably high for movements from those mines included in the complainant's stand-alone cost analysis. Maximum reasonable rates are prescribed and reparations are ordered.

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ACRONYMS USED

AAR	Association of American Railroads
AREMA	American Railway Engineering and Maintenance-of-Way Association
CMP	constrained market pricing
CP&L	Carolina Power & Light Company
CTC	centralized traffic control
CWR	continuous welded rail
DCF	discounted cash flow
DED	defective equipment detector
DOE/EIA	Department of Energy, Energy Information Agency
EOTD	end-of-train device
EPA	Environmental Protection Agency
e-WP.	electronic workpaper

Exh.	exhibit
FEC	Florida East Coast Railway Company
FRA	Federal Railroad Administration
G&A	general and administrative
GTM	gross ton-mile
HR	human resources
ICC	Interstate Commerce Commission
IT	information technology
L&D	loss and damage
LF	linear feet
LTL	less-than-trainload
LUM	locomotive unit-mile
MGT	million gross tons
MGTM	million gross ton-miles
MOW	maintenance-of-way
Narr.	narrative statement of counsel
NS	Norfolk Southern Railway Company
O/D	origin/destination
Open.	opening evidence
OTM	other track material
P&SH	Piedmont & Sand Hills Railroad
PPI	producer price index
R-1	Annual Report Form R-1
RCAF-A	rail cost adjustment factor, adjusted for changes in railroad productivity
RCAF-U	rail cost adjustment factor, unadjusted for changes in railroad productivity
Reb.	rebuttal evidence
ROI	return on investment
ROW	right-of-way
RTM	revenue ton-mile
R/VC	revenue-to-variable cost
SAC	stand-alone cost
SARR	stand-alone railroad
SCS	Soil Conservation Service
SEM	switch engine minutes
SFGT	speed factored gross ton
S&P	Standard and Poor’s
STB	Surface Transportation Board
T&E	train and engine personnel
TPS	train performance simulator
URCS	Uniform Railroad Costing System
USOA	Uniform System of Accounts
V.S.	verified statement
WP.	workpaper
WSAC	weighted system average cost

BY THE BOARD:

By complaint filed on February 1, 2002, Carolina Power & Light Company (CP&L) challenges the rates charged by Norfolk Southern Railway Company (NS) for the movement of coal from origins in West Virginia, Kentucky, and Virginia to CP&L's electricity generating facilities at Mayo and Hyco, NC. CP&L asks the Board to prescribe the maximum reasonable rates for this transportation, to award reparations (with interest) for any unreasonable portion of the charges collected by NS since April 1, 2002, and to order NS to reimburse CP&L for the filing fee for its complaint. Upon consideration of the administrative record, the Board finds that CP&L has demonstrated that the challenged rates are unreasonable for movements from those mines included in CP&L's stand-alone cost analysis. Reparations are awarded and maximum reasonable rates are prescribed.

OVERVIEW

Each rail rate case decided under the stand-alone cost (SAC) methodology is the product of the particular record that was developed by the parties to the case. The record in this case is extensive and sufficient to demonstrate that the rates challenged here are unreasonably high under that test.

In critical respects, this case is both similar to and different from the case recently decided by the Board in *Duke Energy Corp. v. Norfolk Southern Ry.*, 7 S.T.B. 89 (2003) (*Duke/NS*), which was the first modern SAC case addressing rates for traffic east of the Mississippi River. Many of the issues in the record in the *Duke/NS* are present in this record as well. As in *Duke/NS*, the shipper's operating plan for the stand-alone railroad (SARR) designed here is unworkable, and the Board's SAC analysis is therefore based on the operating plan proposed for the SARR by NS. The selection of the operating plan affects the level of locomotives, crews, and track that the SARR would need, and thus the costs to construct and to operate the SARR. But because the size of the SARR here is more limited than in *Duke/NS* (approximately 800 miles here as compared to 1100 miles in that case, with overall construction costs approximately 33% less here) and higher traffic density here, this SARR would benefit from greater economies of density than the SARR in *Duke/NS*. As a result, CP&L has shown that this SARR would be able to cover all of its costs of construction and operation without needing to charge rates for the traffic at issue that are as high as the challenged rates, in contrast to *Duke/NS*.

PRELIMINARY CLAIM

Separate from its argument that the challenged rates violate the Board's SAC constraint, CP&L also argues that, by increasing the rates for the traffic at issue, NS violated a condition imposed by the Board on its approval of NS's acquisition (together with CSX Transportation, Inc., or CSXT) of the Consolidated Rail Corporation (Conrail): specifically the general condition directing NS and CSXT to adhere to representations they had made during the

course of that proceeding.[1] CP&L contends that NS had represented that captive shippers would not be burdened with the costs associated with that acquisition, but that following the acquisition NS nevertheless embarked upon a program to meet unanticipated cash needs by increasing the rates of its captive coal shippers, including CP&L. According to CP&L, NS thus reneged on a pledge to the Board that it would not squeeze its captive shippers if its financial aspirations for Conrail went awry. NS denies that the Conrail acquisition was a factor in its setting of the rates at issue here.

This same claim was made and rejected by the Board in *Duke/NS*, 7 S.T.B. at 96-97. As in *Duke/NS*, there is no evidence here to suggest that the rate increases imposed on CP&L were necessitated by NS's acquisition of Conrail. The Board cannot take remedial action solely on the basis of an unsupported allegation and, in any event, the Board's representations condition in *Conrail* was not, and could not have been, meant to freeze NS's then-existing rates indefinitely, depriving the carrier of the ability to adjust its rates to react to changing market conditions. Therefore, CP&L's claim is rejected.

MARKET DOMINANCE

The reasonableness of a challenged rail rate can be considered only if the carrier has market dominance over the traffic involved. 49 U.S.C. 10701(d)(1), 10707(b), (c). There is both a qualitative and a quantitative component to this limitation. Qualitatively, market dominance is "an absence of effective competition from other carriers or modes of transportation for the transportation to which a rate applies." 49 U.S.C. 10707(a). Quantitatively, the statute precludes a finding of market dominance where the carrier shows that the revenues produced by the movement at issue are less than 180% of the variable costs to the carrier of providing the service. 49 U.S.C. 10707(d)(1)(A). (Variable costs are those railroad costs that have been found to vary with the level of output.) Here, NS concedes that there is not a competitive rail or intermodal transportation alternative for these movements[2] and that the revenues produced by the challenged rates exceed the 180% revenue-to-variable cost (R/VC) threshold.

RATE REASONABLENESS STANDARDS

A. Constrained Market Pricing

The Board's standards for judging the reasonableness of rail freight rates are set forth in *Coal Rate Guidelines, Nationwide*, 1 I.C.C.2d 520 (1985) (*Guidelines*), *aff'd sub nom. Consolidated Rail Corp. v. United States*, 812 F.2d 1444 (3d Cir. 1987). These guidelines impose a set of pricing

[1] *See CSX Corp. et al.–Control–Conrail Inc. et al.*, 3 S.T.B. 196, 387 (1998) (*Conrail*) (Condition No. 19).

[2] *See* NS Open. Narr. at I-3, n.2.

principles known as "constrained market pricing" (CMP). The objectives of CMP can be simply stated. A captive shipper should not be required to pay more than is necessary for the carrier involved to earn adequate revenues. Nor should it pay more than is necessary for efficient service. A captive shipper should not bear the cost of any facilities or services from which it derives no benefit. And responsibility for payment for facilities or services that are shared by other shippers should be apportioned according to the demand elasticities of the various shippers. *Guidelines*, 1 I.C.C.2d at 523-24.

CMP contains three main constraints on the extent to which a railroad may charge differentially higher rates on captive traffic. The revenue adequacy constraint ensures that a captive shipper will "not be required to continue to pay differentially higher rates than other shippers when some or all of that differential is no longer necessary to ensure a financially sound carrier capable of meeting its current and future service needs." *Guidelines*, 1 I.C.C.2d at 535-36. The management efficiency constraint protects captive shippers from paying for avoidable inefficiencies (whether short-run or long-run) that are shown to increase a railroad's revenue need to a point where the shipper's rate is affected. *Id.* at 537-42. The stand-alone cost test protects a captive shipper from cross-subsidizing other traffic, bearing costs of inefficiencies, or paying more than the revenue needed to replicate rail service to a select subset of a carrier's traffic base. *Id.* at 542-46. A fourth constraint—phasing—can be used to limit the introduction of otherwise-permissible rate increases when necessary for the greater public good. *Id.* at 546-47.

The revenue adequacy and management efficiency constraints employ a "top-down" approach, examining the incumbent carrier's existing operations. If the carrier is revenue adequate (earning sufficient funds to cover its costs and provide a fair return on its investment), or would be revenue adequate after eliminating unnecessary costs from specifically identified inefficiencies in its operations, the complaining shipper may be entitled to rate relief.[3] In contrast, the SAC constraint uses a "bottom-up" approach, calculating the revenue requirements that a hypothetical new, optimally efficient carrier would need in order to provide rail service to the complaining shipper. CP&L has chosen to proceed here using the SAC test.

B. SAC Test

A SAC analysis seeks to determine the lowest cost at which a hypothetical, optimally efficient carrier could provide the service at issue free from any costs associated with inefficiencies or cross-subsidization of other traffic. A stand-alone railroad is hypothesized that could serve the traffic if the rail industry were free of barriers to entry or exit. (It is such barriers that can make it possible for railroads to engage in monopoly pricing absent regulatory constraint.) Under the

[3] *See, e.g., CF Industries, Inc. v. Koch Pipeline Company, L.P.*, 4 S.T.B. 637 (2000), *aff'd sub nom. CF Industries, Inc v. STB*, 255 F.3d 816 (D.C. Cir. 2001).

SAC constraint, the rate at issue cannot be higher than what the SARR would need to charge to serve the complaining shipper while fully covering all of its costs, including a reasonable return on investment.

To make a SAC presentation, a shipper designs a SARR specifically tailored to serve an identified traffic group, using the optimum physical plant or rail system needed for that traffic. Using computer models to simulate the flow of traffic over the defendant's rail system, the complainant selects a traffic group and route system for the SARR to achieve economies of density, thereby maximizing revenues while minimizing costs.

Based on the traffic group to be served, the level of services to be provided, and the terrain to be traversed, a detailed operating plan must be developed. The operating plan is a crucial factor in determining both the total investment that would be needed and the annual operating costs that would be incurred by the SARR.

The operating plan affects the physical plant that the SARR would need. For example, roadway must be sufficient to permit the attainment of the speeds and traffic density that are assumed. The length and frequency of passing sidings must be able to accommodate the specific train lengths and frequency of train meets that are assumed. And traffic control devices must be designed to allow trains traveling in opposite directions on the same track to be handled safely and efficiently based on the traffic density assumed in the operating plan. Yards must be built at locations that permit interchange of traffic to connecting carriers, changing of crews, and servicing of equipment. Yards may also be necessary for classification of traffic and consolidation of shipments into line-haul trains.

Among other things, the operating plan must identify the number of trains that would be required to move the traffic group, a total determined by the number of cars in each train, any shipper requirements or limitations, and the number of carloads required to move the shippers' traffic. The operating plan must also identify the train characteristics (such as number of cars per train, locomotive consists and locomotive and car cycle times), and the number of operating personnel required. It must be capable of providing, at a minimum, the level of service to which the shippers in the traffic group are accustomed.

Once an operating plan is developed that would accommodate the traffic group that is assumed, the system-wide investment requirements and operating expense requirements (including such expenses as locomotive and car leasing, personnel, material and supplies, and administrative and overhead costs) must be estimated. The parties must provide appropriate documentation to support their estimates.

It is assumed that investments normally would be made prior to the start of service and that recovery of the investments would occur over the economic life of the assets. (The Board's SAC analyses are limited to finite periods of time—here, 20 years—but they provide for sufficient investment to enable the SARR to operate into the indefinite future.) A computerized discounted cash flow (DCF) model simulates how the SARR would likely recover its capital investments, taking into account inflation, Federal and state tax liabilities, and a reasonable rate of return. The annual revenues required to recover the SARR's

capital costs (and taxes) are combined with the annual operating costs to calculate the SARR's total annual revenue requirements.

The revenue requirements of the SARR are then compared to the revenues that the SARR could expect to receive from the traffic group that it is designed to serve. Absent better evidence, the revenue contributions from non-issue traffic are based on the revenues produced by the current rates (and, where the traffic would be interlined with another carrier, the extent of the SARR's participation in the movement).[4] Traffic and rate level trends for that traffic group are forecast into the future to determine the future revenue contributions from that traffic.

By comparing the total costs of the stand-alone system to the total revenues that would be available to the SARR over the (in this case, 20-year) SAC analysis period, it can be determined whether there would be over- or under-recovery of costs. Because the analysis period is lengthy, a present value analysis is used that takes into account the time value of money, netting annual over-recovery and under-recovery as of a common point in time. If the sum of the present values of over-recoveries does not exceed that of under-recoveries, the existing rate levels are not considered to be unreasonable under the SAC constraint.

C. Evidentiary Considerations

SAC cases require the collection, analysis, and presentation of massive quantities of detailed data. It is a complex task that imposes enormous evidentiary burdens and costs on both parties in developing the record in a SAC case, as well as on the Board in analyzing that record. To a great extent, each SAC case is unique and dependent on its individual facts, particularly with regard to such matters as the route of movement and the type and amount of traffic involved. Thus, many evidentiary disputes cannot be avoided. However, to keep the process as manageable and fair as possible for all concerned, the Board and the parties must strive to minimize needless disputes by bringing standardization and predictability to the SAC process where possible. There are several evidentiary principles to guide the parties and the Board in this effort which merit reiteration here.

The Board adheres to precedent established in prior cases unless new evidence or different arguments are presented that provide a persuasive reason to depart from that precedent. *See Procedures for Presenting Evidence in Stand-Alone Cost Rate Cases*, 5 S.T.B. 441, 446 (2001). There are certain costs, for example, that are expressed as a percentage of total costs (such as costs for engineering, contingencies and mobilization) and that would not be expected to vary significantly from case to case. *See Duke/NS*, 7 S.T.B. at 201-03 & nn.154 & 160. Thus, parties ought to be able to agree in advance as to these types of costs.

[4] *See Guidelines*, 1 I.C.C.2d at 544.

In assessing the weight to be given to competing evidence, the Board applies well recognized evidentiary principles. More specific evidence is generally preferred over more general evidence. *See, e.g., West Texas Utilities Co. v. Burlington N.R.R.*, 1 S.T.B. 638, 713 (1996). Evidence that was prepared in the ordinary course of business is generally preferred over evidence developed specifically for litigation. *See, e.g., Texas Municipal Power v. The BNSF Ry. Co.*, 6 S.T.B. 573, 603 (2003) (*TMPA*). And evidence obtained from an official or otherwise neutral source is generally regarded as the most reliable evidence. *See, e.g., Duke/NS*, 7 S.T.B. at 145.

SAC cases require a considerable amount of long-term forecasting to project traffic levels, costs, and revenues into the future. Where available, those projections should be based on the forecasts of an official governmental source. Thus, for example, the Board has a preference for coal tonnage and coal rate forecasts developed by the Energy Information Administration (EIA), a statistical arm of the Department of Energy charged with providing policy-neutral data and forecasts. *See, e.g., Duke/NS*, 7 S.T.B. at 145.

Finally, the Board has sought in recent cases to further refine and clarify what is expected of parties in making their evidentiary presentations in SAC cases. In *Duke/NS*, 7 S.T.B. at 100-01, the Board articulated what is expected of the parties' opening and reply submissions and the permissible scope of rebuttal evidence. And in *Arizona Electric Power Cooperative, Inc. v. The Burlington Northern and Santa Fe Railway Company and Union Pacific Railroad Company*, 7 S.T.B. 224, 225 (2003), the Board further addressed the responsibilities of the parties in ensuring the development of an adequate record upon which the Board can make its rate reasonableness determination.

STAND-ALONE COST ANALYSIS

CP&L designed a hypothetical SARR called the Piedmont & Sand Hills Railroad (P&SH) to serve a traffic group consisting of coal traffic that NS currently moves from 32 mines in the Central Appalachian region,[5] as well as certain grain traffic currently handled by NS that moves through this region. The P&SH was designed by CP&L to handle approximately 80 million tons of coal and grain traffic in the peak year of the SAC analysis.

A. P&SH Configuration

The P&SH would replicate approximately 818 miles of existing NS lines extending generally southeast from Kenova (in southwest West Virginia, on the Ohio River), through portions of Kentucky and Virginia, to Hyco, NC. In addition, the P&SH would have a secondary line extending north from Bluefield

[5] The 32 mines are: Fola, High Power Mountain, Bradbury, Colmont, Delbarton, Gund, Hatfield, Marrowbone, Martiki, Pevler, Pontiki, Sand Lick, Scarlet Glen, Sidney, Hull, Jamboree, Lavoy, Mabley, Scaggs, Thomas, Timbar, Glen Alum, Biggs, Luke, Stric, Corneliu, Koenig, Page, Hatcher, Kopperston, Pineville, and Pinnacle Creek.

to Elmore, WV; numerous branch lines to serve mines in Virginia, West Virginia and Kentucky; and barge transfer facilities on the Ohio River.

A map and a more detailed description of the P&SH's configuration are contained in Appendix A. That appendix also contains the Board's resolution of evidentiary disputes regarding the amount of track that would be needed for the P&SH to operate this system.

B. P&SH Traffic Group

Most of the traffic moving over the P&SH (approximately 95%) would be coal from Central Appalachian mines. The remainder would be overhead grain traffic that the P&SH would receive from the "residual NS" (i.e., the portion of the NS system that would not be replaced by the P&SH) at Kenova, WV, and return to the residual NS at West Roanoke, VA. The P&SH would originate most of the coal that it would handle, although it would receive some coal from the residual NS via interchanges at Bluefield and Iaeger, WV. The P&SH would serve the two CP&L power plants in North Carolina (at Hyco and Mayo) to which the challenged rates apply. The P&SH would also provide local service to three power plants in Virginia (the Appalachian Power generating station in Glen Lyn, VA, and the Dominion Virginia Power generating stations at Altavista and Clover, VA); a manufacturer in Virginia (the Celanese plant at Narrows, VA); and two barge transload facilities on the Ohio River. The rest of the coal transported by the P&SH would be "cross-over" traffic, i.e., traffic for which the P&SH would not replicate the full length of NS's current move but would instead be interchanged with the residual NS.

However, as in many recent SAC cases, the parties disagree on a number of matters relating to the traffic that would be handled by the SARR. In particular, they disagree here on the amount of traffic and revenues that the P&SH traffic group would generate; what portion of the revenues from cross-over traffic the P&SH would receive; and whether it is appropriate to assume that the P&SH could route cross-over traffic differently from how that traffic currently moves without factoring in additional off-SARR costs that would be incurred by the residual NS for its portion of interlined movements as a result of the different routings.

1. Traffic Projections

The parties agree on the tonnage and revenue projections for the grain traffic, but not for the coal traffic. To develop the amount of coal traffic that the P&SH would transport and the revenues that would be generated by that traffic over the 20-year SAC analysis period (2002-2021), the parties in this case used similar procedures to those used by the parties in *Duke/NS*. (The differences, set forth in Appendix B, are not significant for this discussion.) Those procedures and the parties' support for them, as well as the Board's analysis and findings relating to them, are addressed in some detail in *Duke/NS*, 7 S.T.B. at 143-49.

a. Tonnage

In *Duke/NS*, in determining coal tonnage, the Board's analysis applied different approaches for different time periods. For the first part of 2002, the Board relied on the actual traffic movement, which were available in the record. For the second half of 2002 through the end of 2004, the Board relied on NS's internal business forecasts. For 2005 and beyond, the Board used the most recent tonnage forecasts for the Central Appalachian region obtained from EIA.

At the oral argument conducted in this case, the parties were asked to address whether the Board should alter its approach in this case. NS responded that it would not be appropriate to apply the approach used in *Duke/NS* for determining tonnages for the intermediate time period (the latter part of 2002 through the end of 2004). It pointed to more recently available public information demonstrating that the projected percentage increase developed from NS's internal business forecasts were far too optimistic. Given the sizable drop in coal tonnage NS experienced in 2002 and its optimistic internal forecasts for 2003, applying NS's internal forecasts would yield a 17% increase in coal tonnage from 2002 to 2003. In contrast, *EIA 2003* projects only a 5.5% increase between 2002 and 2003 for the Central Appalachian region. In view of the size of this discrepancy and the compounding effect on projections for later years, NS argued that it would not be appropriate to rely here on the approach used in *Duke/NS*. It suggested that the Board should instead hold the 2002 coal volumes relatively constant for 2003 and 2004 (and then presumably use the *EIA 2003* coal tonnage growth forecasts for 2005 and beyond).

CP&L argued, on the other hand, that NS's revenue projections for the P&SH are understated because of the manner in which NS computed the 2002 tonnages. CP&L identified the traffic group for the P&SH using 2001 data provided by NS. NS then provided updated traffic data for the first three quarters of 2002. However, when it did so, it assumed that the only relevant data were movements that in 2002 moved from the same mine origin to the same destination as they did in 2001, rather than all coal movements on lines replicated by the P&SH. Thus the P&SH traffic figures used by NS do not include all of the coal traffic that NS moved in 2002 over the lines that the P&SH would replicate

As CP&L pointed out, however, the coal business in the Central Appalachian region is constantly shifting. A customer may ship from one mine in one year, then shift to another the next year, and back to the first mine in the following year. Consequently, to freeze the traffic group as NS would, limiting it to the exact origin-destination (O/D pair) matches reflected in one particular year, is unduly restrictive and does not fairly reflect the traffic that would be available to the P&SH in any given year. Moreover, given the constantly changing traffic patterns reflected in the Central Appalachian region, NS's methodology virtually ensures a decline in tonnage from 2001 and 2002. Under that approach, the P&SH would lose any traffic that shifts to another mine, even when that mine would also be served by the P&SH; and the P&SH would not get the benefit of traffic that shifted from a mine not served by the P&SH to a mine that would be

served by the P&SH. Thus, NS's approach understates the actual tonnage volumes that the P&SH could expect to haul in 2002.

A comparison to other sources confirms that NS's approach has likely understated the amount of coal that the P&SH would carry in 2002. Applying its O/D pair approach, NS alleges that the P&SH would experience roughly a 13% drop in tonnage between 2001 and 2002. This, however, is far greater than the roughly 5.5% decline that EIA reported for the Central Appalachian region from 2001 to 2002. The EIA figures are consistent with the "Quarterly Commodity Statistics" (QCS) filed by NS with the Board, which reported that NS experienced a 5.8% drop in total coal shipments originated in the first three quarters of 2001 and 2002. And the Waybill Sample (a statistical sampling of U.S. rail traffic) shows a similar system-wide drop in NS coal traffic.[6]

An O/D pair-specific approach to the traffic group is too restrictive in this situation. It would be unfair to require the complainant to anticipate specific changes in traffic where traffic patterns are constantly shifting. (This problem appears to be more of an obstacle for coal rate complaints in the East, where there are many more mines and shippers than in the West. But the SAC test must be workable in both geographical settings.)

The better approach is to view the traffic group selected by CP&L here as meant to encompass all coal traffic served by NS that moves over the lines replicated by the P&SH (as well as the grain traffic identified) and to view the particular coal traffic that moved over those lines in 2001 as representative of the aggregate traffic that would be expected to move on the P&SH in future years. Thus, the fact that some traffic would not continue to move from a specific mine to a specific destination throughout the SAC analysis period does not mean that other traffic would not move from the mines served by the P&SH.

Moreover, there is no reason to assume that changes in traffic levels from the mines that would be served by the P&SH would be any different from the average changes that the EIA is predicting for the Central Appalachian region as a whole. Even the anticipated substitution of Powder River Basin coal for coal obtained from a Central Appalachian mine is reflected in those forecasts, and thus no separate adjustment to the traffic group is necessary. In other words, it is reasonable to treat the 2001 actual traffic group selected by CP&L as a representative snapshot of the traffic that the P&SH could carry over the 20-year period of the SAC analysis.

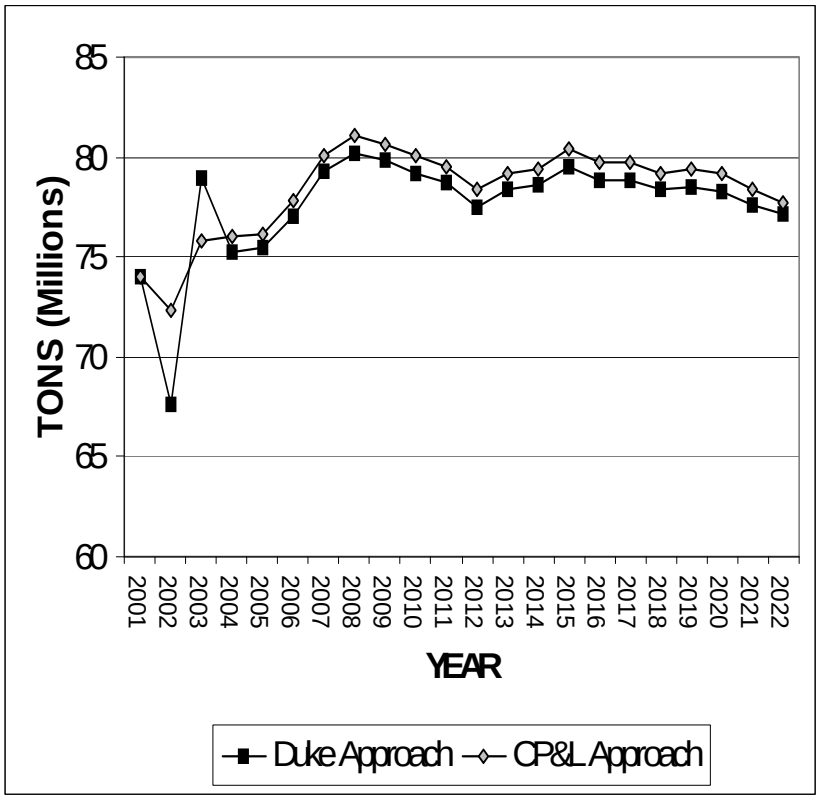
Because the 2002 tonnage figures NS supplied are unduly restricted and do not fully reflect that representative traffic group, they cannot be used here. Nor can CP&L's procedure, which the Board rejected in *Duke/NS* (7 S.T.B. at 144) be applied. Therefore, the Board's analysis is based on 2001 tonnage, indexed to 2002 (the first year of operation for the P&SH) using the actual rate of change

[6] This discrepancy reflects the flawed methodology used by NS for identifying traffic in the P&SH group, and not some broader problem with the traffic data NS produced in discovery. CP&L has complained that NS's traffic tapes did not appear to be consistent with NS's financial disclosures, but the Waybill data and the QCS data NS reports to the Board conform closely to the 2002 traffic tapes. All three data sources show NS handling approximately 120 million tons of coal in the first 3 quarters of 2002.

reported by the EIA for Central Appalachian region tonnage from 2001 to 2002. (The fact that 2001 traffic levels were abnormally high and declined in 2002 is reflected in the EIA adjustment.) The 2003 and 2004 traffic levels are also determined by relying on EIA forecasts, rather than NS's internal business forecasts, in view of the demonstrated inaccuracy of the NS forecasts and the general preference for reliance on official, neutral governmental forecasts. And, as in *Duke/NS*, the Board here relies on the *EIA 2003* forecasts for 2005 and beyond.

Chart 1 below shows the effect of changing the methodology used in this case for calculating tonnages from the approach taken in *Duke/NS*.

Chart 1



b. Revenues

In projecting the revenues associated with the tonnage forecasts in *Duke/NS*, for traffic that currently moves under contract, the Board relied on the rate provisions of the contract until the expiration of the contract. For traffic not currently moving under contract and for traffic moving after expiration of the contract, the Board again applied different approaches for different time periods. For traffic moving prior to 2005, the Board relied on the applicable growth rate from NS's internal business forecasts. From 2005 onward, the Board relied on the Central Appalachian rate forecasts contained in a 2003 report of EIA (*EIA 2003*). In this case, to be consistent with the revised methodology for forecasting tonnage, once a contract expires the *EIA 2003* Central Appalachian rate forecasts are applied to that movement. This is different from *Duke/NS*, where the rate forecasts contained in NS's internal forecasts were applied for non-contract traffic moving prior to 2005.

The Board's decision in the *Duke/NS* case has been stayed so that technical computational errors that have been identified can be corrected.[7] The changes in methodological approach discussed here will also be applied to that case when the Board issues its revised decision.

Appendix B contains the tonnage and revenue figures used by the Board in this case.

2. Revenue Allocations

The majority (over 85%) of the P&SH traffic group would be cross-over traffic that would be interchanged with the residual NS. Thus, an important part of determining the revenues that the P&SH would receive is computing what portion of the revenues from cross-over traffic would go to the P&SH and what portion to the residual NS. CP&L allocated revenues from cross-over traffic using a "Block Methodology," under which each carrier is assigned one "block" for every 100 miles or part thereof that it carries the traffic, plus an additional block for originating or terminating the traffic; the total revenues would then be allocated based on each carrier's share of the total number of blocks. As in *Duke/NS*, NS has argued that a different approach is required.

As discussed more fully in *Duke/NS*, 7 S.T.B. at 108-10, the Block Methodology has inherent shortcomings. Because that method allocates revenue in a "lumpy" manner (a carrier would not receive any incremental revenue for an additional mile that it would move the traffic unless that additional mile resulted in a new mileage block), it can artificially drive the selection of a SARR's configuration. A complainant may find itself in the enticing position in which, by extending the SARR only a few miles, the SARR may obtain another block of the revenues and disproportionately increase the SARR's portion of revenues relative to the additional investment costs and operating

[7] *See Duke Energy Corporation v. Norfolk Southern Railway Company*, STB Docket No. 42069 (STB served November 25, 2003) (*Duke/NS Stay*).

expenses associated with the added miles. Alternatively, a complainant may be reluctant to extend a SARR as far as it otherwise might if the extension resulted in no additional revenues from cross-over traffic.

As explained in *Duke/NS*, 7 S.T.B. at 104-06, NS's argument for allocating revenue based on market power must be rejected. That approach would subvert the SAC test by depriving the complaining shipper of the benefit of grouping traffic to realize the economies of density inherent in the rail industry. And it would not reflect the defendant carrier's relative costs of providing service over the two segments.

Moreover, as explained in *Duke/NS*, 7 S.T.B. at 106-08, NS's proposed formula for allocating revenues based on relative densities must also be rejected. NS has not shown how its proposed formula would account for any differences in fixed costs per mile, nor shown that its per-mile capital investments in the Central Appalachian region are the same as its per-mile capital investments along its lower-density delivery network.

In *Duke/NS* the Board determined that, in the absence of a better supported method, revenues should be allocated between the SARR and the residual railroad applying a "modified straight-mileage prorate" approach. *See Duke/NS*, 7 S.T.B. at 110-12. Under that approach, the revenue allocation is based on the actual mileage of each carrier's participation in the movement, but the 100-mile block for originating or terminating traffic is retained to reflect the additional costs associated with those functions. As the Board observed in *Duke/NS*, 7 S.T.B. at 112-13, this approach should better approximate the relative costs the defendant railroad incurs to haul this traffic over each of the segments, by applying the reasonable assumption that average total costs are a continuous function of distance. Furthermore, this approach avoids the "gaming" incentive created by the lumpy nature of the Block Methodology. In response to the Board's request that parties address at oral argument those issues decided in Duke/NS, neither party argued that the Board should not apply the modified straight- mileage prorate here. Accordingly, the modified straight-mileage prorate is used here.

3. Rerouted Traffic

In *Duke/NS*, 7 S.T.B. at 112-13, the Board refined and clarified SAC policy regarding rerouting of (non-issue) cross-over traffic in a manner that would change the routing of that traffic on the residual carrier. As explained there, rerouting can be an appropriate means of removing inefficiencies from a system. However, when a rerouting involves cross-over traffic and the SARR would not operate over all of the rerouted portion of the move, concerns can arise that the rerouting is designed not to remove inefficiencies but rather to inappropriately shift a greater share of the revenues from the movement onto the SARR and/or to shift costs of serving that traffic off of the SARR onto the residual railroad. Therefore, the Board must look at a proposed rerouting to ensure that it is consistent with SAC principles.

In *Duke/NS*, the Board explained that a rerouting that would shorten the distance traffic would move is presumptively permissible (unless the defendant railroad demonstrates otherwise). For a rerouting that would increase the length of haul the presumption changes, and the greater the disparity in distance the greater the presumption that such a rerouting is permissible.

In this case, CP&L originally proposed to reroute 13.2 million tons of cross-over traffic, or 18.2% of the P&SH traffic, in a manner that would have had the P&SH interchange the traffic with the residual NS at hypothetical interchanges not along the usual NS route for the traffic. NS routes this traffic south from Iaeger, but CP&L would have had the P&SH transport it further east from Iaeger, to either Bluefield (9.3 million tons) or Altavista (3.9 million tons), where it would be interchanged with the residual NS. In an order served October 14, 2003, the Board directed the parties to submit supplemental evidence quantifying the revenues and costs attributable to these reroutings so that, to the extent the reroutings were disallowed, the effects of those reroutings could be removed.

In its supplemental evidence, CP&L acknowledges that all but two of the reroutings of cross-over traffic would result in increasing the total length of movement. It argues, however, that the Board should nevertheless allow the rerouting for 16 movements through Altavista (representing 2.9 million tons, or 3.8% of the total P&SH traffic), because the length of haul for those shipments would be no more than 10 miles longer than the current route and the traffic would reach its destination in a shorter amount of time. NS has not responded to that argument, and (unlike the shipments rerouted through Bluefield) there is no indication that the rerouting of these movements through Altavista would shift costs associated with the rerouting onto the residual NS. Because the showing required to support a rerouting of such modest length is correspondingly modest, the rerouting of those 16 movements is allowed here. In addition, under the presumption established in *Duke/NS*, the two shorter rerouted movements are allowed.

The other reroutings are not permitted, however. As they would increase the length of haul more significantly, there is a stronger presumption that they are inappropriate. And the record shows those reroutings would have cost and operational implications for the residual NS. Thus, the presumption has not been overcome here as to the cross-over traffic that would result in movements more than 10 miles longer than the current routing.

C. Operating Plan

To limit operating expenses, CP&L selected an operating plan for the P&SH that is different from how NS conducts its coal-hauling operations in the Central Appalachian region. CP&L assumed that all trains originated by the P&SH would be trainload movements containing from 90 to 115 cars per train. There would be no less-than-trainload (LTL) movements; nor would any trains exceed

115 cars in length.[8] Moreover, CP&L assumed that the P&SH would not need any staging or gathering yard infrastructure; rather under CP&L's proposal, after loading, each P&SH train would operate as a single train from origin to destination.

