STB DOCKET NO. 42070

DUKE ENERGY CORPORATION
v.
CSX TRANSPORTATION, INC.

Decided February 3, 2004

Based on the record developed by the parties and after oral argument before the Board, the Board finds that the defendant railroad has market dominance over the transportation at issue but that the complainant has failed to establish that the challenged rates are unreasonably high.

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ACRONYMS USED

AAR	Association of American Railroads
ACW	Appalachia & Carolina Western Railroad
Br.	Brief
AREMA	American Railway Engineering and Maintenance-of-Way Association
CMP	constrained market pricing
CSXT	CSX Transportation, Inc.
CTC	centralized traffic control
CWR	continuous welded rail
CY	cubic yards
DCF	discounted cash flow
Duke	Duke Energy Corporation
e-WP.	electronic workpaper
EIA	Energy Information Administration, U.S. Department of Energy
Exh.	exhibit
FEC	Florida East Coast Railway Company
FED	failed equipment detector
FRA	Federal Railroad Administration
G&A	general and administrative

ICC	Interstate Commerce Commission
IT	information technology
LF	linear feet
LUM	locomotive unit-mile
MGT	million gross tons
MMBP	modified mileage block prorate
MOW	maintenance-of-way
MSP	modified straight-mileage prorate
Narr.	Narrative
NS	Norfolk Southern Railway Company
O/D	origin/destination
Open.	opening evidence
R-1	Annual Report Form R-1
RCAF-A	rail cost adjustment factor, adjusted for changes in productivity
RCAF-U	rail cost adjustment factor, unadjusted for changes in productivity
RCB	reinforced concrete box culvert
Reb.	rebuttal evidence
ROW	right-of-way
R/VC	revenue-to-variable cost
SAC	stand-alone cost
SARR	stand-alone railroad
T&E	train and engine crew
URCS	Uniform Railroad Costing System
V.S.	verified statement
WP.	workpaper

BY THE BOARD:

By complaint filed on December 19, 2001, Duke Energy Corporation (Duke) challenges the rates charged by CSX Transportation, Inc. (CSXT) for the movement of coal from origins in Virginia, West Virginia, and Kentucky to Duke's Cliffside, Riverbend, and Lee electricity generating facilities, located at Brice and Riverbend, NC, and Pelzer, SC. Duke 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 CSXT since January 1, 2002, and to order CSXT to reimburse Duke for the filing fee for its complaint. Upon considering the record that has been presented in this case, the Board finds that Duke has not demonstrated that the challenged rates are unreasonable, but that further proceedings may be appropriate to consider whether the magnitude of CSXT's increases in these rates violated the Board's phasing constraint.

BACKGROUND

Prior to December 31, 2001, CSXT served the Duke facilities at issue here under a rail transportation contract. When that contract was not renewed, CSXT, responding to Duke's request for common carrier rates, established a series of interim common carriage rates (CSXT-CORE-105, CSXT-CORE-109, CSXT-CORE-115, and CSXT-CORE-117), which were in effect from January 1, 2002, to February 28, 2002. CSXT later established volume coal rates from 54 named mines (CSXT-CORE-120), which took effect March 1, 2002, and contained a variety of discounts and rate incentives that are dependent on traffic volumes, loading characteristics, and other operating results. CSXT established separate rates for shipments of synthetic fuel derived from coal (synfuel) (CSXT-CORE-128), effective March 12, 2002, and it reclassified traffic moving between four origin/destination (O/D) pairs[1] as synfuel movements rather than coal movements.[2] Duke's amended complaint[3] challenges all of the rates identified above except for the synfuel rates.

OVERVIEW

This case is similar in many respects to two other recent cases involving rates for coal movements from the Central Appalachian region that were decided under the Board's stand-alone cost (SAC) test. *See Duke Energy Corp. v. Norfolk Southern Ry.*, 7 S.T.B. 89 (2003) (*Duke/NS*), *corrected* February 3, 2004 (7 S.T.B. 394); *Carolina Power & Light Co. v. Norfolk Southern Ry.*, 7 S.T.B. 235 (2003) (*CP&L/NS*). However, there are also significant differences in the three cases in both the issues that were raised and the evidence that was submitted. Indeed, this case involves a different defendant carrier with a different rail system, different mines served, and different customer base. And, in the end, the decision in each rail rate case applying the SAC test is the product of the particular record that was developed by the parties in that case. Based on

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[1] Mayflower to Cliffside; Myra to Cliffside; Mayflower to Riverbend; and Bates Branch to Riverbend.

[2] Duke Reb. Narr. II-A-8.

[3] Duke filed a request to amend and supplement its complaint on April 5, 2002, but on April 24, 2002, withdrew part of that request. The amended complaint, as modified on April 24, 2002, was accepted in a decision served on July 26, 2002.

the extensive record developed in this case, the Board concludes that the challenged rates have not been shown to be unreasonable under the SAC test.

However, as pointed out in *Duke/NS*, even where the rate levels are not shown to be unreasonable under the SAC test, there could still be an issue, under a separate Board rate constraint, as to whether it is unreasonable for such a large rate increase to be imposed so abruptly. Therefore, should Duke wish to pursue this matter, the Board will afford the parties an opportunity to address whether the magnitude of the rate increases at issue here violated the Board's phasing constraint and, if so, what method should be used for phasing in these rate increases over time.

PROCEDURAL MATTERS

There are two outstanding procedural matters regarding what should properly be part of the record in this case. First, by petition filed December 8, 2003, CSXT has sought to correct the record by making technical adjustments to its reply evidence to correct an inadvertent computational error. CSXT states that its use of an incorrect formula for calculating bridge abutment costs for Duke's stand-alone railroad resulted in an inadvertent overstatement of road property investment costs by approximately $203.8 million. Duke does not oppose the request, and the Board encourages parties to bring such inadvertent computational errors to its attention as soon as they are discovered. Accordingly, the unopposed petition for leave to correct the record is granted, and CSXT's revised supplemental evidence is accepted.

Second, CSXT has moved to strike statements contained in Duke's brief regarding later increases to the challenged rates, to which Duke has responded, and CSXT has in turn replied. The parties debate the accuracy of this information and the propriety of addressing it at the briefing stage of the proceeding. Because both parties have been heard on the matter and neither party will be prejudiced, the motion to strike will be denied.

PRELIMINARY CLAIM

Separate from its argument that the challenged rates violate the Board's SAC constraint, Duke also argues that, by increasing the rates for the traffic at issue, CSXT violated a condition that was imposed by the Board on its approval of CSXT's acquisition (together with Norfolk Southern Railway Company, or NS) of the Consolidated Rail Corporation (Conrail). That general condition directed CSXT and NS to adhere to representations they had made during the course of that proceeding. *CSX Corp. et al.–Control–Conrail Inc. et al.*, 3 S.T.B. 196, 387 (1998) (*Conrail*) (Condition No. 19). Duke contends that CSXT had represented that captive shippers would not be burdened with the costs associated with that acquisition, but that following the acquisition CSXT nevertheless embarked upon a program to meet unanticipated cash needs by increasing the rates of its captive coal shippers, including Duke. According to Duke, CSXT thus reneged on a pledge to the Board that it would not squeeze its captive shippers if its financial aspirations for Conrail went awry. CSXT denies that the Conrail acquisition was a factor in its setting of the rates at issue here.

This same claim was rejected by the Board in *Duke/NS*, 7 S.T.B. at 95-97, and in *CP&L/NS*, 7 S.T.B. at 242-43 . As in those cases, there is no evidence here to suggest that the rate increases imposed on Duke were necessitated by CSXT's acquisition of Conrail. The Board cannot take remedial action solely on the basis of an unsupported allegation. In any event, the Board's representations condition in *Conrail* was not, and could not have been, meant to freeze CSXT's then-existing rates indefinitely, depriving the carrier of the ability to adjust its rates to react to changing market conditions. Therefore, Duke'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). 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). In this case, CSXT does not dispute Duke's claim that there are not effective competitive alternatives for transporting coal between the points covered by this complaint.[4]

The Board, however, is precluded from finding 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 vary with the level of output.) CSXT claims that, for traffic between some of the O/D pairs, the revenue-to-variable cost (R/VC) percentages are below 180% at certain volume discount rate levels.[5] But CSXT concedes that the base rates produce R/VC levels greater than 180% for all O/D pairs. Because the record does not disclose when or whether the rate incentives were achieved during any period, CSXT has failed to show that any of the O/D pairs should be excluded from the Board's rate reasonableness review here.

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[4] CSXT Reply Narr. II-B-1.

[5] CSXT Reply Narr. II-B-1; CSXT Reply Narr. II-A-47 to -48; CSXT Reb. Narr. II-A-85 to -86.

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 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 SAC 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. *See, e.g., CF Industries, Inc. v. Koch Pipeline Co.*, 4 S.T.B. 637 (2000), *aff'd sub nom. CF Industries, Inc. v. STB*, 255 F.3d 816 (D.C. Cir. 2001). 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. Duke 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 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 that 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 figure 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. Finally, the plan 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 assume that the SARR would continue to operate into the indefinite future. However, the revenue requirements for the SARR are based on the operating expenses that would be incurred over that 20-year period plus the portion of capital costs that would need to be recovered during that period. 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—traffic that is not Duke's 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). *Guidelines*, 1 I.C.C.2d at 544. 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 full (here, 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. As the Board noted in *CP&L/NS*, 7 S.T.B. at 246-47, there are various evidentiary principles to guide the parties and the Board in this effort.

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 or the Board on its own initiative modifies precedent to address the evidence and arguments presented by the parties. 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. Thus, parties ought to be able to agree in advance as to these types of costs.

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. Evidence that was prepared in the ordinary course of business is generally preferred over evidence developed specifically for litigation. And evidence obtained from an official or otherwise neutral source is generally regarded as the most reliable evidence.

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. In this case, the Board was called upon to address a significant issue regarding permissible rebuttal evidence prior to its refinement of its rebuttal evidence policy in *Duke/NS*. After submitting its case-in-chief, Duke recognized that there were two significant flaws in its design of the stand-alone railroad upon which its case had been based: a rail yard had been located in a national scenic river gorge, and infrastructure needed for operations through a tunnel had been omitted. Duke attempted to fix those flaws in its rebuttal evidence by relocating the yard and tunnel. In a decision served March 25, 2003, the Board granted a CSXT motion to strike those portions of Duke's rebuttal evidence on the ground that it is inappropriate to significantly reconfigure a SARR on rebuttal.

Even if the Board were to consider Duke's relocation of the yard presented on rebuttal under the refined policy regarding the permissible scope of rebuttal that was articulated in *Duke/NS*, 7 S.T.B. at 100-01, it would not produce a different result. With respect to relocation of the yard, even if the massive amounts of grading and excavation that CSXT claimed would be necessary were considered unrealistic, the relocation site suggested by Duke on rebuttal appears to be as problematic as the site it originally proposed, based on the topographic maps submitted by CSXT in its motion to strike. Thus, Duke's rebuttal evidence would not correct the deficiency in Duke's opening evidence pointed out by CSXT. Regarding the tunnel, CSXT's reply evidence, showing that the SARR would need the same investment as CSXT at the tunnel location, is realistic and supported. Thus, Duke is precluded from altering its case on rebuttal in any event.

STAND-ALONE COST ANALYSIS

In this case, Duke designed a hypothetical SARR called the Appalachia & Carolina Western Railroad (ACW) to serve a traffic group consisting of coal and synfuel traffic that CSXT currently moves from 62 mine sites in the Central Appalachian region, as well as steel traffic originating at a steel mill at Ashland, KY. The ACW was designed to handle over 100 million tons of traffic annually.

A. ACW Configuration

The ACW would replicate approximately 1,200 miles of existing CSXT lines. Its main line would extend from Fayette, WV, west to Big Sandy Junction, KY, and then south through portions of Virginia, Tennessee, and North Carolina, to Spartanburg, SC, via Bostic, NC. The ACW would have two secondary main lines: one extending northwest from Big Sandy Junction to Russell, KY; and the other extending east from Bostic to Mt. Holly, NC. The ACW would have numerous branch lines serving origin coal mines. In addition, the ACW would replicate CSXT's existing trackage rights arrangements over 42.9 miles of the Norfolk Southern Railway between Frisco and Big Stone, VA, and over 6.1 miles of the Vaughan Railroad between Rich Creek Junction and the Fola Mine near Gauley, WV. Finally, the ACW would have interchange points with the "residual" (off-SARR) part of the CSXT system at eight locations: Fayette, Huntington, and Man, WV; Russell, Typo and Pineville Junction, KY; Mt. Holly, NC; and Spartanburg, SC.

A map of the ACW system and the Board's resolution of evidentiary disputes regarding the amount of track that would be needed for the ACW to operate this system are contained in Appendix A.

B. ACW Traffic Group

As noted above, the traffic selected by Duke for inclusion in the SAC analysis consists of coal (including synfuel) and steel traffic. The coal traffic selected would originate from 62 mines (at 57 loadouts) currently served by CSXT in the Central Appalachian coal fields in West Virginia, eastern Kentucky, and western Virginia. The coal traffic would be transported by the ACW to one of eight power plants that would be served directly by the ACW, three barge transloading facilities on the Ohio and Kanawha Rivers, or eight interchange points with the residual CSXT.

As in the *Duke/NS* and *CP&L/NS* cases, the parties here disagree on the tonnages and revenues that could be expected from the coal traffic; what portion of the revenues from "cross-over" traffic (i.e., traffic for which the SARR would not replace the full length of the defendant carrier's current move but would instead be interchanged with the "residual," off-SARR portion of the defendant carrier's system) should be allocated to the ACW; and whether it is appropriate to assume that the ACW 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 CSXT for its portion of interlined movements as a result of the different routings.

Here, CSXT also objects to the inclusion of the steel traffic. That traffic (estimated to be 2.1 million tons in the peak year of the SAC analysis) would originate at a steel mill at Ashland, KY, and be transported by the ACW for approximately 4 miles to an interchange point with the residual CSXT at Russell, KY. CSXT argues that the traffic would share no facilities used to serve Duke's complaint traffic and that the inclusion of this steel traffic therefore represents an impermissible cross-subsidy.

Each of these issues is discussed below.

1. Rerouting of Traffic

This is another in a growing number of SAC cases in which the complainant has sought to reroute traffic—i.e., hypothetically change the route over which the traffic currently moves. In *Texas Municipal Power Agency v. Burlington N. & S. F. Ry.*, 6 S.T.B. 573 (2003) (*TMPA*), the Board announced some general principles that would guide its analysis. In *Duke/NS*, the Board refined those general principles to address reroutes that change the total length of the movement. Here, the complainant has introduced a new issue by seeking to include traffic for which the customary routing would not use any part of the system replicated by the SARR.

a. General Principles

The objective of the SAC analysis is to measure the costs of serving traffic in the absence of inefficiencies or cross-subsidies. Inefficiencies can take many forms, including inefficiencies due to a carrier's physical plant. *See Guidelines*, 1 I.C.C.2d at 537. An existing carrier's routing of traffic—which can be the product of a series of line constructions, mergers or line acquisitions, and line abandonments occurring over the course of many years—may be less than optimal. It might be more efficient to site a line differently or to eliminate redundant routes. Therefore, as a general matter, a SARR need not replicate either the configuration or routing of the defendant carrier, as the use of a different routing can be an appropriate means of removing inefficiencies from a system.

As the Board held in *TMPA*, 6 S.T.B. at 591-98, if a complainant wishes to reroute cross-over traffic, it must ensure that the combined operations of the SARR and the residual carrier would be at least as efficient as the existing operations. At a minimum, the complainant must fully account for all of the ramifications of requiring the residual carrier to alter its handling of the traffic and any changes in the level of service received by the shippers. But, as the Board clarified in *Duke/NS*, 7 S.T.B. at 112-13, where a rerouting would shorten the total distance, the Board will presume it is acceptable, unless the defendant railroad demonstrates otherwise. Conversely, for reroutings that would result in a longer overall haul, the rebuttable presumption is that the longer route is less efficient; and the greater the disparity in distance, the stronger that presumption.

In this case, a new issue is presented by Duke's attempt to include traffic that would not, under its customary routing, use any lines included in the SARR. The Board concludes that rerouting traffic in this manner is not consistent with the goals and purposes of the SAC test, as revenue from traffic that bears no relation to the SARR network should not be used to pay for that network. Inclusion of other traffic is appropriate where that traffic currently shares in the use of the facilities and should therefore contribute to the costs of those facilities. But it is not appropriate to divert traffic from other parts of the defendant carrier's system to help defray costs for the portion of the system used by the complainant. Thus, where traffic does not already utilize lines replicated by the SARR, the traffic may not be included in the SAC analysis absent a compelling justification that the defendant carrier should itself be routing the traffic in this manner and that it is inefficient for it not to do so.

b. Application to This Case

There are 81 movements in this case for which Duke's SAC presentation reflected a different routing than is customary for that traffic. On October 14, 2003, the Board reopened the record in this proceeding to obtain additional evidence pertaining to the propriety and costs of those rerouted movements. In their supplemental submissions, CSXT agreed that 56 of those reroutings should be allowed, as the reroute would shorten the total distance,[6] and Duke agreed that one of the movements should be changed to its historical routing.[7] CSXT continues to object to the rerouting of the remaining 24 movements, which are identified in Table 1.

[6] *See* CSXT Supp. Reply at 6.
[7] *See* Duke Supp. Reply at 9.

Table 1
Challenged Rerouted Movements

	Origin		Destination		Distance (miles)[1]				Normal Route Would Traverse Portion of the ACW
					Normal	Reroute	Diff.	%	
1	CLOVER	KY	STILESBOR	GA	311	609	297	95%	yes
2	GOALS	WV	NORBIRMIN	AL	752	961	209	28%	yes
3	WELPREPLA	WV	NORBIRMIN	AL	747	955	208	28%	yes
4	LYNCH3	KY	JACMAC	GA	381	524	143	38%	yes
5	LYNCH3	KY	MITCHELL	GA	588	721	133	23%	yes
6	RAPLOADE1	KY	STILESBOR	GA	519	626	107	21%	yes
7	PRENTER	WV	STILESBOR	GA	687	765	78	11%	yes
8	FANCO	WV	STILESBOR	GA	694	772	77	11%	yes
9	HUTCHINSON	WV	STILESBOR	GA	683	758	75	11%	yes
10	CLOVER	KY	POWERPARK	FL	708	774	66	9%	yes
11	CLOVER	KY	TAFT	FL	849	915	66	8%	yes
12	CLOVER	KY	PARK	FL	882	948	66	7%	yes
13	CLOVER	KY	LAKELAND	FL	878	944	66	8%	yes
14	CLOVER	KY	HARLLEE	GA	527	575	48	9%	yes
15	DAMFORK	KY	STEVENSON	AL	675	682	7	1%	yes
16	DAMFORK	KY	BRIDGEPOR	AL	685	672	-13	-2%	yes
17	LOVMINE	WV	BOSTWICK	FL	1160[2]	1235[3]	75	6%	no
18	RESOURCE	KY	REDLEVJUN	FL	810	869	59	7%	no
19	BAIMINE	PA	POWERPARK	FL	1200	1234	34	3%	no
20	EMEMINE	PA	POWERPARK	FL	1187	1220	33	3%	no
21	EMEMINE	PA	BOSTWICK	FL	1222	1255	33	3%	no
22	EVERGREEN	WV	REDLEVJUN	FL	1318	1330	12	1%	no
23	EVERGREEN	WV	LAKELAND	FL	1373	1384	11	1%	no
24	CONSOL 95	WV	BOSTWICK	FL	1161	1130	-31	-3%	no

[1] Source: Duke Supp. Exh. S3 (except for movement 17 from the Loveridge Mine).
[2] Source: PC Rail.