NS has objected to CP&L's assumption that the mines, connecting carriers, and shippers would be willing to accept a different level of service than NS provides. Historical data for the traffic group that the P&SH would serve show that these customers are accustomed to a greater range of service, with some shipments exceeding 115 cars per train and many others consisting of fewer than 90 cars. Indeed, 18% of the selected coal traffic currently moves in LTL shipments.[9]

A core SAC principle is that the SARR must meet the transportation needs of the traffic it would serve. Thus, the proponent of a SARR may not assume a changed level of service to suit its proposed configuration and operating plan, unless it also presents evidence showing that the affected shippers, connecting carriers, and receivers would not object. *See West Texas*, 1 S.T.B. at 667 (rejecting an operating plan that would have increased average train length, because "train sizes must reflect the operational constraints and restrictions faced by connecting railroads, coal mines, and utilities"); *McCarty Farms, Inc. v. Burlington N., Inc.*, 2 S.T.B. 460, 476 (1997) (*McCarty Farms*) (explaining that car loading factors and train lengths cannot be set without regard to the practices and preferences of shippers and connecting railroads, because shippers control loading and connecting railroads determine train length for traffic received in interchange); *FMC Wyoming Corp. & FMC Corp. v. Union Pacific RR Co.*, 4 S.T.B. 699, 736 (2000) (*FMC*) (rejecting the contention that the SARR could dictate the type of service to be provided).

CP&L's assumptions here, like the assumptions made by the complainant in the *Duke/NS* case, violate that principle. CP&L's operating plan for the P&SH would require some shippers to accept trains much larger or smaller than they have been receiving. For example, CP&L estimated from the railroad's waybill information that a shipper in Yates, GA, would receive two large shipments of 149 and 135 carloads from the Delbarton and Timbar mines, respectively. Under CP&L's operating plan, however, these loadings would be split and combined into three unit trains to Yates: 2 trains (of 95 and 94 cars) from the Delbarton mine, and 1 train (of 95 cars) from the Timbar mine.[10] In other words, in its attempt to generate operational efficiencies, CP&L has postulated an operating plan that would deliver more Timbar coal, and less Delbarton coal, to Yates in more frequent, smaller trains than the destination shipper actually takes.[11]

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[8] *See* CP&L Open. Narr. at III-C-3.

[9] *See* NS Reply Narr. at III-C-9.

[10] This example, and the other examples discussed *infra*, are drawn from CP&L's electronic spreadsheets and workpapers. *See* CP&L Reb. e-WP. "Piedmont RR String Trains With Growth Factors v2."

[11] *See also* NS Reply, Exh III-C-1 (comparing P&SH train sizes with actual NS train sizes).

Moreover, as NS points out and CP&L's electronic spreadsheets and workpapers illustrate, the operations proposed by CP&L for the P&SH would be unworkable. CP&L's operating plan would combine cars from different mines to create unit trains. For example, it would combine coal from five mines (78 cars of coal from the High Power Mountain mine, 18 cars from the Kopperston mine, 2 cars from the Marrowbone mine, 10 cars from the Pevler mine, and 3 cars from the Sidney mine) into a single 111-car train traveling from the High Power Mountain mine to its destination at Hyco. However, because CP&L did not provide for staging or gathering yards where the cars from the various mines could be assembled into a single train, the P&SH could not realistically gather cars from the other four mines into a single train at the High Power Mountain mine and then haul that unit train to Hyco. Nor has CP&L indicated that its cycle-time figure accounts for the time that would be required to move a single train between several mines to add cars. This example is not an isolated instance; combining traffic from different mine origins without taking into account the logistics of such an operation is the defining characteristic of CP&L's operating plan.

CP&L may have assumed that the source of coal for shippers would be shifted. For example, its operating plan combines multiple loadings from four mines (Kopperston, WV, Clinchfield, VA, Stric, VA, and Lavoy, WV) into a single, 82-car shipment from the Kopperston mine to Bluefield, for interchange with the residual NS for delivery to customers at Skyland, NC, Celriver, SC, Danville, VA, and Kannapolis, NC. The unstated assumption may have been that, rather than receiving coal from the Clinchfield, Stric, and Lavoy mines, those customers would receive their coal requirements from the Kopperston mine.

CP&L has not shown, however, that the PS&H customers would be satisfied with such a change in their coal supply sources. When a utility purchases coal from a particular mine, it generally does so for a specific reason, such as a favorable coal supply contract or a requirements contract. Moreover, coal is neither perfectly fungible nor perfectly homogeneous; there can be important differences that affect how the coal burns. Shippers pay a premium for coal with higher BTU content or for other specific characteristics. For example, coal with a low sulfur content is at times used as a "sweetener," blended together with other, higher sulfur coal so the power plant's emissions will comply with Clean Air Act requirements. A shipper seeking 20 carloads of low-sulfur coal would not want to receive lower quality coal from another mine. Similarly, a utility that burns 100 carloads of comparatively inexpensive, high-sulfur coal would not want to receive an unexpected and undesired shipment of more expensive, low-sulfur coal. Thus, it is not reasonable to assume that the P&SH customer would accept the change in service reflected in CP&L's operating plan.

Table 1 below illustrates how CP&L's operating plan would change the historical traffic flows, resulting in many mines loading either more or less coal. The columns under "Forecast from Waybill" show the traffic that CP&L forecasts NS will actually load in the "peak week." (CP&L calculates these peak demands by finding the peak week from NS's waybill for the year 2001 and then inflating those coal volumes by CP&L's volume forecast for the P&SH's peak

year.) The columns under "P&SH Operating Plan" then show how much coal it is assumed those same mines would load in the peak week under CP&L's operating plan for the P&SH, reflecting a relocation of this coal traffic to different mine origins.

Table 1
Peak Week Traffic

Mine Origin	Forecast from Waybill		P&SH Operating Plan					
	Peak Cars	Peak Tons	Peak Cars	Change	% Change	Peak Tons	Change	% Change
Biggs	580	64,552	670	90	16%	74,368	9,816	15%
Bluefield	956	99,665	936	(20)	-2%	97,995	(1,670)	-2%
Colmont	746	77,086	713	(33)	-4%	74,000	(3,086)	-4%
Corneliu	36	3,680	0	(36)	-100%	0	(3,680)	-100%
Delbarton	247	28,249	287	40	16%	33,090	4,841	17%
Fola Mine	407	42,232	431	24	6%	44,813	2,581	6%
Gund	688	68,664	643	(45)	-7%	64,148	(4,516)	-7%
Hatcher	25	2,746	87	62	248%	9,182	6,436	234%
Hatfield	42	4,518	87	45	107%	9,521	5,003	111%
High Pow. Mt.	1,638	179,465	1,254	(384)	-23%	137,189	(42,276)	-24%
Hull	170	16,760	86	(84)	-49%	8,696	(8,064)	-48%
Jamboree	238	23,992	186	(52)	-22%	19,547	(4,445)	-19%
Kenova	154	16,163	154	0	0%	16,163	0	0%
Koenig	108	11,823	111	3	3%	11,973	150	1%
Kopper-ston	326	37,158	337	11	3%	37,612	454	1%
Lavoy	413	45,226	407	(6)	-1%	44,400	(826)	-2%
Luke	13	1,518	0	(13)	-100%	0	(1,518)	-100%
Mabley	201	20,341	284	83	41%	29,631	9,290	46%
Marrow-bone	283	30,596	283	0	0%	30,622	26	0%
Martiki	327	34,768	327	0	0%	34,768	0	0%
Page	139	15,102	114	(25)	-18%	12,338	(2,764)	-18%
Pevler	165	19,096	300	135	82%	32,633	13,537	71%
Pinnacle Creek	731	74,079	774	43	6%	79,375	5,296	7%
Scaggs	160	17,563	212	52	33%	23,071	5,508	31%
Scarlet Glen	313	34,170	402	89	28%	43,061	8,891	26%
Sidney	416	47,897	491	75	18%	55,616	7,719	16%
Stric	71	7,759	0	(71)	-100%	0	(7,759)	-100%
Thomas	624	69,495	689	65	10%	76,991	7,496	11%
Timbar	1,299	140,845	1,265	(34)	-3%	135,535	(5,310)	-4%

Source: CP&L Reb. e-WP. "Piedmont RR String Trains With Growth Factors v2."

As the table shows, CP&L's operating plan would alter shipping patterns, at the expense of some mines and to the benefit of others. Under CP&L's operating plan, the Hatcher and Hatfield mines would double the amount of coal they would load in the peak week. The High Power Mountain and Hull mines would lose 25% or more of their business to other mines. And the Corneliu, Luke, and Stric mines, which are collectively forecast to ship 120 cars in the peak week of mostly export coal to Lambert's Point, would ship no coal; all of those shipments would be shifted and consolidated with coal shipments from other mines.

In addition to denying some shippers their selection of the coal to be shipped, the P&SH would not even ship the amount of coal demanded by some of its shippers. For example, CP&L forecasts that in the peak week the P&SH would need to haul 9 cars from the Gund mine and 35 cars from the Hull mine to a barge-loading facility at Ceredo (located on the P&SH). The P&SH would also need to haul 53 cars from the Steer Branch mine to a utility at Glen Lyn (also located on the P&SH, but hundreds of miles from Ceredo in a different direction). To generate operational efficiencies, CP&L's operating plan would combine these shipments into a 97-car train. The P&SH would load this train at the Steer Branch mine and haul it to Glen Lyn. However, all of Ceredo's coal would also travel to Glen Lyn. Ceredo would be short 44 cars of coal, representing 4,264 tons, or 45% of the total coal that shippers using the Ceredo barge-transloading facility would demand in the peak week.

As in *West Texas*, *McCarty Farms*, and *FMC*, the complainant's operating plan is fatally flawed. *See also Duke/NS* (rejecting an analogous operating plan to that proposed by CP&L in this proceeding). CP&L carries the burden of demonstrating that its operating plan would meet the needs of the traffic group it selected. *See Guidelines*, 1 I.C.C.2d at 543 ("The proponent of the SAC model must show that the alternative is feasible and could satisfy the shipper's needs."). Here, CP&L has failed to demonstrate that the service the P&SH would provide would be acceptable to all of the affected shippers and mines involved.

NS has proffered an alternative operating plan for the P&SH that would provide the same service to all of the shippers and mines as they currently receive from NS. Because CP&L's operating plan is not feasible, NS's operating plan is used here.

D. Operating Expenses

Having accepted NS's operating plan, the SAC analysis here necessarily uses NS's operating assumptions for the P&SH to determine such matters as the number of locomotives, freight cars, and train crew personnel that would be needed. But the costs of those resources are determined based on the quality of the record presented in this case, as discussed in Appendix C. For some costs, the shipper's evidence is used here, while for other costs the railroad's evidence is used. The total operating expenses used here for the P&SH are approximately $205 million in the base year (2002).

E. Road Property Investment

Despite the small difference between CP&L's and NS's estimate of total track miles, there is a substantial difference between the parties' estimates of the level of investment that would be required to construct the P&SH. CP&L claims that the P&SH could be built for $1.8 billion, while NS claims that it would cost $3.7 billion. Table D-1 in Appendix D provides a summary of the parties' investment figures by category, and the Board's restatement. As shown there, the SAC analysis assumes that it would cost approximately $2.4 billion to construct the P&SH.

F. DCF Analysis

A discounted cash flow analysis is used to distribute the total capital costs of the P&SH over the 20-year SAC analysis period and determine the total revenues that would be needed by the P&SH to cover its operating expenses, meet its tax obligations, recover its investment, and obtain an adequate return on that investment. The stream of revenues that would be generated by the P&SH is compared to the stream of costs that the P&SH would incur, discounted to the starting year (2002). In this case, the most significant disagreements between the parties regarding the DCF model relate to the indices used to adjust the P&SH's operating expenses and road property assets (to account for projected changes in costs over the 20-year analysis period) and the cost of raising the capital to finance the P&SH.

1. Indexing

a. Operating Expenses

The parties based their estimates of inflation in operating expenses on the rail cost adjustment factor (RCAF), which is an index of railroad costs developed on a quarterly basis. The Board publishes two versions of the RCAF: one that does not take into account changes in the rail industry's productivity (referred to as the unadjusted RCAF, or the RCAF-U) and one that incorporates the average change in productivity over the most recent 5-year period (referred to as the adjusted RCAF or RCAF-A). *See* 49 U.S.C. 10708 (requiring quarterly publication by the Board of both the RCAF-U and RCAF-A).

CP&L argues that the RCAF-A is the more appropriate index to use here, because the P&SH would benefit from practices and productivity enhancements occurring in the railroad industry and reflected in the RCAF-A. NS argues that the P&SH would not achieve the same productivity improvements anticipated for the nation's railroad industry as a whole, and that applying the RCAF-A would therefore be inappropriate. NS reasons that, because the P&SH would be a new railroad, it would incorporate the latest technology and the efficiencies associated with those technologies, thereby lessening the impact of technology on productivity. NS further argues that the P&SH would not realize productivity

gains from increasing traffic volume, as the P&SH's tonnage is not projected to increase appreciably over the 20-year analysis period.

While it is difficult to imagine that there would not be some areas in which the P&SH might realize productivity improvements over the course of the SAC analysis period, the potential impact of such improvements is far less than it would be for existing railroads, which make changes incrementally as older technology assets wear out or become obsolete. Thus, it would not be appropriate to use the RCAF-A here. While the use of RCAF-U may somewhat overstate the P&SH's costs over the 20-year period, such overstatement would appear to be far less than the understatement that would result from using the RCAF-A. Because the record here does not provide an alternative approach that would better reflect the likely expected experience of the P&SH, the RCAF-U is used here.

b. Road Property Assets

CP&L assumed that land value would increase by 4.4% annually, based on a weighted combination of indices reflecting rural and urban land prices. NS used a composite 3% inflation factor, which it states was developed by applying separate inflation indices for rural and urban land values. While CP&L documented the composite inflation factor for land, NS has not shown how its composite figure was computed. Therefore, the Board uses CP&L's inflation factor for land.

To inflate the remaining (non-land) road property assets over the 20-year SAC analysis period, CP&L relied on forecasts for rail labor, materials, and supplies. NS would use historical rates of inflation. CP&L notes that a forecast was used by the Board in the *FMC* case, while NS points out that the Board used historical inflation rates in the *WPL*[12] and *PPL*[13] cases.

The inflation rates that were used in those three cases reflect the agreement of the parties. *See FMC*, 4 S.T.B. at 847, *WPL*, 5 S.T.B. at 1039-40. Generally, however, forecasts of future inflation, when available, are preferable to historical inflation rates. Forecasts take into account the outlook for the future, using available data and observations to predict the most likely future outcome. In contrast, historical indices, which are simply a compilation of data from the recent past, are not forward-looking. Accordingly, because CP&L's evidence is based on forecasts of future inflation, that evidence is used here.

2. Cost of Capital

Both parties relied on a composite of the Board's annual determinations of the rail industry's cost of capital for the years 1999 through 2001 to develop the P&SH's cost-of-capital rate. However, the parties' composite figures differ

[12] *Wisconsin Power & Light v. Union Pacific Railroad Company*, 5 S.T.B. 955 (2001).
[13] *PPL Montana, LLC v. Burlington Northern &Santa Fe Railway Co.*, 6 S.T.B. 286 (2002).

slightly (10.50% used by CP&L vs. 10.54% used by NS) as a result of how the debt and equity components were weighted. The weighting is determined by when funds would be needed to procure materials and hire labor for construction of the P&SH. The construction schedule assumed by the Board results in a weighting that produces a 10.5% composite cost of capital. That figure is used here.

Finally, CP&L objects to NS's proposed additive of financing costs (3% placement costs plus fees) to cover the cost of raising new equity capital. CP&L argues that the annual cost-of-capital computation already includes flotation fees. CP&L further asserts that NS did not incur these fees, and thus the fees should not be included here. CP&L's points are well taken, and, as in prior SAC cases,[14] the Board rejects the railroad's argument here.

3. Results

The results of the Board's DCF calculations are shown in Table 2, below. As that table shows, based on the record presented here, over the 20-year SAC analysis period the revenues that the P&SH could expect to receive from the traffic in the stand-alone group would exceed the P&SH's revenue requirements by approximately $680 million. Accordingly, the Board concludes that the challenged rates are higher than justified under the SAC test and thus unreasonable.

[14] *See WPL*, 5 S.T.B. at 1040; *TMPA* 6 S.T.B. at 751.

Table 2
Cash Flow
($ millions)

Year	Capital Costs & Taxes	Annual Operating Costs	Total Annual Costs	Annual Revenues	Annual Over/ Under Recovery (Current)	Annual Over/ Under Recovery (Present Value)	Cumulative Over/ Under Recovery (Present Value)
2002	172.7	147.2	319.9	340.3	20.4	19.9	19.9
2003	236.4	203.6	440.0	512.6	72.5	64.0	70.8
2004	243.7	206.9	450.6	526.0	75.4	60.2	131.0
2005	251.3	212.4	463.7	551.4	87.7	63.4	194.4
2006	259.3	221.0	480.3	571.5	91.2	59.6	254.0
2007	267.3	230.5	497.7	596.3	98.6	58.3	312.4
2008	275.2	237.5	512.7	613.6	100.9	54.0	366.4
2009	283.4	241.7	525.1	618.9	93.8	45.5	411.9
2010	292.1	246.3	538.4	621.6	83.2	36.5	448.4
2011	301.4	251.2	552.6	627.6	75.0	29.8	478.2
2012	234.1	191.8	426.0	472.1	46.1	22.8	501.0
2013	320.8	263.8	584.6	647.0	62.3	20.3	521.2
2014	331.1	271.9	603.0	661.0	58.0	17.1	538.3
2015	341.6	282.0	623.6	681.5	57.8	15.4	553.7
2016	352.5	287.9	640.5	688.5	48.0	11.6	565.2
2017	363.8	296.5	660.3	704.0	43.6	9.5	574.7
2018	375.5	304.4	679.9	714.7	34.8	6.9	581.6
2019	387.6	314.4	702.0	733.3	31.3	5.6	587.2
2020	400.0	324.1	724.1	746.2	22.1	3.6	590.7
2021	412.9	332.6	745.6	757.0	11.5	1.7	592.4
2022	105.3	84.3	189.6	192.6	3.0	0.4	592.8

G. Maximum Rate Determination

1. Criticisms of the Percent Rate Reduction Approach

Having determined that the challenged rates are unreasonable, the final issue is how to determine the maximum reasonable rate for the CP&L traffic at issue here. The *Guidelines* do not set forth a prescribed method, leaving the inquiry to a case-by-case analysis. 1 I.C.C.2d at 546. In prior SAC cases, however, the Board has required the challenged rates to be reduced by the percentage by which the SARR's overall revenues would need to be reduced to avoid an over-recovery. The rationale for applying this percent reduction method was to preserve the rate structure for the traffic group by maintaining existing rate relationships, albeit at reduced levels, and thereby implicitly recognizing varying demand elasticities. *See Coal Trading Corp. v. The Baltimore & O.R.R.*,

6 I.C.C.2d 361, 380 (1990) (*Coal Trading*); *Arizona Pub. Serv. Co. v. The Atchison, T.&S.F. Ry.*, 2 S.T.B. 367, 392 (1997) (*Arizona*).

CP&L argues that the Board should not continue to use this approach because it permits a railroad to manipulate the outcome of the regulatory process. CP&L argues that a railroad can pre-ordain an outcome to its liking by setting the challenged rate at a higher level than it otherwise would, so that when the percent reduction is applied the challenged rate will be reduced to the desired level. In other words, when a railroad expects a rate to be challenged, it can set the rate at a higher level than it expects to sustain, so that the resulting reduced rate is to its liking. As CP&L has put it, the railroad could "lose the battle" over the reasonableness of the challenged rate, but "win the war" with respect to the rate level that is prescribed.

NS concedes that the regulatory process could be manipulated in this manner.[15] But it points out that the percent reduction approach is also subject to manipulation by a shipper. Given a traffic group with sufficiently highly rated non-issue traffic, the percent reduction approach could brand any rate level established by a defendant railroad as unreasonable (assuming that the R/VC percentage exceeds the jurisdictional threshold). This potential could encourage a shipper to challenge an otherwise reasonable rate, or enable a shipper to obtain an inordinate rate reduction, simply by selecting a traffic group with much higher-rated traffic.

To demonstrate that NS sought to manipulate the outcome of this case by setting the rates at an inordinately high level, CP&L has submitted an internal CP&L file memorandum summarizing a telephone conversation in which an NS official allegedly disclosed such a strategy. In that memorandum to the file a CP&L employee asserts that an NS senior vice president stated that NS would go the regulatory route before agreeing to a decrease in these rates and "that the NS strategy would be to go real high on the common carrier rates and let the STB reduce them."[16]

CP&L has offered testimony by two CP&L employees that the author of the memo discussed the phone call with them after it occurred and that his account to them was consistent with the account contained in the file memo. CP&L also points to the steep increase in the challenged rates (over 50%) and the fact that NS applied a flat across-the-board rate increase to all of the movements involved, without regard to differing mileages or other factors that might be expected to affect the level of a rate, as evidence that the rate levels here were set for litigation purposes.

The NS executive involved denies having made the statement.[17] NS also denies that the challenged rate levels here were set for litigation purposes, and it offers various non-SAC arguments for setting the challenged rates at their current levels.

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[15] *See*, *e.g.*, NS Reply, I-53.
[16] CP&L Open. Exh. III-G-2.
[17] NS Reply Appendix B-1 (affidavit).

The Board cannot readily assess the credibility of the two competing versions of what transpired or divine NS's motives in setting the challenged rates. Nor is it necessary to do so. The parties have shown that the percent reduction method is susceptible to manipulation by parties: by a defendant railroad in setting a challenged rate at an artificially high level to limit the impact of a SARR over-recovery, and by a complaining shipper in grouping a challenged rate with non-issue traffic that is much higher rated to generate a larger rate reduction. That is sufficient to warrant a change; the maximum reasonable rate that can be charged to a complaining captive shipper should be determined by the Board, not by parties' litigation tactics.

Accordingly, the Board is receptive to another approach for determining the appropriate extent of rate relief in SAC cases. Unfortunately, the Board has not been presented here with an alternative to the percent reduction approach that would remove the flaws while still conforming with the statute and *Guidelines*. The alternatives proposed by CP&L and why they are unacceptable are discussed below. (NS has not suggested an alternative.)

2. CP&L's Suggestions

To prevent a railroad from successfully "gaming" the regulatory process, CP&L suggests that, rather than apply the percent reduction to the challenged rate, the Board apply the percent reduction to either the prior (contract) rate or the last good-faith offer made by the railroad in the parties' rate negotiations. Neither of these alternatives is appropriate. The expired contract rate was a "bundled" rate that applied not only to the traffic at issue here but also to traffic moving to CP&L's competitively served Lee and Cape Fear plants (served by both NS and CSXT).[18] It was presumably lower than a rate would have been for the solely served plants alone. Nor would it be sound public policy to base a rate prescription on the last contract offer, as such a policy would chill good-faith rate negotiations.

Another alternative suggested by CP&L here would be to apply the percent reduction approach to constructive rate levels set 10% higher than the expired contract rates. There is, however, no sound basis for selecting that particular level. Nor would any of these variants of the percent reduction approach address the concern that the approach is subject to manipulation by a shipper. Indeed, all of the suggestions outlined above would do just what CP&L argues that the railroad should not be allowed to do: pre-ordain the outcome of the case through the selection of the rate level to which the percent reduction approach would be applied.

CP&L's final suggestion is to use a "ton-mile approach," under which the total revenue requirements of the SARR would be distributed among the traffic in the stand-alone group on a ton-mile basis so that all traffic in the group would contribute the same per-ton-mile amount. (A ton-mile represents the movement

[18] *See* NS Reply, III-G-10.

of 1 ton of traffic for a distance of 1 mile.) The ton-mile approach would address the problem CP&L identified with the percent reduction approach; a railroad could not manipulate the outcome of the regulatory process simply by increasing the level of the challenged rate. But CP&L's ton-mile approach would not allow for demand-based differential pricing. Demand-based differential pricing is essential in the railroad industry because railroads serve a mix of captive and competitive traffic, and "non-demand-based cost apportionment methods do not necessarily reflect the carrier's ability (or inability) to impose the assigned allocations and cover its costs." *See Guidelines*, 1 I.C.C.2d at 526. If a railroad attempted to collect the average per-ton-mile amount from all of its traffic, competitive traffic that is lower-priced would shift to other transportation options, depriving the railroad of the revenues assigned to that traffic.

At oral argument the Board pressed counsel for CP&L for any feasible alternative to using the percent reduction approach, but received no additional suggestions. The Board is left with a situation in which, although both parties deny having sought to exploit the method in this proceeding, each agrees that the method is subject to manipulation by the other party, yet no acceptable alternative has been suggested.

The Board welcomes proposals for appropriate alternatives to the percent reduction approach in future cases. But in the absence of a feasible alternative that satisfactorily addresses the concerns articulated here and conforms with the statute, the Board will not depart from its precedent. *See Atchison, T.&S.F. Ry. v. Wichita Board of Trade*, 412 U.S. 800, 808 (1973) ("There is, then, at least a presumption that [the policies committed to the Board's predecessor agency by Congress] will be carried out best if the settled rule is adhered to.").

3. Rate Relief

Based on the SAC analysis described in this decision and more fully in Appendices A through D, the Board has calculated the SAC rate that the P&SH would need to charge for the CP&L traffic at issue here from the coal origin districts for which evidence has been presented in its SAC analysis. However, the Board may not set a maximum reasonable rate that is below the 180% revenue-to-variable cost (R/VC) regulatory floor. Therefore, the Board has determined the rate level that would produce 180% R/VC for the time periods and movements for which variable cost data have been supplied by the parties. Those findings are set forth and explained in Appendix E. For later periods and other movements, the parties should calculate this rate floor, as the necessary information becomes available, in a manner consistent with the procedures and findings set forth in Appendix E.

As shown in the following tables, the maximum reasonable rate for the traffic at issue is the higher of the SAC rate or the regulatory floor (the 180% R/VC rate). That rate—to be determined by the parties in accordance with this decision—is prescribed here for future shipments moving from the mines included in CP&L's SAC analysis. Moreover, reparations are awarded for the unreasonable portion of the rate that CP&L has paid for movements from those mines occurring prior to the rate prescription taking effect, together with interest

to be calculated in accordance with 49 CFR 1141. The total amount of reparations and interest are to be calculated by the parties in accordance with this decision.

Table 3
Maximum Reasonable Rate
Virginia/Thacker I/Thacker II Coal Origin Districts

Year	Tariff Rate	SAC Rate Reduction	SAC Rate	180% R/VC Rate	Maximum Reasonable Rate
2Q 2002	$16.56	6.34%	$15.51		
3Q 2002	16.61	6.00%	15.61	To be determined	Higher of
4Q 2002	16.66	6.00%	15.66	by the parties	SAC rate
2003	16.97	14.15%	14.57	based on the	or
2004	17.38	14.33%	14.89	procedures	180% R/VC rate
2005	17.78	15.90%	14.95	set forth in	
2006	18.19	15.96%	15.29	Appendix E	
2007	18.59	16.53%	15.52		
2008	19.01	16.44%	15.88		
2009	19.45	15.16%	16.50		
2010	19.90	13.38%	17.24		
2011	20.40	11.95%	17.96		
2012	20.96	10.09%	18.85		
2013	21.54	9.64%	19.46		
2014	22.17	8.78%	20.22		
2015	22.83	8.49%	20.89		
2016	23.52	6.97%	21.88		
2017	24.27	6.20%	22.77		
2018	25.06	4.86%	23.84		
2019	25.89	4.26%	24.79		
2020	26.73	2.96%	25.94		
2021	27.59	1.51%	27.17		
1Q 2022	28.49	1.54%	28.05		

Table 4
Maximum Reasonable Rate
Kanawha/Kenova Origin Coal District

Year	Tariff Rate	SAC Rate Reduction	SAC Rate	180% R/VC Rate	Maximum Reasonable Rate
2Q 2002	$16.74	6.34%	$15.68		
3Q 2002	16.79	6.00%	15.78	To be determined	Higher of
4Q 2002	16.84	6.00%	15.83	by the parties	SAC rate
2003	17.16	14.15%	14.73	based on the	or
2004	17.57	14.33%	15.05	procedures	180% R/VC rate
2005	17.98	15.90%	15.12	set forth in	
2006	18.39	15.96%	15.46	Appendix E	
2007	18.79	16.53%	15.68		
2008	19.22	16.44%	16.06		
2009	19.66	15.16%	16.68		
2010	20.11	13.38%	17.42		
2011	20.63	11.95%	18.16		
2012	21.19	10.09%	19.05		
2013	21.78	9.64%	19.68		
2014	22.41	8.78%	20.44		
2015	23.08	8.49%	21.12		
2016	23.78	6.97%	22.12		
2017	24.53	6.20%	23.01		
2018	25.34	4.86%	24.11		
2019	26.17	4.26%	25.06		
2020	27.02	2.96%	26.22		
2021	27.89	1.51%	27.47		
1Q2022	28.8	1.54%	28.36		

Finally, CP&L's request that the Board order NS to reimburse CP&L for the filing fee is denied. The Board is not persuaded that it has the authority to direct such action.

This decision will not significantly affect either the quality of the human environment or the conservation of energy resources.

It is ordered:

1. Defendant shall, within 60 days, establish and maintain rates for movements of the issue traffic that do not exceed the maximum reasonable rates prescribed by this decision.

2. Defendant shall pay reparations and interest, in accordance with this decision and Board regulations, for all CP&L shipments covered by this complaint that moved prior to the establishment of the maximum reasonable rate pursuant to ordering paragraph 1.

3. This decision is effective January 22, 2004.

By the Board, Chairman Nober.

APPENDIX A – P&SH CONFIGURATION

As shown in the following map, the P&SH would replicate approximately 818 miles of existing NS lines extending south from Kenova, WV, through portions of the states of Kentucky and Virginia, to Hyco, NC. The P&SH would be primarily a single-track system, with passing sidings, yards, and set-out tracks located at strategic points along the route. It would interchange traffic with NS at seven locations.


Kenova
Ceredo
Colmont
High Power Mountain
Fola
Vaughan Conn. Track
Alloy
Deepwater Bridge
Marrowbone
Wolf Creek Branch Jct.
Marrowbone Jct.
Martiki
Naugatuck
Pontiki
Kingfork Jct.
Nolan
Delbarton
Hatfield
Fevler
Bradbury
Sidney Gund Jct.
Sand Lick
Scarlet Glen
Lavoy
Gund
Mabley
Scaggs
Timbar
Sprigg
Sidney
Glen Alum
Mate Creek Jct.
Arrow
Ben Creek
Wharncliffe
Devon
Hull
Phelps
Thomas
Jamboree
Beeger
Glen Alum Jct.
Biggs
Stric
Luke
Thomas Wye
Dismal Creek Branch Jct.
Vansant
Koenig
Page Jct.
Cornelia
Page
Richlands
Cedar Bluff
Kopperston
Hatcher
Morri Branch Jct.
Pinnacle Creek Jct.
Pineville
Elmore
Pinnacle Creek
Glen Lyn
Kellysville
Caico
Matoaka
Bluestone
Bluefield
W. Roanoke
Altavista
Vabrook
Clover
South Boston
Hyco Jct.
Mayo Cr. Jct.
Mayo Cr.
Hyco
P&SH Origins
P&SH/NS Interchange
P&SH Local Destination
P&SH Yard and/or Crew Terminal
Junctions and Way Points
P&SH Rail Network
Existing NS Coal Routes
Not Constructed by P&SH

A. P&SH Route

Beginning at Kenova, WV, the P&SH would interchange northbound coal traffic from its main line to the residual NS for movement to utilities and other points north of the Ohio River, and receive southbound grain traffic from the residual NS. Proceeding in a southeasterly direction, the P&SH would replicate the existing NS main line to Bluefield, WV, via Naugatuck, Devon, and Iaeger, WV.

A secondary line would extend north of Bluefield from a connection at Bluestone, WV, to Elmore, WV, where there would be two connecting branch lines. One branch line would serve the Pinnacle Creek, Pineville, Hatcher and Kopperston mines. The other branch line—which would connect with the residual NS at Alloy, WV—would serve the Fola and High Power Mountain mines. (The Fola mine is located on the tracks of the Vaughan Railroad; the P&SH would operate over those tracks under the same terms as NS currently does.)

South and east of Bluefield, the P&SH main line would replicate the NS line from Bluefield to Narrows, Salem, and West Roanoke, VA. (NS presently uses the route between Narrows and West Roanoke for east/southbound loaded coal trains, and uses a parallel line for west/northbound empty trains. The P&SH would replicate only one of those lines (the line with the gentler eastbound grade).

From West Roanoke, the P&SH main line would proceed eastward to Vabrook, VA, replicating the NS main line via Altavista, VA. The main line would turn southward from Vabrook, replicating the NS line to Mayo Junction and Hyco, NC, where it would end at CP&L's Roxboro plant.

The P&SH would have the following branch lines: (1) the Ceredo branch, extending from Kenova to the Colmont mine via Ceredo, where the P&SH would also serve a rail/barge transfer terminal on the Ohio River; (2) the Wolf Creek branch, extending from Wolf Creek Junction, WV, to the Martiki, Pontiki, Bradbury and Pevler mines; (3) the Naugatuck branch, extending from Naugatuck, WV, to the Marrowbone, Delbarton and Scarlet Glen mines; (4) the Nolan branch, extending from Nolan, WV, to the Hatfield, Sand Lick, Sidney and Gund mines; (5) the Mate Creek branch, extending from Mate Creek Junction, WV, to the Mabley mine; (6) the Arrow branch, extending from Arrow, WV, to the Thomas and Jamboree mines; (7) the Devon branch, extending from Devon, WV, to the Luke, Stric, Biggs, Koenig, Corneliu and Page mines; (8) the Wharncliffe branch, extending from Wharncliffe, WV, to the Timbar and Scaggs mines; (9) the Elmore West branch, extending from Elmore, WV, to the Pinnacle Creek, Pineville, Hatcher and Kopperston mines; (10) the Elmore North branch, extending from Elmore to the Fola and High Power Mountain mines; (11) the Clover branch, extending from South Boston, VA, to Dominion Virginia Power's Clover power plant; and (12) the Mayo Creek branch, extending from Mayo Junction, NC, to CP&L's Mayo power plant.

Table A-1 shows the P&SH's line segments and route miles, which are not in dispute.[19]

Table A-1
P&SH Route Mileage

Main Line and Secondary Line Route Miles	
Kenova to Devon	97.34
Devon to Bluefield	71.99
Bluestone to Elmore Branch	33.64
Bluefield to West Roanoke	103.74
West Roanoke to Vabrook	77.38
Vabrook to Hyco	47.24
Total	431.33
Branch Line Route Miles	
Ceredo Branch	40.03
Wolf Creek Branch	23.17
Naugatuck Branch	24.74
Nolan Branch	19.2
Mate Creek Branch	6.37
Arrow Branch	13.44
Devon Branch	71.08
Wharncliffe Branch	11.4
Elmore West Branch	55.71
Elmore North Branch	94.64
Clover Branch	16.4
Mayo Creek Branch	4.01
Misc. mine spurs	6.9
Total	387.09
Total Route Miles	818.42

B. Track Miles

The parties disagree on the total track miles that the P&SH would need. The parties' track-mile estimates are summarized in Table A-2, and the differences in their estimates are discussed below.