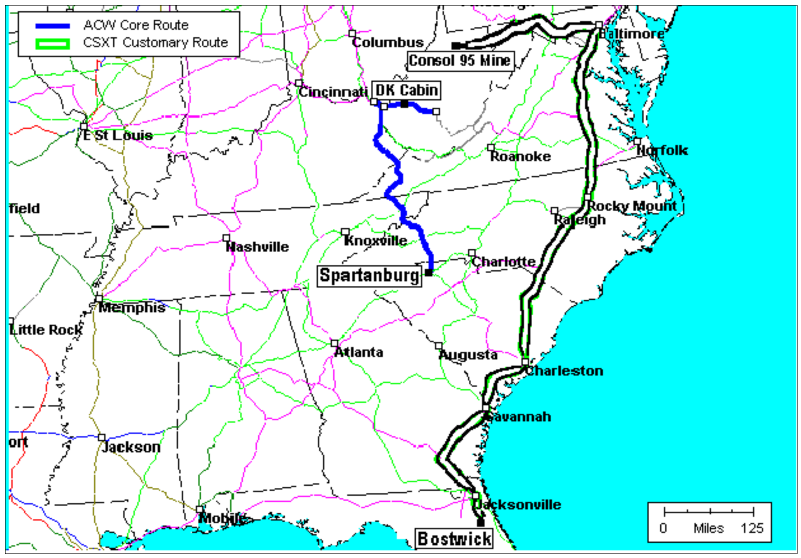
The first 15 movements rerouted by Duke would have a longer overall route. Therefore, under the Board's rerouting principles articulated above, Duke is required to support its proposed rerouting by addressing the ramifications of requiring the residual carrier to alter its handling of the traffic. Where the increase in total distance is small, Duke's burden is modest, but it must provide some evidence to support these reroutings. *Compare CP&L/NS*, 7 S.T.B. at 254 (permitting the rerouting for 16 movements that increased the length of the haul by less than 10 miles based on specific evidence and arguments presented by the complainant). Instead, Duke simply argues here that those routes are efficient because "Duke's analysis shows that the reroutes remain more profitable to the ACW [if rerouted] * * * than with the original routing."[8] This merely explains why Duke wishes to reroute the traffic, not whether the combined operations of the SARR and the residual CSXT carrier would be at least as efficient as the existing operations. Accordingly, Duke has not met its burden and the proposed reroutings for these 15 movements are disallowed. The Board's SAC analysis here uses the historical routing of this traffic.

For movement 16 in Table 1 (Damfork, KY, to BridgePort, AL), the rerouting would result in a modestly shorter movement. Therefore, the Board presumes that the rerouting is acceptable and CSXT has the burden to show otherwise. Here, CSXT has offered no evidence that this rerouting would create operational difficulties or improperly shift operating costs off of the SARR. The rerouting of that movement is therefore accepted.

The last eight movements listed in Table 1 are ones that, under their customary routing, generally do not come within 250 miles of the lines that would be replicated by the ACW. The traffic originates in the Northern Appalachian coal mines; from there CSXT hauls the coal east towards Maryland and then south along its I-95 corridor. Figure 1 depicts one of these movements.

[8] Duke Supp. Reply at 9.

Figure 1
Consol 95 Mine to Bostwick Movement



CSXT points out that the rerouting would require these movements to travel over capacity-constrained segments of the residual part of the CSXT system and that CSXT would have to haul the shipments in smaller trains and cross the Appalachian Mountains twice. But CSXT argues that, even if there were not such operational difficulties, and even where the reroute would result in a slight decrease in the total distance of the movement (as it would for the movement depicted in Figure 1), it would be contrary to the goals and purpose of the SAC test to allow the inclusion of this traffic. As discussed above, the Board agrees that such reroutings are generally impermissible in a SAC case. Therefore, these eight movements are excluded from the SAC analysis here.

2. Revenue Divisions for Cross-Over Traffic

The majority (almost 90%) of the ACW traffic group would be cross-over traffic. Thus, an important part of determining the total ACW revenues is computing what portion of the revenues from cross-over traffic should be assigned to the ACW network and what portion to the residual CSXT network. Duke allocated revenues from cross-over traffic using a "Block Methodology," under which each movement is assigned one "block" for every 100 miles or part thereof that the traffic moves over each carrier's network, plus an additional block if the traffic originates or terminates on that carrier's network; the total revenues would then be allocated based on each carrier's share of the total number of blocks. CSXT argues here, as NS did in the *Duke/NS* and *CP&L/NS* cases, that a different approach is required.

In *Duke/NS*, 7 S.T.B. at 104-06, the Board addressed the more general issue raised by CSXT here as to whether divisions should reflect a market-based or a cost-based inquiry. The Board concluded that a market-based inquiry is not appropriate for a SAC analysis. Rather, the revenue allocation issue should reflect, to the extent practicable, the defendant carrier's relative costs of providing service over the two segments. *Duke/NS*, 7 S.T.B. at 106.

The Board also rejected the same proposal that is offered by CSXT here for a methodology that purports to allocate revenues in relation to the relative total costs. *See Duke/NS*, 7 S.T.B. at 106-08. The premise of that proposal is that proportionately more revenues should be allocated to lighter density lines because (all other factors being equal) they would have higher average total costs. As discussed in more detail in *Duke/NS*, the proposed approach rests on a critical assumption that light-density lines have the same fixed costs per mile as heavy-density lines—an assumption that Duke challenges here. The Board has not foreclosed an approach that would incorporate relative densities, as densities could affect the defendant carrier's relative costs of providing service over the relevant segments. But CSXT has not supported its assumption that its per-mile capital investments in the Central Appalachian region are identical to its per-mile capital investments along its lower-density delivery network. This deficiency strikes at the heart of CSXT's proposed methodology, and thus its proposal cannot be accepted.

Likewise, for the reasons discussed in *Duke/NS*, 7 S.T.B. at 108-12, the Block Methodology used by Duke in this case has inherent shortcomings. The Board has concluded that the "modified, straight-mileage prorate" (MSP) approach discussed in *Duke/NS* is preferable to the Block Methodology.

Duke contends that the MSP method also has shortcomings when applied to rerouted cross-over traffic. It objects to the prospect that, when a rerouting shortens the total length of a movement, the revenue allocation (on a per unit-of-service basis) to the residual network would increase. And Duke argues that a mechanical application of the MSP approach (or any other mileage approach) ignores the possibility that the SARR could compensate the residual railroad to overcome any inefficiencies associated with a longer route.[9]

[9] *See* Duke Supp. at 10-17.

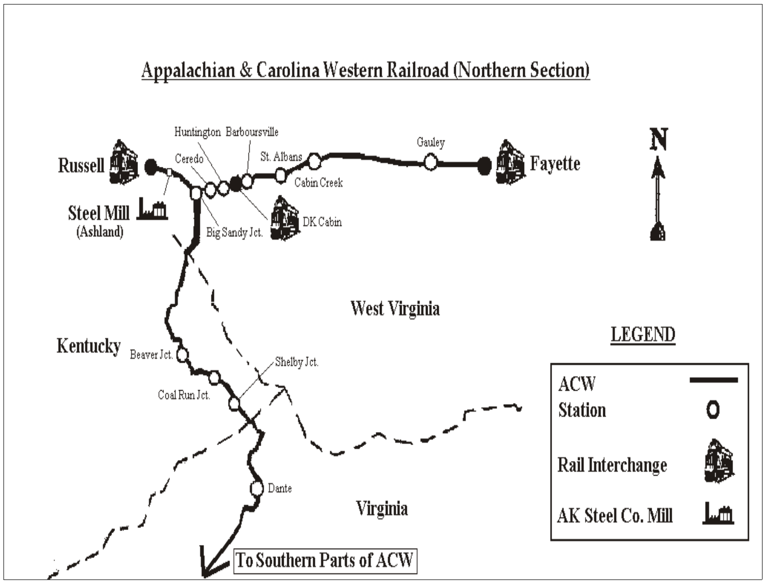
To address these perceived shortcomings, Duke proposes that the revenues allocated to the residual network for originating the traffic and the revenue per mile allocated to the residual network for hauling the traffic under the original route be held constant. Where a reroute shortens the total distance, this approach would benefit the SARR network; where it lengthens the reroute, the residual network would benefit.