[19] NS Reply Narr. at III-B-6-7; CP&L Reb. Narr. at III-B-5 (adopting NS's route mileages).

Table A-2
P&SH Track Miles

Category	CP&L	NS	STB
Single track	818.42	818.42	818.42
Passing track	114.15	146.05	137.95
Yard track	59.66	111.02	105.7
Set-out track	6.12	10.49	10.49
Total Track Miles	998.35	1085.98	1072.56

1. Main Line and Secondary Line Track Miles

CP&L's proposed configuration for the P&SH is based upon CP&L's operating plan for the P&SH. NS argues that the configuration designed by CP&L would be inadequate to move the peak-period traffic, that it would not account for many required rail activities, and that it fails to account for the physical limitations of many of the P&SH's proposed facilities. NS would add additional capacity to the P&SH system, based on the operating plan that NS claims the P&SH would need. Because CP&L's operating plan is rejected (for the reasons discussed in the body of this decision) and NS's proposed operating plan is used here, NS's main line and secondary line track mile estimates are used here.

2. Branch Line Track Miles

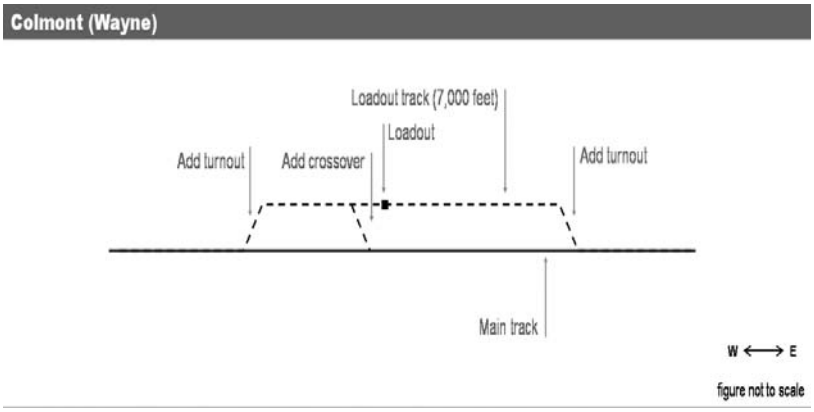
CP&L and NS agree on the branch line route mileages for the P&SH, but not on the track configurations that would be needed. CP&L initially assumed that all of the branch lines would consist of single track with passing sidings. NS argues that changes to the proposed track facilities at various mine sites would be needed for the P&SH to access loading points or provide sufficient space for efficient train operations. CP&L has agreed to NS's suggested changes at the Pontiki, Marrowbone, Scaggs, Hull, and Hatcher mines. But as to the other mines CP&L maintains that its proposed configuration is adequate because, unlike NS, the P&SH would use locomotives at both ends of the trains that would be connected electronically. CP&L claims that this distributed power (DP) service would negate the need for "run-around" tracks (tracks used by railroads to reposition locomotives from one end of the train to the other), as it would permit the P&SH, upon arrival at a mine, to move the crew to the other end, switching command to the new head (former tail) locomotive. While this technology is not new in the industry, NS has very few DP units. Use of a different technology, however, is permissible under the SAC test. *See*

Guidelines, 1 I.C.C.2d at 542-44. CP&L's approach is reasonable, and the Board's analysis here is based upon use of DP service.

The track facilities at each mine where the parties do not agree are discussed below. For many of the locations, a diagram showing the configuration initially proposed by CP&L, as well as NS's proposed modifications, is included.

a. Ceredo Branch

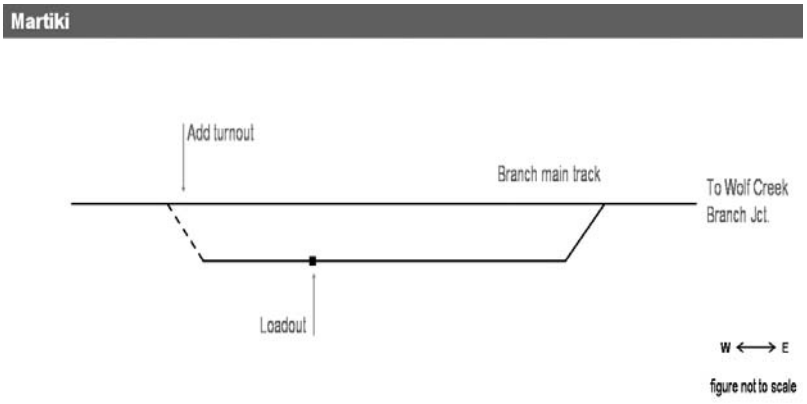
- Colmont Mine



NS asserts that, while CP&L included track running past this mine, facilities would need to be added to serve the coal tipple. NS would add a 7,000-foot loadout track, attached to the line by two turnouts and a crossover. CP&L argues that no such addition would be necessary, as the P&SH would locate the main track directly under the mine loadout. Because the mine is at the end of the track on this branch, and the Colmont spur would be dedicated solely to this mine, the use of DP would negate the need for P&SH's locomotives to be able to run around the coal cars. Therefore, CP&L's routing of the track under the loadout would be feasible, and CP&L's configuration is accepted.

b. Wolf Creek Branch

- Martiki Mine

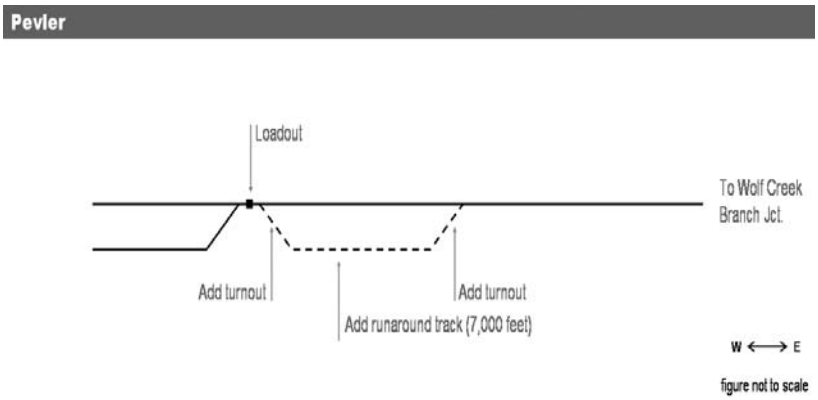


NS would add a turnout to CP&L's single track, claiming that without it the P&SH would have to split the train and take it through a long backup move. CP&L notes that the loadout track would be 1.1 miles long, which would be sufficient to handle a 105-car DP train. With the use of DP locomotives, so that locomotives would not need to run around the train, a turnout would not be needed and CP&L's configuration is used.

- Bradbury Mine

CP&L initially included a turnout on the single-track branch line, but on rebuttal would remove it, claiming that the loadout facility was sited over a siding off the branch line and that DP units could handle the operation without a turnout. However, NS did not contest the proposed turnout, and CP&L cannot change its network configuration on a matter that has not been challenged by NS. Therefore, CP&L's opening configuration is used.

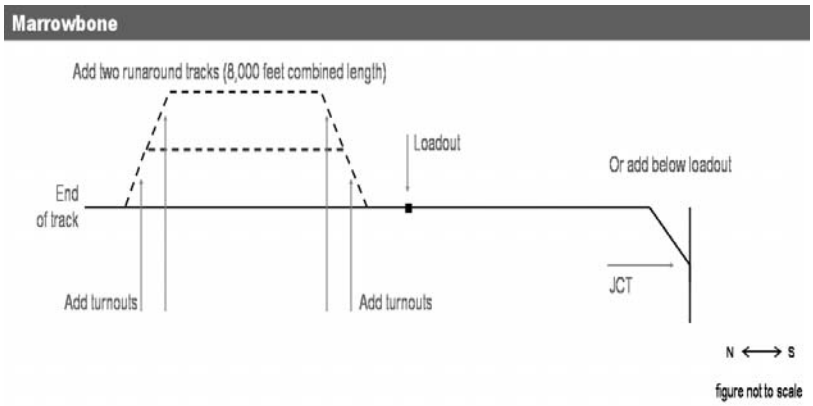
- Pevler Mine



To CP&L's proposed single track, NS would add a 7,000-foot run-around track with two turnouts, to allow locomotives to run around trains and avoid lengthy backup movements. Again, because the P&SH would use DP locomotives to serve this end-of-track mine, a run-around track would not be needed. Therefore, CP&L's configuration is accepted.

c. Naugatuck Branch

- Marrowbone Mine

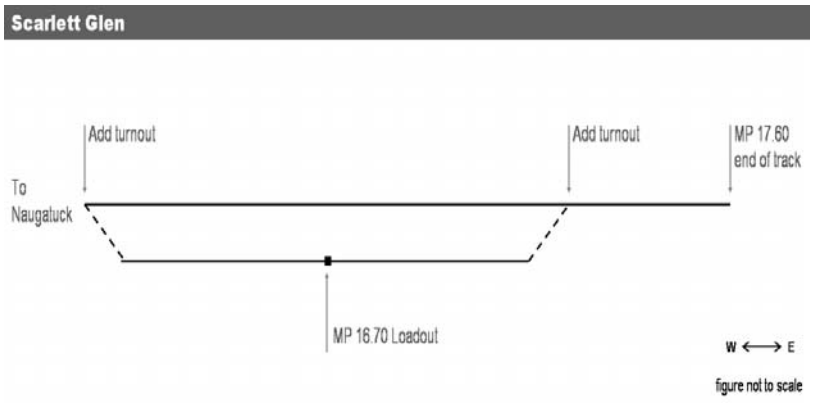


To CP&L's proposed configuration, NS would add two run-around tracks (together totaling 8,000 feet) to handle the train lengths that CP&L proposes and to allow locomotives to run around trains. Again, CP&L responds that the main line would allow sufficient space for feasible DP operations without the added facilities. Because the mine is at the end of a spur, allowing the P&SH to route the track directly under the loadout without obstructing other traffic, CP&L's configuration is accepted.

- Delbarton Mine

CP&L proposed a single track and turnout at this mine. NS, without comment, would add a second turnout and would also include two 1.8-mile sidings from MP 0.0 to MP 1.8 on the Lenore-to-Scarlet Glen portion of the Naugatuck branch. On rebuttal, CP&L maintains that NS's additions are unnecessary. CP&L would also remove the turnout, which it claims was mistakenly included on opening. The configuration proposed by CP&L in its opening evidence appears to be feasible and NS has not shown otherwise. As to the proposed turnout, CP&L may not change its network configuration on rebuttal on a matter that NS has not contested. Therefore, CP&L's opening configuration, including the turnout, is used here.

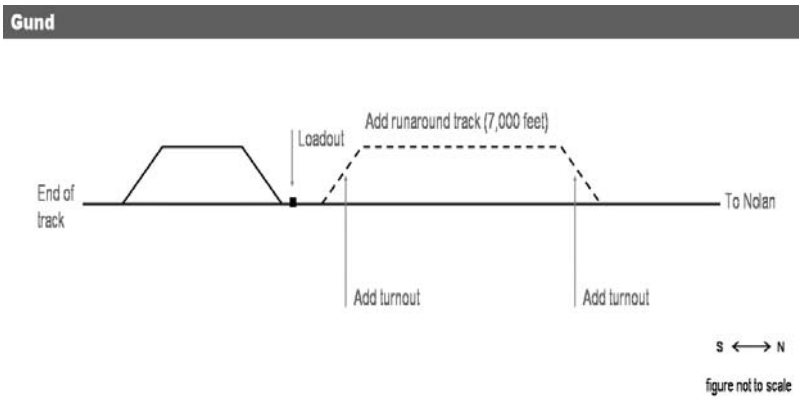
- Scarlet Glen Mine



To CP&L's proposed configuration, NS would add two turnouts, to make access to the loadout possible. CP&L claims that it designed the P&SH's main track so as to have the loadout tipple on the track, with sufficient clearance for entire trains, rather than the way in which the track is portrayed in NS's diagram (shown above). Because the mine is at the end of the track, turnouts would not be needed. Therefore, CP&L's proposed configuration is accepted.

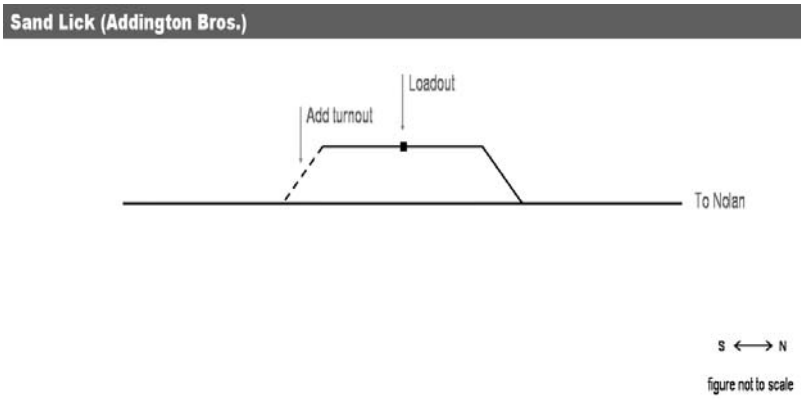
d. Nolan Branch

• Gund Mine



NS notes that CP&L's design for single-track facilities at this mine would only allow loading of 50-53 cars at a time. To allow full trainload operations, NS would add a 7,000-foot run-around track with two turnouts. CP&L agrees that, if the tail track could not be extended, the train loading operations at this mine would have to be done in two parts. However, with DP locomotives, CP&L argues that only one 3,500-foot run-around track with turnouts would be necessary. However, CP&L has not shown that the tail tracks could be extended, nor has it provided a sufficient explanation of how operations could be conducted with only a 3,500-foot run-around track. Because CP&L has not met its burden of proof here, NS's proposed addition of the 7,000-foot track with two turnouts is accepted.

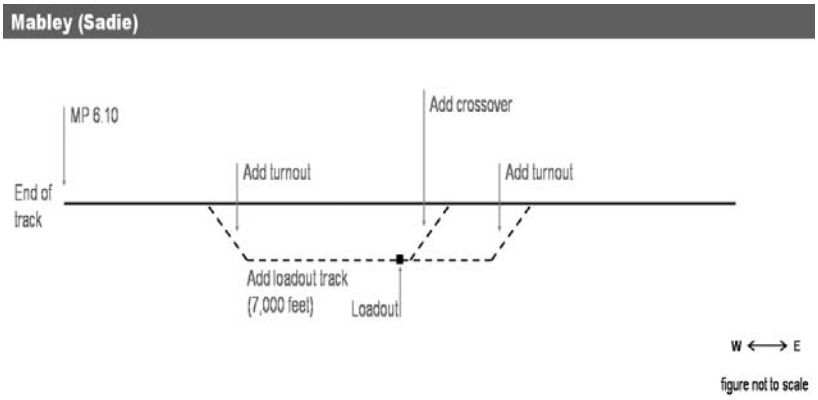
- Sand Lick Mine



To its single-track design, CP&L initially included a turnout to reach the loadout. Pointing to the limited car capacity of the loadout track in CP&L's design (only 3-5 cars), NS argues that, without a second turnout, the P&SH would need to handle trains in many cuts, thereby causing significant interference with operations on the main line. CP&L responded that DP trains could load directly from the main track if it were located under the loadout, and that, because only one train per day would be loaded at this mine, the P&SH could manage the traffic without the proposed turnout. However, CP&L may not change its opening configuration on rebuttal as to a matter that NS has not challenged (the location of the loadout on a siding). And the inclusion of a second turnout is realistic, given the limited capacity of CP&L's proposed loadout track.

e. Mate Creek Branch

• Mabley Mine



To CP&L's configuration, NS would add a 7,000-foot loadout track, two additional turnouts, and one additional crossover to accommodate 100-car trains—all of which, NS contends, the P&SH would need to reach the mine's loading point. CP&L maintains that, because the mine is located at the end of the track, the track could be routed under the loadout. CP&L acknowledges, however, that one of two roads that cross the tracks would have to be relocated. Because CP&L has not included the cost of relocating the road, it has not supported all elements of its track configuration. Accordingly, NS's suggested changes are accepted.

f. Arrow Branch

• Thomas Mine

To CP&L's single-track configuration, NS would add a 7,000-foot run-around track with two turnouts, arguing that the 1.2% to 1.9% grade at that location would make direct loading challenging. According to NS, without these added facilities, the P&SH would be forced to make long back-up movements after loading. But, as CP&L points out, this mine is at the end of the branch and there are other mines with a similarly steep grade at which NS loads directly. Thus, DP units should be capable of loading directly, and the additional track facilities proposed by NS would not be needed.

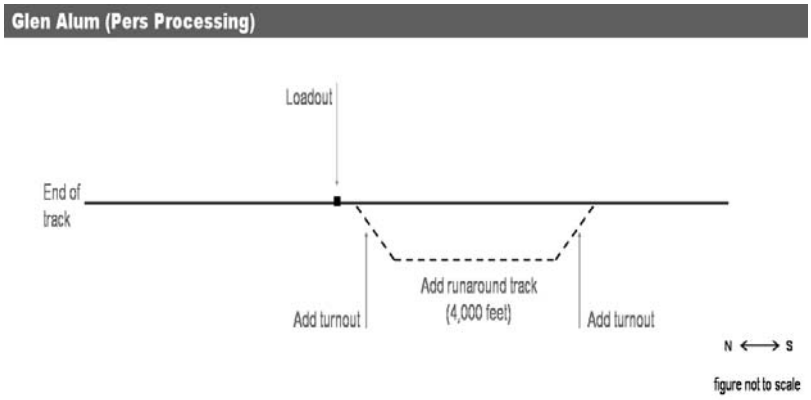
g. Devon Branch

• Thomas Wye

CP&L states that helper locomotives would be needed to serve this wye, but CP&L failed to include a pocket track for holding those locomotives. NS would add such a pocket track to hold helper locomotives prior to the Thomas Wye. Because track to hold helper locomotives would be needed, NS's addition of the pocket track is accepted.

h. Glen Alum Spur

• Glen Alum Mine



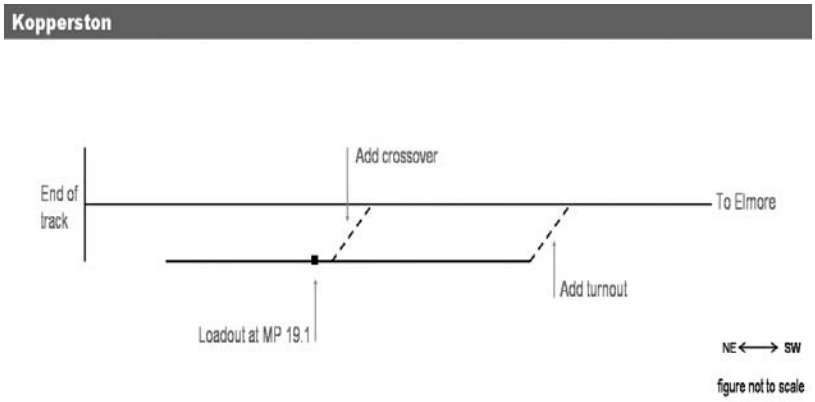
To CP&L's configuration, NS would add a 4,000-foot run-around track with two turnouts, claiming that the added facilities would be needed because of the steep grade of the loadout track (ranging from 2.40% to 2.77%) and the small capacity of the loadout track (only 30 cars). CP&L maintains that the P&SH could manage this loadout if the main line were extended 3,000 feet. However, there is no evidence as to whether such an extension would be possible. Thus, CP&L has not supported all elements of its track configuration for this spur, nor has it refuted NS's argument concerning the problem posed by the grade at the loadout. Therefore, the facilities added by NS are accepted.

i. Elmore West Branch

- Pineville Mine

CP&L proposed a single-track line and one turnout at this mine. NS would add an additional turnout to allow locomotives to run around trains. But, as CP&L points out, the use of DP would obviate the need for an additional turnout. Accordingly, CP&L's track configuration at this mine is accepted.

- Kopperston Mine



NS states that CP&L's proposed single-track configuration at this mine is inadequate because the 2.3% grade would make loading long trains difficult. To alleviate this problem, NS would add 3,000 feet of track 5 miles down the line to hold the first cut of loaded cars. In addition, NS would add a crossover and turnout to reach the loadout. CP&L concedes that its initial proposal is inadequate, but it suggests that, if the loadout track were extended to twice its length, the trains could be loaded in one cut, making the switches and additional track unnecessary. However, CP&L has not shown that NS's proposed modification is unrealistic. Nor has it shown that the loadout track could be extended so as to obviate the need for the switches and additional track. Therefore, NS's proposed track changes are accepted.

3. Yard Tracks

Although the parties generally agree on the location of the P&SH yards, they do not agree on the yard track requirements. NS argues that CP&L's proposed yard facilities would be inadequate to accommodate all of the activities that would be required to serve the P&SH's traffic group. Specifically, NS argues

that CP&L has failed to provide adequate yard facilities to stage LTL blocks and to classify multiple cuts of cars into trainload quantities for line-haul movement. In addition, NS argues that the P&SH's yard facilities would need to be able to accommodate the inspection and repair of empty cars, accommodate the building of empty trains for return to the mines, hold bad-order cars pending movement to a repair facility, fuel and repair locomotives, and hold loaded and empty trains awaiting interchange with NS.

CP&L maintains that NS has overstated the space and time required to perform various functions at these yards and that additional yard trackage would thus be unnecessary. CP&L states that the principal functions to be performed at the yards would be crew changes; interchanges with the residual NS; and, at West Roanoke and Kenova, 1,000-mile inspections, the related removal/insertion of cars from/into trains, and locomotive refueling. CP&L states that no assembling or disassembling of trains would occur, because the P&SH would operate only unit trains.

However, as discussed in the body of the decision, a significant part of the P&SH traffic group involves LTL movements, which would require staging, switching, and sorting. CP&L has not shown that customers purchasing LTL shipments from individual mines would either desire or be able to ship in trainload quantities from those mines. Indeed, on rebuttal CP&L concedes that it did not provide sufficient yard investment to handle the LTL traffic. Moreover, CP&L has not shown that NS's yard configuration would be inappropriate for handling LTL shipments. Therefore, NS's yard track configurations are generally used.

In its supplemental evidence, NS made three changes to the P&SH yards to reflect the disallowance of rerouted cross-over traffic. First, it moved inspections to Devon, which did not change the configuration of that yard. Second, it reduced the yard at Bluefield by 4 tracks because of the reduced interchange volume at Bluefield. Third, it created a new yard at Iaeger to handle the increased interchange volume at that location. The net effect of these changes reduced total yard track by 7,000 feet, which is reflected in the Board's analysis here.

4. Set-out Tracks

CP&L would place two set-out tracks at each failed equipment detector (which would be spaced at 25-mile intervals). One set-out track would be a single-ended 300-foot track, while the other would be a longer track with switches at both ends. CP&L contends that its configuration would have sufficient length to accommodate both bad-order cars and the occasional piece of maintenance-of-way (MOW) equipment. NS accepts CP&L's placement, but it argues that the longer track should have another switch and a 1,500-foot extension track to provide more space for MOW equipment. Because NS's MOW plan is used, NS's proposed additional track and switches are accepted.

APPENDIX B – TRAFFIC VOLUMES AND REVENUES

To develop the amount of coal traffic that the P&SH would transport and the revenues that would be generated by that traffic over the 20-year SAC analysis period (2002-2021), the parties in this case used similar procedures as the parties in *Duke/NS*, which are addressed in some detail in *Duke/NS* 7 S.T.B. at 143-149.

The only significant difference between the parties' presentations in *Duke/NS* and their presentations here is that CP&L used a different methodology to project coal volumes in 2005 and beyond than Duke used. Duke provided two tonnage projections for this period—one holding tonnage constant and the other using the 2002 EIA forecasts. CP&L, in contrast, projected 2005-2021 volumes based on a number of different forecasts. For coal volumes destined for utilities, CP&L used a forecast prepared for this litigation by J.D. Energy. This forecast reflects an initial increase in volume through 2006, followed by a general downward trend in the years 2007-2015, with volumes returning to 2004 levels by 2018, and increasing slightly between 2018-2021. CP&L also used the same J.D. Energy forecast to estimate the coal tonnage destined to rivers and lake terminals. For industrial coal, CP&L assumed that demand would remain flat. CP&L assumed that demand for metallurgical coal would follow the pattern forecast by the *EIA 2002* for Central Appalachian medium sulfur (premium) coal. CP&L projected slightly declining tonnages levels for export coal based on a composite index.

As explained in the body of this decision, the approach applied by the Board in *Duke/NS* is applied here with modifications prompted by the evidence and arguments presented in this case. The resulting tonnage and revenue figures used in the Board's SAC analysis in this case are set forth in Tables B-1 and B-2, respectively.

Table B-1
P&SH Tonnages

Year	CP&L	NS Base Case	NS Alternate Case	STB
2002	72,639,845	67,657,953	67,657,953	72,307,171
2003	80,286,925	78,972,734	66,136,020	75,852,117
2004	77,099,259	75,254,395	63,022,051	75,979,053
2005	79,276,303	71,663,759	61,155,212	76,173,684
2006	80,119,314	69,975,011	59,347,293	77,790,841
2007	76,052,688	70,577,448	57,596,432	80,092,069
2008	76,657,382	70,221,420	55,900,829	81,101,095
2009	74,992,349	69,602,994	54,258,741	80,656,882
2010	72,523,260	68,590,603	52,668,478	80,086,570
2011	73,120,574	71,468,685	51,128,404	79,556,380
2012	72,100,969	71,114,961	50,538,844	78,361,303
2013	72,639,273	69,632,598	49,956,639	79,223,937
2014	73,139,639	68,766,708	49,381,698	79,430,281
2015	74,110,611	68,284,135	48,813,929	80,401,818
2016	75,449,290	68,327,220	48,253,244	79,682,479
2017	76,039,011	67,558,582	47,999,403	79,705,406
2018	76,833,014	66,079,454	47,747,015	79,186,680
2019	77,662,839	66,262,174	47,496,070	79,341,438
2020	78,622,113	65,816,167	47,246,560	79,152,289
2021	79,048,085	65,938,736	46,998,477	78,410,023
2022	79,461,588	65,938,736	46,998,477	77,743,145

Table B-2
P&SH Revenues

Year	CP&L	NS Base Case	NS Alternate Case	STB
2002	511,499,752	390,947,728	367,334,377	453,766,615
2003	562,726,227	468,727,289	365,570,752	512,553,924
2004	564,076,835	467,943,934	364,562,507	525,992,935
2005	593,551,099	450,568,282	358,712,611	551,413,235
2006	611,707,480	445,867,022	352,601,530	571,468,610
2007	588,984,727	457,039,901	346,539,214	596,310,702
2008	604,933,623	461,515,253	340,716,814	613,579,654
2009	601,971,123	465,294,394	335,077,259	618,939,257
2010	592,710,835	465,991,302	329,570,836	621,606,228
2011	612,532,870	497,615,931	325,235,293	627,567,969
2012	618,663,466	505,296,224	327,212,964	629,425,310
2013	640,916,727	503,905,171	329,346,602	646,970,481
2014	664,214,172	507,573,914	331,720,416	660,982,845
2015	692,824,454	513,740,246	334,209,134	681,460,982
2016	726,329,954	524,179,482	336,967,892	688,471,728
2017	754,663,674	527,901,252	342,266,444	703,955,198
2018	786,721,088	525,301,566	347,827,125	714,662,692
2019	810,660,955	538,787,552	353,544,331	733,273,513
2020	858,286,672	547,521,137	359,320,329	746,237,533
2021	890,614,141	560,448,068	365,226,229	757,006,254
2022	923,994,279	560,448,068	365,226,229	770,361,507

APPENDIX C – OPERATING EXPENSES

This appendix addresses the annual operating expenses that would be incurred by the P&SH. The manner in which a railroad operates and the amount of traffic it handles are the major determinants of the expenses a railroad incurs in its day-to-day operations. Because, as discussed in the body of the decision, NS's proposed operating plan for the P&SH is used here, NS's operating assumptions must be used to determine the level of operational resources the P&SH would need for a given level of traffic, and NS's spreadsheets must be used as the basis for developing the P&SH operating costs. But because much of the rerouting of cross-over traffic originally proposed by CP&L is disallowed (as discussed in the body of the decision), the overall operating expenses have been reduced from those initially estimated by the parties.

Table C-1 summarizes the operating cost figures reflected in the parties' supplemental evidence and the operating costs used here. The costs in dispute are discussed below.

Table C-1
P&SH Annual Operating Costs (2002)
($ millions)

	CP&L	NS	STB
Train & Engine Personnel	$13.7	$35.5	$29.8
Locomotive Ownership	12.7	34.6	26.7
Locomotive Maintenance	9	24.5	19
Locomotive Operations*	18.7	25.4	17.3
Railcars **	8.5	24.5	24.7
Ad Valorem Tax	5.8	5.9	5.9
Operating Managers	4.8	10.7	9.3
Materials & Supplies	0.7	1.5	1.4
General & Administrative	10.2	23.4	13
Start-up Costs	4	57.3	8.8
Loss & Damage	0.1	0.1	0.1
Maintenance-of-Way	9.5	43.5	42.3
Insurance	2.4	4.9	3.7
Trackage Rights Fee	0.4	2.2	2.1
TOTAL	$100.5	$294.0	$204.1

* The Board's estimate of locomotive operations expense is lower than either party's because the restatement relies upon NS's locomotive unit miles (which are substantially lower than CP&L's) and upon CP&L's gallons per locomotive-mile and costs per gallon (which are lower than those based on the rejected NS fuel study).
** The Board's figure for railcar expenses is slightly higher than even NS's estimate because 16 rerouted movements are included in the analysis here.

A. Locomotives

1. Locomotive Requirements

The parties agree on the unit cost for acquiring (leasing) locomotives (an annual lease cost of $176,271 per AC4400CW locomotive and $76,281 per SD-40-2 locomotive),[20] but as shown in Table C-2, there is a substantial difference in the number of locomotives each party assumes the P&SH would need.

Table C-2
Locomotive Requirements

	CP&L	NS	STB
Road	59	176	133
Helper	12	16	14
Switch	3	10	10
Total	74	202	157

Locomotive requirements are primarily determined by how the P&SH would operate. Because NS's operating plan is used, the basic number of road, helper, and switch locomotives required by that plan are used here. However, individual locomotives would not be available 100% of the time, and therefore additional (spare margin) locomotives would need to be acquired. CP&L proposed a spare margin of 5% and supported this figure with witness testimony. NS proposed a 30% spare margin but provided no explanation as to the derivation of this figure. Because NS has not shown that CP&L's proposed spare margin is unreasonable, nor provided support for its alternative, a 5% locomotive spare margin is used here.

2. Locomotive Maintenance Expense

The parties agree on the maintenance expense per locomotive. The agreed-upon maintenance expense is used in conjunction with the restated number of locomotives to develop total locomotive maintenance expense.

3. Locomotive Operating Expense

Table C-3 summarizes the unit costs for fuel and locomotive servicing. These unit costs are used in conjunction with the restated number of locomotives to develop total locomotive operating expense.

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[20] *See* CP&L Reb. Narr. at III-D-3 (accepting NS's annual lease cost).

Table C-3
Fuel and Servicing Expenses

	CP&L	NS	STB
Gallons of Fuel per LUMs	2.82	3.9	2.82
Fuel Price per Gallon	$0.6574	$0.7170	$0.6574
Sand and Lube per LUM	$0.1649	$0.1649	$0.1649

a. Fuel Costs

CP&L used a fuel cost of $0.6574 per gallon, based on the cost reported in NS's Annual Report filed with the Board (the R-1 report). NS used a $0.717 per gallon figure, claiming that reliance on the R-1 is improper because that cost does not include the labor cost associated with CP&L's proposed use of contractors to fuel locomotives.

CP&L's evidence is reasonable. The R-1 expenses include an embedded labor component in the storage and dispensing costs. Furthermore, NS's fuel cost is unsupported. Accordingly, CP&L's per-gallon fuel cost is used here.

Total fuel expense also depends on the rate at which fuel is consumed. CP&L relied upon NS's system-average fuel consumption, while NS relied on a special study of fuel consumption for a selected group of locomotives. However, NS's study is based on fuel consumption for a type of locomotive that the P&SH would not use. In the absence of a study of fuel consumption by the type of locomotives that the P&SH would use, the system-average fuel consumption is used here.

b. Servicing

Locomotive servicing includes the labor and material costs associated with servicing the locomotives, including the costs of adding lube oil and sand. The parties agree on a cost of $0.1649 per locomotive unit mile (LUM) for servicing locomotives. The Board's SAC analysis develops locomotive servicing cost by using the agreed-upon unit cost for servicing locomotives in conjunction with the number of locomotives needed to serve the P&SH's traffic group.

4. Residual NS Distributed Power Locomotives

Because the P&SH would operate its locomotives in a DP configuration, NS argues that the SAC analysis should include $26 million for retrofitting NS locomotives with the necessary equipment so that the residual NS could operate in DP run-through service with the P&SH. But, as CP&L points out, NS's proposed operating plan for the P&SH assumed that residual NS locomotives would not operate in DP service and it allowed time for exchanging P&SH and residual NS locomotives. Because NS's operating plan for the P&SH is used

here, there would be no need to equip residual NS locomotives to operate in DP service. Therefore, this expense is excluded.

B. Railcars

There is a substantial difference in the parties' estimates for the number of railcars that would be required and the costs of acquiring those cars.

1. Railcar Requirements

Because NS's operating plan has been accepted, that plan is used to estimate the number of coal and grain cars that would be required. However, because of maintenance considerations, cars would not be available 100% of the time and the P&SH would need additional (spare margin) cars. CP&L assumes that the P&SH would need a 5% spare margin, while NS assumes a 10% spare margin based on the Board's findings in prior SAC cases. Because CP&L offered no evidence to support its 5% figure, it failed to meet its burden of proof on this issue. Therefore, a 10% spare margin is used.

2. Lease Expense

CP&L and NS agree on the cost of leasing coal and grain cars. The agreed-upon unit costs are used here.

C. Train Crew Personnel

There is a substantial difference in the parties' estimates for the number of train and engine (T&E) personnel that the P&SH would need. Because the operating plan is the prime determinant of the number of T&E personnel and NS's operating plan for the P&SH is used here, the Board's SAC analysis is based on the number of crew personnel specified by NS. NS's crew estimate is adjusted, however, to reflect that train crews could work 270 shifts per year. NS argues that 250 shifts per year is more appropriate. However, NS has provided no reason to depart from the SAC precedent relied upon by CP&L here.[21] *See FMC* 4 S.T.B. at 832-33.

D. Non-Train Operating Personnel

There is a significant difference in the parties' estimates for the number of, and expenses for, non-train operating personnel. Table C-4 shows the parties' staffing requirements and the figures used by the Board. The areas of dispute are discussed below.

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[21] CP&L Reb. Narr. at III-D-24.

Table C-4
Non-Train Operating Personnel

	CP&L	NS	STB
Train Manager	4	4	4
Asst. Train Manager	6	2	2
Trainmaster	0	18	18
Clerks	0	25	0
Fueling	0	10	0
Yardmasters	0	10	10
Car/Equipment Inspectors	27	45	45
Crew Callers	5	5	5
Dispatchers	14	20	14
Manager - Operations Control	5	0	5
Mgr Locomotive Operations	3	5	5
Manager - Mech. Operations	1	3	3
Manager - Dispatch/Crew Call	0	6	0
Total	65	153	111

1. Train Managers, Asst. Train Managers and Trainmasters

NS's evidence regarding the number of train managers, assistant train managers, and trainmasters is used here because those numbers are primarily dependent on the operating plan.

2. Clerks, Yardmasters & Fueling Personnel

CP&L did not include clerks, claiming that the P&SH would have relatively few supervisors and thus would have little need for clerks. NS would add 25 clerks to provide five positions with round-the-clock coverage, but NS has not explained why 25 clerks would be necessary. Because CP&L's exclusion of clerks has been explained and appears reasonable, CP&L's evidence is accepted.

CP&L also did not provide for yardmasters, claiming that the only yard activities would be locomotive fueling and servicing, movements to and from contractor maintenance facilities, and some bad-order car replacements.

However, because the operating plan used here would have a variety of activities occurring in yards (including staging work to manage LTL shipments), yardmasters would be required. Accordingly, NS's staffing figure for yardmasters is the best evidence of record and is used here.

CP&L contends that contract employees would fuel locomotives; NS would have P&SH personnel perform that task. CP&L's proposal to use contract personnel is reasonable and is used here.

3. Car/Equipment Inspectors

CP&L proposed fewer inspectors than NS. Because the number of inspectors is primarily dependent on the operating plan, NS's evidence is used. Although the disallowance of CP&L's rerouting of cross-over traffic would eliminate the need for the P&SH to inspect trains at Bluefield, the trains would be inspected at Devon instead.

4. Crew Callers

For crew calling, the parties agree that five positions would be needed. NS would also add a management position. CP&L has explained, however, that the manager of operations control could provide the needed supervision. Therefore, CP&L's evidence is used here.

5. Dispatchers

CP&L proposed three dispatching desks that would be staffed at all times. NS suggested four dispatching desks, noting that it presently uses six desks to cover the same territory. On rebuttal, CP&L buttressed its opening evidence by demonstrating that the Kansas City Southern Railway Company (KCS) has dispatching desks that cover an even larger area while handling a higher volume of local, coal, grain, general merchandise and intermodal trains than would the P&SH. CP&L claims that NS's proposal, which is based upon NS's own operations, is inefficient. CP&L's evidence is accepted because its comparison to KCS supports its opening evidence.

CP&L assumed that 14 dispatchers, working 250 shifts per year, could provide the needed coverage for the three dispatching desks. NS would include a manager for each shift. Again, CP&L has explained that the manager of operations control could provide the needed supervision. Therefore, CP&L's staffing estimate is used.

6. Operations Managers

CP&L included five positions for operations control management. NS would staff these positions at an executive level. However, NS has not demonstrated a need for executive level staffing for these positions. Therefore, CP&L's evidence is accepted.

CP&L provided for three locomotive operations managers. NS proposed five, noting that the P&SH must comply with Federal Railroad Administration (FRA) engineer certification regulations. CP&L has not addressed NS's argument regarding FRA regulations. Therefore, five locomotive operations positions are used here.

CP&L proposed one manager of mechanical operations, while NS would provide three. CP&L has not supported its staffing number for this position, nor has it provided any specific reason why NS's proposed staffing is unrealistic. Therefore, NS's evidence is used here.

E. General & Administrative Personnel

The parties' general and administrative (G&A) personnel estimates differ substantially with respect to the staffing levels that the P&SH would need. Based on the experience of its rail operations witnesses, who have held senior management positions at a variety of railroads (including regional and start-up railroads), CP&L proposed a G&A staff of 59 employees for the P&SH. CP&L's plan includes limited in-house staffing, with various financial, marketing, human resources (HR) and information technology (IT) functions outsourced.

NS argues that CP&L's staffing levels would be insufficient for a Class I railroad (which the P&SH would be). NS proposed a staff of 141, based on a comparison with NS's own staffing levels. But NS has not adequately addressed the outsourcing proposed by CP&L, which would reduce the P&SH's staffing needs. In addition, portions of NS's submission contain inconsistencies, with different staffing levels in its exhibits, workpapers, and narratives. CP&L's G&A staffing levels, which are based on the experience of former senior-level railroad employees, are reasonable and supported, and NS has not supported a need for the additional staffing it proposed. Therefore, CP&L's G&A staffing levels are used here, with the exceptions noted below.

Table C-8
G&A Staffing

	CP&L	NS	STB
President/Exec. Dept.	3	4	3
Transp. & Engin. - Oper.	12	16	12
Finance & Accounting	20	46	24
Law, Admin. & H.R.	13	25	13
Marketing/Customer Service	11	50	11
Total	59	141	63

a. Outside Directors

The parties disagree on the size of the board of directors that the P&SH would need. Because the P&SH would not be a publicly owned company, CP&L contends that the board could be limited to the P&SH's president, its vice-president of transportation, and one (uncompensated) outside director. NS would include five outside directors. NS cites the New York Stock Exchange requirement that outside directors comprise a majority of board members. NS also points to the composition of the board of the Florida East Coast Railway Company (FEC), a railroad that is smaller than the P&SH would be but which has a board consisting of ten members, nine of whom are outside directors.

CP&L's proposal is unreasonable, as it would result in unconstrained managerial control and oversight of the P&SH. An organization of this size would require significant independent oversight of its management, regardless of whether it is publicly or privately held. Therefore, NS's proposal for five outside directors is accepted.

b. Information Technology

CP&L provided for an IT staff of only nine employees, on the assumption that certain IT functions would be outsourced. However, CP&L failed to account for the cost of outsourcing any IT functions. NS proposed a larger IT staff of 13. Because NS has provided the only cost evidence on the additional IT staffing that would be needed (whether employed in-house or by a contractor), NS's figure is used here.

F. Wages and Salaries

1. Crew Compensation

Both parties used NS's 2001 Wage Forms A and B as a basis for estimating crew compensation. However, they disagree on the basic wage and constructive allowance for crews, as well as the number of taxi trips and overnight stays that P&SH crews would require.

a. Basic Crew Wages

CP&L developed basic crew compensation based on each train having an engineer and a conductor. Furthermore, because CP&L assumed that the P&SH would provide only trainload service, it used the compensation rate for "road" crew personnel. NS assumed that each train would need two engineers. And because its operating plan for the P&SH assumed yard as well as road operations, NS assumed that crews would be compensated at a rate reflecting the wages of "road," "yard," and "way" crews.

CP&L's assumption of one engineer and one conductor per train seems reasonable, and NS has not explained why two engineers would be required.

However, because the operating plan used here includes yard operations, crew compensation should be based on a combination of wages for road, yard, and way train operations. Therefore, the analysis here uses a combined compensation rate for road, yard, and way train engineers and conductors, as set forth on the wage forms relied upon by the parties.

b. Constructive Allowance

CP&L included a constructive allowance of 8% to account for overtime, vacation, and meal expenses, but excluding allowances for benefits that it asserts would not be available to the P&SH's non-unionized work force. NS would apply a 30% markup, based on data contained in its 2001 Wage Forms A and B. Because CP&L has provided no evidence that non-unionized railroads do not pay the benefits that it would exclude, NS's constructive allowance is used here, which is based on the wage forms used by both parties to develop the basic wages. *See TMPA*, 6 S.T.B. at 687.

c. Taxi Expenses

The parties differ on the number and cost of taxi trips that would be required for P&SH crews. Because the number of taxi trips that would be needed is primarily dependent on the operating plan, the number of trips estimated by NS is used here. Furthermore, NS's $25 cost per taxi trip is used, as CP&L (the party with the burden of proof on this issue) offered no justification for its $10 estimate.

d. Overnight Expenses

The parties agree on a $45 cost for overnight lodging and meals, but differ on the number of overnight stays that would be required by T&E crews. Because the number of overnight stays is determined by the operating plan, and NS's operating plan is used here, NS's number of overnight stays is used here.

2. Executive Compensation

Both parties used the executive salaries paid by FEC in 2001 as a standard for the executive salaries for the P&SH. The parties agree on the salary for the President/CEO. For the salaries for other executive positions, CP&L relied upon the individual positions that would be comparable to the P&SH positions, while NS used the salary paid to FEC's Executive Vice President for all executive positions other than President/CEO. Because the salaries tied to the duties of a specific position are more reflective of the compensation for an individual job than a single, one-size-fits-all salary, CP&L's evidence on executive salaries is used here.

The parties disagree on the amount for executive bonuses. CP&L did not provide for any bonuses, while NS would include bonuses of approximately 70% of salaries. Because FEC's base compensation (used here) contemplated bonuses

for its executives, bonuses are appropriately included in executive compensation. However, NS's calculation of bonuses, based upon a 3-year average, is faulty, given the rise in FEC's base compensation during that period and the corresponding decrease in bonuses. Because the 2001 bonuses of FEC executives are 45% of salaries,[22] this percentage is used to calculate the P&SH executive bonuses.

3. G&A and Non-Crew Operating Compensation

Both parties used NS's Wage Forms A and B to develop non-executive G&A and non-crew operating personnel salaries. To adjust the P&SH base salaries from 2001 to the first quarter 2002, CP&L used the Wage Rate Index developed by the Association of American Railroads (AAR). While NS stated that it agreed with CP&L's use of that index, in its calculations NS used a different index (AAR's Wage Rates and Supplements Index). Because NS has not explained why a different index is more appropriate, CP&L's index is accepted, and CP&L's estimates for non-executive G&A staff salaries are used here.

With respect to non-train operating personnel, the parties relied upon NS wage data to develop their compensation estimates. CP&L, however, made arbitrary adjustments to the salaries. For example, in its "NS Salaries" worksheet, CP&L showed a salary of $64,775 for an assistant train manager, but in its operating expense spreadsheet, CP&L used $60,540 as the unit expense for this position. As the party with the burden of proof on this issue, CP&L failed to support its compensation levels. Accordingly, NS's evidence on compensation levels is used here, except that the base salaries are adjusted by the AAR Wage Rate Index, rather than the Wage Rates and Supplement Index, for the reason stated above.

4. Outside Directors

CP&L assumed that an outside director would be a shipper or investor representative who would have a direct interest in the P&SH's success and would thus be willing to serve on the P&SH board with only minimal compensation (for the travel expenses associated with attending board meetings, discussed *infra*). NS proposed a salary of $30,000 a year for each director, but failed to provide any basis for its salary proposal. CP&L's evidence on this issue is reasonable and accepted.

G. Materials, Supplies, and Equipment

Materials, supplies, and equipment would be needed for various P&SH personnel, including such items as motor vehicles, office furniture, equipment, utilities, outside services, IT hardware and software, travel, and training. The

[22] CP&L Open. WP. Vol. 4 at CPL02106.

parties agree on some of these items, but their aggregate cost figures differ due to the difference in proposed staffing levels. Where that is the case, the costs are restated to the staffing levels found appropriate here and are not further discussed. Likewise, decisions that are driven by the use of NS's operating plan are not addressed separately. The remaining disputes are discussed below.

1. Vehicles

The parties disagree over the quantity and type of vehicles for use by P&SH staff. CP&L would provide the P&SH's supervisory personnel with Ford pick-up trucks. NS would include the cost for a Ford Explorer to transport people and equipment. Given that pick-up trucks are less expensive and could transport both supervisory personnel and cargo, CP&L's proposal is reasonable and is used here.

For vehicles used for inspections, CP&L included three pick-up trucks, while NS would include eleven. CP&L's number is inadequate for the number of inspectors accepted here, and NS's inspection vehicle estimate is therefore accepted.

CP&L would provide sedans for the P&SH's G&A staff, while NS would provide sport utility vehicles. NS claims that CP&L's spreadsheets reflect the cost for pick-up trucks, which would not be appropriate for executives who may have to transport customers in their vehicles. On rebuttal, CP&L explains that pick-up trucks and sedans are similarly priced. It further argues that the cost of a sport utility vehicle would be excessive and that sedans would address NS's criticism but provide a reasonable and feasible alternative.

CP&L's evidence is used here. CP&L's rebuttal supports its opening cost estimate and NS provided no basis for using sport utility vehicles rather than a less expensive vehicle.

2. Computer Equipment and Software

The parties disagree on the price of software for a general accounting system. However, as CP&L points out and NS's workpapers confirm, NS double-counted the cost of the software.[23] Therefore, CP&L's cost is accepted.

On opening, CP&L did not include firewall protection for its computer systems. On reply, NS included a firewall at a cost of $12,148. On rebuttal, CP&L agreed that a firewall would be required, but claimed that it would only cost $3,000. Because CP&L failed to account for a firewall in its opening evidence or show that NS's cost figure is unrealistic, NS's evidence of the cost of a firewall is accepted.

On reply, NS contended that the network hardware proposed by CP&L on opening would be inadequate and it proposed alternative hardware. On rebuttal, CP&L pointed out that its specified equipment has the same functional capabilities as NS's product. CP&L has thus supported on rebuttal the network

[23] NS Reply WP. III-D-0047.

hardware proposal contained in its opening evidence. Therefore, CP&L's network hardware proposal (including routers and printers) is accepted. And because CP&L's network hardware is accepted, its network-related software expenses are also used here.

3. Travel & Entertainment

CP&L provided no travel allowance for G&A personnel, on the ground that a regional railroad such as the P&SH would cover a limited geographic area and would maintain personnel levels so as to minimize travel. CP&L further claims that the $50,000 allowance for miscellaneous expenses could be used for travel. NS proposed travel expenses equivalent to 20% of compensation for marketing staff and 10% for other G&A staff. Given the size of the P&SH, and the fact that the $50,000 allowance for miscellaneous expenses would have to cover the travel expenses of the five-member board of directors and all other personnel, CP&L's omission of travel expenses is not reasonable. As NS's evidence on travel expenses is the only evidence of record, NS's proposed travel allowance costs are accepted.

4. Annual Recruiting and Training Expense

CP&L excluded annual training expenses for G&A personnel. NS argues that the P&SH would likely confront attrition rates of 5% to 6%, and thus would need to train new staff each year. CP&L argues that turnover would be lower at the P&SH, but CP&L has not explained how the P&SH would avoid annual training expenses altogether. Because some expenses for training new staff should be included, the annual figure submitted by NS is used here, but adjusted to reflect the P&SH's reduced staffing estimates.

H. Start-Up Costs

CP&L estimates that it would cost the P&SH $4 million to hire and train its initial personnel, whereas NS contends that it would cost $9.6 million. While the parties generally agree on the cost for training an employee, they disagree on the number of employees that would need to be hired and trained.

NS would also include recruiting costs (fees paid to recruitment agencies). CP&L argues that the P&SH could draw on a pool of experienced NS employees—those that would be displaced by the P&SH's replacement of a portion of the NS—obviating the need for the P&SH to pay recruiters to find qualified employees. However, as the Board has previously explained (*see TMPA*, 6 S.T.B. at 665), it is inconsistent with the purpose of the SAC test to assume that the existence of the defendant railroad would limit the costs the P&SH would incur. *Cf. WPL*, 5 S.T.B. at 1038 (rejecting argument that uncertainty associated with construction of a SARR would be limited because of information that is available about the existing railroad that the SARR would replace).

For rank-and-file personnel, however, it is inappropriate to include both training costs and recruiting costs for the same people. *TMPA*, 6 S.T.B. at 665. Recruiting costs are generally incurred to find skilled personnel who would not need extensive training. Where training costs are included, it is unnecessary to include recruiting costs as well. Using training costs for rank-and-file employees and recruiting costs for skilled employees, the combined costs for the P&SH would be $8.8 million.

I. Ad Valorem Tax

Because ad valorem taxes are driven by the configuration and NS's configuration for the P&SH is used here, NS's ad valorem tax estimates are accepted.

J. Loss and Damage

The parties agree on the loss-and-damage expense, and that estimate is used here.

K. Maintenance-of-Way

A summary of the MOW costs used here is set forth below in Table C-9. Disputed components of those costs are then discussed.

Table C-9
MOW Costs
($ millions)

	CP&L	NS	STB
Staffing	$4.232	$25.494	$25.494
Equipment	$0.230	$6.787	$6.787
Materials	$0.282	$3.006	$3.006
Maintenance Work			
Track Geometry Testing	$0.065	$0.073	$0.072
Building Maintenance	$0.094	$0.125	$0.094
Snow Removal	$0.200	$0.200	$0.200
Derailments	$0.750	$0.750	$0.750
Weed Spray	$0.493	$0.536	$0.530
Yard Cleaning	$0.060	$0.066	$0.066
Storm Related Tree Work	$0.090	$0.200	$0.200
Shoulder Ballast Cleaning	$0.350	$0.000	$0.000
Crossing Paving	$0.210	$0.350	$0.350
Blasting Rock Slides	$0.010	$0.024	$0.024
Ultrasonic Rail Testing	$0.166	$0.000	$0.195
Rail Grinding	$0.075	$1.136	$0.075
Casualties	$0.000	$2.000	$2.000
Bridge Contract Work	$0.300	$0.600	$0.600
Storm Water Prevention	$0.000	$1.000	$1.000
Ditching	$0.125	$0.000	$0.125
Brush Cutting	$0.025	$0.000	$0.025
Ballast Undercutting	$0.700	$0.000	$0.700
Contract Labor	$0.797	$0.000	$0.000
Misc. Maintenance	$0.520	$0.000	$0.000
TOTAL	$9.513	$43.540	$42.293

1. Staffing and Equipment

The parties included in their respective DCF calculations the necessary funds to replace all of the P&SH's assets at the end of their asset lives, thereby obviating the need to provide MOW funds to replace worn-out assets (so-called program maintenance). However, the P&SH would need a MOW department to perform day-to-day preventive (operating) maintenance. CP&L estimated this annual expense at $9.5 million, while NS estimated this expense at $42.8 million.

The majority of the difference in their estimates is due to how each party assumed the MOW department would function and how many personnel would be required.

CP&L contends that the P&SH could perform the necessary operating maintenance with a streamlined MOW department. It assumes that the P&SH would contract out much of the routine operating maintenance work. The P&SH itself would employ only a small force of MOW employees to perform routine inspections and maintenance, including some emergency repairs. Those employees would be cross-trained, so that an individual P&SH employee might, for example, perform the functions of a welder one day, operate a machine the next day, and arrange for deliveries of materials a day later.

NS argues that CP&L's MOW staffing plan is unrealistic, because such a highly versatile, cross-trained labor force does not exist. NS further argues that CP&L's MOW plan understates the amount of daily operating maintenance that would be required on the P&SH. NS contends that, because heavily loaded coal trains would be operating over severe curves and grades during varying weather conditions, the P&SH would need almost daily track inspections and significant operating maintenance.

CP&L has failed to meet its burden of establishing that a small, cross-trained MOW staff would be available and, even if available, whether such a limited MOW staff could provide the unplanned day-to-day maintenance that would be needed by a Class I railroad the size of the P&SH. In addition, CP&L has not attempted to reflect the higher compensation such skilled, cross-trained workers would command. Thus, NS's proposed MOW staffing levels are the best evidence of record.

On rebuttal, conceding that its opening MOW staffing was insufficient, CP&L sought to increase its original size of the MOW department by more than 60%. However, CP&L did not demonstrate that NS's MOW staffing would be unrealistic or infeasible. Thus, CP&L's alternative evidence on rebuttal may not be considered.

NS's estimate of the P&SH's equipment costs is also used, as the amount of equipment that would be required is directly attributable to the railroad's staffing levels.

2. Materials

CP&L calculated that the cost of materials needed for operating maintenance would be 5% of the cost of total (operating and program) annual maintenance cost. NS estimated those costs using a labor-based charge of 30% of overhead. CP&L has not explained how it determined that 5% of total maintenance costs would be materials needed for operating maintenance. Because CP&L has failed to meet its burden of proof, NS's figures are used here as the only other evidence of record.

3. Maintenance Work

The parties agree on the total cost for building maintenance,[24] snow removal, and derailments.[25] They also agree on the per-mile unit cost of weed spraying. But their total spraying costs differ due to their different track configurations. The agreed-upon unit cost for weed spraying is used here, in conjunction with the track configuration used by the Board, to develop total spraying costs.

In its opening evidence, CP&L failed to include any funds for a variety of other work (yard cleaning, storm-related tree work, shoulder ballast cleaning, crossing paving, and blasting expense for rock slides). On rebuttal, in response to NS's evidence that such work would be necessary, CP&L included some funds for these purposes, but in each case, without any support, lowered NS's cost estimates. Because CP&L has not explained why NS's estimates are unrealistic, nor provided any support for its alternative estimate, NS's evidence is used here.

a. Track Geometry Testing

The parties agree that track geometry testing would be required on a regular basis to ensure that the track alignment, profile, cross level, super-elevation, gauge and twist meet FRA and corporate track safety standards. The parties agree on the unit cost for such testing, but not on the frequency of the testing. CP&L proposed 12 days of testing twice yearly. NS determined a testing interval for each line segment based on traffic characteristics. Because CP&L provided no evidence or explanation to support its testing frequency, and NS's proposal to base testing intervals on traffic characteristics is realistic, NS's evidence is used here.

b. Ultrasonic Rail Testing

CP&L used a unit cost of $90 per mile for semi-annual ultrasonic rail testing, based on a third-party quotation.[26] NS argues that CP&L's unit cost does not reflect the cost of frequent hand checks that would be necessary in mountainous territory. NS also contends that testing would be required three times per year. NS's evidence used a unit cost of $187 per test mile.

CP&L's ultrasonic rail testing estimate is accepted, because it is based on discussions with a contractor. NS has not discredited CP&L's estimate, nor provided any support for its argument.

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[24] Despite using differing numbers, NS in its narrative stated that it agreed with CP&L's numbers for building maintenance.

[25] CP&L's rebuttal workpapers show only $500,000 for this expense, but CP&L had agreed to a $750,000 figure.

[26] *See* CP&L Reb. WP. Vol. 3 at 04824.

c. Rail Grinding

CP&L and NS agree on a unit cost of $1,000 per mile for rail grinding. CP&L would have the P&SH grind all 136-pound premium rail every 150 million gross tons (MGT) on curves exceeding 3 degrees, and at 300 MGT on tangent track. Standard rail used in main tracks and passing sidings would be ground at 50 MGT intervals.

NS argues that grinding would need to be performed more frequently, due to the rigid track structure of the P&SH resulting from the use of steel ties. However, NS has provided no support for its argument. Because CP&L's proposed rail grinding schedule (which is based on rail grinding studies conducted by the Canadian National Railroad and on the experience of CP&L's expert witnesses) is adequately supported, it is used here.

d. Casualties

Based on the mountainous territory the P&SH would traverse, NS would add $2 million for casualty losses as a result of occurrences such as washouts, floods, land slides, and slope failures. NS states that the $750,000 appropriated for derailments would not cover casualty losses, citing its own incurrence of more than $11 million in total casualty losses across its system in 2001. CP&L claims that casualty loss expenses are factored into its railcar lease costs and that a separate expense is thus unnecessary. However, CP&L has not supported its claim that casualty costs are addressed in railcar leasing costs. Therefore, the additional expense is included here.

e. Bridge Contract Work

Without any explanation, CP&L included $300,000 for bridge maintenance work, while NS would include $600,000. Because CP&L (which has the burden of proof) did not present any evidence to support its position, NS's estimate is accepted.

f. Storm Water

NS included $1 million for addressing storm water. CP&L has not commented on this cost. NS's cost is therefore accepted as unopposed.

g. Ditching, Brush Cutting and Ballast Undercutting

CP&L included $125,000 for ditching, $25,000 for brush cutting, and $700,000 for ballast undercutting. NS has not addressed these issues. Thus, CP&L's estimates are accepted.

h. Contract Labor

CP&L included $797,000 for contract labor. However, as discussed above, CP&L's proposal to use contract labor to provide the required MOW staffing for the P&SH is rejected. Therefore, there would be no need for a contract labor expense.

i. Miscellaneous Maintenance

CP&L included $635,135 for miscellaneous maintenance, but did not specify what costs are included. NS did not include miscellaneous costs. Because all of the necessary costs for maintaining the line have been included in other cost categories, no separate costs are included here.

L. Insurance

The parties agree that insurance costs would be 2.5% of operating expenses. The agreed-upon procedure for estimating insurance costs is used here.

M. Trackage Rights Fee

It is assumed that the P&SH would operate over the lines of the Vaughan Railroad pursuant to a trackage rights agreement, with the same terms and conditions as NS currently has for the use of that track. The NS payment per ton is separated into two parts—a capital portion and a maintenance portion. The capital portion was set to expire either on December 31, 2002, or when a certain percentage of the total capital costs have been repaid. In July 1996, pursuant to the agreement between the parties, that period was extended to July 31, 2003. Here, in contrast to *Duke/NS*, NS submitted invoices from 2002 to demonstrate that NS has paid both capital costs and a maintenance fee on a monthly basis.[27] Because NS has submitted probative evidence that it has paid both the capital cost and maintenance fee for use of the Vaughan Railroad tracks, NS's per-ton figure for the maintenance portion is used for the entire SAC analysis period and its capital portion is used through July 2003 when such payments are scheduled to cease.

[27] NS. Reb. Exh. II-A-7.

APPENDIX D - P&SH ROAD PROPERTY INVESTMENT

This appendix addresses the evidence and arguments of the parties concerning what it would cost to build the P&SH. Table D-1 summarizes the parties' cost estimates associated with that construction, as well as the numbers used here, which total approximately $2.4 billion.

Table D-1
P&SH Construction Costs
($ millions)

	CP&L	NS	STB
A. Land	$24.8	$41.6	$36.8
B. Roadbed Preparation	405.1	1,186.4	611.7
C. Track Construction	541.4	690.1	570.7
D. Tunnels	269.4	449.9	272.6
E. Bridges	200.1	342.3	260.9
F. Signal & Communications	93.7	143.1	135.8
G. Buildings & Facilities	14.0	49.6	37.9
H. Public Improvements	0.6	31.3	13.9
I. Mobilization	9.6	77.9	49.4
J. Engineering	103.8	391.2	192.2
K. Contingencies	122.1	290.0	190.3
L. Off-System Investment*	0.0	0.0	0.0
TOTAL**	$1,784.60	$3,693.4	$2,372.2

* NS had originally included $3.5 million for the additional investment that the residual NS would need to accommodate reroutings of cross-over traffic that are disallowed here.
** Columns may not sum to totals because of rounding.

A. Land

As shown in Tables D-2 and D-3, respectively, the parties' estimates for the total amount of land that the P&SH would need differ only slightly. The parties agree that the width of the P&SH right-of-way (ROW) would be 100 feet, except in industrial, urban and commercial areas in and around Roanoke, VA, where it would be 75 feet. The land values used by the parties, however, differ substantially. The record does not permit the combination of one party's acreage estimates with the other party's valuation. Therefore, where one party's valuation of a section of the P&SH is used, that same party's estimate of the amount of acres that would be needed for that section is also used.

Table D-2
Land Acreage

		CP&L	NS	STB
ROW	Inspected by NS	477.20	339.30	339.30
	Not Inspected by NS	9,246.80	9,141.20	9,246.80
	Easements	70.40	0.00	70.40
	Subtotal	9,794.40	9,480.59	9,656.50
Yards		206.24	206.24	206.24
TOTAL*		10,000.64	9,686.74	9,862.74

* Columns may not sum to totals because of rounding.

Table D-3
Real Estate Costs

		CP&L	NS	STB
ROW	Inspected by NS	$12,397,964	$16,278,755	$16,278,755
	Not Inspected by NS	10,022,492.00	14,526,180	10,022,492.00
Easements		156	0	156
Yards		2,363,165	10,788,375	10,482,760
TOTAL*		$24,783,777	$41,593,311	$36,784,163

* Columns may not sum to totals because of rounding.

For valuation purposes, CP&L physically inspected 89% of the existing NS ROW; for inaccessible areas, CP&L used aerial photographs and a variety of mapping sources to develop land costs. CP&L divided the ROW into 43 large segments (averaging 18.5 miles in length) and valued each segment based on the value of unimproved land in the general area.

NS asserts that in urban areas CP&L's method of dividing the ROW into large segments leads to flawed estimates, because long stretches of land cannot be assumed to have entirely uniform characteristics in such areas. NS inspected about 4% of the ROW (located in the Roanoke, Bluefield City and Tazewell County areas) and assigned values to each segment based on a physical inspection and an analysis of local land sales. For the remaining approximately

96% of the ROW that it did not inspect, NS increased CP&L's land values based on the ratio of NS's valuation to CP&L's valuation for areas that both had inspected.

For the segments of the P&SH route inspected by both parties, NS's valuation method is superior. NS used a greater number of comparable sales, which provides a more complete, and thus more accurate, representation of market values. Moreover, NS examined parcels along the ROW, whereas CP&L based its valuation on land in the general area. The land along the ROW is a prime indicator of a ROW's value and has been used in all prior SAC cases.

For the segments of the P&SH route that NS did not inspect, CP&L has provided the best evidence. NS's approach is unacceptable, as NS provided no basis for its assumption that the relationship between the two parties' appraisals for urban land prices would apply to rural land values as well.

CP&L included a one-time easement payment for certain parcels of land, based upon the terms under which NS now uses that property. Board policy in SAC cases is to assume that the SARR could acquire the same interest in property as the incumbent railroad has. Therefore, CP&L's easement acreage and cost for this land are accepted.

B. Roadbed Preparation

To prepare the land for rail operations, the land would have to be cleared of vegetation, and then the earth and rock would need to be graded into a suitable railroad ROW. Drainage and erosion control measures would also have to be taken to protect the track structure. The table below shows the parties' estimates for the costs necessary to prepare the P&SH roadbed, as well as the numbers used here.

Table D-4
Roadbed Preparation Costs
($ millions)

	CP&L	NS	STB
Clearing	$19.35	$46.06	$19.35
Grubbing	3.74	8.08	3.74
Earthwork	344.95	1,021.52	495.46
Drainage			
Lateral Drainage	0.36	0.48	0.43
Yard Drainage	0.87	2.97	2.97
Culverts	25.76	43.28	34.53
Retaining Walls	9.48	50.46	50.46
Rip Rap	0.85	1.59	1.52
Relocation of Utilities	0.00	0.00	0.00
Seeding/Topsoil Placement	0.18	0.19	0.18
Water for Compaction	0.00	8.11	0.00
Waste Excavation	0.37	0.39	0.38
Road Surfacing	0.00	0.45	0.00
Erosion Mitigation			
Silt Fences	0.00	0.77	0.73
Slope Drains	0.00	2.03	1.94
TOTAL*	$405.92	$1,186.38	$577.16

* Columns may not sum to totals because of rounding.

1. Clearing and Grubbing

To determine the amount of land that would need to be cleared and grubbed, the parties used the Interstate Commerce Commission (ICC) Engineering Reports (*Engrg Rpts*). The *Engrg Rpts* are a compendia of data collected by the ICC in the early part of the 20th century. They detail the material quantities required to build most rail lines in place in the United States at the time. The data continue to be useful as a baseline for estimating current earthwork requirements, subject to adjustments for modern engineering standards.

While there is no dispute on the number of acres that would need to be cleared and grubbed, the parties disagree on the cost to clear and grub land. Their divergent estimates reflect differences regarding: (1) the number of tracks at particular locations, (2) the size of trees to be removed, and (3) how to apply the cost adjustment index that they both use.

The parties' clearing and grubbing quantities must be restated to reflect the Board's findings regarding the number of track miles that the P&SH would require. *See* Appendix A – P&SH Configuration. CP&L's spreadsheet allows for such an adjustment, whereas NS's spreadsheet contains a hard-coded value

for the agreed-upon location adjustment factor, rather than a formula that allows for a restatement.

Both parties used the R.S. Means Manual (*Means*)—a set of nationwide standardized unit costs, adjusted for localities, used to estimate the cost of construction—as the basis for clearing and grubbing unit costs. However, CP&L used the costs for removal of 12-inch-diameter trees, whereas NS used the costs for 24-inch-diameter trees. CP&L inspected portions of the NS route that the P&SH would replicate and, based on that inspection, determined that trees in the area were generally 12 inches in diameter or less. In contrast, NS provided no support for its assumption that 24-inch trees would need to be removed. Accordingly, the cost for removing 12-inch-diameter trees is used here.

Finally, CP&L's indexation procedure appropriately reduced the mid-year 2002 *Means* costs to reflect the lower prices in effect at the beginning of 2002, the startup date for the P&SH. NS's indexation procedure erroneously increased, rather than decreased, the *Means* mid-year 2002 costs. Accordingly, CP&L's indexation is accepted, and CP&L's clearing and grubbing cost figures ($3,460 and $2,314 per acre, respectively) are used here.

2. Earthwork

As noted above, the parties agree upon the width of the ROW (100 feet, except in urban areas, where a 75-foot wide ROW would be used), the width of the roadbed except in daylighted tunnels (24 feet on single-track segments and 39 feet on double-track segments), the roadbed side slope (1.5:1), and the size of drainage ditches (2 feet wide by 2 feet deep). But they disagree on the extent of access roads that would be needed, the amount of grading that would be needed for the yards and for tunnel daylighting, and the earthwork equipment that would be required. These disputed elements are discussed below.

a. Access Roads

CP&L excluded costs for access roads, claiming that they would be unnecessary. NS argues that the P&SH would need to construct 61,436 feet of access roads to transport labor, materials, and equipment to remote railheads and to improve access to remote culvert, tunnel, and bridge sites along the route.

In past SAC cases, the cost of access roads have not been included where such roads did not exist when the line that the SARR would replicate was originally built or the carrier did not incur the costs of building such roads. *See, e.g.*, *TMPA*, 6 S.T.B. at 701-02. Here, NS has provided no evidence that it (or its predecessors) incurred any costs for access roads. Moreover, as CP&L points out, remote areas could be reached by using the cleared ROW. Therefore, costs for access roads are not included here.

b. P&SH Yards

For yards that would replicate existing NS yards, both parties based grading requirements on an average fill height of 1 foot. However, the parties disagree

on the amount of earthwork that would be needed for new yards. CP&L assumed that new yards would have the same fill requirement as NS's existing yards. NS calculated the grading for new yards using the method it used for grading of the main line.