This suggestion, however, does not comport with the Board's objective in SAC cases, which, as explained in *Duke/NS*, 7 S.T.B. at 103-12, is for the revenue allocation for cross-over traffic to reflect, to the extent practicable, the defendant carrier's relative total costs of providing service over the two parts of its system. Duke's approach undermines that objective and would place an inappropriate revenue bounty for identifying shorter routes. Moreover, Duke's argument is premised on how the ACW might negotiate divisions with the residual CSXT, and the minimum compensation the residual CSXT would demand to haul the traffic. But as explained in *Duke/NS*, 7 S.T.B. at 105-06, "a debate over how much of the revenues from cross-over traffic the hypothetical carrier could negotiate with the residual defendant has no place in a SAC analysis."

3. Inclusion of Steel Traffic

CSXT currently hauls roughly 100,000 tons per year of coal to the steel mill at Ashland, KY, and it hauls almost 2 million tons per year of steel from that plant to Middletown, OH (a distance of 189 miles). Over 75% of that coal arrives from the east via Fayette, WV, while all the steel is hauled west via Russell, KY.

Under Duke's operating plan, the ACW would serve both the inbound and outbound needs of the steel plant, although it would not carry any of that traffic completely from origin to destination. Rather, it would receive the coal movements from the residual CSXT at Fayette, and it would hand off the steel movements to the residual CSXT at Russell. The following map shows the location of the steel plant in relation to the ACW's system.



CSXT argues that including the 4-mile steel movement would create an impermissible cross-subsidy, because that movement would share no facilities in common with the Duke coal traffic that is the subject of this rate complaint. CSXT cites to the Board's statement in *PPL Montana, LLC v. Burlington N. & S. F. Ry.*, 6 S.T.B. 286, 295-96 (2002) (*PPL*), that "a cross-subsidy arises when traffic would be required to pay for facilities that it does not use or when it would be required to pay a portion of costs that are attributable to other traffic."

Here, however, the steel plant would use not only the segment of track from Ashland to Russell, but the track segment from Fayette to Ashland used to bring coal to the plant. And the Ashland-to-Russell segment would not serve the steel traffic alone, but would also be used for coal traffic that clearly would share facilities in common with the Duke traffic that is at issue in this case. The Board is thus not persuaded that it is necessary or appropriate to differentiate between the inbound (coal) and outbound (steel) traffic of the steel plant for purposes of what should properly be included in the traffic group in this case.

In any event, even if the steel traffic were viewed in isolation, it is not clear that inclusion of this traffic would result in a cross-subsidy. In light of the Board's rejection of Duke's operating plan discussed below and the Board's use of the MSP to allocate revenues from cross-over traffic, it does not appear that the steel movement would pay for facilities it does not use. Nor is it clear that, if a cross-subsidy could be shown, the correct remedy would be to exclude this steel traffic entirely.

For all of these reasons, the Board will not exclude the steel movements from the SAC analysis here.

4. Tonnage and Revenues

The annual tonnage and revenues for the traffic included in the ACW traffic group are addressed in Appendix B. As discussed there, for projecting future tonnage and revenues for this traffic, the Board's analysis here generally relies on either existing contracts (where applicable), CSXT's internal business forecasts, or the 2003 coal tonnage and revenue projections for the Central Appalachian region obtained from the Energy Information Administration.

C. Operating Plan

To limit operating expenses, Duke selected an operating plan for the ACW that is different from how CSXT conducts its coal-hauling operations in the Central Appalachian region. Duke assumed that, regardless of historical traffic patterns or customer preferences, all traffic would be handled by the ACW in unit-train movements, with trains of up to 115 cars.[10] Moreover, Duke assumed that the ACW would not need any staging or gathering yard infrastructure to build the trains; rather, after loading, each ACW train would operate as a single train from origin to destination.

CSXT objects to Duke's assumption that the mines, connecting carriers, and shippers would be willing and able to accept a different level of service than CSXT provides. CSXT notes that most southern utilities it serves today receive their coal shipments under contracts that specify a maximum train size in the range of 90-95 cars. In addition, CSXT's rail system south of Spartanburg, SC, is designed to handle coal trains of 90-95 cars. Thus, CSXT contends, however efficient the operation of larger trains might otherwise be for the ACW, such a configuration would be inconsistent with the requirements of the ACW's connecting carrier, the residual CSXT. To address this concern, CSXT submitted an operating plan for the ACW that would limit the length of all loaded and empty coal trains interchanged between the ACW and the residual CSXT at Spartanburg and Mt. Holly to a maximum of 95 cars (except for shipments to Duke, where 100-car trains would be permitted).

[10] *See* Duke Open. Narr. III-C-3.

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 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 Wy. Corp. v. Union Pac. R.R.*, 4 S.T.B. 699, 736 (2000) (*FMC*) (rejecting the contention that the SARR could dictate the type of service to be provided).

Duke's assumptions here, like the assumptions made by the complainants in the *Duke/NS* and *CP&L/NS* cases, violate that principle. Duke's operating plan for the ACW would increase the average train length without an adequate showing that the affected shippers, mines, and connecting carrier would not object. *See West Texas Utilities Co. v. Burlington N. R.R.*, 1 S.T.B. 638, 667 (1996) (*West Texas*) (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").

Moreover, Duke's operating plan proposed for the ACW would be unworkable. Duke would have the ACW combine cars from different mines to create unit trains. For example, Duke estimates that in the peak week, a shipper in East Lansing, MI, would call for 16 cars from the Bevins Branch mine and 9 cars from the Esco mine. A second customer in Fayetteville, NC, would call for 4 cars of coal from the Patton mine. And a third customer in Ferbeach, FL, would call for 67 cars of coal from the Goff mine. Yet Duke's operating plan would combine all of this traffic into a single train that would originate at the Goff mine and move to the interchange point at Spartanburg, SC, for delivery by the residual CSXT.

Duke has not provided for staging or gathering yards where the cars from the various mines could be assembled into a single train. The ACW could not therefore realistically gather cars from the other three mines for consolidation into a single train at the Goff mine and then haul that train to Spartanburg. Nor is there any indication that Duke has accounted in its cycle-time figures 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 a defining characteristic of Duke's operating plan.

Duke may have assumed that the source of coal for shippers could be shifted. In other words, in the example above, Duke's unstated assumption may have been that, rather than receiving coal from the Bevins Branch, Esco, and Patton mines, these customers would fill their coal requirements from the Goff mine. Duke has not shown, however, that the ACW 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 or because of the characteristics of the boilers of a particular power plant. 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 ACW customers would accept the change in service reflected in Duke's operating plan.

Table 2 below illustrates how Duke's operating plan would change the historical traffic flows, if the coal was meant to be re-sourced, resulting in many points originating either more or less coal. The second column shows the traffic anticipated for the "peak week" of the SAC analysis period, derived from inflating the peak week data in CSXT's waybill for the year 2001 by Duke's growth forecast for the ACW to the peak year (2021). The third column shows how much coal it is assumed those same points would originate in the peak week under Duke's operating plan for the ACW, reflecting a relocation of this coal traffic to different origins.

Table 2
Peak Week Traffic[11]

SARR Origin	Forecast from Waybill (Tons)	ACW Operating Plan (Tons)	Change
BATES BRANCH	31493	39,937	27%
BETH	132,893	142,891	8%
BEVINS BRANCH	47981	44,307	-8%
BLUGRASS 4	89453	99,243	11%
BUCKEYE1	79,631	77,692	-2%
BURKE STATION	42893	20114	-53%
CLOVER	114,452	98231	-14%
DAMFORK	67,634	65,372	-3%
DK CABIN	30631	31,110	2%
ESCO	885	0	-100%
FANCO	83,003	79,770	-4%
FAYETTE	22524	35,701	59%
FOLA	72,004	95,349	32%
FORKCREEK	32,462	45,212	39%
GOALS	37433	37,740	1%
GOFF	46,514	51,197	10%
HAMILTON	23456	21,097	-10%
HOLBROOK	40585	55,154	36%
HUTCHINSON	91,660	55,918	-39%
IVEL	24,716	26,292	6%
LEATHERWOOD 1	111478	125703	13%
LIBERTY	50,733	30,599	-40%
LICK	125,987	167,451	33%
LYNCH3	119,313	120,810	1%
MARFORK	116346	123591	6%
MCCLURE	47124	43006	-9%
MOUSIE	53,184	66,421	25%
MYRA	67067	76,021	13%
PATTON	11879	9,505	-20%
PINEVILLE JCT	11,263	10,606	-6%
PRENTER	49,135	20081	-59%
RAPLOADER 1	105483	95,926	-9%
SAPPHIRE	54990	59826	9%
SARAH	20861	9,969	-52%

[11] Source: Duke Reb. e-WP. "CSX SAC Trains." Duke's operating plan did not alter the peak-week shipping pattern at nine SARR origins: Ashland, Charlene, Kohlsaat, Man, Mayflower, Pittco, Roxana, Slones Branch, and Yellow Creek.

SCOTTS BRANCH	35309	33,059	-6%
SUNKNOTT	9872	9545	-3%
SYLVESTER	114110	147,311	29%
TOMSFORK	118,731	107,117	-10%
TYPO	18,865	20,393	8%
VIALL	32,157	31,333	-3%
WELLS PREP	92459	47,433	-49%
WINIFRED JCT	8,628	10,801	25%

As the table shows, Duke's operating plan would alter shipping patterns considerably, at the expense of some origins and to the benefit of others. Under Duke's operating plan, Bates Branch, Fayette, Fola, Fork Creek, Holbrook, Lick, Mousie, Sylvester, and Winifred Junction would increase loadings by more that 25%. Meanwhile, loadings at the Burke Station, Esco, Prenter, Sarah, and Wells Prep would drop by roughly 50% or more; all of those lost shipments would be shifted and consolidated with coal shipments from other mines.