There is no apparent reason, and NS has not explained, why the amount of grading in new yards would be different from what has historically been undertaken in existing yards. Therefore, CP&L's method of calculating earthwork quantities for new yards is accepted.

c. Tunnel Daylighting

CP&L assumed that the P&SH would daylight (i.e., use an open cut, rather than a tunnel) any terrain that would require 500 linear feet (LF) or less of excavation. It asserts that modern earthmoving and excavation equipment now make it less expensive to create open cuts on the P&SH route than when the NS line was built, when it was more economical to construct tunnels. NS does not dispute that daylighting would be appropriate, but it does not agree on the amount of earthwork that would be associated with installing daylighted tunnels along the P&SH route.

NS first argues that CP&L understated earthwork quantities (by an average of 49%) because CP&L assumed a side slope ratio of 0.5:1 for the cuts, whereas NS asserts that the minimum standard for a side slope ratio is 1:1. As CP&L points out, however, the reference manual *Railroad Engineering* by William H. Hay recognizes that cuts can have the side slopes proposed by CP&L. CP&L also notes that it provided for 10-foot benches for every 30 feet of vertical height excavation to make the cuts even more stable.[28] Because CP&L's proposed side slopes for daylighted tunnels are reasonably supported, they are used here.

NS also assumes that certain of the daylighted tunnels would be double-tracked and that such tunnels would cost 75% more than similar length single-tracked tunnels. Because NS's configuration for the P&SH is used (which includes double-tracking of certain lines) and because CP&L has not addressed NS's 75% markup for excavating double-track daylighted tunnels, NS's markup is used here where double-tracking would be needed.

Finally, NS applied the assumption contained in CP&L's opening evidence that single-track roadbeds in daylighted tunnels would be 28 feet wide. On rebuttal, claiming that it had made an inadvertent error, CP&L narrowed the width of single-tracked daylighted tunnels to 24 feet to be consistent with its assumption for the rest of the P&SH.[29] NS has objected, claiming that there was no error and that a 28-foot width is necessary.[30] The Board's analysis assumes that single-track daylighted tunnels would have a roadbed width of 28 feet, as it is inappropriate to alter on rebuttal an uncontested assumption.

[28] *See* CP&L Reb. Narr. Vol. 2 at III-F-34; CP&L Reb. WP. at 04313.
[29] CP&L Reb. Narr. III-F-33 n.26.
[30] NS Brief at 38 n.72.

d. Grading Costs

The *Engrg Rpts* classify earthwork into various types: common excavation, loose rock, solid rock, and borrow (material moved to the construction site for fill). In determining the relative amounts of solid rock and loose rock areas along the P&SH, CP&L assumed, as has been the assumption in many prior SAC cases, that 50% of the area classified as solid rock in *Engrg Rpts* would actually be rippable using modern equipment. NS argues that much of the rock classified by *Engrg Rpts* as solid rock would still be classified as solid rock and would require blasting rather than removal by modern ripping equipment. NS points out that the P&SH would traverse the Appalachian mountain range, and it has provided a geologic description of the large masses of solid rock that would be encountered in constructing tunnels. Based on its tunnel study and CP&L's assumption that 90% of the material encountered in daylighting tunnels would be solid rock, NS concluded that 90% of the material classified in *Engrg Rpts* as solid rock would need to be removed by blasting.

NS has misinterpreted CP&L's evidence. While CP&L did assume that 90% of the rock encountered in daylighting tunnels would be solid, it further assumed that half of such rock could be removed with modern ripping equipment. Moreover, NS has provided no support for its assumption that 90% of the solid rock portions of the ROW other than tunnels would require blasting, as the geologic study submitted by NS addresses only tunnel construction. Finally, NS has elsewhere acknowledged that "[m]ost of the mountainous area [that the P&SH would traverse] contains hard shale rock,"[31] a material that its own workpapers indicate is rippable.[32] Thus, CP&L's position that 50% of solid rock would be rippable using modern equipment is the more reasonable assumption and is used here.

In its opening evidence, CP&L proposed a mix of earthwork equipment for use in various soil conditions. NS generally agrees that the equipment proposed by CP&L for excavating common earth would be appropriate for the portion of the P&SH east of Roanoke. However, NS contends that bulldozers, in addition to the scrapers proposed by CP&L, would be needed to spread graded material. The Board has previously determined that scrapers can effectively spread graded material and that bulldozers would not be necessary. *See PPL*, 6 S.T.B. at 305. Accordingly, NS's proposal for additional bulldozers east of Roanoke is rejected.

For grading the P&SH through areas of loose and solid rock, NS contends that the equipment proposed by CP&L would be inadequate, and NS has proposed a different mix of larger, more powerful earthwork equipment. On rebuttal, CP&L acknowledged that some of the equipment in its initial proposal for grading loose and solid rock would be inadequate, and it proposed a mix of equipment that is different both from what it initially presented and from what NS proposed.

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[31] *See* NS Reply Narr. at III-F-23.
[32] *See* NS Reply WP. III-F-0065 (referencing *Means*).

Having failed in its opening evidence to account for the difficulty of grading areas of solid and loose rock in mountainous terrain, CP&L is limited in what it may present on rebuttal on this issue. CP&L objects to NS's unsupported rough-terrain markup for grading the line west of Roanoke. Because NS has not demonstrated the need for such an adjustment, it is rejected. In addition, CP&L has shown that some of the equipment proposed by NS would be unrealistic. CP&L points out that the backhoe-type equipment NS designated for grading the ROW is equipment that is designed primarily for trenching and is relatively inefficient for performing other types of excavation; thus it would likely not be used for the grading of a railroad ROW. Therefore, CP&L's rebuttal proposal to use a power shovel—equipment more suited for excavation than a backhoe—is used here.

CP&L has not shown, however, that the larger bulldozer that NS specifies for ripping rock in the mountainous terrain west of Roanoke is unrealistic. Furthermore, CP&L now concedes that its proposal to use over-the-road dump trucks for moving excavated material was flawed. And CP&L has not shown that NS's proposal to use a 22-cubic-yard off-road dump truck to move excavated material is unrealistic. Thus, while CP&L's rebuttal proposal to use a 42-cubic-yard off-road dump truck would have been appropriate to propose on opening, it is not appropriate on rebuttal given NS's realistic alternative. Therefore, NS's bulldozer and dump truck proposal is used here.

For solid rock excavation, because much of the P&SH would be in remote areas requiring significant drilling and blasting, CP&L used an average of the costs for "bulk drilling and blasting" and "drilling and blasting over 1,500 cubic yards." NS objects to inclusion of a bulk drilling and blasting cost, which it contends represents the lowest possible cost for blasting and pertains only to quarry operations. However, according to *Means* the bulk drilling and blasting cost used by CP&L is not the minimum cost for such activities, but rather an average figure for blasting large quantities of rock.[33] Moreover, there is no indication that the figure used by CP&L pertains only to quarry operations. In fact, *Means* has a separately listed cost for drilling and blasting in pits, which would seem to apply to quarry operations. Therefore, CP&L's unit cost for blasting is reasonable and is used here.

CP&L excluded costs for undercutting (removing structurally unsuitable materials from the roadbed) and fine grading (using specialized equipment to achieve the final grade prior to placement of sub-ballast on the roadbed), claiming that these separate activities would not be necessary. NS would include costs for both, arguing that unsuitable material must be removed to provide a structurally sound roadbed, and that fine grading is required to efficiently shape the roadbed to the required slope. However, given NS's showing that much of the ROW would be constructed in solid rock areas, there should not be much need to remove soft, structurally unstable soil. Furthermore, NS has not

[33] *See* NS Reply WP. III-F-0064 (referencing *Means*).

explained why the normal grading activities would not include fine grading. Therefore, the analysis here does not include such costs.

Finally, CP&L and NS disagree on the amount of land (746 versus 789 acres) that would be required to dispose of waste material generated during the grading process. Because CP&L's lower earthwork quantities are generally accepted, CP&L's lower figure for the amount of land needed for waste material is also accepted.

3. Drainage

The parties offered different cost estimates for installing drainage along the ROW and in yards.

a. Lateral Drainage

CP&L would have the P&SH install lateral drainage along the P&SH ROW at the same time as the other roadbed excavation is performed. CP&L derived the quantity of pipe that would be needed for lateral drainage from *Engrg Rpts* and the cost per LF for installation of pipe from *Means*. In contrast, NS would have the P&SH install the drainage by re-excavating after completion of the initial roadbed grading, and NS would also include costs for geotextile fabric and for hauling away excavated materials.

In prior SAC cases, the Board has concluded that the more efficient construction procedure would be to install drainage at the same time as the other excavation work would be performed. *See, e.g., PPL*, 6 S.T.B. at 306. NS has not demonstrated why that procedure would be infeasible for the P&SH. In addition, NS has not shown why geotextile fabric would be necessary. Therefore, CP&L's evidence on lateral drainage is used here.

b. Yard Drainage

CP&L did not include in its case-in-chief any cost for installing yard drainage. While NS did not discuss the need for yard drainage, its electronic spreadsheets included $9.7 million for such investment.[34] On rebuttal, CP&L conceded that yard drainage would be necessary, but it argued that the investment proposed by NS is excessive and not typically used for rail yards. CP&L would include $900,000 for yard drainage.

Because NS did not discuss why such a high level of investment would be needed, and because CP&L points out that the elaborate drainage system shown in NS's workpapers is not generally used by railroads, CP&L's rebuttal proposal for yard drainage, which appears reasonable, is used here.

[34] *See* NS Reply e-WP. "III F2 Grading.xls" and "III F2 Yard Drainage Summary.xls."

4. Culverts

The parties generally agree that culverts would be used, instead of bridges, to span spaces of less than 20 LF. They disagree, however, on the number of culverts that would be appropriate and on the costs associated with installing them.

a. Quantity

NS argues that the choice between bridges and culverts is not driven by length alone, but must also take into consideration underpass roadway clearances and required hydraulic opening size. NS submits that there are several locations where only a bridge would suffice. Because CP&L does not contest NS's evidence that culverts would be unsuitable for certain locations, NS's estimate of the number of culverts is used here.

b. Costs

CP&L's cost evidence is based on the use of galvanized corrugated metal pipe culverts similar to those used on the existing NS ROW that would be replicated by the P&SH. CP&L also specified precast reinforced concrete box (RCB) culverts to replicate the cast-in-place RCB culverts that are presently in place along the NS ROW. CP&L did not include wing walls, headwalls and scour pads on the RCB culverts, as NS's culverts generally do not have such features. CP&L also excluded costs for stream diversion, claiming that its proposed method of siting culverts early in the construction process would obviate the need for diversion.

NS asserts that the P&SH should use bituminous coated, thicker gauge pipe in order to deter corrosion. NS would also have the P&SH use cast-in-place RCB culverts, arguing that the terrain would make it difficult to move precast culverts to where they would be needed. In addition, NS would have the P&SH add wing walls, headwalls and scour pads to culverts. Finally, NS would include costs for stream diversion during construction of the P&SH.

Non-coated corrugated metal pipe and RCB culverts without wing walls, headwalls, or scour pads should be sufficient for the P&SH, given NS's use of such culverts on its existing line. Furthermore, CP&L has satisfactorily explained that the P&SH could move precast culverts over the ROW after it was cleared and that early siting of culverts would eliminate the need for stream diversion. Accordingly, CP&L's evidence on culvert costs is used.

5. Retaining Walls

The parties differ significantly in their estimates of the number of, and cost associated with constructing, retaining walls along the P&SH ROW. On opening, CP&L included costs for soil stabilization gabions (wire mesh containers filled with stone) in place of the masonry retaining walls listed in *Engrg Rpts*, but on rebuttal CP&L conceded that the P&SH would need

additional gabions to replicate other types of retaining walls identified in *Engrg Rpts*. CP&L included no costs for handling or acquiring aggregate material to fill the gabions, arguing that the rock excavated during construction of the roadbed could be used.

NS argues that the P&SH would need to use structurally stronger retaining wall gabions, which have specialized anchoring and holding hardware needed for retaining walls. In addition, NS would increase CP&L's retaining wall quantities to reflect the higher walls necessitated by the P&SH's use of a wider roadbed than that reflected in *Engrg Rpts* and to account for walls added to the ROW after *Engrg Rpts* were compiled. Finally, NS would include costs to transport, stockpile, and grade the stone used to fill the gabions.

Given CP&L's proposal to use gabions for retaining walls, the P&SH would need to purchase gabions that are specifically suited for this purpose. Also, the quantity of retaining walls shown in *Engrg Rpts* would need to be increased to account for the P&SH's wider roadbed. As roadbed width increases on sloping terrain, retaining wall height would also need to increase. Furthermore, even if local rock were used, it is reasonable to assume that the P&SH would incur costs to handle and sort the rock in order to have materials suitable for preparing structurally sound gabions. Thus, the analysis here includes those costs. However, NS has not demonstrated that the costs must be increased to reflect walls installed after the *Engrg Rpts*. While NS claims to have provided photographs showing post-*Engrg Rpts* walls, those pictures cannot be located in the record and therefore their probative value cannot be assessed.

6. Rip Rap

CP&L included the costs to place rip rap (large stones placed at the ends of drains and culverts to slow and deflect drainage), but not any costs for acquiring, transporting, sorting, grading, and stockpiling materials for rip rap. CP&L asserts that the P&SH would collect material from nearby blasted or ripped rock and that the P&SH would place this material using equipment already present. CP&L contends that, because rip rap can include a wide variety of rock sizes, sorting and grading would be unnecessary.

CP&L has offered no evidence, however, to support its assumption that rock would be readily available at each location requiring rip rap and that there would be no additional cost associated with the construction crews gathering and of utilities should not be included, as NS and its predecessors did not incur stockpiling the needed rock material. Therefore, the analysis here uses NS's evidence, which includes costs to handle, stockpile and transport rip rap.

7. Relocation of Utilities

The parties agree that, consistent with Board policy,[35] costs for the relocation of utilities should not be included, as NS and its predecessors did not incur such costs.

8. Seeding/Topsoil Placement

The parties agree on a cost of $0.18 million for seeding and topsoil placement.[36] (NS, without explanation, uses $0.19 million in its rebuttal spreadsheet.)

9. Water for Compaction

NS would include $8.1 million to cover the cost of one water truck for every 3-5 dozers, arguing that this water would be required for compacting soil. CP&L did not include any cost for water for compaction, arguing that soil in the eastern United States has sufficient water content to allow for compaction. As support, CP&L provided rainfall charts for West Virginia and North Carolina.[37]

The area traversed by the P&SH is not particularly arid, and NS has provided no evidence demonstrating the need for additional water or showing that it uses water for compaction in its own construction projects. Therefore, no cost for water for compaction is included here.

10. Waste Excavation

On opening, neither party submitted evidence on waste excavation costs. In its reply, NS included $0.39 million. CP&L included $0.37 million on rebuttal. Absent any evidence as to why NS's figure is unreasonable, the $0.39 million figure submitted on reply is used here.

11. Road Surfacing

CP&L did not include costs for surfacing existing and detour roads during construction, arguing that NS's predecessors would not have incurred these costs when the lines were originally constructed. CP&L also did not include costs for surfacing access roads, arguing that access roads would not be needed. NS included surfacing costs of $0.45 million. However, there is no evidence that NS or its predecessors incurred these costs. Furthermore, costs for access roads are not included, as discussed above. Accordingly, no road surfacing costs are included here.

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[35] *See TMPA*, 6 S.T.B. at 705-06; *WPL*, 5 S.T.B. at 1024-25; *McCarty Farms*, 2 S.T.B. at 506; *Burlington N.R.R v. STB*, 114 F.3d 206, 214 (D.C. Cir. 1997), *aff'g West Texas*.

[36] *See* NS Reply Narr. Vol. II, at III-F-51.

[37] CP&L Reb. WP. Vol. 2 at 04356-59.

12. Erosion Mitigation

CP&L excluded costs for silt fences that would be used during construction of the P&SH, arguing that they are an environmental remediation cost and, as such, constitute a barrier-to-entry cost that should be excluded from the SAC analysis. To the contrary, the cost of silt fences is properly included, because such fencing is a modern construction technique needed to preserve the newly constructed roadbed and to prevent accumulation of silt in newly installed culverts or drainage ditches. *See TMPA*, 6 S.T.B. at 707 & n.205. Absent such fences, additional costs would be incurred to address the damage from runoff.

CP&L also excluded costs for slope drains (pipes which carry collected water down a slope without exposing the slope face to soil saturation and erosion), on the ground that NS or its predecessors did not incur costs for such drains when constructing the existing ROW. Slope drains are temporary devices used to control water runoff during construction before permanent drainage systems are completed. This cost should be included because slope drains are simply a modern construction practice necessary to avoid the added expense of reworking slopes after heavy rains.

C. Track Construction

A variety of materials would be needed to assemble the tracks of the P&SH. Table D-5 summarizes the cost estimates associated with this aspect of constructing the P&SH.

Table D-5
Track Construction Costs
($ millions)

	CP&L	NS	STB
Sub-ballast	$40.42	$47.69	$40.22
Ballast	21.06	55.63	22.03
Ballast Offloading	0.00	14.47	0.00
Geotextiles	0.00	6.55	1.66
Steel Ties (12mm)	53.45	60.19	57.00
Steel Ties (10mm)	46.38	53.53	46.38
Timber Ties	3.47	6.90	6.14
Transition Ties	0.00	1.72	1.70
New Rail	62.58	77.89	65.89
Relay Rail	49.04	63.58	53.23
Rail Offloading	0.00	7.31	0.00
Field Welds	0.38	2.30	0.39
Joint Bars	0.62	1.28	1.24
Insulated Joints	0.09	0.54	0.11
14-Inch Tie Plates	2.06	2.95	2.82
18-Inch Tie Plates	0.00	1.02	0.17
6-Inch Spikes	0.18	0.33	0.30
Rail Anchors	0.11	0.21	0.20
Spring Clip Assemblies	87.64	93.83	93.60
Switches	13.23	31.25	18.16
Rail Lubricators	2.65	2.88	2.88
Track Construction	158.03	157.98	156.58
TOTAL*	$541.39	$690.06	$570.68

* Columns may not sum to totals because of rounding.

1. Sub-ballast and Ballast

The parties agree on the use of 8 inches of sub-ballast and 12 inches of ballast for main-line track and passing sidings, and on a sub-ballast cost of $7.74 per cubic yard. They disagree on the need for sub-ballast in yards and for set-out

tracks, the quantities of sub-ballast and ballast needed, the unit cost of ballast, and costs for transporting and offloading ballast.

a. Yards

CP&L would have the P&SH install 10 inches of ballast in yards. CP&L argues that 10 inches of ballast over 1 foot of compacted fill would provide sufficient support for the track structure, and CP&L has provided evidence demonstrating that the pressure exerted on the subgrade would be well below the maximum loading specifications of the American Railway Engineering and Maintenance-of-Way Association (AREMA).[38] NS would have the P&SH install 6 inches of sub-ballast (in addition to the 10 inches of ballast) in yards and under set-out tracks because of the heavy axle loads of P&SH trains, the poor soil conditions, and CP&L's exclusion of geotextile fabric in the yards.

CP&L's reliance on the AREMA industry standards is reasonable, and NS has failed to explain why those standards would be inappropriate to use here. Therefore, no cost for sub-ballast in yards is included here. However, because CP&L did not address the issue of ballast and sub-ballast under set-out tracks nor support its exclusion of costs, NS's costs are used for set-out tracks.

b. Quantities of Material

CP&L's calculation for quantities of sub-ballast and ballast excluded the area occupied by ties embedded in the ballast, whereas NS's did not. CP&L's calculation is more accurate, as it recognizes that ties and ballast cannot occupy the same area.

In determining the amount of rock the P&SH would require, quantities expressed in tons must be converted into quantities expressed in cubic yards. To accomplish this, CP&L used a conversion factor of 1.5 tons/cubic yard for sub-ballast and ballast, which it submits is conservative in light of a published 1.325 tons/cubic yard conversion factor for compacted granite ballast.[39] NS used conversion factors of 1.76 tons/cubic yard and 1.62 tons/cubic yard for sub-ballast and ballast, respectively. Because CP&L's conversion factor is supported by a published reference and has not been discredited by NS, it is used here.

c. Unit Costs

CP&L based its ballast cost figure ($4.51 per cubic yard) on information obtained from NS in discovery. NS would restate CP&L's unit cost for ballast to include transportation costs from quarries to the work sites. However, the data on ballast costs that NS supplied to CP&L in discovery indicate that the cost

[38] *See* CP&L Reb. WP. Vol. 2 at 04378-80.
[39] *See* CP&L Reb. WP. Vol. 2 at 04372.

included delivery to the railroad.[40] Therefore, the transportation costs added by NS are a double count and should be excluded.

NS would also add a separate ballast offloading cost of $14.47 million for the labor and equipment needed to move the delivered ballast onto the track structure after the laying of the rail. CP&L argues that the contractor responsible for track construction would offload the material. It is reasonable to assume that a quote from a contractor for laying the track and installing the ballast would include the cost for placing the ballast along the ROW. Therefore, a separate offloading cost is rejected.

2. Geotextile Fabric

CP&L excluded geotextile fabric on the ground that NS did not incur this cost, because geotextile fabric was not developed until 1968 and virtually all of the NS lines that would be replicated by the P&SH were built before that time. NS argues that it is now standard railroad practice to use geotextile fabric to improve roadbed stabilization in locations subject to diverse lateral forces (such as turnouts and road crossings) and locations with poor subgrade quality, and that failure to include geotextile fabric would increase the need for spot surfacing. NS further argues that CP&L's proposal to use steel ties would increase the need for geotextile fabric, because more lateral force is transmitted to the subgrade under steel ties. Accordingly, NS would have the P&SH include geotextile fabric costs for all turnouts and crossings, for all curves greater than 6 degrees, and for 10% of the remainder of the P&SH to account for poor soil structure. NS would use a unit cost of $1.15 per square yard delivered, and it would add labor, overhead and profit based on *Means*.

The installation of geotextile fabric under all turnouts and crossings is now a standard practice and, as such, its cost is properly included in the SAC analysis. *See TMPA*, 6 S.T.B. at 710; *Arizona*, 2 S.T.B. at 406. However, because NS has not shown that geotextiles would be required under steel ties or that it has installed geotextile fabric elsewhere on its own system, this cost is included here only for turnouts and crossings on the P&SH.

3. Ties

CP&L and NS would include $103.31 million and $122.17 million, respectively, for ties.[41] The parties agree that the P&SH would be constructed with heavy-duty (12mm) steel ties for main lines, and industrial duty (10mm) steel ties for spur lines and light-duty connecting tracks. They agree on a tie spacing of 24 inches for tangent track and on curves of 6 degrees or less. They would use industrial-grade wood ties in yards and for set-out tracks. The parties also agree on a wood tie cost of $20 per tie, with a transportation allowance of $1.50 per tie, and they agree on the cost of steel ties and associated hardware.

[40] *See* CP&L Open. WP. Vol. 5 at 02750.
[41] *See* CP&L Reb. e-WP. "IIIF Total.xls;" NS Reply e-WP. "IIIF Construction Total CPL.xls."

However, they do not agree on the need for or cost of transition ties (i.e., larger ties used to absorb some of the impact when a train moves from stiffer steel-tied track to more flexible wood-tied track), the inclusion of transloading costs for steel ties, and tie spacing on curves greater than 6 degrees. Each of these issues is discussed below. The remaining difference in the parties' cost estimates is due to the difference between their network configurations. The parties' tie requirements are restated based on the network configuration accepted in Appendix A – P&SH Configuration.

a. Transition Ties

In its opening evidence, CP&L did not include a cost for transition ties. On rebuttal, CP&L agreed to the use of transition ties on main line switches; however, CP&L would not place transition ties at approaches to yards and bridges. Also, CP&L would use 12' x 7" x 9" ties as transition ties, in place of the specialized transition ties proposed by NS.

While CP&L acknowledges that transition ties would be necessary, it has not provided evidence on the number of ties that would be needed on the main line. Thus, the number of ties proposed by NS, which is the only evidence as to the number of transition ties that would be needed, is used here. As to the type of transition tie to use, there is no indication that NS's proposal is unrealistic. Accordingly, NS's cost figure for transition ties is used here.

b. Transportation Cost

NS would include costs for transloading steel ties from a barge in Lemont, IL, and transporting them to the various P&SH construction railheads. CP&L explains that it did not include such costs because its tie vendor indicated that the ties could be shipped to Kenova (a point on the P&SH) for the same price as shipping to Lemont,[42] and thus a separate transloading cost would not be necessary. Because CP&L's cost evidence for steel ties includes transportation to P&SH railheads, CP&L's evidence on this cost is used here.

c. Tie Spacing

CP&L would use the same tie spacing on tangent track and curves, while NS would have the P&SH use a reduced tie spacing on curves of greater than 6 degrees. Because steel ties are relatively new, there is no industry standard on tie spacing, and NS has not demonstrated that CP&L's spacing of steel ties would need to be reduced. Therefore, the analysis here uses CP&L's evidence on this point.

[42] *See* CP&L Reb. Narr. Vol. II at III-F-87.

4. New Rail

The parties agree that the P&SH would use 136-pound premium continuous welded rail (CWR) on main-line track between Kenova and Vabrook, and on curves of 3 degrees or more elsewhere, and that it would use 136-pound standard CWR for all other main-line track. These specifications are used in conjunction with the miles of track accepted in Appendix A – P&SH Configuration to develop the quantity of each type of track needed.

CP&L used a price of $500 per ton for standard CWR and $550 per ton for premium CWR. NS used a cost figure of $600 per ton for standard CWR and $650 per ton for premium CWR. NS argues that CP&L's lower unit costs are unrealistic because they are based on quotations from a small supplier that likely would not be able to supply the quantity needed to construct the P&SH. However, NS has not shown that CP&L's supplier would be any less capable of supplying rail to the P&SH than the supplier that NS used for its price quote. Accordingly, CP&L's unit cost figures are used here.

5. Relay Rail

The parties agree that the P&SH would use 115-pound welded relay rail on the main line between Vabrook and Hyco and on branch and spur lines, and 119-pound jointed relay rail in yards and on set-out tracks. They also agree on the cost of 115-pound rail. For 119-pound rail, NS would increase CP&L's cost (from $400 per ton to $475 per ton) to account for transportation costs. However, CP&L's evidence indicates that its cost estimate included transportation costs.[43] Therefore, CP&L's $400 per ton figure is used here.

6. Rail Offloading

NS would add separate costs for offloading and distributing rail materials along the P&SH roadbed. However, it is reasonable to assume that a contractor's quote for installing rail would include the cost of placing the rail on the ties. Thus, the analysis here does not include a separate cost for offloading.

7. Field Welds

CP&L included a unit cost of $55.25 for field welds. NS contends that CP&L's estimate is understated because it does not include labor costs. However, the quote CP&L obtained from the contractor that would install the CWR indicates that the contractor would provide all the labor to lay the track sections. Thus, CP&L's unit-cost figure for field welds is used here.

[43] *See* CP&L Reb. WP. Vol. 2 at 04395.

8. Joint Bars

Joint bars are required where CWR rail is not used. On opening, CP&L did not include any costs for joint bars in yards or set-out tracks where jointed track would be used; nor did it explain why joint bars would be unnecessary. NS would include a cost for joint bars. On rebuttal, CP&L recognized the need for joint bars and simply substituted a lower cost, for which it provided no support. Accordingly, NS's cost estimate for joint bars is used here.

9. Insulated Joints

Insulated joints are required on rails both before and after turnouts and at approximately 3-mile intervals in centralized traffic control (CTC) territory. The parties disagree on both the cost and number of insulated joints that would be required on the P&SH. On opening, CP&L used a cost of $80 each, based on a third-party quotation and, without any support, proposed a quantity of 100 insulated joints. NS included a cost of $375 per insulated joint, also based on a third-party quotation, and a quantity of 1,358 insulated joints. On rebuttal, CP&L increased the number of insulated joints it would install to 1,134.

Because CP&L's unit-cost estimate is supported by evidence and NS has not shown why its higher cost should be used, CP&L's unit-cost figure for insulated joints is used here. However, because the number of insulated joints is dependent on the P&SH's configuration and NS's proposed configuration for the P&SH is used here, NS's proposed quantity of insulated joints is used.

10. Tie Plates, Spikes, Rail Anchors, and Spring Clips

The parties agree that the P&SH would use 6-inch spikes, rail anchors and spring clip assemblies. They also agree on the use of four spikes per tie (two per plate) and a set of four rail anchors every fifth tie for wood ties in yards and set-out tracks. CP&L would have the P&SH use 14-inch tie plates. NS argues that 18-inch tie plates would need to be used. However, NS itself currently uses 14-inch tie plates; therefore, it would seem reasonable for the P&SH to do so as well. Because NS does not dispute CP&L's cost figures, CP&L's figures are used here.

11. Switches

Switches (turnouts) would be required where trains would enter, exit or cross the main-line track, or navigate on yard tracks. The parties agree on the switch specifications: AREMA No. 14 turnouts for all main track and passing track sections; AREMA No. 14 turnouts for lower speed sections and interchanges; and AREMA No. 10 turnouts for yard, set-out tracks and low-speed mine leads. But they disagree on the number of switches that would be required and the unit costs for switches. The parties' differing quantities are based on their differing configurations for the P&SH. As discussed in Appendix A – P&SH Configuration, NS's proposed network configuration for the P&SH, with limited

modifications, is used here. The switch count used here is based on that restated network configuration.

CP&L's cost estimates are based on quotations for switches and switch components. NS's cost estimates were for complete switch packages rather than individual components. NS claims that CP&L's method of pricing individual components produces an unrealistic estimate of the total cost of switch installation. However, NS has failed to demonstrate that switch costs cannot be properly developed from a combination of component parts. Accordingly, CP&L's cost estimates are used in the restatement here.

12. Rail Lubrication

The parties state that they agree to a rail lubricator unit cost ($5,080) and quantity (566), for a total cost of $2,875,280. Nevertheless, on rebuttal CP&L used a different, slightly lower figure for the number of lubricators. The Board's analysis uses the agreed-upon number.

13. Track Construction (Labor and Equipment)

CP&L and NS included $158.03 million and $157.72 million, respectively, for track construction costs. The difference in their estimates is due to their differing configurations for the P&SH. Because NS's proposed basic configuration for the P&SH is used here, its unit cost for track construction costs is also used.

D. Tunnels

The parties agree that the P&SH would have 52,949 LF of tunnels. CP&L would only provide for single-track tunnels, whereas NS would have 10 of the 59 tunnels on the P&SH double-tracked. The parties agreed to base the cost for single-track tunnels on the $2,561 per LF figure developed in *Coal Trading*, 6 I.C.C.2d at 422. Using *Means*, CP&L indexed this cost from 1980 to 2002, arriving at a current unit cost of $5,150 per LF. In contrast, NS used an AAR index to inflate the costs from 1978 to 2002, arriving at a current unit cost for single-track tunnels of $7,223 per LF.

While the SARR in *Coal Trading* was to be built in 1977-78, the costs were developed for 1980 and then indexed back (in the DCF analysis) to the time the various assets would have been needed for construction.[44] Thus, the cost in *Coal Trading* was expressed in 1980 dollars. Moreover, the *Means* construction index is more appropriate for tunnel construction costs than is an AAR index, which is a more general railroad price index. Therefore, CP&L's figure for single-track tunnels is used here. However, because NS's configuration for those portions of the P&SH where tunnels would be required has been accepted, the

[44] *See Coal Trading*, 6 I.C.C.2d at 378.

analysis here assumes that 10 tunnels would need to be doubled-tracked. As NS has provided evidence that the cost of a double-tracked tunnel would be 175% of the cost of a single-track tunnel and that is the only evidence of record on the issue, that percentage is used here to develop the cost of constructing double-tracked tunnels.

E. Railroad Bridges

The difference in the parties' bridge estimates is due to disagreements on the number of bridges, the design of bridge superstructures and substructures, and certain unit costs for materials. The parties' cost estimates and the restatement used here are shown in Table D-6 below.

Table D-6
Railroad Bridge Costs
($ millions)

	CP&L	NS	STB
Type I	$18.59	$49.74	$31.38
Type II	22.54	114.64	81.21
Type III	158.96	177.88	148.30
TOTAL	$200.09	$342.25	$260.89

1. Number of Railroad Bridges

NS has challenged the number and size of bridges included in CP&L's cost estimates. CP&L generally agrees with NS's bridge inventory.[45] But CP&L argues that NS has understated the number of bridges that could be replaced with culverts, that NS wrongly assumed that some bridges would be multi-tracked rather than single-tracked, and that the cost of 54 railroad bridges over highways should be excluded because NS did not bear the cost of constructing those bridges.

Because CP&L's proposal to substitute culverts for all existing bridges of less than 20 feet is rejected (*see* Culvert discussion above), the analysis here uses NS's estimate of the number of bridges. And because NS's general network configuration for the P&SH is used, the analysis here uses the multi-tracked bridges proposed by NS. However, it is the Board's policy not to include in a SAC analysis costs that the incumbent railroad has not itself incurred. Therefore, the restatement here excludes the costs associated with constructing the 54

[45] *See* CP&L Reb. III-F-100.

bridges over highways identified by CP&L, as there is no evidence that NS or its predecessors paid for those bridges.

2. Bridge Design and Unit Costs

The parties' bridge cost evidence used bridge categorizations based on length. Type I bridges would be 20-40 LF, Type II bridges would be 40-75 LF, and Type III bridges would be 75-125 LF. As discussed below, the parties disagree on various matters relating to bridge construction in general, as well as on some matters that relate to specific bridge types.

a. Span Lengths

The parties calculated a slightly different average span length, reflecting the differing number of NS bridges that they assumed the P&SH would replicate. As discussed above, the analysis here excludes costs for the 54 bridges over highways that NS would have included, but it includes some Type I bridges that CP&L assumed could be replaced with culverts. Accordingly, the average bridge span length here is based on the restated number of bridges used here.

b. Handrails

CP&L proposed to use 34-inch high handrails, whereas NS would have the P&SH use 42-inch handrails based on AREMA standards. CP&L argues that AREMA standards are guidelines rather than requirements and that NS's own bridges often do not even have handrails.[46] However, CP&L has relied on the AREMA specifications in other aspects of its bridge design. And the single photograph of an NS train that CP&L submits as evidence of a lack of handrails on NS's bridges is not persuasive, as it does not identify the line or bridge in the photograph or the date of the photograph. For these reasons, it is appropriate to use the 42-inch handrails specified by AREMA.

c. Steel

The parties agree on the cost for structural steel. But CP&L's workpapers do not show that it included the cost of reinforcing steel. As NS points out, CP&L's proposed bridges include concrete abutments, wing walls, and piers—all of which would require reinforcing steel.[47] NS's evidence on this cost is thus used here.

[46] *See* CP&L Reb. WP. Vol. 2 at 04523.
[47] *See* CP&L Open. WP. Vol. 5 at 02915-16.

d. Cofferdams

CP&L initially did not include any costs for cofferdams (i.e., watertight enclosures from which water is pumped to expose the bottom of a body of water to permit construction of a pier). On rebuttal CP&L conceded that some cofferdams would be required, but it would limit the use of cofferdams to 20% of the piers on Type II and Type III bridges. However, CP&L has not demonstrated that NS's proposal is unrealistic. Cofferdams are generally used for underwater construction. Accordingly, NS's cost evidence for cofferdams is used here.

e. Rip Rap

As discussed above, CP&L included the costs to place rip rap, but not any costs for acquiring, transporting, sorting, grading, and stockpiling materials for rip rap. CP&L has offered no evidence, however, to support its assumptions that rock would be readily available at each location requiring rip rap and that there would be no additional cost associated with the construction crews gathering and stockpiling the needed rock material. Therefore, the analysis here uses NS's evidence, which includes costs to handle, stockpile and transport rip rap.

f. Transportation

NS would add costs for transporting materials to the construction sites. CP&L claims that transportation costs are included in the material unit costs it used, but there is no indication in CP&L's evidence that these costs were included. Therefore, NS's separate evidence on transportation costs is used here.

3. Superstructures

a. Type I Bridges

The parties generally agree on the specifications for Type I bridges, but they dispute whether a separate walkway would be needed for these bridges. CP&L notes that AREMA guidelines allow a minimum 2-foot width gravel shoulder to be used instead of a separate walkway on ballasted deck bridges. Because CP&L's proposal to use 14-foot-wide bridges meets or exceeds the AREMA requirements, its evidence is used here.

b. Type II Bridges

The parties disagree on the number of tie hook bolts and the number of guard timbers for Type II bridges. CP&L's opening evidence did not include hook bolts. NS would have the P&SH include hook bolts on every bridge timber, allegedly based on AREMA standards. However, a review of the AREMA guidelines reveals no hook bolt standards. Moreover, as CP&L pointed out on

rebuttal, NS's own standard is to place a hook bolt only at every fifth tie.[48] Therefore, CP&L's rebuttal evidence, which would place a hook bolt on every fourth timber, is accepted and used here.

CP&L initially provided for no guard timbers. NS would place 4" x 8" timber curbing on one side of the deck. On rebuttal, CP&L agreed that guards would be needed and proposed to use 2" x 6" guard timbers placed on both sides of the deck. However, CP&L has not shown that NS's proposal is unrealistic. Therefore, NS's evidence is used here.

c. Type III Bridges

As with Type II bridges, CP&L's placement of hook bolts on every fourth timber and NS's use of 4" x 8" timber curbing are accepted for Type III bridges. Also, while the parties differ on the spacing of girders on Type III bridges, they agree that the AREMA standard is appropriate. Accordingly, the restatement here uses the AREMA recommendation that girder spacing be 1/15 of the deck span.

4. Bridge Substructures

a. Piles

NS notes that the type of pile proposed by CP&L is no longer manufactured, and NS has proposed a substitute pile. CP&L assumes that another manufacturer would enter the business and make those piles for the P&SH. But in designing a SARR, the proponent of the design must show that its proposal is feasible. It is inappropriate to assume that a construction component that is not actually currently available would nevertheless be available to the SARR. Accordingly, NS's pile design is used here.

NS also argues that CP&L understated the bearing requirements for each type of bridge, because the local soil conditions cannot support bridges with the number of piles specified by CP&L. CP&L disputes this, but accepts NS's proposal for additional piles.[49] Therefore, NS's evidence is used here.

b. Abutments

While NS accepts CP&L's abutment types, NS would change the footing design based on the loads that would be applied to the abutments. CP&L responds that its abutment components are designed to meet Cooper E80 loading requirements for railroad bridges and they have been used in actual bridge construction projects and bids.[50] Nevertheless, CP&L accepts NS's abutments for Type I, II and III bridges. Therefore, NS's abutment cost is used here.

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[48] *See* CP&L Reb. WP. Vol. 2 at 04455.
[49] *See* CP&L Reb. Narr. Vol. II, at III-F-107.
[50] *See* CP&L's Open. WP. Vol. 5 at 02915-16.

c. Pier Height

CP&L calculated pier height as 70% of the bridge height, measured from the top of rail to the top of the ground or normal water elevation. In contrast, NS would subtract the actual average superstructure depth from the total bridge height. NS's method, which is based on the actual measurements of the structures that would be replicated by the P&SH, is superior and is used here.

F. Signals and Communications

As shown in Table D-7, the parties disagree on the costs of providing a signaling and communication system.

Table D-7
Signals and Communications
($ millions)

	CP&L	NS	STB
CTC	$35.23	$39.89	$39.89
Signals in Dark Areas	14.93	12.93	12.93
Failed Equipment Detectors	1.02	1.03	1.03
Slide Fences	0	28.38	28.38
Communications (Microwave Sys.)	42.52	60.84	53.53
TOTAL	$93.70	$143.08	$135.77

1. Centralized Traffic Control

The parties agree that the P&SH would have CTC on the main lines from Kenova to Vabrook, with a computer-assisted "track warrant control" system on other signaled lines. CP&L and NS agree on the unit costs for the CTC, but not on the total costs. NS would have the P&SH use more signals for its double- and triple-track configuration and would place signals in more locations than would CP&L. Because NS's basic configuration is used here, and because CP&L has not shown that signals would be unnecessary at any of the specific locations identified by NS, NS's cost figures for CTC are used here.

2. Signals in Dark Areas

CP&L and NS agree on how to estimate costs for signaling in dark territories, but their cost figures differ due to differences in their proposed network configurations for the P&SH. Because NS's proposed configuration is used here, NS's estimate for signaling in dark areas is also used.

3. Failed Equipment Detectors

CP&L and NS agree on the cost for failed equipment detectors.

4. Slide Fences

CP&L did not include a cost for slide fences. NS states that such fences would be needed in the mountainous terrain to detect earth and rock slides. Because CP&L has not responded to this argument, NS's evidence is used here.

5. Communications

On opening, CP&L proposed a satellite-based communication system. On rebuttal, it adopted NS's proposed microwave-based system, but CP&L notes that certain equipment costs are already reflected as operating expenses and that NS's proposed tower count exceeds the number of towers actually on the NS lines that the P&SH would replicate.

NS's microwave costs are accepted, but restated to exclude costs for equipment already included in operating expenses. Also, because CP&L's evidence shows that NS's proposed tower count is unrealistic based on NS's own system, NS's tower count is restated to comport with the 36 towers actually on the NS lines that the P&SH would replicate.

G. Buildings and Facilities

The parties disagree on the costs associated with fueling and wastewater treatment facilities, locomotive and car repair shops, a headquarters building, MOW and roadway buildings, scales, and yard air and lighting. Table D-8 below summarizes the parties' cost estimates and the Board's restatement.

Table D-8
Facilities
($ millions)

	CP&L	NS	STB
Fueling Facility	$7.60	$10.62	$10.26
Wastewater Treatment	0.11	2.08	2.08
Locomotive Shop	3.41	14.05	14.05
Car Repair	0.00	10.44	0.00
Headquarters Building	1.35	1.86	1.86
MOW & Roadway Buildings	1.56	6.83	6.83
Scales	0.00	0.90	0.00
Yard Air and Lighting	0.00	2.83	2.83
TOTAL	$14.03	$49.60	$37.91

1. Fueling Facilities

CP&L would locate P&SH locomotive fueling facilities at Kenova and West Roanoke, at a cost of $7.6 million. NS argues that CP&L's estimate is based on a smaller locomotive fleet than would be needed and therefore understates the scope of fueling. NS estimated a cost of $10.62 million for fueling facilities at these locations. CP&L objects to the inclusion of fuel meters, claiming that other Class I railroads' fueling facilities do not have meters and that meters would not be necessary to measure fuel that would be consumed only by P&SH locomotives.

The size of fueling facilities is related to the number of locomotives to be fueled. Because NS's proposed operating plan and resulting locomotive requirements are used here, NS's cost estimate for fueling facilities is used. However, the cost of fuel meters is excluded as an unnecessary expense because the P&SH would be the only railroad whose locomotives would use the fueling facilities.

2. Wastewater Treatment

On opening, CP&L included $110,647 for wastewater treatment, but it did not provide any support for that figure. NS challenged this figure as too low, and it has proposed a cost of $2.1 million. On rebuttal, CP&L neither contested NS's evidence nor offered support for its own figure. Accordingly, NS's cost estimate is used here.

3. Locomotive Shop

CP&L and NS would include $3.4 million and $14.05 million, respectively, for a locomotive repair facility.

a. Building

CP&L would have the P&SH build a 47,000-square foot locomotive maintenance and repair building. This building would be capable of simultaneously handling 16 locomotives for routine maintenance, with space outside of the building for minor repair of five additional locomotives. NS argues that the P&SH would need a 61,000-square-foot shop, plus an additional 3,000-square-foot common area, to accommodate the larger locomotive fleet that it claims the P&SH would need. The appropriate building size is dependent upon the locomotive fleet size. Because NS's operating plan and its fleet size (as restated) are used here, NS's proposed building size is also used.

CP&L's building cost per square foot was based on third-party quotations.[51] NS relied on a building cost per square foot based on AREMA standards.[52] Under those standards, locomotive repair facilities require 44-foot ceilings, whereas CP&L's quotations are for a facility with only a 24-foot ceiling. At times, engines are removed from locomotives by overhead cranes, and a 24-foot ceiling would not provide enough clearance for such operations. NS's unit cost is therefore used here, as it would provide for the required ceiling height.

b. Equipment

CP&L claims that, because the P&SH would acquire locomotives under a full-service lease agreement, it would not need to provide all of the equipment required for locomotive repairs. NS argues that, even under a full-service lease agreement, the P&SH would need to provide the necessary equipment to service the locomotives. CP&L agrees with NS and, on rebuttal, included much of the equipment in NS's proposal. However, CP&L has not provided sample lease agreements or any other evidence supporting its argument that a contractor would provide the remainder of the equipment necessary to support the repair facility. Therefore, NS's estimate for equipment that the P&SH would need to provide at the locomotive repair facility is used here.

4. Car Repair

CP&L did not include costs for car repair facilities, arguing that under a full-service lease repairs would be made by a third-party contractor at the contractor's

[51] *See* CP&L Open. WP. Vol. 6 at 03018.
[52] NS Reply e-WP. III-F-7 "Facilities/W. Roanoke Shop.xls."

facilities.[53] (CP&L included the cost of the full-service lease as an operating expense.) Claiming that there are no contractor facilities close to the P&SH route, NS would include $10.4 million to construct and equip a 26,000-square-foot car repair facility at West Roanoke and a 19,000 square-foot facility at Kenova, as well as a small car repair track at Bluefield where 1,000 mile inspections would be performed.[54] On rebuttal, CP&L supported its initial evidence by noting that a repair facility is located within a few miles of the P&SH.[55] Accordingly, the P&SH would not need to build its own car repair shop.

5. Headquarters Building

CP&L would locate the P&SH's headquarters building at West Roanoke, because of its central location on the P&SH system. The facility would accommodate the P&SH's senior operating supervisory staff, clerical and dispatching staff, customer service personnel, CTC control center, and general and administrative staff. This building also would serve as an away-from-home terminal for train crews, as well as the base for the mechanical and MOW personnel stationed at West Roanoke.

The parties generally agree on the building size and the cost per square foot, but they disagree on site development costs. CP&L estimates the total cost at $1.35 million, while NS estimates the cost at $2.75 million. NS's estimate is higher because it includes funds for insurance, surveys, and other costs that would be incurred before constructing a building. Because CP&L has failed to account for all of the necessary costs, NS's cost estimate is used here.

6. Maintenance-of-Way and Roadway Crew Change Buildings

Both parties would include six roadway crew change buildings. CP&L estimated the cost at $0.58 million, while NS estimated the cost at $1.69 million.[56] For MOW facilities, based on their respective MOW plans, CP&L included nine buildings at a total cost of $0.98 million, while NS included 19 buildings at a total cost of $5.14 million. The differences in the cost estimates are due not only to the difference in the number of MOW buildings, but also to differences in the square footage allotment per employee and the cost per square foot to construct these buildings. NS adjusted CP&L's building size to accommodate NS's proposed staffing requirements. And while NS used a cost per square foot for the buildings that was $0.37 less than the cost used by CP&L on opening, CP&L argued on rebuttal for an even lower unit cost, claiming that NS had included unnecessary items, such as paved parking areas.

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[53] *See* CP&L Open. Narr. III-D-5.

[54] *See* NS Reply Narr. Vol. II III-F-113; NS Reply Narr. III-D-13-14, III-F-117-18; NS Reply e-WP. "IIIF/Workpapers/IIIIF7 Car Shop Building.xls" and "IIIIF/IIIIF7 Facilities.xls."

[55] CP&L Reb. WP. Vol. 2 at 04465.

[56] CP&L Reb. WP. Vol. 2 at 04462-63; NS Reply e-WP. "III-F-7 Roadway Bldgs.xls".

Because NS's proposed operating plan (including its MOW plan and requirements) is used here, its building quantities and its restated square footage requirements are also used. In addition, NS's unit costs are used. CP&L's attempt to impeach NS's proposed unit costs as too high contradicts the evidence in CP&L's own opening evidence, which used unit costs even higher than those proposed by NS.

7. Scales

NS asserts that the P&SH would require weigh-in-motion scales at Kenova, Celco, and West Roanoke, at a cost of $300,000 each, including the communications equipment necessary to transmit the weights to the P&SH billing system. However, as CP&L notes,[57] industry practice is to weigh large-volume movements of coal at either origin or destination. Accordingly, the P&SH would not need scales.

8. Yard Air and Lighting

NS would have the P&SH place an air system at each end of yards, to expedite train departure by eliminating the need for locomotives to pressurize a train's air system. CP&L argues that such systems would not be required, because locomotives attached to the trains would maintain air pressure for brakes. However, CP&L has not shown that a locomotive would be attached to all sets of cars at all times. Thus, the P&SH yards would appear to need an air system.

The parties agree that lighting would be necessary, but CP&L failed to include any costs for this in its spreadsheets. Accordingly, NS's evidence on both yard air and yard lighting is used here.

H. Public Improvements

Table D-9 lists the type of public improvements and associated costs that the parties estimate would be necessary along the P&SH ROW.

[57] CP&L Reb. Narr. Vol. 2 at III-F-121.

Table D-9
Public Improvements
($ millions)

	CP&L	NS	STB
Fences	$0.00	$16.35	$0.00
Signs	0.17	1.17	0.17
Road Crossing Protection	0.00	2.95	2.95
At-Grade Highway Crossings	0.00	4.84	4.80
Grade-Separated Highway Crossings	0.00	5.59	5.59
Yard Access Roads	0.38	0.38	0.38
TOTAL	$0.55	$31.28	$13.89

1. Fences

CP&L inspected about 70% of the NS lines that the P&SH would replicate, and it did not encounter any fencing there. Thus, it did not include any cost for fencing for the P&SH. NS would include costs to fence approximately 47.5% of the line, relying on *Engrg Rpts* and 10 photographs to show that its ROW is fenced.

While the photographs submitted by NS show random lengths of fencing, they do not show any railroad track.[58] Moreover, while *Engrg Rpts* indicates some fencing of the lines that would be replicated by the P&SH, CP&L's line inspection provides a more up-to-date assessment of current fencing. Because CP&L has presented the best evidence of record on this issue, no fencing costs are included here.

2. Signs

CP&L included costs for installation of milepost, whistle post, and flanger signs, as well as some speed restriction and resume speed signs. NS claims that station and yard signs, as well as advance warning, additional speed restriction, and resume speed signs, would also be necessary for safe and efficient train operation. NS acknowledges that yard limit, reduce speed, and resume speed areas are set forth in the railroad operating timetable, but it asserts that a locomotive engineer would not consult the timetable for speed changes during a

[58] *See* NS Reply WP. III-F-0900.

trip. On rebuttal, CP&L pointed out that crews are required to be familiar with conditions on the line over which they operate before beginning a trip.[59]

While it claims that "standard safety procedure" would require signs at all of the locations it has specified, NS has offered no support for the extent of the warning signs that it advocates. Indeed, station signs would not be appropriate because the P&SH would have no stations. Accordingly, CP&L's cost evidence for signs is used here.

3. Road Crossing Protection

CP&L included no costs for crossing protection. NS would include crossing protection costs for those grade crossings included in *Engrg Rpts*. NS estimates that it incurred 10% of the cost for crossing protection at those crossings. NS has offered the only evidence of the extent to which those costs were incurred by the railroad. Moreover, that evidence is consistent with evidence that has been offered by railroads in other SAC cases that their predecessors paid for about 10% of the costs associated with crossing protection. *See, e.g.*, *TMPA*, 6 S.T.B. at 742. In the absence of better evidence, it seems reasonable to use this factor in SAC cases, rather than including 100% of the cost of replicating those assets identified in *Engrg Rpts*. Accordingly, NS's crossing protection cost estimates are used here.

4. At-Grade and Grade-Separated Highway Crossings

NS would include costs for all at-grade and grade-separated highway crossings identified in *Engrg Rpts*. CP&L argues that *Engrg Rpts* are not helpful in determining whether NS or its predecessors paid for these crossings, because the rules governing the data collection for those reports allowed railroads to count the cost of construction even when their contribution to construction costs might have been minimal or non-existent. However, NS maintains that, even where the railroad preceded the highway, the railroad was typically responsible for approximately 10% of the cost of the crossing. Accordingly, NS would include in the SAC analysis 10% of the cost of these highway crossings.

It is reasonable to presume that, where a group of assets are listed in *Engrg Rpts*, the existing railroad, or its predecessor, incurred some investment cost. Thus, to the extent that such investment is still necessary for current rail operations, it is appropriate to include those costs in the SAC analysis. Because NS has provided the only crossing cost evidence, its evidence is relied upon here.

5. Yard Access Roads

The parties agree that $0.38 million would be needed for yard access roads.

[59] *See* CP&L Reb. WP. Vol. 2 at 04566-04567.

I. Mobilization

Mobilization involves the marshaling and movement of people, equipment, and supplies to the various construction sites. A mobilization factor is calculated as a percentage of the construction costs (excluding land, engineering, and contingency costs). CP&L only included funds for initial mobilization, which it estimated at $9.6 million, or 1% of those construction costs that it claims do not already include such costs. CP&L argues that a 1% markup is sufficient, because the construction bids it used include mobilization and demobilization costs and *Means* supports low mobilization costs.[60] CP&L notes that in *WPL*, 5 S.T.B. at 1036, a 1.2% markup was used for mobilization. But that figure was in addition to separate costs for performance bonds and demobilization that were included in *WPL*.

NS does not contest using a 1% markup for track, signals and communications, and buildings and facilities, but NS would apply a higher markup to roadbed preparation, tunnels, and bridges. NS would also include additional mobilization costs for establishing field offices and staging areas along the P&SH. On rebuttal, CP&L agreed that funds should be included to establish field offices and staging areas. Unlike CP&L, NS would include costs for demobilization and performance bonds. NS estimated total mobilization costs (covering initial mobilization, demobilization, and performance bonds) to be approximately 2.6% of total construction costs (or $77.9 million).

CP&L's evidence is unacceptable, as it ignores several cost elements (bridge mobilization, performance bonds, and demobilization) that have been included in prior SAC cases. Because CP&L has failed to meet its burden of establishing the reasonableness of its cost estimate on this issue, its evidence is rejected, and NS's 2.6% mobilization factor is used as the best evidence of record. NS's evidence is in line with the factor accepted in prior cases. *See TMPA* (2.0% mobilization factor); *PPL* (2.2% factor); *WPL* (2.6% factor); *FMC* (2.4% factor); *Arizona* (2.8% factor); *West Texas* (3.2% factor).

J. Engineering

Engineering costs would be incurred to plan, design, and manage the construction of the P&SH. The parties calculated engineering costs as a percentage of most categories of investment costs (except land). Table D-10 below summarizes the parties' evidence on this cost.

[60] *See* CP&L Open. Narr. at III-F-51-56; CP&L Reb. Narr. at III-F-125-129.

Table D-10
Engineering Costs

		CP&L	NS	STB
Percentage of	Basic Engineering Services	5.0%	5.7%	4.0%
	Planning & Feasibility Studies	0.0%	0.5%	0.0%
	Geotechnical Investigation	0.0%	0.7%	0.0%
	Construction Management	0.0%	4.3%	4.3%
	Resident Inspection	1.8%	1.8%	1.8%
	Total	6.8%	13.0%	10.1%
Flat Fee	Location & Design Surveys ($M)	$0.0	$6.4	$0.0
	Environmental Permitting ($M)	$0.0	$7.9	$0.0

The parties disagree as to what activities should be encompassed within the basic engineering services designation. CP&L argues that planning and geotechnical studies, as well as management of the construction project, are part of basic engineering services. CP&L notes that the American Society of Civil Engineers' *Manual 45* lists six standard phases of a construction project and that five of those six phases (study and report, preliminary design, final design, bidding or negotiating, and construction) are factored into the estimates of basic engineering services in the references upon which CP&L relied. NS asserts that basic engineering services do not include planning/feasibility studies, location and design surveys, and geotechnical subsurface investigations.[61] However, NS provided no support for that assertion. Therefore, CP&L's evidence that the basic engineering services include planning, surveys, and geotechnical studies is relied upon here.

The major difference between the parties' basic engineering services percentages stems from their differing characterizations of the complexity of the P&SH construction. NS asserts that all of the P&SH's construction would be above-average in difficulty. CP&L, however, notes that the terrain in western Pennsylvania is similar to much of the terrain the P&SH would traverse and that the American Consulting Engineers Council of Pennsylvania designates bridge and tunnel construction as "above-average" in complexity but railway construction otherwise as only "average" in complexity. As CP&L points out, only 35% of the P&SH's total cost would involve bridges and tunnels, and

[61] *See* NS Reply Narr. Vol. II at III-F-139.

CP&L's proposed engineering factor takes that into account. Because CP&L has supported its evidence on this point, CP&L's evidence is relied upon here.

The remaining dispute centers on whether the P&SH would use a construction management firm to oversee the project. As CP&L recognizes, the use of such firms has been the standard practice for large modern construction projects for some 40 years. Nevertheless, CP&L argues that, because the original NS lines were likely built without the services of a management construction firm, such a cost should not be included in a SAC analysis. However, much of the modern construction process relies on an entity being responsible for overseeing all aspects of the project. As NS points out, CP&L assumes that the P&SH could be constructed as a series of individual projects for grading, tunnels, bridges, track work, signals, communications, and facilities. This process would require careful coordination and oversight. Thus, it is reasonable to include this expense as a modern construction practice.

Because NS has provided the only independent evidence on the cost of a management construction firm's services, its 4.3% factor is used here. However, as CP&L asserts that 20% of its basic engineering service estimate is attributable to construction management, CP&L's 5% basic engineering factor is reduced to 4% to ensure against a double count of construction management costs.

Finally, NS argues that location and design surveys, as well as environmental permitting, should be added to the engineering costs. However, NS has not explained why the cost of surveys is not captured in the study and design phases that are specifically included in the basic engineering estimates used by CP&L. Furthermore, it is contrary to SAC principles to include costs for environmental permitting where such costs have not been incurred by the defendant railroad or its predecessors when its original rail system was built. *See Guidelines*, 1 I.C.C.2d at 529; *West Texas*, 1 S.T.B. at 668-70.

In sum, the engineering factor used here for the P&SH is 10.1% (4% for basic engineering, 1.8% for resident inspection, and 4.3% for construction management). The engineering factor is calculated as a percentage of construction costs excluding land, mobilization, and contingency costs. This figure comports with the percentages used in prior SAC cases. *See TMPA* (10.2% of construction costs); *PPL* (10.5% factor); *WPL* (10.0% factor); *FMC* (11.7% factor); *McCarty Farms* (10.0% factor); *Arizona* (9.5% factor); *West Texas* (9.7% factor).

K. Contingencies

A contingency account provides funds to cover unforeseen costs that might arise during construction. CP&L proposes an 8% markup for contingencies. NS argues for the 10% contingency figure used in previous SAC cases. *See TMPA*, 6 S.T.B. at 746-47; *WPL*, 5 S.T.B. at 1038. NS cites U.S. Army Corps of

Engineers data, showing 10% or higher contingency markups for multi-million dollar construction projects.[62]

CP&L argues that modern engineering practice (project management software and risk management techniques), barrier-to-entry considerations, and obtaining contractor construction bids in advance would all reduce the amount of the contingency costs that would be appropriate here. However, CP&L has not shown that project management software and risk management techniques would reduce the risk of contingencies on the P&SH. Also, CP&L's argument that the risk of late delivery of materials or equipment should be ignored in SAC cases is misplaced. The assumption in SAC cases that scarcities would not be a concern (i.e., that the massive numbers of workers, materials and equipment needed to build a railroad would be available) does not mean that the SARR would be immune from the risk of late arrival of materials or equipment, a normal occurrence in all business transactions. CP&L's argument that advance construction bids would reduce the risk of contingencies must be rejected, because substantial cost overruns can occur after construction bids are approved. Finally, CP&L cannot assume that the risk factor, and in turn the contingency costs, would be lower because the new entrant would be the beneficiary of building on the existing route. The SAC analysis does not assume any cost advantage from replicating the incumbent carrier's existing plant. *See Nevada Power*, 10 I.C.C.2d at 311. Accordingly, as in prior cases, a 10% contingency factor is used.

L. Off-System Investment

The dispute as to whether the residual NS system would need additional investment to carry the rerouted cross-over traffic that would be received in interchange from the P&SH at Bluefield is mooted by the disallowance of the proposed rerouting of that traffic. Thus, no off-system investment costs are included here.

APPENDIX E – VARIABLE COST

In its complaint, CP&L challenges NS rates that are applicable to coal movements from NS-served mines in Virginia, West Virginia, and Kentucky to CP&L's electric generating facilities at Hyco and Mayo, NC. The parties have submitted evidence to show the variable costs for movements in the 2nd and 3rd quarters of 2002 between 28 origin/destination (O/D) pairs. However, no traffic moved under the challenged rates between two of these O/D pairs (Lavoy to Mayo and Pontiki to Mayo) and, in the absence of actual data on those O/D pairs, accurate variable costs cannot be calculated. (Should traffic move between

[62] *See* NS Reply Narr. at III-F-152.

those O/D pairs, the parties should use the procedures detailed in this appendix to develop the variable costs associated with those movements.) Accordingly, only 26 O/D pairs are addressed here. Because two of these O/D pairs (High Power to Hyco and High Power to Mayo) use two different routings, 28 movements are discussed here. The parties' evidence[63] and the Board's findings for those 28 movements on variable costs are summarized in Tables E-1 and E-2.

Table E-1
Variable Costs and R/VC Percentages
2nd Quarter 2002

			CP&L		NS		STB	
Origin	Destination	Rate	VC	R/VC	VC	R/VC	VC	R/VC
1. Biggs	Hyco	$16.56	$3.74	443%	$4.80	345%	$4.49	369%
2. Colmont	Hyco	$16.74	$4.49	373%	$5.88	285%	$5.46	307%
3. Fola	Hyco	$16.74	$4.30	389%	$7.00	239%	$6.28	267%
4. Gund	Hyco	$16.74	$3.52	476%	$4.50	372%	$4.26	393%
5. High Power	Hyco	$16.74	$4.05	413%	$5.52	303%	$4.68	358%
6. High Pwr (OH)	Hyco	$16.74	$6.37	263%	$8.28	202%	$7.70	217%
7. Jamboree	Hyco	$16.56	$3.61	459%	$4.62	358%	$4.44	373%
8. Kopperston	Hyco	$16.56	$3.25	510%	$4.73	350%	$4.41	376%
9. Lavoy	Hyco	$16.56	$3.61	459%	$4.39	378%	$4.34	382%
10. Mabley	Hyco	$16.56	$3.62	457%	$4.71	352%	$4.40	377%
11. Marrowbone	Hyco	$16.74	$3.56	471%	$4.58	365%	$4.32	387%
12. Martiki	Hyco	$16.74	$3.99	420%	$4.99	336%	$4.84	346%
13. Pelver	Hyco	$16.74	$3.87	433%	$4.92	340%	$4.63	362%
14. Pontiki	Hyco	$16.74	$3.83	437%	$5.34	314%	$4.59	365%

[63] In rail rate cases, the parties each file three rounds of evidence (opening, reply, and rebuttal), because the variable cost analysis determines both the jurisdictional threshold for rate review (as to which the railroad bears the burden of proof under 49 U.S.C. 10707(d)(1)(A)) and the regulatory floor for rate relief (as to which the shipper seeking that relief assumes some responsibility).

			CP&L		NS		STB	
Origin	Destination	Rate	VC	R/VC	VC	R/VC	VC	R/VC
15. Scaggs	Hyco	$16.56	$3.51	472%	$4.36	380%	$4.08	406%
16. Scarlet Glen	Hyco	$16.74	$3.68	455%	$4.55	368%	$4.50	372%
17. Sidney	Hyco	$16.74	$3.73	449%	$4.75	352%	$4.27	392%
18. Thomas	Hyco	$16.56	$3.39	488%	$4.41	376%	$4.11	403%
19. Gund	Mayo	$16.74	$3.48	481%	$4.48	374%	$4.22	396%
20. High Power	Mayo	$16.74	$4.13	405%	$5.51	304%	$4.68	358%
21. High Pwr (OH)	Mayo	$16.74	$6.42	261%	$8.27	202%	$7.68	218%
22. Mabley	Mayo	$16.56	$3.58	463%	$4.75	349%	$4.35	381%
23. Marrow-bone	Mayo	$16.74	$3.56	471%	$4.65	360%	$4.29	390%
24. Sidney	Mayo	$16.74	$3.64	460%	$4.65	360%	$4.17	401%
25. Bradbury	Hyco	$16.74	$3.82	438%	$4.70	356%	$4.02	416%
26. Glen Alum	Hyco	$16.56	$3.45	480%	$4.51	367%	$3.79	437%
27. Timbar	Hyco	$16.56	$3.13	529%	$4.13	401%	$3.48	476%
28. Timbar	Mayo	$16.56	$3.12	531%	$4.17	397%	$3.46	478%

Table E-2
Variable Costs and R/VC Percentages
3rd Quarter 2002

			CP&L		NS		STB	
Origin	Destination	Rate	VC	R/VC	VC	R/VC	VC	R/VC
1. Biggs	Hyco	$16.61	$3.74	443%	$4.80	345%	$4.55	365%
2. Colmont	Hyco	$16.79	$4.49	373%	$5.88	285%	$5.53	304%
3. Fola	Hyco	$16.79	$4.30	389%	$7.00	239%	$6.35	265%
4. Gund	Hyco	$16.79	$3.52	476%	$4.50	372%	$4.32	389%
5. High Power	Hyco	$16.79	$4.05	413%	$5.52	303%	$4.75	354%

			CP&L		NS		STB	
Origin	Destination	Rate	VC	R/VC	VC	R/VC	VC	R/VC
6. High Pwr (OH)	Hyco	$16.79	$6.37	263%	$8.28	202%	$7.80	215%
7. Jamboree	Hyco	$16.61	$3.61	459%	$4.62	358%	$4.50	369%
8. Kopperston	Hyco	$16.61	$3.25	510%	$4.73	350%	$4.46	373%
9. Lavoy	Hyco	$16.61	$3.61	459%	$4.39	378%	$4.40	378%
10. Mabley	Hyco	$16.61	$3.62	457%	$4.71	352%	$4.45	373%
11. Marrowbone	Hyco	$16.79	$3.56	471%	$4.58	365%	$4.38	384%
12. Martiki	Hyco	$16.79	$3.99	420%	$4.99	336%	$4.90	343%
13. Pelver	Hyco	$16.79	$3.87	433%	$4.92	340%	$4.69	358%
14. Pontiki	Hyco	$16.79	$3.83	437%	$5.34	314%	$4.65	361%
15. Scaggs	Hyco	$16.61	$3.51	472%	$4.36	380%	$4.13	402%
16. Scarlet Glen	Hyco	$16.79	$3.68	455%	$4.55	368%	$4.55	369%
17. Sidney	Hyco	$16.79	$3.73	449%	$4.75	352%	$4.32	389%
18. Thomas	Hyco	$16.61	$3.39	488%	$4.41	376%	$4.16	399%
19. Gund	Mayo	$16.79	$3.48	481%	$4.48	374%	$4.28	392%
20. High Power	Mayo	$16.79	$4.13	405%	$5.51	304%	$4.74	354%
21. High Pwr (OH)	Mayo	$16.79	$6.42	261%	$8.27	202%	$7.78	216%
22. Mabley	Mayo	$16.61	$3.58	463%	$4.75	349%	$4.41	377%
23. Marrowbone	Mayo	$16.79	$3.56	471%	$4.65	360%	$4.35	386%
24. Sidney	Mayo	$16.79	$3.64	460%	$4.65	360%	$4.22	398%
25. Bradbury	Hyco	$16.79	$3.87	434%	$4.75	353%	$4.08	412%
26. Glen Alum	Hyco	$16.61	$3.50	475%	$4.57	364%	$3.85	432%
27. Timbar	Hyco	$16.61	$3.17	524%	$4.18	398%	$3.53	471%
28. Timbar	Mayo	$16.61	$3.16	526%	$4.22	393%	$3.51	473%

A. General Cost Estimation Procedures

The Uniform Railroad Costing System (URCS) is the cost accounting model used by the Board to estimate variable costs. URCS reflects the extent to which different types of costs incurred in the rail industry have been found to change in direct proportion to changes in output. Each year, the cost and operating statistics from each Class I carrier's Annual Report (STB Form R-1), Carload Waybill Sample, Annual Report of Cars Loaded and Terminated (STB Form CS-54) and Report of Freight Commodity Statistics (STB Form QCS) are used to determine the URCS system-average variable costs for that carrier. Here, the parties relied upon preliminary 2001 data, because final 2001 URCS numbers were not available in time to be incorporated into the parties' evidence. The Board has restated the preliminary 2001 URCS data where appropriate to reflect the final numbers.

URCS contains a general overhead ratio markup which allocates unassignable investment costs among all categories of investment and therefore affects many different variable cost categories. NS would adjust the URCS overhead ratio for return on investment (ROI) to exclude debt-service expenses recorded in its R-1 Report in Account 76 (Interest During Construction) and to include capital expenses recorded in Account 90 (Construction in Progress) instead, in order to reflect its full capital costs (both debt and equity) rather than only the debt costs associated with that investment. CP&L argues that this is contrary to precedent in rate cases considered since the adoption of URCS, and that variable cost calculations should exclude Account 90 monies and include Account 76 monies.

This issue was addressed most recently in *TMPA* (6 S.T.B. at 616), where the Board explained that substitution of Account 90 for Account 76 is appropriate in rate cases unless the construction projects included in Account 90 are long-term in nature such that they will not be available for transportation service for an extended period of time. Here, NS has provided evidence that its Account 90 expenses involve only short-term construction projects. CP&L has not provided any new arguments or evidence not already addressed in *TMPA*. Accordingly, the substitution of Account 90 for Account 76 is allowed here.