As in *West Texas*, *McCarty Farms*, and *FMC*, the complainant's operating plan is thus fatally flawed. *See also Duke/NS* (rejecting an analogous operating plan to that proposed by Duke in this proceeding); *CP&L/NS* (same). Duke 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, Duke has failed to demonstrate that the service the ACW would provide would be acceptable to the affected shippers and mines involved.

When the plan presented in a SAC case by the complainant is infeasible, it is generally incumbent on the defendant railroad to present a realistic alternative so that the SAC analysis may be completed. *See Duke/NS*, 7 S.T.B. at 100-01; *Arizona Electric Power Cooperative, Inc. v. The Burlington N. & S. F. Ry. Co. and Union Pacific Railroad Company*, 6 S.T.B. 322, 323-24 (2002). Here, the operating plan offered by CSXT for the ACW would correct the major deficiencies in Duke's operating plan, by limiting the size of trains to 95 cars and not re-sourcing customer's coal movements. But it would not provide for the gathering and staging of small trains into larger trains that CSXT's own operations include. CSXT explained at oral argument that its own, more complex gathering operation is used to serve the movements that originate at many smaller mines in the region that Duke excluded from the ACW traffic group. Given the subset of traffic Duke selected, CSXT concluded that it would be more reasonable, for purposes of addressing the faulty plan submitted by Duke, to maintain the basic framework of the operating plan proposed by Duke with the errors corrected than to replicate the more complicated gathering system

CSXT actually uses in the region. Because Duke's operating plan is clearly not feasible and thus cannot be used, while CSXT's operating plan for the ACW is realistic, CSXT's operating plan is used here.

D. Operating Expenses

Having accepted CSXT's operating plan, the SAC analysis here necessarily uses CSXT's operating assumptions for the ACW 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 ACW are approximately $300 million in the base year (2002).

E. Road Property Investment

There is a substantial difference between the parties' estimates on the level of investment that would be required to construct the ACW. Duke claims that the ACW could be built for $2.3 billion, while CSXT claims that it would cost $5.1 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 Board's restatement results in total construction costs for the ACW of approximately $3.3 billion.

F. DCF Analysis

A discounted cash flow analysis is used to distribute the total capital costs of the ACW over the 20-year SAC analysis period and to determine the total revenues that would be needed by the ACW 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 ACW is compared to the stream of costs that the ACW 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 ACW's operating expenses and road property assets (to account for projected changes in costs over the 20-year analysis period) and to the cost of raising the capital to finance the ACW.

1. Indexing

a. Operating Expenses

The parties based their estimates of inflation in operating expenses on projections of 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).

Duke argues that the RCAF-A is the more appropriate index to use here, because the ACW would benefit from practices and productivity enhancements occurring in the railroad industry and reflected in the RCAF-A. CSXT argues that the ACW would not achieve the same level of productivity improvements that is anticipated for the nation's railroad industry as a whole, and that applying the RCAF-A would therefore be inappropriate. CSXT reasons that, because the ACW would be a new railroad, it would incorporate the latest technology and the efficiencies associated with those technologies, thereby lessening the impact of changing technology on future productivity. CSXT further argues that the ACW would not realize productivity gains from increasing traffic volume, as the ACW'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 ACW 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 ACW'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 ACW, the RCAF-U is used here.

b. Road Property Assets

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

To inflate the remaining (non-land) road property assets over the 20-year SAC analysis period, Duke relied on forecasts for rail labor, materials, and supplies. CSXT would use historical rates of inflation. Duke notes that a forecast was used by the Board in the *FMC* case, while CSXT points out that the Board used historical inflation rates in the *WPL*[12] and *PPL* 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. Because Duke's evidence is based on forecasts of future inflation, that evidence is used here.

2. Cost of Capital

To develop the ACW's 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. However, the parties' figures differ slightly (10.53% used by Duke vs. 10.56% used by CSXT) 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 ACW. The construction schedule adopted by the Board results in a weighting that produces a 10.54% composite cost of capital. That figure is used here.

Finally, Duke objects to CSXT's proposed additive for financing costs (3% placement costs plus fees) to cover the cost of raising new equity capital. Duke argues that the annual cost-of-capital computation already includes flotation fees. Duke further asserts that CSXT did not incur these fees, and thus the fees should not be included here. Duke's points are well taken, and, as in prior SAC cases (*see WPL*, 5 S.T.B. at 1040; *TMPA*, 6 S.T.B. at 751), the railroad's argument is rejected.

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[12] *Wisconsin Power & Light Co. v. Union Pac. R.R.*, 5 S.T.B. 955 (2001) (*WPL*).

3. Results

The results of the Board's DCF calculations are shown in Table 3, below. As that table shows, based on the record presented here, over the 20-year SAC analysis period the ACW would experience a cumulative revenue shortfall of approximately $1.4 billion. Thus, Duke has not demonstrated that the challenged rates are unreasonably high.

Table 3
ACW Cash Flow
($ millions)

Year	Capital Costs & Taxes	Annual Operating Costs	Total Annual Costs	Annual Revenues	Annual Over/(Under) Payment (Current)	Annual Over/(Under) Payment (Present Value)	Cumulative Over/(Under) Payment (Present Value)
2002	$341.5	$306.7	$648.3	$496.8	($151.5)	($144.1)	($144.1)
2003	$349.6	$307.8	$657.4	$511.5	($145.9)	($125.5)	($269.6)
2004	$357.8	$320.6	$678.5	$531.9	($146.6)	($114.1)	($383.7)
2005	$366.3	$329.6	$695.9	$559.2	($136.6)	($96.2)	($479.9)
2006	$375.0	$346.3	$721.2	$576.6	($144.7)	($92.2)	($572.1)
2007	$383.9	$358.9	$742.8	$598.7	($144.1)	($83.1)	($655.2)
2008	$393.0	$370.8	$763.8	$610.1	($153.8)	($80.2)	($735.3)
2009	$402.4	$378.2	$780.6	$611.4	($169.2)	($79.8)	($815.1)
2010	$412.0	$386.0	$798.0	$610.9	($187.1)	($79.8)	($895.0)
2011	$421.9	$339.4	$761.3	$614.4	($146.9)	($56.7)	($951.7)
2012	$432.0	$345.8	$777.8	$613.7	($164.1)	($57.3)	($1,009.0)
2013	$442.4	$359.0	$801.4	$626.9	($174.5)	($55.1)	($1,064.1)
2014	$453.1	$370.4	$823.5	$636.7	($186.8)	($53.4)	($1,117.5)
2015	$464.0	$384.9	$848.9	$651.8	($197.1)	($51.0)	($1,168.5)
2016	$475.2	$393.4	$868.6	$652.8	($215.8)	($50.5)	($1,219.0)
2017	$486.7	$405.3	$892.0	$662.7	($229.3)	($48.5)	($1,267.5)
2018	$498.5	$415.5	$914.0	$667.5	($246.6)	($47.2)	($1,314.7)
2019	$510.7	$428.6	$939.2	$675.3	($263.9)	($45.7)	($1,360.4)
2020	$523.1	$440.7	$963.8	$680.1	($283.7)	($44.4)	($1,404.8)
2021	$535.9	$450.8	$986.7	$684.6	($302.1)	($42.8)	($1,447.6)

PHASING CONSIDERATION

A rate that has not been shown to be unreasonable under the SAC test may nevertheless cause significant economic dislocation or have other inequitable consequences that may need to be mitigated for the greater public good. Therefore, the *Guidelines* include a "phasing" constraint on railroad pricing. *See Guidelines*, 1 I.C.C.2d at 546-47 (establishing the phasing constraint as "an independent constraint relating not to the reasonableness of the ultimate rate, but to the reasonableness of collecting it immediately"). This constraint limits the introduction of otherwise-permissible rate increases.

In this case, Duke complains not merely of the rate level, but also of the magnitude of the rate increase. When Duke terminated its rail transportation contract with CSXT a year in advance of the scheduled expiration of that contract, CSXT established common carrier rates that were roughly 45% higher than the contract rates had been for 2001. The annual cost to Duke of the rate increases was roughly $17 million, based on 2001 volumes.

CSXT does not dispute the magnitude of these rate increases, but it argues that Duke can well afford them. It notes that Duke is a large company with annual profits greater than CSXT's and that Duke can pass its transportation costs on to its customers. Furthermore, CSXT contends that the amount of the annual increase in transportation charges is relatively small in comparison with Duke's 2001 operating revenues, net income, and total retail electricity sales.

However, these rate increases alone amount to approximately 7.1% of Duke's total ($234 million) annual cost to generate electricity at the issue plants.[13] Given the magnitude of these rate increases and Duke's strenuous objection to them, this case may present an appropriate situation for the application of the phasing constraint.

The phasing constraint has not yet been applied in a case, and the *Guidelines* provide only cursory guidance on the subject. Therefore, if Duke elects to pursue relief under the phasing constraint, the parties should be prepared to address: whether phasing is appropriate under the circumstances presented here; what rate increases would violate that constraint; and an appropriate means for applying the phasing constraint.

In proposing ways to apply the phasing constraint, the parties should be mindful that any approach should take into account the revenue needs of the defendant railroad. But at the same time it should provide some restraint to a railroad's pricing even if the railroad falls far short of the Board's measure of

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[13] *See* CSXT Open. Narr. IV-C-23.

revenue adequacy or has only a small base of potentially captive shippers to cover its revenue shortfall.

Duke should advise the Board, within 30 days of the service date of this decision, whether it wishes to seek relief under the phasing constraint. If Duke elects to pursue this option, it should suggest a procedural schedule that would permit expedited discovery regarding the impact of the rate increase, the filing of evidence and argument by the parties, and a quick and fair Board review.

If Duke chooses not to seek relief under the phasing constraint, the Board will discontinue this proceeding.

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

It is ordered:

1. CSXT's petition to correct the record filed December 8, 2003, is granted.

2. CSXT's motion to strike filed April 21, 2003, is denied.

3. Duke shall advise the Board within 30 days of the service of this decision whether it wishes to seek relief under the phasing constraint.

4. This decision is effective March 5, 2004.

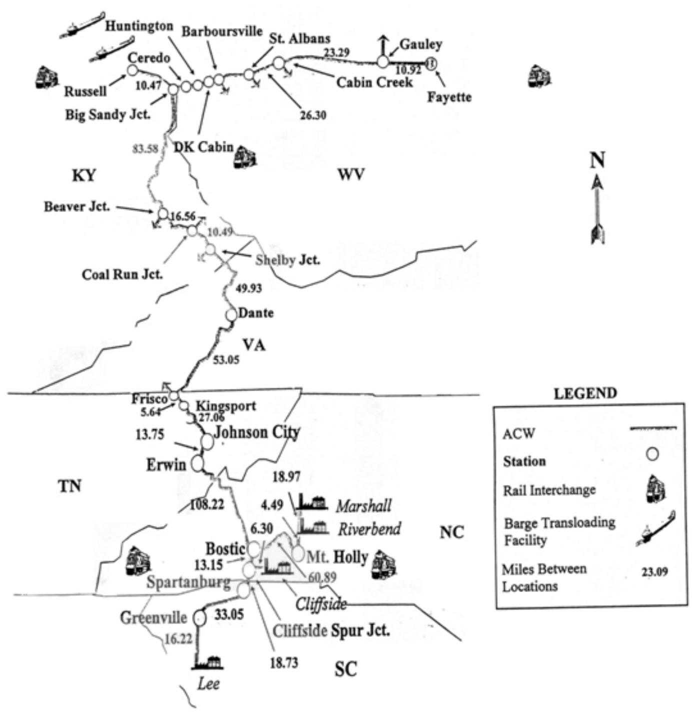
By the Board, Chairman Nober.

APPENDIX A – ACW CONFIGURATION

The ACW would replicate approximately 1,200 miles of existing CSXT lines extending from Fayette, WV, west to Russell, KY, and from Big Sandy Junction, KY, south through portions of Virginia, Tennessee, and North Carolina, to Spartanburg, SC. *See* map below. The ACW would be a single-track, trunk- and branch-line system, with double track/passing sidings, yards, and set-out tracks located at strategic points along the route.

The ACW is designed to handle a (peak-year) volume of over 100 million tons of traffic consisting mostly of coal moving from mine origins in West Virginia, eastern Kentucky and western Virginia. The ACW also would handle synthetically altered coal ("synfuel"). Some coal traffic would move to one of eight power plants located on the ACW, or to three barge transloading facilities (at Ceredo, Huntington, and Alloy, WV) on the Ohio and Kanawha Rivers. But most of the traffic moving over the ACW would be cross-over traffic that would be interchanged with the residual CSXT at one of eight locations: Fayette, Huntington, and Man, WV; Russell, Typo, and Pineville Junction, KY; Mt. Holly, NC; and Spartanburg, SC. The cross-over traffic would include approximately 2 million (peak-year) tons of steel traffic that would originate at Ashland, KY, and be interchanged with the residual CSXT at Russell.

Appalachia & Carolina Western Railroad



A. ACW Route

At its northeast terminus in Fayette, the ACW would interchange northbound coal traffic with the residual CSXT. From Fayette, the ACW main line would proceed in a westerly direction through Huntington and Ceredo to Big Sandy Junction. The main line would turn south at Big Sandy Junction and replicate the existing CSXT main line to Bostic, NC (via Dante, VA and Frisco, TN). From Bostic, the main line would proceed south to Spartanburg, SC. The ACW would have two secondary lines: one extending in a northwesterly direction from Big Sandy Junction to Russell, and the other extending east from

Bostic to Mt. Holly, NC. Duke's Cliffside plant at Brice, NC, would be served by a branch line extending from Cliffside Spur Junction, and its Lee generating station at Pelzer, SC, would be served by a branch line running south from Spartanburg.

The ACW would also have numerous coal-gathering branch lines: (1) the Gauley Branch, extending from Gauley over the Vaughan Railroad to Fola mine; (2) the Cabin Creek Branch, extending from Cabin Creek, WV, to Toms Fork mine; (3) the St. Albans Branch, extending from St. Albans, WV, to Beth, Kohlsaat, Wells, Lick, Liberty, Holbrook, Fork Creek, Homer III, Prenter, Sylvester, Marfork, and Goals mines; (4) the Barboursville Branch, extending from Barboursville, WV, to Hutchinson, Phillips, and Fanco mines; (5) the Beaver Branch, extending from Beaver Junction, KY, to Sunny Knott, Mousie, Bates Branch, Arnold Fork, Rapid Loader 1, KMCC/KMCC 1/Cheyenne/Cheyenne 1, Sapphire, Roxana, Leatherwood, Buckeye 1, Charlene, Yellow Creek, Bluegrass 4, and Typo mines; (6) the Coal Run Branch, extending from Coal Run Junction, KY, to Scotts Branch, Bevins Branch, Goff, Fairway, Burke, and Jesse Branch mines; (7) the Shelby Branch, extending from Shelby Junction, KY, to Esco, Damron Fork, and Myra mines; and (8) the Frisco Branch, extending from Frisco, VA, to Mayflower, NRG, Lynch 3, Sarah, Viall, Hamilton 2, and Clover mines. In addition to the mines served by these branches, the ACW would serve several mines located along its main line.

The ACW's line segments and route miles are shown in Table A-1. On rebuttal, Duke sought to shorten the ACW system by relocating the yard at Fayette to Gauley. This relocation was disallowed in the Board's decision served March 25, 2003, as inappropriate rebuttal. As discussed in the body of the decision here, the rejection of Duke's attempted relocation of the Fayette yard on rebuttal is consistent with the refinement of the Board's rebuttal standard articulated in *Duke/NS*, 7 S.T.B. at 100-01. In any event, the record does not show that it would be significantly less expensive to locate the yard at Gauley than at Fayette. Thus, the decision to disallow the relocation has no significant impact on the outcome of this case.

Table A-1
ACW Route Miles

Main/Secondary Lines	
Fayette to Big Sandy Junction	109.10
Russell to Big Sandy Junction	10.47
Big Sandy Jct. to Beaver Jct.	83.58
Beaver Junction to Dante	76.98
Dante to Frisco	53.05
Frisco to Bostic	154.67
Bostic to Mt. Holly	62.55
Bostic to Spartanburg	31.88
Subtotal	582.28
Branch Lines	
Gauley Branch	6.78
Cabin Creek Branch	11.50
St. Albans Branch	103.71
St. Albans Branch - Sproul	14.77
Barboursville Branch	87.56
Beaver Branch	119.12
Coal Run Branch	30.30
Shelby Branch	14.85
Frisco Branch	179.33
Terrell Branch	23.46

Cliffside Spur	6.30
Pelzer Branch	49.77
Main line mine spurs	10.18
Subtotal	657.63
Total Route-Miles	1,239.91

B. Track Miles

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

Table A-2
ACW Track Miles

	Duke	CSXT	STB
Single track	1231.6	1239.91	1231.6
Double track/passing sidings	84.23	191.76	191.76
Yard track	87.8	117.95	117.95
Set-out track	7.02	12.69	12.69
Total	1410.65	1562.31	1562.31

1. Single Track

Duke's lower single-track mileage figure reflects its attempted relocation of the Fayette yard and a corresponding reduction in track miles. As discussed in the body of this decision, the Board has disallowed such a reconfiguration of the SARR.

2. Double-Track and Passing Sidings

The amount of track needed at any location is dependent on the operating plan for the ACW. CSXT argues that the configuration designed by Duke 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 ACW's proposed facilities. CSXT would add more capacity to the ACW system, based on the operating plan that CSXT claims the ACW would need. Because Duke's operating plan is rejected (for the reasons discussed in the body of this decision) and CSXT's proposed operating plan is used here, CSXT's main line and secondary line track mile estimates are used here.

3. Yard Tracks

As shown in Table A-3, CSXT's operating plan for the ACW uses the 10 yard locations proposed by Duke on opening, but it would reduce the track miles in the Fayette, Frisco, and Typo yards, and increase the track miles in the other seven yards. In addition, CSXT's plan would add yards at Big Coal, Danville, and Dante, VA, for a total of 117.95 miles of yard track.

Table A-3
Yard Tracks

Yard	Duke	CSXT	STB
Fayette	11.34	6	6
Frisco	5.81	5.46	5.46
Porter Junction	5.81	8.12	8.12
Bostic	25.84	26.12	26.12
Spartanburg	2.9	8.88	8.88
DK Cabin/Huntington	6.82	7.56	7.56
Ceredo	14.74	11.62	11.62
Russell	5.81	6.79	6.79
Typo	5.81	5.46	5.46
Mount Holly	2.9	4.06	4.06
Big Coal/Goals Staging	--	13.25	13.25
Danville/Lick Staging	--	6.62	6.62
Dante	--	7.95	7.95
Total	87.8	117.95	117.95

Duke disputes the need for the new yard locations proposed by CSXT, as well as the changes that CSXT would make to Duke's yard configurations. Duke, however, would add one yard track at Ceredo and 1.3 miles of track at Pineville (to serve as a staging area for traffic being interchanged to CSXT), and it would extend the length of the Porter Junction yard to 1.33 miles, for a revised total of 87.80 track miles.[14]

Yard size is dependent on how the ACW would operate. Accordingly, because CSXT's proposed operating plan for the ACW is used here, CSXT's proposed yard configuration is also used.