B. Movement-Specific Adjustments

URCS calculates the system-average variable costs associated with individual movements based upon 20 standard traffic characteristics of the movements (service units and operating statistics). Here, the parties' evidence regarding service units and operating statistics has been evaluated and, where necessary, restated to reflect the most accurate operating data possible. Because a carrier's system-wide average costs are not necessarily representative of the costs of providing a particular service, the parties have also proposed various movement-specific adjustments to particular cost components to better reflect the variable costs attributable to providing the service at issue here. Each proposed adjustment has been analyzed to determine whether it is supported by reliable

evidence and whether it produces costs more reflective of the service at issue than the system-average cost figures.

Tables E-3 and E-4 below show (for a selected movement to each of the two CP&L destinations at issue here) the various service units and operating characteristics used by the Board to develop the variable costs associated with transporting CP&L's traffic. Statistics for all movements are shown in Table E-10 at the end of this appendix. The parties agree on Items 1, 3, 7-11 (with a minor discrepancy regarding whether they have reached agreement on certain loop track miles[64]), but they disagree on the remainder of the items. The following discussion addresses only those items for which there is some discrepancy between the parties' figures.

Table E-3
Operating Statistics and Traffic Characteristics
High Power Mountain to Hyco Plant

Item	CP&L	NS	STB
1. Lading Weight (Tons)	110	110	110
2. Tare Weight (Tons)	29.6	29	29.6
3. Cars Per Train	98.5	98.5	98.5
4. Loaded Miles	346.1	361.6	346.1
5. Empty Miles	351	387.1	351
6. Round Trip Miles	697.1	748.7	697.1
7. Origin Loop Miles – Loaded	0.9	0.9	0.9
8. Origin Loop Miles – Empty	0.9	0.9	0.9
9. Destination Loop Miles – Loaded	1.3	1.3	1.3
10. Destination Loop Miles – Empty	1.8	1.8	1.8
11. Round Trip Miles (incl Loop Trk. Miles)	701.9	753.6	701.9
12. Locomotive Units	2.6	2.9	2.6
13. Locomotive Cycle Hours	102.2	187.2	0
14. Freight Car Cycle Hours	153.2	187.2	0
15. Sw. - Yd. Loco. (SEMs/Car)	0.4	4.6	3.8
16. Sw. - Rd. Loco, Non-Yd (SEMs/Car)	0	4.3	3.8

[64] *See* Item 11, Round Trip Miles (incl. Loop Track Miles).

17. Sw. - Rd. Loco, Yd (SEMs/Car)	0	1	0
18. Gross Ton Miles	58,691.7	61,484.7	58,705.2
19. Train-Miles Per Car	7.13	7.65	7.13
20. Locomotive Unit-Miles Per Car	18.4	22.27	18.4

Table E-4
Operating Statistics and Traffic Characteristics
High Power Mountain (Via Ohio) to Mayo Plant

Item	CP&L	NS	STB
1. Lading Weight (Tons)	109.9	109.9	109.9
2. Tare Weight (Tons)	29.8	28.7	29.8
3. Cars Per Train	98.4	98.4	98.4
4. Loaded Miles	773.7	812.8	773.7
5. Empty Miles	347.2	390.7	347.2
6. Round Trip Miles	1,120.8	1,203.5	1,120.9
7. Origin Loop Miles – Loaded	0.9	0.9	0.9
8. Origin Loop Miles – Empty	0.9	0.9	0.9
9. Destination Loop Miles – Loaded	0.8	0.8	0.8
10. Destination Loop Miles – Empty	1.2	1.2	1.2
11. Round Trip Miles (incl Loop Trk. Miles)	1,124.6	1,207.2	1,124.6
12. Locomotive Units	2.2	2.5	2.2
13. Locomotive Cycle Hours	104.6	184.5	0
14. Freight Car Cycle Hours	169.3	184.5	0
15. Sw. - Yd. Loco. (SEMs/Car)	0.6	5.7	3.8
16. Sw. - Rd. Loco, Non-Yd (SEMs/Car)	0.6	4.3	3.8
17. Sw. - Rd. Loco, Yd (SEMs/Car)	0	1	0
18. Gross Ton Miles	118,412.2	123,869.1	118,432.5
19. Train-Miles Per Car	11.43	12.27	11.43
20. Locomotive Unit-Miles Per Car	25.06	31.07	25.06

1. Tare Weight - Tons (Item 2)

NS states that it accepts CP&L's tare weight per car evidence,[65] but it failed to incorporate those numbers into its spreadsheet.[66] CP&L's agreed-upon tare weight figures are used here.

2. Loaded Miles (Item 4)

NS concedes that it made significant overstatements in calculating its loaded (and empty) miles and claims to have corrected them.[67] Nevertheless, there remain numerous problems with NS's mileage figures. For example, while NS claims that it corrected its evidence by decreasing the segment miles between mines and gathering yards, in its workpapers NS actually increased the miles shown between mines and gathering yards. NS's loaded miles are rejected because they are not well documented, they cannot be verified, and the data contained in NS's electronic files conflict with the corrections that NS claims it made. CP&L's loaded mile figures are well-documented, were developed based on NS track charts, and show all line segment connections based on connecting mileposts. Therefore, CP&L's figures are used here.

3. Empty Miles (Item 5)

There are significant differences between the parties on the empty miles associated with the High Power Mountain and Fola movements. On reply, NS claimed that empty trains returning to High Power Mountain and Fola travel north from Elmore to Deepwater Bridge and then west to Dickinson Yard prior to assignment to the next coal loading.[68] However, CP&L has shown that operational changes that NS implemented in early 2002 eliminated the need to move these empty trains through the Dickinson Yard.[69] As CP&L states, the variable cost analysis should reflect current operations. Because CP&L's empty mile figures reflect the elimination of the Dickinson Yard portion of these movements, CP&L's figures for these movements are used.

For the remainder of the empty miles calculations, NS's evidence suffers from the same inconsistencies discussed above for Loaded Miles (Item 4). NS's empty miles figures are therefore rejected and CP&L's empty miles figures are used here for all movements.

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[65] *See* NS Reply Narr. at II-A-11.
[66] *See* NS Reply e-WP. "01-NS-VC-PRG-Reply.123."
[67] *See* NS Reply Narr. at II-A-14 to 19.
[68] *See* NS Reply Narr. at II-A-17.
[69] *See* CP&L Open. WP. Vol. 4 at 02058 (inspection report of CP&L witness William C. Lyman).

4. Round Trip Miles (Item 6)

Round trip miles are a combination of the loaded and empty miles discussed above. The round trip miles figures are restated to reflect the loaded and empty miles figures used here.

5. Round Trip Miles (incl. Loop Track Miles) (Item 11)

On reply, NS agreed with CP&L's loop track miles figures with the exception of origin loop track miles on movements from the Fola mine. However, on rebuttal, NS, without explanation, removed all miles and costs associated with loop track operations, while stating that it accepted CP&L's reply origin loop track miles figures for the Fola mine. CP&L's loop track mile figures,[70] with which NS has stated it agrees, are used here.

6. Locomotive Units (Item 12)

CP&L developed the average number of locomotives per train from data provided by NS in discovery.[71] NS argues that CP&L incorrectly assumed that the consists on its trains are always optimally sized, and ignored the operating reality that in many instances more locomotives than CP&L assumed are required to power CP&L trains over certain NS lines, as demonstrated by NS's train movement data.

NS points out that the variable cost analysis should ideally reflect the actual locomotives used in the issue service, citing *West Texas*, 1 S.T.B. at 729. With that objective, NS used its train movement data to calculate the average number of locomotives required to operate between the gathering yards and the mines, and to operate through trains from the gathering yards to the plants and return the empties.[72]

CP&L argues that NS overstated locomotive units per train by a wide margin because the train movement records improperly provided total locomotives (which includes helpers) as a surrogate for locomotives per train (which excludes helpers). In addition, CPL notes that NS failed to provide sources for its locomotives-per-train figures for each line segment.[73] CP&L argues that in many instances NS did not use mine-specific data as it claimed,[74] but rather used estimates of locomotives per train or averages based on non-related

[70] CP&L Reb. Exh. II-A-63.

[71] *See* CP&L Reply e-WP. "NS CPL Service Description.doc." *See also* NS Open. Narr. at Part IV-D (description of NS's service to CP&L).

[72] NS derived its locomotives per train from detailed train movement data. *See* NS Open. Narr. at II-15; NS's Open. e-WP. "cpltrains.mdb. file NSC C 020332." NS used data from that file to construct NS's Open. e-WPs. "762-769,774,775 Trains Point Pairs.xls" and "U Trains Point Pairs.xls." *See also* NS Reply Narr. at II-A-20.

[73] *See* CP&L Reply Narr. at II-A-55.

[74] *See* NS Reply Narr. at II-A-20 to 21.

movements.[75] CP&L also claims that NS's development of average locomotives per train between the serving/gathering yards and CP&L's plants was defective. For example, the data used by NS to compute the average number of locomotive units do not distinguish between locomotives which are placed on the train as road power, helper locomotives, or locomotives that are included in the consist simply to be repositioned within the NS system.

CP&L's points are well taken. The data NS used to develop its locomotives per train figure are not movement-specific, they include locomotives moving for other than line-haul service, and they contain numerous errors and data gaps. In contrast, CP&L's locomotive requirements per train, which are based upon actual movement-specific data provided by NS in discovery, are well supported. Therefore, CP&L's figures for the number of locomotive units per train are used here.

7. Cycle Hours - Locomotive and Freight Car (Items 13 and 14)

As discussed below, both parties' estimates of cycle times for locomotives and freight cars are unreliable.

CP&L developed car cycle times by adjusting NS's car movement data. It then used those data to develop locomotive cycle times. In developing car cycle times, CP&L removed the cycle-lengthening effects that resulted from NS's decision to keep many cars in circulation rather than place them in storage. CP&L claims that NS's car spare margin figure of 15.3%, based on the number of spare cars in the 1st quarter 2001, shows that NS maintains a bloated car fleet. However, the 15.3% figure is based on only one quarter and thus is not likely representative of NS's spare cars for an entire year, which varies based on demand. But even if it were representative, CP&L's arbitrary adjustment to remove excessive freight car cycle times is not based on any probative evidence. Therefore, this unsupported adjustment and CP&L's estimates of car cycle times are rejected. Likewise, CP&L's proposed locomotive cycle times are rejected, because CP&L developed its locomotive cycle times using as a starting point its flawed freight car cycle times.

NS developed locomotive and freight car cycle times based on the intervals between when a car destined to a CP&L facility was loaded at the mine and when that car was next loaded, based upon the waybills for that specific car number. In order to account for cars taken out of service for a substantial period of time for repairs, or cars that may have been placed in holding yards for longer periods of time due to fluctuations in NS's coal traffic volumes, NS eliminated from consideration records with waybill-to-waybill cycle times in excess of 30 days. NS's selection of a 30-day cutoff is arbitrary. NS has not explained why it selected 30 days rather than 150 days or 10 days. Therefore, NS's estimates of locomotive and freight car cycle times are unsupported.

Because both parties' proposed movement-specific estimates are rejected, the URCS system-average locomotive and freight car ownership costs are used

[75] *See* NS's Open. e-WP. "U Trains Point Pairs.xls."

here. And because both parties' cycle time figures for locomotive, freight car and associated end-of-train (EOTD) are rejected, the components of the parties' variable cost estimates that are based on cycle times (depreciation, leases and return on investment) must also be rejected. In the absence of better evidence, the URCS system-average variable costs are used for those cost categories (which are relied upon in Part C, Items 6, 13, 16 and 17).

8. Switching - Yard Locomotives (SEMs/Car) (Item 15)

CP&L's figure for switch engine minutes (SEMs) per car must be rejected. To develop both bad order switch time and overweight railcar estimates, CP&L relied upon the special study of yard switching of bad order cars presented in the *West Texas* case. *See West Texas* at 720. However, CP&L has not shown that the facilities and circumstances under which bad ordered cars were switched in the *West Texas* case are similar to those present here. In addition, CP&L has not attempted to quantify switching times associated with other switching activities that NS performs for CP&L, such as assembling empty CP&L trains bound for the origin mines, and switching locomotives for servicing and fueling.

NS claims to have used actual data on yard switching applicable to CP&L's traffic to develop the number of cars requiring switching and SEMs per car. NS asserts that its switching reports are based on average switching time and are appropriate because most of the traffic at Williamson, Bluefield and Roanoke, VA, is coal. However, NS has not submitted these studies into evidence, and thus they cannot be verified. The table provided by NS to support its assertion that the majority of the traffic being switched is coal does not contain a breakdown of coal and noncoal traffic data for these locations.[76]

In sum, while both parties agree that switching occurs at Williamson, Bluefield, and Roanoke, VA, neither party has presented any reliable evidence on the actual SEMs per car associated with yard switching activities there. In the absence of superior evidence, URCS system-average SEMs per car associated with yard switching are used here.

9. Switching - Road Locomotives – Non-Yard Tracks (SEMs/Car) (Item 16)

NS states that it uses road locomotives to place cars at all mine origins, at the destinations, and at the gathering points where CP&L trains are assembled. NS's road locomotives also switch bad ordered cars at other locations where yard crews are not available. According to NS, its road locomotives and crews must also reassemble freight cars into empty trains for returns to the coal fields for a subsequent loading. NS claims that it captures, as part of its normal record keeping, average road switching times by origin station, based upon detailed observations of the switching activities at each mine. For destination switching,

[76] *See* NS Open. Narr. at Table II-14 (at II-42).

SEMs per car at Hyco and Mayo are based on switching information produced in discovery.

NS has not provided sufficient evidence to support its SEMs per car for road locomotives. NS claims that support for its origin SEMs per car figures is shown in its electronic file. However, all origin SEMs per car there are hard coded numbers that cannot be verified.[77] Further, as pointed out by CP&L, the origin switching minutes are suspect. For example, NS included 240 minutes for switching at the High Power mine, although its own description of the operations at this mine does not indicate that any switching takes place.[78] For destination switching, NS provided no support for the appropriate SEMs per car. For the other switching performed by NS road locomotives, NS has not explained how it developed its SEMs per car figures.

CP&L's SEMs per car figures for origin, destination, and other switching performed by road locomotives are likewise undocumented and unsupported. For some origin mines CP&L, without support, assigned 60 minutes of road locomotive switching time, while for others CP&L assigned no time. For destination switching, CP&L estimated road locomotive switching times based on interviews with CP&L fuel handling staff and unloading reports. The unloading reports, however, do not substantiate CP&L's estimates of road locomotive switching minutes at destination. Nor is there reliable origin and destination switching time evidence that would permit any meaningful restatement so as to capture all costs associated with road locomotive switching activities.

Accordingly, in the absence of any superior evidence relative to SEMs per car associated with road locomotive switching, URCS system-average SEMs per car and system-average unit costs are used here.

10. Switching - Road Locomotives – Yard Tracks (SEMs/car) (Item 17)

NS included additional SEMs to reflect the switching done by road locomotives in yards. However, as discussed above, the URCS system-average SEMs and unit costs are used here for road locomotive switching. These system-average figures include all time associated with origin and destination switching and switching at gathering yards to assemble trains and switch bad ordered cars. Therefore, the switching performed by road locomotives on yard tracks is already reflected and no additional time need be included.

[77] NS Reply e-WP. "Composite Inputs.xls," tab "Master."
[78] *See* NS Open. Narr. at II-22 to 23.

11. Gross Ton-Miles/Car (Item 18)

Gross ton-miles (GTMs) per car are developed from lading and tare weights and loaded and empty miles.[79] As discussed earlier, CP&L's loaded and empty miles (Item 4 and Item 5), CP&L's tare weights (Item 2) and the parties' agreed to lading weights (Item 1) are used here.

12. Train-Miles/Car (Item 19)

Train-miles per car are determined by dividing round trip miles (including loop track miles) by the number of cars per train. The restatement here reflects the round trip miles discussed in Item 11 – Round Trip Miles (Including Loop Track Miles) and the cars per train agreed to by the parties as set forth in Item 3 – Cars Per Train.

13. Locomotive Unit-Miles/Car (Item 20)

LUMs per car are the product of round trip miles and the number of locomotive units per train divided by the number of cars per train. The restatement here reflects the round trip miles and the locomotive units discussed above in Item 6 – Round Trip Miles and Item 12 – Locomotive Units and the cars per train agreed to by the parties set forth in Item 3 – Cars Per Train.

C. Variable Costs

After determining the appropriate figures to apply for the 20 categories of traffic characteristics and operating statistics employed by URCS, the total system-average variable costs and the resulting R/VC percentages can be determined. Tables E-5 and E-6 below show the component parts of the variable cost calculations for the same two movements for which the 20 categories are shown above. (Tables for all O/D pairs analyzed here appear at the end of this appendix – Tables E-11 and E-12.) As seen in the two tables shown here, the parties agree only on the costs for Item 19. As discussed below, CP&L's evidence is used by the Board for Items 2 and 5. For Items 1, 9, 11 and 14, NS's evidence is relied upon. The Board's figures for Items 3–4, 6–8, 10, 12–13, and 15–17 differ from both parties' figures.

[79] GTM = [(lading wt. + tare wt.) x loaded miles] + (tare wt. x empty miles).

Table E-5
Variable Cost -2nd Quarter 2002
High Power Mountain to Hyco Plant

Service Category	CP&L	NS	STB
1. Carload O/T Clerical Expense	$7.67	$7.58	$7.58
2. Carload Handling - Other Expense	0.05	0.31	0.05
3. Switching Expense - Yard Locomotives	1.2	14.65	11.98
4. Switching Expense - Road Locomotives	0	6.82	5.68
5. Switching Expense - Road Locomotives	0	1.87	0
6. Gross Ton-Mile Expense (GTM)	202.7	237.4	235.9
7. Loop Track Expense - Origin &	0.46	0.67	0.51
8. Train-Mile Expense - Other than Crew	1.98	4.76	4.44
9. Train-Mile Expense - T&E Crew	66.52	75.58	75.58
10. Helper Service Expense - Other than	19.77	19.74	20
11. Helper Service Expense - T&E Crew	6.06	9.82	9.82
12. Locomotive Unit-Mile Expense	41.05	65.59	43.54
13. Locomotive Ownership Expense	40.73	84.06	18.12
14. Third Party Loading Charges	0	0	0
15. Car Operating Expense	14.37	23.74	19.32
16. Car Ownership Expense	46.18	58.97	65.82
17. Caboose & EOTD Ownership Expense	0.12	0.18	0
18. Joint Facility Payment	0	0	0
19. Loss and Damage	0.02	0.02	0.02
20. Total Variable Cost Per Carload	$448.9	$611.	$518.
21. Tons Per Car	110	110	110
22. Variable Costs Per Ton	$4.08	$5.56	$4.71
23. RFA - URCS Linking Factor	0.993	0.993	0.993

Service Category	CP&L	NS	STB
24. Linked Variable Cost Per Ton	$4.05	$5.53	$4.68
25. Jurisdictional Threshold (L.24 x 180%)	$7.29	$9.95	$8.43
26. Rate Per Ton	$16.74	$16.7	$16.7
27. R/VC Percentage (L.26/L.24)	413%	303%	358%

Table E-6
Variable Cost - 2nd Quarter 2002
High Power Mountain (Via Ohio) to Mayo Plant

Service Category	CP&L	NS	STB
1. Carload O/T Clerical Expense	$7.67	$7.58	$7.58
2. Carload Handling - Other Expense	0.05	0.31	0.05
3. Switching Expense - Yard Locomotives	1.89	18.16	11.99
4. Switching Expense - Road Locomotives	0.73	6.14	5.22
5. Switching Expense - Road Locomotives	0	1.75	0
6. Gross Ton-Mile Expense (GTM)	409	478.4	475.9
7. Loop Track Expense - Origin &	0.37	0.54	0.42
8. Train-Mile Expense - Other than Crew	3.17	7.64	7.11
9. Train-Mile Expense - T&E Crew	100	112	112
10. Helper Service Expense - Other than	16.14	21.76	22.05
11. Helper Service Expense - T&E Crew	5.85	6.84	6.84
12. Locomotive Unit-Mile Expense	55.9	91.49	59.3
13. Locomotive Ownership Expense	35.3	71.89	24.69
14. Third Party Loading Charges	0	0	0
15. Car Operating Expense	22.59	31.5	27.56
16. Car Ownership Expense	51.01	59.62	88.78
17. Caboose & EOTD Ownership Expense	0.12	0.18	0

Service Category	CP&L	NS	STB
18. Joint Facility Payment	0	0	0
19. Loss and Damage	0.02	0.02	0.02
20. Total Variable Cost Per Carload	$709.8	$915.	$849.
21. Tons Per Car	109.9	109.9	109.9
22. Variable Costs Per Ton	$6.46	$8.33	$7.73
23. RFA - URCS Linking Factor	0.993	0.993	0.993
24. Linked Variable Cost Per Ton	$6.42	$8.28	$7.68
25. Jurisdictional Threshold (L.24 x 180%)	$11.56	$14.9	$13.8
26. Rate Per Ton	$16.74	$16.7	$16.7
27. R/VC Percentage (L.26/L.24)	261%	202%	218%

1. Carload Other Than Clerical Expense (Item 1)

The difference between the parties' calculations of this cost component results from differing unit costs based on preliminary URCS data. The Board relies on the system-average unit cost produced by the Board's final 2001 URCS cost for NS.

2. Carload Handling - Other Expense (Item 2)

CP&L adjusted NS's system-average costs for carloads handled to remove certain costs that are not incurred by NS in providing service to CP&L: costs for cleaning car interiors, car loading devices and grain doors. Because NS has not offered any evidence that CP&L's traffic requires any of the activities or devices that CP&L has excluded, CP&L's evidence is used here.[80] This is consistent with the Board's exclusion of these costs in *WPL* (5 S.T.B. at 998) and *FMC* (4 S.T.B. at 765).

3. Switching Expense - Yard Locomotives and Road Locomotives (Item 3-5)

As discussed above (Part B, Items 13 and 15-17), system-average SEMs for yard and road locomotives are used here.

[80] This adjustment results in a reduction of 82.60% to the system-average unit cost for this category of costs.

4. Gross Ton-Mile Expenses (Item 6)

GTM expenses include maintenance-of-way; return on investment and depreciation for road property; locomotive fuel; locomotive maintenance; and other costs. Listed below in Tables E-7 and E-8 are summaries of the GTM expenses included in the restatement here for the two movements shown in Tables E-5 and E-6 above. Also included in the tables are figures for depreciation/leases and return on investment for locomotives. As explained above (Part B, Item 13), the Board rejects both parties' evidence regarding actual locomotive cycle hours. Accordingly, the Board rejects the service unit costs developed by both parties and instead relies on the system-average unit costs produced by the Board's 2001 URCS run for NS for the depreciation/leases and return on investment portions of this variable cost category.

Table E-7
GTM Expense Per Car
High Power Mountain to Hyco Plant

Category	Amount	Percent
Maintenance-of-Way Expense	$35.19	14.92%
Return on Road Property Investment	$50.16	21.27%
Road Property Depreciation	$75.35	31.94%
Locomotive Return on Investment	$9.53	4.04%
Locomotive Leases & Depreciation	$12.05	5.11%
Locomotive Fuel Expense	$21.30	9.03%
Locomotive Maintenance Expense	$8.59	3.64%
Other GTM Expense	$23.71	10.05%
TOTAL	$235.88	100.00%

Table E-8GTM Expense Per Car
High Power Mountain (via Ohio) to Mayo Plant

Category	Amount	Percent
Maintenance-of-Way Expense	$70.99	14.92%
Return on Road Property Investment	$101.19	21.26%
Road Property Depreciation	$152.02	31.95%
Locomotive Return on Investment	$19.24	4.04%
Locomotive Leases & Depreciation	$24.29	5.10%
Locomotive Fuel Expense	$42.97	9.03%
Locomotive Maintenance Expense	$17.33	3.64%
Other GTM Expense	$47.86	10.06%
TOTAL	$475.88	100.00%

a. Maintenance-of-Way Expense

The parties agreed to use the 2001 URCS system-average maintenance-of-way unit cost. The restatement here uses the final 2001 URCS system-average figure.

b. Return on Investment and Depreciation for Road Property

The parties agreed to use the Board's 2001 URCS system-average figures for NS's return on road property and depreciation unit costs. The restatement here uses the final 2001 URCS system-average figures.

c. Locomotive Fuel Expense

In their opening evidence, CP&L and NS both relied upon URCS system-average locomotive fuel consumption data to calculate variable costs. On opening, NS also revealed that it had been collecting fuel consumption data and stated that it would present the results in its reply evidence. In its reply evidence, NS departed from its opening evidence and, on the basis of its completed study, proposed an upward adjustment to system-average fuel costs of approximately 48.7%. CP&L is critical of NS's fuel study, and CP&L continues to rely upon URCS system-average costs.

NS's fuel study is flawed. First, NS improperly assumed that the fuel consumption data that it collected on a handful of new locomotives would be applicable to the older and smaller locomotives NS used in CP&L service in

2001 and still primarily uses in that service. In addition, NS improperly attributed to CP&L movements data from a sample that includes a substantial number of movements to non-CP&L destinations. Furthermore, NS's study contains data anomalies that undermine the credibility of its asserted results, even with respect to the movements it addresses. For example, analysis of NS's data demonstrates that it was not always possible to determine the miles traveled by the locomotives, an essential input in the calculations submitted by NS. Finally, NS incorrectly subtracted ending fuel level readings in one segment from the beginning fuel level readings in a completely different segment, and utilized incorrect fuel level readings to determine fuel consumption within segments.[81] Because NS's fuel study was not conducted on a representative group of locomotives, did not rely upon traffic specific to the service at issue, and contains unsound data, it is rejected. URCS system-average locomotive fuel consumption data is used to calculate the variable costs for fuel.

d. Locomotive Maintenance Expense

The parties agree to use URCS system-average for locomotive maintenance cost. The Board's restatement uses the final 2001 URCS system-average figure.

e. Other GTM Expenses

This expense category includes costs for: maintaining locomotive repair shops and service facilities; locomotive administrative matters; locomotive equipment damage; small tools; work equipment and non-revenue equipment repair; and other casualty expenses. Both parties develop these expenses based on URCS system-average costs, but they arrive at differing expense figures due to differences in certain unit costs (a result of using different preliminary NS 2001 URCS data); in GTMs per car; in operating expense general overhead ratios; and in fuel overhead amounts (a result of NS's reliance on its fuel study results).

As discussed above, in its restatement, the Board relies upon CP&L's GTMs per car and upon the final NS 2001 URCS data (which includes both the appropriate operating expense general overhead ratio for NS and the applicable fuel general overhead amount).

5. Loop Track Expense (Item 7)

As discussed above (Part B, Item 11), the parties agree on loop track miles. Those mileages and the associated variable costs are used here.

[81] *See* CP&L Reb. e-WP. "Analysis of NS Fuel Study.123."

6. Train-Mile Expense Other Than Crew (Item 8)

The service units associated with this expense item (round trip miles and cars per train) are discussed above (Part B, Items 11 and 13). The restatement here uses those service units.

7. Train-Mile Expense – T&E Crew (Item 9)

The parties agree on all components of this cost item except for calculation of base wages. CP&L claims that NS incorrectly divided total wages by an understated number of trains thereby overstating crew wages per train and the calculation of base wages. CP&L's calculations, however, include segments between O/D pairs over which traffic did not move. Because CP&L includes these additional segments in some calculations, its evidence is unreliable. Therefore, NS's evidence is used to calculate base wages here.

8. Helper Service Expense - Other Than Crew and T & E Crew (Items 10 and 11)

CP&L calculated the number of trains a helper crew can assist by dividing the number of miles for which a helper crew is compensated (generally 130 miles) by the average distance a train is helped. However, the number of miles actually traversed is less than the number of miles upon which the crew's compensation is based. For example, while CP&L calculates that the Elmore to Algonquin helper crew can assist five trains per shift, NS's data demonstrate that these helper units can assist only two trains in a typical shift. Thus, CP&L's approach overstates the number of helps per shift. Furthermore, the amount of helper service CP&L included in its variable costs cannot be verified.

NS developed its helper crew wages based upon detailed wage data, a description of the helper service by location, and the number of trains helped per shift. In addition to well-supported wage and helper data, NS's helper service expense is based upon the detailed operations at each mine developed by witness Kimbrough (reflecting his observations and discussions with NS's local operating personnel). NS's determinations of helper service are used here as the best evidence of record.

9. Locomotive Unit-Mile Expense (Item 12)

a. Return on Investment and Depreciation

The parties do not agree on LUM return on investment and depreciation. The differences result from the use of different service units (i.e., the number of locomotives and the number of round trip miles) and from the use of different ROI overhead ratios. The restatement here reflects the number of locomotives units and round trip miles accepted in Part B, Items 12 and 6, respectively, and NS's ROI general overhead ratio.

b. Locomotive Fuel Expense

See the discussion of locomotive fuel with respect to Gross Ton-Mile Expense above (Part C, Item 6c).

c. Locomotive Maintenance Expense

The difference in the parties' locomotive maintenance expense evidence results from the use of different service units (i.e., the number of locomotive units and round trip miles). The restatement here reflects the number of locomotive units and round trip miles accepted in Part B, Item 12 and 6, respectively.

d. Other LUM Expenses

The difference in the parties' estimates of this cost component stems from their use of different overhead costs. The restatement here reflects the resolution of these issues discussed above (Part C, Item 6e).

10. Locomotive Ownership Expense (Item 13)

As explained above (Part B, Item 13), neither NS's nor CP&L's methodology for the calculation of locomotive ownership costs (depreciation/leases and return on investment) can be relied upon. Accordingly, the 2001 URCS system-average cost figures for depreciation/leases and return on investment for locomotives are reflected here.

11. Third Party Loading Charges (Item 14)

CP&L claims that NS included inappropriate charges related to trackage rights fees paid for use of the Vaughan Railroad's lines between the Vaughan connecting track near Belva, WV, and the Fola mine, and for NS's cost of owning and operating a conveyor belt that runs from the Harris mine to the Kopperston loading facility.

As part of the cost of using the trackage rights, NS included a fee associated with the capital costs of the Vaughan lines. Invoices submitted by NS show that this fee was paid by NS for the year 2002. Accordingly, it is appropriate to include this fee as a cost associated with the shipments at issue.

CP&L claims that the services NS provides in transporting coal from the Harris mine (which is directly served by CSXT) to Kopperston is not part of the NS services covered by the challenged rate. NS has explained that it incurs a per ton cost to move coal over the NS-owned conveyer belt from Harris mine to the Kopperston mine, where it is then loaded into NS cars for delivery to CP&L's Hyco plant. Because this expense is part of NS's actual cost of handling the Kopperston-Hyco movement, it is properly included in calculating NS's variable costs of serving that movement.

12. Car Operating Expense (Item 15)

The parties disagree on car repair costs, service unit costs, and the car-miles applicable to those service unit costs. Each of these areas of disagreement are addressed below.

a. Car Repair Costs

URCS develops a system-average car repair cost by spreading maintenance expenses over the days in which the cars are actually used. CP&L argues that, by assigning expenses only to the days during which cars are actually in use, the URCS procedure results in an artificially inflated per-day maintenance cost. CP&L would spread maintenance expenses over 365 calendar days.

Adjustments to the unit costs are permitted when data are available that more accurately reflect the service at issue. Adjustments that alter the logic and assumptions in URCS, however, are a collateral attack on the model itself and are thus inappropriate here. In any event, because the railroad receives revenue only when cars are in service, the URCS formula properly spreads car maintenance costs over active car days. This procedure allows the railroad to recover all of its maintenance costs from the users of the cars. Thus, NS's evidence, which is based on URCS, is used here.

b. Service Unit Costs

NS indicates that 92% of the cars used in CP&L service are plain gondolas while the other 8% are general service open top hoppers. Thus, NS's service unit costs reflect that mix of freight car types. CP&L claims that its freight car operating expenses are also based on a mix of freight cars but, because its costing program contains only hard-coded figures, these service unit costs cannot be verified. Because NS's unit cost calculations have been verified, they are reflected here.

c. Car-Miles

The parties disagree on the appropriate amount of round trip car-miles. As discussed above (Part B, Item 11), the appropriate number of miles are composed of the round trip miles plus the loop track miles, and that is reflected in the freight car operating expense here.

13. Car Ownership Expense (Item 16)

As discussed above (Part B, Item 14), the parties' calculations of actual freight car ownership expense data (depreciation/leases and return on investment) are rejected. Accordingly, the system-average car ownership data contained in the final 2001 URCS run are used in the restatement for this expense category.

14. EOTD Ownership Expense (Item 17)

Because both parties' calculations of actual EOTD ownership costs are rejected, as discussed above (Part B, Item 13), system-average data for the expenses associated with the EOTD units are used here.

15. Joint Facility Payment (Item 18)

CP&L adjusted the system-average cost figure for joint facility costs to exclude the fee paid by NS to other railroads, but it did not remove the corresponding service units. Thus, its adjustment is flawed, and the restatement here reflects NS's system-average joint facility costs.

16. Loss & Damage Expense (Item 19)

Both parties used the same unit cost to calculate the variable costs associated with this expense, and that figure is used here.

17. Indexing

The parties disagree on the calculation of the fuel index. NS used an NS-specific fuel index. Because NS's specific fuel index inputs are unaudited, CP&L relied on the AAR fuel index. For the same reason, the restatement here relies on the AAR fuel index data, which is well documented. The various index amounts used in the Board's restatement of the variable costs are contained in the table below.