[14] Duke Reb. Narr. III-B-22.

4. Set-Out Tracks

Duke would place two set-out tracks at each failed equipment detector. One would be a single-ended 300-foot track, while the other would be a 600-foot track with switches at both ends. Duke contends that its configuration would have sufficient length to accommodate both bad-order cars and the occasional piece of maintenance-of-way (MOW) equipment. CSXT accepts Duke's placement but argues that the longer track should have a 1,300-foot extension with a switch to provide more space for MOW equipment. Because CSXT's MOW plan is used, CSXT's proposed additional track and switch are accepted.

5. Additions to the CSXT Lines South of Spartanburg

CSXT claims that the residual CSXT system would need additional investment to handle effectively the traffic that Duke is allowed here to reroute, because the rerouting would require CSXT to move traffic over lines that currently do not handle the traffic. For example, CSXT points out that its Erwin Gateway, which would receive additional traffic as a result of the reroutes, faces significant capacity constraints due to its single-track orientation, grades, curvature, rugged terrain, slow speeds and limited siding capacity. CSXT argues that a variety of improvements (costing $18.9 million) would be required on certain line segments of the residual (off-SARR) part of the CSXT system (between Spartanburg and Laurens, SC; Laurens and Columbia, SC; and Columbia and Savannah, GA) to handle the rerouted traffic that CSXT's supplemental evidence accepts as appropriate, because these lines are at or near current capacity.

While acknowledging that the additional investments proposed by CSXT are "relatively modest,"[15] Duke contends that only one off-SARR improvement would be needed, and that under SAC theory the costs of that improvement should be borne by the residual CSXT. Duke agrees that the Spartanburg/Laurens line would benefit from adding centralized traffic control and power switches. As for the other improvements proposed for the residual CSXT, Duke asserts that the new investment could be avoided if the residual CSXT would move other traffic over different routes.

Duke's arguments for avoiding or limiting off-SARR investment are inappropriate under SAC theory. First, while the proponent of a SARR can determine (within reason) how the SARR would operate, it cannot assume that a connecting carrier (here the residual CSXT) would alter its existing operations for the benefit of the SARR. *See, e.g.*, *McCarty Farms*, 2 S.T.B. at 476. Thus, the need for additional off-SARR investment cannot be disregarded.

Second ff-SARR investment would be needed because of a change in historical routings, the residual CSXT should not be expected to pay for those investments. To burden the residual CSXT with the costs for the needed

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[15] Duke Supp. at 22.

investment would be to require the residual carrier to pay for efficiencies that would inure only to the benefit of the SARR and, in effect, result in an inappropriate cross-subsidization of the SARR. Accordingly, as Duke has not shown that the additional investments identified by CSXT could reasonably be avoided, or that the cost of such investment should be borne by the residual carrier, that additional investment is included in the SAC analysis here, as the Board generally agrees with CSXT on which traffic could permissibly be rerouted.

APPENDIX B – TRAFFIC VOLUMES AND REVENUES

The parties agree on the tonnage and total revenues from the steel traffic that the ACW would transport. Thus, the discussion here pertains only to the coal traffic in the ACW traffic group.

A. ACW Tonnage

The parties' disagreement on the volume of coal traffic that would be generated by the ACW traffic group revolves mainly around their respective forecasts for 2002. The parties generally agree to use CSXT's internal coal growth forecasts for 2003 and 2004, and the coal growth forecasts of the Department of Energy's Energy Information Agency in its *Annual Energy Outlook*, thereafter. The parties do not agree, however, on how to forecast a subset of the coal traffic referred to by the parties as the "Utility South" traffic, which includes Duke's traffic. The Board's analysis of the disputed issues is discussed below.

Table B-1 shows the volumes assumed by the parties for both coal and steel traffic and the volumes used by the Board here.

Table B-1
ACW Tonnage Projections

Year	Duke	CSXT	STB*
2002	104,926,514	99,907,323	104426898
2003	107,503,705	103,365,098	107010352
2004	110,071,504	105,429,255	109555213
2005	105,837,108	99,349,456	109845221
2006	105,993,713	96,426,267	112254845
2007	107,210,943	97,689,537	115683762
2008	106,397,823	97,303,783	117039976
2009	106,188,751	95,375,484	116378929

2010	105,353,422	94,013,263	115530229
2011	107,936,747	99,115,181	114741237
2012	107,799,383	98,399,807	112962806
2013	105,880,435	95,623,890	114246517
2014	104,540,063	94,465,209	114553585
2015	103,657,247	93,726,836	115999359
2016	103,809,137	93,458,108	114928889
2017	103,118,409	91,953,142	114963007
2018	101,482,840	89,437,895	114191075
2019	101,592,979	89,445,652	114421375
2020	101,096,035	88,579,781	114139897
2021	101,096,035	87,724,633	113035308

* The Board's tonnage forecast exceeds Duke's estimate after 2004 due to the Board's use of a more recent EIA forecast.

1. 2002 Coal Traffic

Duke and CSXT disagree on the coal tonnage of the ACW traffic group in 2002. The disagreement revolves around their differing positions on what happened in the first 8 months of 2002 (the only period for which the record contains actual traffic information) and how to then forecast the remaining 4 months of 2002.

For the first 8 months of 2002, the Board uses the actual data provided by CSXT and adjusted by Duke on rebuttal.[16] That evidence (showing an average 2.6% increase in tonnage over 2001) is specific to the mines that would be served by the ACW and is therefore preferable to the more general system-wide information used by CSXT (showing a 7.3% decrease in tonnage).

For the remaining 4 months of 2002, the analysis here assumes that traffic volumes would be at the same level as the comparable period in 2001. In other words, it assumes that coal volumes would remain at their 2001 levels. The record contains evidence that in the first part of 2002 mines in the Central Appalachian region reduced production due to an unusually warm winter and a sluggish economy. However, later in 2002 CSXT reported that "inventories are approaching normal levels, and unit train coal shipments should pick up in the

[16] Because the data pertain to all coal originating at mines that would be served by the ACW, it does not suffer the methodological flaws discussed in *CP&L/NS*, 7 S.T.B. at 249-51, which caused the Board to reject the actual data there in favor of EIA information.

fourth quarter."[17] CSXT agrees that some of the coal traffic should be held constant at 2001 levels, but not "Utility North" and Utility South non-issue traffic. For this traffic, which comprises over 60% of the ACW traffic group, CSXT estimated the last third of 2002 using a 3.7% reduction from the traffic levels in the last third of 2001. This forecast was developed by EVA (an energy consulting firm). CSXT's approach is, however, inconsistent with the evidence that the mines that would be served by the ACW experienced an increase in volume in the prior 8 months and the press statements by CSXT that it expected coal volumes to rebound in the last quarter of 2002. Thus, Duke's approach represents the best evidence of record.

Information on the last four months of 2002 was not in the record and in the past the Board has discouraged the filing of additional traffic data that becomes available after the close of the record. In past cases, one party or another has sought to update the record regarding traffic data when it feels such an update would benefit its case. The Board has not allowed such *ad hoc* updates, choosing instead to rely on a defined record. However, in this case as in past cases, traffic data from prior years is clearly ascertainable. Therefore, in all future cases, the Board will seek to have the parties update the record so that more recent traffic data is available to the Board. An updated record will simplify the rate case process by limiting the amount of forecasting required.

2. 2003-2004 Coal Traffic

For the period 2003-2004, the parties generally agree on the use of CSXT's internal line-of-business growth forecasts to estimate 2003 and 2004 volumes. CSXT, however, would use Duke's coal burn forecasts to adjust tonnages for Duke's plants.[18] But as Duke points out, this is an unnecessary adjustment, as CSXT's forecasts included Duke's traffic. Thus, the Board applies CSXT's internal growth forecasts, by line-of-business, to the entire coal traffic group.

The parties also disagree on the base year to which to apply the growth forecasts. Duke would use 2001 as the base year and then use the internal forecast to estimate the 2003 tonnage. CSXT argues that 2002 should be used as the base year. However, the internal forecast was developed based on 2001 actual performance and CSXT's best estimate of its likely progress in 2002, 2003, and 2004. Using 2002 instead as the base year would carry the experience of 2002 forward into the remaining forecasts, even if tonnage levels are expected to return to the levels of CSXT's original 2003 and 2004 forecasts.

Table B-2 below illustrates the flaw in CSXT's approach. This table depicts a hypothetical forecast made in 2001 and a subsequent unexpected (and temporary) decline in traffic in 2002 due to weather. As the table demonstrates, CSXT's approach would bias the expected tonnages downward by assuming the weather related drop in 2002 would continue in 2003 and 2004, while Duke's

[17] *See* Duke Reb. Narr. III-A-9 (quoting CSXT press release).
[18] *See* CSXT's Reply Narr. III-A-9 n.9.

approach forecasts the 2003 and 2004 tonnage as if the weather events of 2002 did not render the original forecast unreliable as to 2003 and 2004.