Table E-9
STB Indexes

Category	2nd Qtr 2002	3rd Qtr 2002
Composite (less fuel)	0.98922	1.001
Fuel	0.84504	0.85824
Crew Wages	1.02099	1.05756

Table E-10
Operating Statistics and Traffic Characteristics

Item -------------------------------- --	Fola to Hyco	High Pwr to Hyco	High Pwr (OH) to Hyco	Marrow-bone to Hyco	Scarlet Glen to Hyco	Colmont to Hyco	Sidney to Hyco	Gund to Hyco
1. Lading Weight (Tons)	101.3	110.0	110.0	108.8	106.3	104.3	108.1	109.0
2. Tare Weight (Tons)	29.7	29.6	29.6	28.7	28.8	29.9	28.7	29.1
3. Cars Per Train	100.7	98.5	98.5	104.1	107.0	106.1	106.3	108.1
4. Loaded Miles	325.8	346.1	777.6	343.7	358.7	435.3	346.3	341.3
5. Empty Miles	330.8	351.0	351.0	348.6	363.7	440.3	351.2	346.2
6. Round Trip Miles	656.6	697.1	1128.6	692.3	722.4	875.6	697.5	687.5
7. Origin Loop Miles – Loaded	12.7	0.9	0.9	0	0.7	0.5	0.8	0.7
8. Origin Loop Miles – Empty	12.7	0.9	0.9	0.4	1.1	0.8	1.0	1.0
9. Destination Loop Miles –Loaded	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
10. Destination Loop Miles –Empty	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
11. Round Trip Miles (incl Loop Trk. Miles)	685.1	701.9	1133.4	695.7	727.2	880.0	702.3	692.3
12. Locomotive Units	2.6	2.6	2.2	2.3	2.3	2.2	2.3	2.3

Item -------------------------------- --	Folo to Hyco	High Pwr to Hyco	High Pwr (OH) to Hyco	Marrow-bone to Hyco	Scarlet Glen to Hyco	Colmont to Hyco	Sidney to Hyco	Grand to Hyco
13. Locomotive Cycle Hours	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14. Freight Car Cycle Hours	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15. Sw. - Yd. Loco. (SEMs/Car)	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
16. Sw. - Rd. Loco, Non-Yd (SEMs/Car)	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
17. Sw. - Rd. Loco, Yd (SEMs/Car)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18. Gross Ton Miles	52,505	58,705	118,943	57,264	58,935	71,582	57,453	57,208
19. Train-Miles Per Car	6.80	7.13	11.51	6.68	6.80	8.29	6.61	6.40
20. Locomotive Unit-Miles Per Car	16.95	18.40	25.21	15.30	15.53	18.16	15.09	14.63

Table E-10 (Continued)
Operating Statistics and Traffic Characteristics

Item	Martiki to Hyco	Pontiki to Hyco	Pevler to Hyco	Scaggs to Hyco	Mabley to Hyco	Lavoy to Hyco	Jambore to Hyco	Thomas to Hyco
1. Lading Weight (Tons)	96.2	102.3	104.4	107.1	105.0	108.9	107.1	111.6
2. Tare Weight (Tons)	30.3	30.0	28.6	30.1	29.4	29.8	29.5	29.1
3. Cars Per Train	104.0	110.5	106.7	100.7	106.9	93.0	106.2	104.8
4. Loaded Miles	351.4	356.0	367.3	302.1	341.8	335.9	352.0	318.5
5. Empty Miles	356.4	361.0	372.3	307.1	346.8	340.9	357.0	356.6
6. Round Trip Miles	707.8	717.0	739.6	609.2	688.6	676.8	709.0	675.1
7. Origin Loop Miles – Loaded	1.2	1.1	0.1	0.3	0.1	0.0	0.0	0.3
8. Origin Loop Miles – Empty	2.0	1.7	0.1	0.6	0.4	1.0	0.6	0.7
9. Destination Loop Miles – Loaded	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
10. Destination Loop Miles – Empty	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
11. Round Trip Miles (incl Loop Trk. Miles)	714.1	722.9	742.8	613.1	692.2	680.8	712.6	679.2

Item	Martiki to Hyco	Pontiki to Hvco	Pevler to Hyco	Scaggs to Hyco	Mabley to Hyco	Lavoy to Hyco	Jambore to Hyco	Thomas to Hyco
12. Locomotive Units	2.3	2.3	2.3	2.4	2.3	2.3	2.3	2.3
13. Locomotive Cycle Hours	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14. Freight Car Cycle Hours	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15. Sw. - Yd. Loco. (SEMs/Car)	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
16. Sw. - Rd. Loco, Non-Yd (SEMs/Car)	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
17. Sw. - Rd. Loco, Yd (SEMs/Car)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18. Gross Ton Miles	55,251	57,929	59,499	50,692	56,134	56,748	58,615	55,190
19. Train-Miles Per Car	6.87	6.54	6.96	6.09	6.48	7.32	6.71	6.48
20. Locomotive Unit-Miles Per Car	15.65	14.92	15.94	14.52	14.82	16.74	15.35	14.82

Table E-10 (Continued)
Operating Statistics and Traffic Characteristics

Item	Biggs to Hyco	Kopper-ston to Hyco	High Pwr To Mayo	High Pwr Via (OH) to Mayo	Marrow-bone to Mayo	Sidney to Mayo	Gund to Mayo	Mabley to Mayo
1. Lading Weight (Tons)	109.6	112.7	109.9	109.9	108.7	109.2	108.7	104.4
2. Tare Weight (Tons)	29.5	28.3	29.8	29.8	28.5	25.6	29.0	28.7
3. Cars Per Train	94.1	103.2	98.4	98.4	103.5	102.1	108.8	107.8
4. Loaded Miles	342.0	303.6	342.2	773.7	339.8	342.4	337.4	337.9
5. Empty Miles	347.0	308.5	347.2	347.2	344.7	347.4	342.3	342.9
6. Round Trip Miles	689.0	612.1	689.4	1120.9	684.5	689.8	679.7	680.8
7. Origin Loop Miles – Loaded	0.0	1.0	0.9	0.9	0.0	0.8	0.7	0.1
8. Origin Loop Miles – Empty	1.0	1.6	0.9	0.9	0.4	1.0	1.0	0.4
9. Destination Loop Miles – Loaded	1.3	1.3	0.8	0.8	0.8	0.8	0.8	0.8
10. Destination Loop Miles – Empty	1.8	1.8	1.2	1.2	1.2	1.2	1.2	1.2

Item	Biggs to Hyco	Kopper-ston to Hyco	Hgh Pwr To Mayo	Hgh Pwr Via (OH) to Mayo	Marrow-bone to Mayo	Sidney to Mayo	Gund to Mayo	Mabley to Mayo
11. Round Trip Miles (incl Loop Trk. Miles)	693.1	617.8	693.1	1124.6	686.9	693.6	683.4	683.4
12. Locomotive Units	2.3	2.8	2.7	2.2	2.3	2.3	2.3	2.3
13. Locomotive Cycle Hours	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14. Freight Car Cycle Hours	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15. Sw. - Yd. Loco. (SEMs/Car)	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
16. Sw. - Rd. Loco, Non-Yd (SEMs/Car)	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
17. Sw. - Rd. Loco, Yd (SEMs/Car)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18. Gross Ton Miles	57,809	51,538	58,152	118,432	56,445	55,049	56,387	54,816
19. Train-Miles Per Car	7.37	5.99	7.04	11.43	6.64	6.79	6.28	6.34
20. Locomotive Unit-Miles Per Car	16.84	16.61	18.92	25.06	15.21	15.54	14.37	14.53

Table E-10 (Continued)
Operating Statistics and Traffic Characteristics

Item	Bradbury to Hyco	Glen Alum to Hyco	Timbar to Hyco	Timbar to Mayo
1. Lading Weight (Tons)	109.4	104.4	112.8	112.2
2. Tare Weight (Tons)	28.2	28.2	28.2	28.2
3. Cars Per Train	106.0	95.8	107.2	106.5
4. Loaded Miles	357.7	302.2	303.0	299.1
5. Empty Miles	362.8	307.2	308.0	304.1
6. Round Trip Miles	720.5	609.4	611.0	603.2
7. Origin Loop Miles – Loaded	1.4	0.6	1.1	1.1
8. Origin Loop Miles – Empty	1.4	0.9	1.6	1.6
9. Destination Loop Miles – Loaded	1.3	1.3	1.3	0.8
10. Destination Loop Miles – Empty	1.8	1.8	1.8	1.2
11. Round Trip Miles (incl Loop Trk. Miles)	726.4	614	616.8	608
12. Locomotive Units	2.3	2.4	2.4	2.4
13. Locomotive Cycle Hours	0.0	0.0	0.0	0.0
14. Freight Car Cycle Hours	0.0	0.0	0.0	0.0

Item	Bradbury to Hyco	Glen Alum to Hyco	Timbar to Hyco	Timbar to Mayo
15. Sw. - Yd. Loco. (SEMs/Car)	3.8	3.8	3.8	3.8
16. Sw. - Rd. Loco, Non-Yd (SEMs/Car)	3.8	3.8	3.8	3.8
17. Sw. - Rd. Loco, Yd (SEMs/Car)	0.0	0.0	0.0	0.0
18. Gross Ton Miles	59,450	48,735	51,409	50,569
19. Train-Miles Per Car	6.85	6.41	5.75	5.71
20. Locomotive Unit-Miles Per Car	15.63	15.27	13.68	13.59

Table E-11
Variable Cost - 2nd Quarter 2002

Service Category	Fola to Hyco	High Pwr to Hyco	High Pwr via (OH) to Hyco	Marr. to Hyco	Scarlet Glen to Hyco	Colmont to Hyco	Sidney to Hyco	Gund to Hyco
1. Carload O/T Clerical Expense	$7.58	$7.58	$7.58	$7.58	$7.58	$7.58	$7.58	$7.58
2. Carload Handling - Other Expense	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
3. Switching Expense - Yard Locomotives	11.97	11.98	11.98	11.98	11.98	11.99	11.97	11.98
4. Switching Expense - Rd Locos (Non-Yard)	5.68	5.68	5.22	5.34	5.34	5.22	5.34	5.34
5. Switching Expense - Rd Locos (Yard)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6. Gross Ton-Mile Expense (GTM)	208.05	235.88	477.93	230.09	236.81	287.64	230.86	229.87
7. Loop Track Expense - Origin & Destination	3.08	0.51	0.51	0.34	0.47	0.43	0.48	0.47
8. Train-Mile Expense - Other than Crew	4.23	4.44	7.15	4.14	4.23	5.15	4.11	3.99
9. Train-Mile Expense - T&E Crew	73.94	75.58	111.90	60.54	58.90	78.93	51.39	58.30

Service Category	Fola to Hyco	Hgh Pwr to Hyco	Hgh Pwr via (OH) to Hyco	Marr. to Hyco	Scarlet Glen to Hyco	Colmont to Hyco	Sidney to Hyco	Gund to Hyco
10. Helper Service Expense - Other than Crew	19.56	20.00	22.04	12.33	11.99	12.11	12.08	11.87
11. Helper Service Expense - T&E Crew	9.61	9.82	6.84	5.00	4.87	4.91	4.90	4.82
12. Locomotive Unit-Mile Expense	37.65	43.54	59.65	36.20	36.74	42.97	35.70	34.61
13. Locomotive Ownership Expense	16.69	18.12	24.83	15.07	15.29	17.87	14.86	14.40
14. Third Party Loading Charges	158.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15. Car Operating Expense	18.99	19.32	27.73	19.20	19.80	22.79	19.32	19.13
16. Car Ownership Expense	64.92	65.82	89.25	65.49	67.19	75.49	65.84	65.29
17. Caboose & EOTD Ownership Expense	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18. Joint Facility Payment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19. Loss and Damage	0.01	0.02	0.02	0.02	0.01	0.01	0.02	0.02
20. Total Variable Cost Per Carload	$640.65	$518.33	$852.67	$473.36	$481.26	$573.16	$464.48	$467.72

Service Category	Fola to Hyco	Hgh Pwr to Hyco	Hgh Pwr via (OH) to Hyco	Marr. to Hyco	Scarlet Glen to Hyco	Colmont to Hyco	Sidney to Hyco	Gund to Hyco
21. Tons Per Car	101.30	110.00	110.00	108.80	106.30	104.30	108.10	109.00
22. Variable Costs Per Ton	$6.32	$4.71	$7.75	$4.35	$4.53	$5.50	$4.30	$4.29
23. RFA - URCS Linking Factor	0.9934	0.9934	0.9934	0.9934	0.9934	0.9934	0.9934	0.9934
24. Linked Variable Cost Per Ton	$6.28	$4.68	$7.70	$4.32	$4.50	$5.46	$4.27	$4.26
25. Jurisdictional Threshold (L.24 x 180%)	$11.31	$8.43	$13.86	$7.78	$8.10	$9.83	$7.68	$7.67
26. Rate Per Ton	$16.74	$16.74	$16.74	$16.74	$16.74	$16.74	$16.74	$16.74
27. R/VC Percentage (L.26/L.24)	267%	358%	217%	387%	372%	307%	392%	393%

Table E-11 (Continued)
Variable Cost-2nd Quarter 2002

Service Category	Martiki to Hyco	Pontiki to Hyco	Pevler to Hyco	Scaggs to Hyco	Mabley to Hyco	Lavoy to Hyco	Jamboree to Hyco	Thomas to Hyco
1. Carload O/T Clerical Expense	$7.58	$7.58	$7.58	$7.58	$7.58	$7.58	$7.58	$7.58
2. Carload Handling - Other Expense	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
3. Switching Expense - Yard Locomotives	11.99	11.98	11.99	11.97	11.99	11.97	11.98	11.99
4. Switching Expense - Rd Locos (Non-Yard)	5.34	5.34	5.34	5.46	5.34	5.34	5.34	5.34
5. Switching Expense - Rd Locos (Yard)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6. Gross Ton-Mile Expense (GTM)	222.01	232.77	239.07	203.69	225.56	228.01	235.52	221.76
7. Loop Track Expense - Origin & Destination	0.61	0.56	0.33	0.41	0.34	0.40	0.35	0.42
8. Train-Mile Expense - Other than Crew	4.27	4.08	4.32	3.78	4.03	4.55	4.17	4.03
9. Train-Mile Expense - T&E Crew	60.60	57.03	59.06	61.25	58.95	58.73	59.34	60.14

Service Category	Martiki to Hyco	Pontiki to Hvco	Pevler to Hyco	Scaggs to Hyco	Mabley to Hyco	Lavoy to Hyco	Jamboree to Hyco	Thomas to Hyco
10. Helper Service Expense - Other than Crew	12.36	11.62	12.04	12.75	12.01	13.80	12.08	12.26
11. Helper Service Expense - T&E Crew	5.01	4.72	4.88	5.18	4.87	5.61	4.91	4.97
12. Locomotive Unit-Mile Expense	37.03	35.3	37.72	34.35	35.06	39.62	36.31	35.06
13. Locomotive Ownership Expense	15.42	14.7	15.69	14.29	14.6	16.49	15.12	14.60
14. Third Party Loading Charges	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15. Car Operating Expense	19.55	19.73	20.12	17.59	19.13	18.90	19.53	18.87
16. Car Ownership Expense	66.47	66.94	68.05	61.00	65.30	64.67	66.41	64.58
17. Caboose & EOTD Ownership Expense	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18. Joint Facility Payment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19. Loss and Damage	0.01	0.01	0.01	0.02	0.01	0.02	0.02	0.02
20. Total Variable Cost Per Carload	$468.28	$472.40	$486.24	$439.36	$464.82	$475.74	$478.69	$461.67

Service Category	Martiki to Hyco	Pontiki to Hyco	Pevler to Hyco	Scaggs to Hyco	Mabley to Hyco	Lavoy to Hyco	Jamboree to Hyco	Thomas to Hyco
21. Tons Per Car	96.20	102.30	104.40	107.10	105.00	108.90	107.10	111.60
22. Variable Costs Per Ton	$4.87	$4.62	$4.66	$4.10	$4.43	$4.37	$4.47	$4.14
23. RFA - URCS Linking Factor	0.9934	0.9934	0.9934	0.9934	0.9934	0.9934	0.9934	0.9934
24. Linked Variable Cost Per Ton	$4.84	$4.59	$4.63	$4.08	$4.40	$4.34	$4.44	$4.11
25. Jurisdictional Threshold (L.24 x 180%)	$8.70	$8.26	$8.33	$7.34	$7.92	$7.81	$7.99	$7.40
26. Rate Per Ton	$16.74	$16.74	$16.74	$16.56	$16.56	$16.56	$16.56	$16.56
27. R/VC Percentage (L.26/L.24)	346%	365%	362%	406%	377%	382%	373%	403%

Table E-11 (Continued)
Variable Cost - 2nd Quarter 2002

Service Category	Biggs to Hyco	Kopperston to Hyco	HP Mt to Mayo	HP Mt Via (OH) to Mayo	Marrowbone to Mayo	Sidney to Mayo	Gund to Mayo	Mabley to Mayo
1. Carload O/T Clerical Expense	$7.58	$7.58	$7.58	$7.58	$7.58	$7.58	$7.58	$7.58
2. Carload Handling - Other Expense	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
3. Switching Expense - Yard Locomotives	12.00	11.99	11.99	11.99	11.99	11.99	11.99	11.98
4. Switching Expense - Rd Locos (Non-Yard)	5.34	5.91	5.80	5.22	5.34	5.34	5.34	5.34
5. Switching Expense - Rd Locos (Yard)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6. Gross Ton-Mile Expense (GTM)	232.28	207.09	233.66	475.88	226.79	221.19	226.58	220.26
7. Loop Track Expense - Origin & Destination	0.41	0.56	0.42	0.42	0.24	0.39	0.37	0.25
8. Train-Mile Expense - Other than Crew	4.48	3.72	4.38	7.11	4.13	4.22	3.90	3.95
9. Train-Mile Expense - T&E Crew	67.59	64.07	75.67	112.02	60.89	53.50	57.92	58.46

Service Category	Biggs to Hyco	Kopper-ston to Hyco	HP Mt. to Mayo	HP Mt. Via (OH) to Mayo	Marrow-bone to Mayo	Sidney to Mayo	Gund to Mayo	Mabley to Mayo
10. Helper Service Expense - Other than Crew	16.57	8.01	20.03	22.05	12.40	12.58	11.80	11.91
11. Helper Service Expense - T&E Crew	7.77	6.42	9.83	6.84	5.03	5.10	4.79	4.83
12. Locomotive Unit-Mile Expense	39.85	39.30	44.77	59.30	35.98	36.76	33.99	34.37
13. Locomotive Ownership Expense	16.59	16.35	18.64	24.69	14.99	15.31	14.15	14.31
14. Third Party Loading Charges	0.00	49.82	0.00	0.00	0.00	0.00	0.00	0.00
15. Car Operating Expense	19.14	17.68	19.14	27.56	19.02	19.15	18.95	18.95
16. Car Ownership Expense	65.34	61.24	65.35	88.78	65.02	65.37	64.82	64.82
17. Caboose & EOTD Ownership Expense	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18. Joint Facility Payment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19. Loss and Damage	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01

Service Category	Biggs to Hyco	Kopper-ston to Hyco	HP Mt. to Mayo	HP Mt. Via (OH) to Mayo	Marrow-bone to Mayo	Sidney to Mayo	Gund to Mayo	Mabley to Mayo
20. Total Variable Cost Per Carload	$495.11	$499.80	$517.32	$849.51	$469.47	$458.54	$462.25	$457.06
21. Tons Per Car	109.60	112.70	109.90	109.90	108.70	109.20	108.70	104.40
22. Variable Costs Per Ton	$4.52	$4.43	$4.71	$7.73	$4.32	$4.20	$4.25	$4.38
23. RFA - URCS Linking Factor	0.9934	0.9934	0.9934	0.09934	0.09934	0.9934	0.9934	0.9934
24. Linked Variable Cost Per Ton	$4.49	$4.41	$4.68	$7.68	$4.29	$4.17	$4.22	$4.35
25. Jurisdictional Threshold (L.24 x 180%)	$8.08	$7.93	$8.42	$13.82	$7.72	$7.51	$7.60	$7.83
26. Rate Per Ton	$16.56	$16.56	$16.74	$16.74	$16.74	$16.74	$16.74	$16.56
27. R/VC Percentage (L.26/L.24)	369%	376%	358%	218%	390%	401%	396%	381%

Table E-11 (Continued)
Variable Cost - 2nd Quarter 2002

Service Category	Bradbury to Hyco	Glen Alum to Hyco	Timbar to Hyco	Timbar to Mayo
1. Carload O/T Clerical Expense	$7.58	$7.58	$7.58	$7.58
2. Carload Handling - Other Expense	0.05	0.05	0.05	0.05
3. Switching Expense - Yard Locomotives	11.98	11.98	11.99	11.98
4. Switching Expense - Rd Locos (Non-Yard)	5.34	5.46	5.46	5.46
5. Switching Expense - Rd Locos (Yard)	0.00	0.00	0.00	0.00
6. Gross Ton-Mile Expense (GTM)	238.88	195.83	206.56	203.19
7. Loop Track Expense - Origin & Destination	0.61	0.48	0.57	0.47
8. Train-Mile Expense - Other than Crew	4.26	3.99	3.58	3.55
9. Train-Mile Expense - T&E Crew	59.45	64.38	57.53	57.91
10. Helper Service Expense - Other than Crew	12.11	13.40	11.98	12.06
11. Helper Service Expense - T&E Crew	4.92	5.44	4.86	4.89
12. Locomotive Unit-Mile Expense	36.99	36.13	32.37	32.16
13. Locomotive Ownership Expense	15.40	15.04	13.48	13.39
14. Third Party Loading Charges	0.00	0.00	0.00	0.00

Service Category	Bradbury to Hyco	Glen Alum to Hyco	Timbar to Hyco	Timbar to Mayo
15. Car Operating Expense	13.01	11.05	11.10	10.94
16. Car Ownership Expense	32.59	27.69	27.81	27.43
17. Caboose & EOTD Ownership Expense	0.00	0.00	0.00	0.00
18. Joint Facility Payment	0.00	0.00	0.00	0.00
19. Loss and Damage	0.02	0.01	0.02	0.02
20. Total Variable Cost Per Carload	$443.16	$398.50	$394.92	$391.08
21. Tons Per Car	109.40	104.40	112.80	112.20
22. Variable Costs Per Ton	$4.05	$3.82	$3.50	$3.49
23. RFA - URCS Linking Factor	0.9934	0.9934	0.9934	0.09934
24. Linked Variable Cost Per Ton	$4.02	$3.79	$3.48	$3.46
25. Jurisdictional Threshold (L.24 x 180%)	$7.24	$6.83	$6.26	$6.23
26. Rate Per Ton	$16.74	$16.56	$16.56	$16.56
27. R/VC Percentage (L.26/L.24)	416%	437%	476%	478%

Table E-12
Variable Cost - 3rd Quarter 2002

Service Category	Fola to Hyco	HP Mt. to Hyco	HP Mt. Via (OH) to Hyco	Marrow-bone to Hyco	Scarlet Glen to Hyco	Colmont to Hyco	Sidney to Hyco	Gund to Hyco
1. Carload O/T Clerical Expense	$7.67	$7.67	$7.67	$7.67	$7.67	$7.67	$7.67	$7.67
2. Carload Handling - Other Expense	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
3. Switching Expense - Yard Locomotives	12.10	12.11	12.11	12.11	12.11	12.13	12.10	12.11
4. Switching Expense - Rd Locos (Non-Yard)	5.74	5.74	5.28	5.40	5.40	5.28	5.40	5.40
5. Switching Expense - Rd Locos (Yard)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6. Gross Ton-Mile Expense (GTM)	209.96	238.05	482.34	232.22	239	290.29	232.99	231.99
7. Loop Track Expense - Origin & Destination	3.12	0.51	0.51	0.34	0.48	0.44	0.49	0.48
8. Train-Mile Expense - Other than Crew	4.28	4.49	7.24	4.19	4.28	5.22	4.15	4.03
9. Train-Mile Expense - T&E Crew	76.59	78.29	115.91	62.71	61.01	81.76	53.23	60.39

Service Category	Fola to Hyco	HP Mt. to Hyco	HP Mt. Via (OH) to Hyco	Marrow-bone to Hyco	Scarlet Glen to Hyco	Colmont to Hyco	Sidney to Hyco	Gund to Hyco
10. Helper Service Expense - Other than Crew	19.79	20.23	22.30	12.47	12.13	12.25	12.22	12.01
11. Helper Service Expense - T&E Crew	9.95	10.17	7.09	5.18	5.04	5.09	5.08	4.99
12. Locomotive Unit-Mile Expense	38.16	44.13	60.45	36.68	37.24	43.54	36.18	35.08
13. Locomotive Ownership Expense	16.80	18.24	24.99	15.17	15.39	18.01	14.96	14.50
14. Third Party Loading Charges	158.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15. Car Operating Expense	19.22	19.55	28.06	19.43	20.04	23.06	19.55	19.36
16. Car Ownership Expense	65.26	66.16	89.70	65.83	67.54	75.87	66.18	65.63
17. Caboose & EOTD Ownership Expense	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18. Joint Facility Payment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19. Loss and Damage	0.01	0.02	0.02	0.02	0.01	0.01	0.02	0.02
20. Total Variable Cost Per Carload	$647.34	$525.42	$863.72	$479.47	$487.39	$580.68	$470.25	$473.70

Service Category	Fola to Hyco	HP Mt to Hyco	HP Mt Via (OH) to Hyco	Marrow-bone to Hyco	Scarlet Glen to Hyco	Colmont to Hyco	Sidney to Hyco	Gund to Hyco
21. Tons Per Car	101.30	110.00	110.00	108.80	106.30	104.30	108.10	109.00
22. Variable Costs Per Ton	$6.39	$4.78	$7.85	$4.41	$4.59	$5.57	$4.35	$4.35
23. RFA - URCS Linking Factor	0.9934	0.9934	0.9934	0.9934	0.9934	0.9934	0.9934	0.9934
24. Linked Variable Cost Per Ton	$6.35	$4.75	$7.80	$4.38	$4.55	$5.53	$4.32	$4.32
25. Jurisdictional Threshold (L.24 x 180%)	$11.43	$8.54	$14.04	$7.88	$8.20	$9.96	$7.78	$7.77
26. Rate Per Ton	$16.79	$16.79	$16.79	$16.79	$16.79	$16.79	$16.79	$16.79
27. R/VC Percentage (L.26/L.24)	265%	354%	215%	384%	369%	304%	389%	389%

Table E-12 (Continued)
Variable Cost - 3rd Quarter 2002

Service Category	Martiki to Hyco	Pontiki to Hyco	Pevler to Hyco	Scaggs to Hyco	Mabley to Hyco	Lavoy to Hyco	Jamboree to Hyco	Thomas to Hyco
1. Carload O/T Clerical Expense	$7.67	$7.67	$7.67	$7.67	$7.67	$7.67	$7.67	$7.67
2. Carload Handling - Other Expense	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
3. Switching Expense - Yard Locomotives	12.13	12.11	12.13	12.10	12.13	12.10	12.11	12.13
4. Switching Expense - Rd Locos (Non-Yard)	5.40	5.40	5.40	5.52	5.40	5.40	5.40	5.40
5. Switching Expense - Rd Locos (Yard)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6. Gross Ton-Mile Expense (GTM)	224.05	234.92	241.28	205.57	227.64	230.12	237.70	223.81
7. Loop Track Expense - Origin & Destination	0.61	0.57	0.33	0.41	0.35	0.40	0.35	0.42
8. Train-Mile Expense - Other than Crew	4.32	4.12	4.37	3.82	4.07	4.60	4.22	4.07
9. Train-Mile Expense - T&E Crew	62.77	59.08	61.18	63.44	61.06	60.83	61.47	62.29

Service Category	Martiki to Hyco	Pontiki to Hyco	Pevler to Hyco	Scaggs to Hyco	Mabley to Hyco	Lavoy to Hyco	Jamboree to Hyco	Thomas to Hyco
10. Helper Service Expense - Other than Crew	12.50	11.76	12.18	12.90	12.15	13.96	12.22	12.41
11. Helper Service Expense - T&E Crew	5.19	4.89	5.06	5.36	5.04	5.81	5.09	5.15
12. Locomotive Unit-Mile Expense	37.53	35.77	38.22	34.81	35.53	40.15	36.80	35.53
13. Locomotive Ownership Expense	15.52	14.80	15.80	14.39	14.70	16.60	15.22	14.70
14. Third Party Loading Charges	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15. Car Operating Expense	19.78	19.96	20.36	17.80	19.36	19.13	19.76	19.10
16. Car Ownership Expense	66.81	67.29	68.40	61.32	65.64	65.01	66.75	64.92
17. Caboose & EOTD Ownership Expense	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18. Joint Facility Payment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19. Loss and Damage	0.01	0.01	0.01	0.02	0.01	0.02	0.02	0.02
20. Total Variable Cost Per Carload	$474.34	$478.40	$492.43	$445.18	$470.79	$481.85	$484.82	$467.66

Service Category	Martiki to Hyco	Pontiki to Hwco	Pevler to Hyco	Scaggs to Hyco	Mabley to Hyco	Lavoy to Hyco	Jamboree to Hyco	Thomas to Hyco
21. Tons Per Car	96.20	102.30	104.40	107.10	105.00	108.90	107.10	111.60
22. Variable Costs Per Ton	$4.93	$4.68	$4.72	$4.16	$4.48	$4.42	$4.53	$4.19
23. RFA - URCS Linking Factor	0.9934	0.9934	0.9934	0.9934	0.9934	0.9934	0.9934	0.9934
24. Linked Variable Cost Per Ton	$4.90	$4.65	$4.69	$4.13	$4.45	$4.40	$4.50	$4.16
25. Jurisdictional Threshold (L.24 x 180%)	$8.82	$8.36	$8.43	$7.43	$8.02	$7.91	$8.09	$7.49
26. Rate Per Ton	$16.79	$16.79	$16.79	$16.61	$16.61	$16.61	$16.61	$16.61
27. R/VC Percentage (L.26/L.24)	343%	361%	358%	402%	373%	378%	369%	399%

Table E-12 (Continued)
Variable Cost - 3rd Quarter 2002

Service Category	Biggs to Hyco	Kopper-ston to Hyco	HP Mt. to Mayo	HP Mt. Via (OH) to Mayo	Marrow-bone to Mayo	Sidney to Mayo	Gund to Mayo	Mabley to Mayo
1. Carload O/T Clerical Expense	$7.67	$7.67	$7.67	$7.67	$7.67	$7.67	$7.67	$7.67
2. Carload Handling - Other Expense	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
3. Switching Expense - Yard Locomotives	12.14	12.13	12.13	12.13	12.13	12.13	12.13	12.11
4. Switching Expense - Rd Locos (Non-Yard)	5.40	5.99	5.87	5.28	5.40	5.40	5.40	5.40
5. Switching Expense - Rd Locos (Yard)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6. Gross Ton-Mile Expense (GTM)	234.43	209.00	235.82	480.28	228.89	223.23	228.67	222.29
7. Loop Track Expense - Origin & Destination	0.41	0.57	0.42	0.42	0.24	0.40	0.38	0.25
8. Train-Mile Expense - Other than Crew	4.63	3.76	4.43	7.20	4.18	4.27	3.94	3.99

Service Category	Biggs to Hyco	Kopperston to Hyco	HP Mt to Mayo	HP Mt Via (OH) to Mayo	Marrow-bone to Mayo	Sidney to Mayo	Gund to Mayo	Mabley to Mayo
9. Train-Mile Expense - T&E Crew	70.01	66.36	78.38	116.04	63.07	55.42	60.00	60.56
10. Helper Service Expense - Other than Crew	16.77	8.10	20.26	22.31	12.55	12.73	11.93	12.05
11. Helper Service Expense - T&E Crew	8.05	6.65	10.18	7.09	5.21	5.29	4.96	5.00
12. Locomotive Unit-Mile Expense	40.38	39.83	45.36	60.09	36.47	37.25	34.45	34.83
13. Locomotive Ownership Expense	16.70	16.46	18.76	24.85	15.09	15.41	14.25	14.41
14. Third Party Loading Charges	0.00	49.82	0.00	0.00	0.00	0.00	0.00	0.00
15. Car Operating Expense	19.37	17.89	19.37	27.89	19.25	19.38	19.18	19.18
16. Car Ownership Expense	65.68	61.56	65.69	89.23	65.36	65.71	65.16	65.16
17. Caboose & EOTD Ownership Expense	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Service Category	Biggs to Hyco	Kopper-ston to Hyco	HP Mt. to Mayo	HP Mt. Via (OH) to Mayo	Marrow-bone to Mayo	Sidney to Mayo	Gund to Mayo	Mabley to Mayo
18. Joint Facility Payment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19. Loss and Damage	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01
20. Total Variable Cost Per Carload	$501.70	$505.84	$524.41	$860.54	$475.56	$464.34	$468.18	$462.96
21. Tons Per Car	109.60	112.70	109.90	109.90	108.70	109.20	108.70	104.40
22. Variable Costs Per Ton	$4.58	$4.49	$4.77	$7.83	$4.37	$4.25	$4.31	$4.43
23. RFA - URCS Linking Factor	0.9934	0.9934	0.9934	0.9934	0.9934	0.9934	0.9934	0.9934
24. Linked Variable Cost Per Ton	$4.55	$4.46	$4.74	$7.78	$4.35	$4.22	$4.28	$4.41
25. Jurisdictional Threshold (L.24 x 180%)	$8.19	$8.03	$8.53	$14.00	$7.82	$7.60	$7.70	$7.93
26. Rate Per Ton	$16.61	$16.61	$16.79	$16.79	$16.79	$16.79	$16.79	$16.61
27. R/VC Percentage (L.26/L.24)	365%	373%	354%	216%	386%	398%	392%	377%

Table E-12 (Continued)
Variable Cost - 3rd Quarter 2002

Service Category	Bradbury to Hyco	Glen Alum to Hyco	Timbar to Hyco	Timbar to Mayo
1. Carload O/T Clerical Expense	$7.67	$7.67	$7.67	$7.67
2. Carload Handling - Other Expense	0.05	0.05	0.05	0.05
3. Switching Expense - Yard Locomotives	12.11	12.12	12.13	12.11
4. Switching Expense - Rd Locos (Non-Yard)	5.40	5.52	5.52	5.52
5. Switching Expense - Rd Locos (Yard)	0.00	0.00	0.00	0.00
6. Gross Ton-Mile Expense (GTM)	241.08	197.63	208.47	205.07
7. Loop Track Expense - Origin & Destination	0.61	0.49	0.58	0.48
8. Train-Mile Expense - Other than Crew	4.31	4.03	3.62	3.59
9. Train-Mile Expense - T&E Crew	61.58	66.69	59.59	59.98
10. Helper Service Expense - Other than Crew	12.25	13.55	12.11	12.2
11. Helper Service Expense - T&E Crew	5.10	5.64	5.03	5.07
12. Locomotive Unit-Mile Expense	37.48	36.61	32.8	32.59
13. Locomotive Ownership Expense	15.50	15.14	13.57	13.48
14. Third Party Loading Charges	0.00	0.00	0.00	0.00

Service Category	Bradbury to Hyco	Glen Alum to Hyco	Timbar to Hyco	Timbar to Mayo
15. Car Operating Expense	13.16	11.18	11.23	11.07
16. Car Ownership Expense	32.72	27.8	27.92	27.54
17. Caboose & EOTD Ownership Expense	0.00	0.00	0.00	0.00
18. Joint Facility Payment	0.00	0.00	0.00	0.00
19. Loss and Damage	0.02	0.01	0.02	0.02
20. Total Variable Cost Per Carload	$449.05	$404.14	$400.30	$396.44
21. Tons Per Car	109.40	104.40	112.80	112.20
22. Variable Costs Per Ton	$4.10	$3.87	$3.55	$3.53
23. RFA - URCS Linking Factor	0.9934	0.9934	0.9934	0.9934
24. Linked Variable Cost Per Ton	$4.08	$3.85	$3.53	$3.51
25. Jurisdictional Threshold (L.24 x 180%)	$7.34	$6.92	$6.35	$6.32
26. Rate Per Ton	$16.79	$16.61	$16.61	$16.61
27. R/VC Percentage (L.26/L.24)	412%	432%	471%	473%