Table B-2
Hypothetical Forecast – Example 1

	2001 Forecast				CSXT Method		Duke Method	
	Forecast Tons	Annual Growth	Growth From 2001	Actual Tons	Formula	Tons	Formula	Tons
2001	--	--	--	100	2001 actual	100	2001 actual	100
2002	102	2%	2%	98	2002 actual	98	2002 actual	98
2003	106	3.9%	6%	n.a.	2002 actual + 3.9%	101.8	2001 actual + 6%	106
2004	105	-0.94%	5%	n.a.	2003 forecast - 0.94%	100.8	2003 forecast - 0.94%	105

The Board's analysis uses Duke's approach.

3. 2005-2021 Coal Traffic

The parties generally agree to use EIA forecasts for most traffic after 2004 as a conservative approach. Duke argues, however, that the Utility South traffic should be held constant from 2004-2021, while CSXT argues that EIA forecasts should be applied to all of the Utility South traffic except for Duke's traffic, which CSXT would estimate using Duke's utility reports to the State of North Carolina.

Neither forecasting methodology is sound. The EIA forecast for the Central Appalachian coal traffic is a composite forecast of all the traffic from the region, reflecting EIA's best assessment of the average expected growth in traffic volumes. Some Central Appalachian coal traffic will see more growth, some less. Only by applying the EIA average coal growth forecast to the entire coal traffic group can the Board accurately reflect the EIA forecast of the most likely total coal tonnage that the ACW would carry.

The following hypothetical is offered to illustrate the point. Assume that the EIA developed internal forecasts for two groups of Central Appalachian coal shippers (Group A and Group B), and that it predicted that Group A would experience a drop of 10%, while Group B would remain constant. Table B-3 shows the hypothetical results, whereby the EIA would forecast an average growth rate of -8.33%.

Table B-3
Hypothetical Forecast – Example 2

	2003 Actual Tonnage	2004 Forecast Tonnage	Growth Forecast
Group A	50 million	45 million	-10%
Group B	10 million	10 million	0%
Total	60 million	55 million	-8.33%

Application of Forecast

	Selective Application		Uniform Application	
	2004 Forecast	Growth	2004 Forecast	Growth
Group A	45.84 million	-8.33%	45.84 million	-8.33%
Group B	10 million	0%	9.16 million	-8.33%
Total	55.84 million	-6.93%	55 million	-8.33%

Even if presented with persuasive evidence that Group B tons would remain constant, the Board could not selectively hold Group B constant and use the average EIA forecast for Group A. As shown in Table B-3, that would over-forecast (i.e., show less of a decline in) the total coal traffic. In contrast, uniform application of the average EIA growth forecast would overstate some traffic (Group A tons), understate other traffic (Group B), but accurately forecast the total volume growth. For that reason, the Board's analysis here applies the 2003 EIA rate forecast for Central Appalachian coal volume to all the coal movements in the traffic group for 2005 and beyond. (The EIA 2004 forecast for the Central Appalachian region is now available but was released too late to be relied upon in this decision.)

B. ACW Revenues

Duke and CSXT dispute the expected revenues that the selected traffic group would generate over the 20-year period of analysis. The key issues are addressed below. It should be noted, however, that the forecasts of future transportation rates cannot be divorced from the forecasts of future demand for coal transportation (tonnages), as the two matters are interrelated.

1. Rate Used for Traffic Subject to Pending Rate Complaint

Duke questions the propriety of basing a SAC analysis on challenged rates that it claims have been inflated in anticipation of rate litigation before the Board. It suggests that the revenue forecasts for that traffic instead be based upon either the previous contract rates or the last good faith contract offer, so that the alleged manipulation would not influence the amount of relief awarded if the rates were found to be unreasonable. However, the rates being challenged here are neither the contract rates previously in effect nor an arbitrary fictional rate 10% higher than the expired contract rate. Therefore, the analysis here uses CSXT's common carrier rates actually charged to Duke to calculate the ACW revenues for this traffic.

2. Rates on Traffic Moving Under Contract

For traffic that currently moves under contract, the parties agree that the rate provisions of the applicable contract should be applied until the scheduled expiration of that contract.

3. Rates on Traffic After Expiration of Contracts

For all non-issue traffic, once a contract would expire, or for movements where no contract exists, Duke would develop the coal rate forecasts using the average escalation factor contained in the remaining unexpired contracts, as was done in *WPL*, 5 S.T.B. at 976. CSXT, in contrast, would apply the average percentage change in rates from its internal business forecasts through 2004 for any traffic whose contract would expire before the end of 2004, and for subsequent years CSXT would apply the EIA nationwide coal transportation rate forecast. CSXT argues that this would preserve the economic assumptions that CSXT and the EIA used to forecast coal volumes.

Duke's approach closely follows the methodology used in *WPL*. But in that case, the forecast provided by the defendant carrier was based on a convoluted, partial analysis developed specifically for the purpose of that litigation. Thus, the forecasting methodology used in *WPL* was the best evidence of record in that case. But as the Board explained in *TMPA*, 6 S.T.B. at 602-03, such forecasts (using a composite of historical escalation factors) are "more reflective of past rate changes [and] are not the best evidence of what changes in rates would reasonably be expected in the future." And, as the Board explained in *TMPA*, 6 S.T.B. at 603, and *Duke/NS*, 7 S.T.B. at 148-49, forecasts developed by EIA are more reliable and less subject to manipulation by litigants than forecasts by private parties. Finally, EIA's coal demand forecasts reflect EIA's rate forecasts, and tonnage and rate forecasts should be internally consistent where possible. Thus, where EIA tonnage forecasts are used, it is preferable to use the matching EIA rate forecasts as well. This provides a single, consistent, and independent source for the coal rate and tonnage projections.

For these reasons, the Board here uses CSXT's internal forecasts for the period from 2003-2004, and the 2003 EIA Central Appalachian rate forecasts for 2005 and beyond.

4. Contract Refunds

The parties dispute whether an adjustment needs to be made to CSXT's 2001 traffic tapes to account for refunds that are triggered when certain provisions in some transportation contracts are met. When it produced its traffic tapes, CSXT advised Duke that the revenue data in the tapes did not fully reflect contract refunds. It then provided Duke with itemized documentation of the appropriate contract refund adjustments prepared by CSXT's coal marketing department. In its opening evidence, Duke neither modified the traffic data to reflect these rebates nor explained why it did not do so. CSXT provided what it asserts are the necessary adjustments. On rebuttal, Duke stated that, in comparing the contract rate less refund to the rate calculated by CSXT, it found no "matches," and therefore no reduction is appropriate.

The arguments and evidence on this issue are poorly developed by both parties. The Board cannot determine how CSXT calculated its revised rates (supposedly reflecting the refunds actually paid) for these customers, as the number is hard-coded in its electronic workpapers. On the other hand, Duke did not provide its calculation of the contract rate less refund (hard-coded or otherwise) for the Board to compare to CSXT's revised rates or the rates contained in the 2001 traffic tapes.

The defendant's traffic tapes are a critical component of the Board's SAC analysis, and CSXT advised Duke of this issue when it supplied the traffic tapes in discovery. When a railroad identifies a problem with its traffic tapes, the complainant must either correct the problem on opening or offer a full explanation of its reasons for not doing so. It may not simply ignore the matter and rely on rebuttal evidence to support that decision. As the contract refunds supplied by CSXT do not appear on their face to be unreasonable or defective, and given Duke's failure to demonstrate otherwise, they are accepted here.

5. Zero Revenue Movements

After CSXT filed its reply evidence, Duke discovered 92 movements whose variable costs (as calculated by the Board's Uniform Railroad Costing System, or URCS) purportedly exceed the total revenue reported in CSXT's traffic tapes. For each O/D pair, Duke then examined every waybill movement and found a few waybills with no reported revenues. Assuming the error was with the reported revenues (rather than the reported tons), Duke then replaced the zero-revenue field with the average revenue per ton for all other movements between the same O/D pair.

Because this is not an issue raised by CSXT in its reply, it was not open to rebuttal. *Duke/NS*, 7 S.T.B. at 100-01. Without testimony from CSXT, the Board cannot determine whether there is an error in the traffic tapes, whether the purported error is in the revenue field or the tons field, and whether Duke's solution is appropriate. Duke's original evidence is used.

Table B-4 contains the revenue figures (for both coal and steel traffic) used by the Board here.

Table B-4
ACW Revenues
($ million)

Year	Duke	CSXT	STB
2002	$549.3	$453.0	$496.8
2003	567.5	487.7	511.5
2004	593.8	503.7	531.9
2005	581.1	478.9	559.2
2006	584	465.1	576.6
2007	602.3	478.9	598.7
2008	610.4	484.4	610.1
2009	619.2	483.7	611.4
2010	624.7	482.4	610.9
2011	663.0	525.3	614.4
2012	676.4	529.6	613.7
2013	681.2	523.6	626.9
2014	692.0	526.9	636.7
2015	705.7	532.1	651.8
2016	724.3	537.7	652.8
2017	737.6	536.7	662.7
2018	744.1	533.5	667.5
2019	768.4	542.5	675.3
2020	787.1	549.2	680.1
2021	811.3	554.2	684.1

APPENDIX C – OPERATING EXPENSES

This appendix addresses the annual operating expenses that would be incurred by the ACW. 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, CSXT's proposed operating plan for the ACW is used here, CSXT's operating assumptions must be used to determine the level of operational resources the ACW would need for a given level of traffic, and CSXT's spreadsheets must be used as the basis for developing the ACW operating costs. 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
ACW Annual Operating Costs (2002)
($ millions)

	Duke	CSXT	STB
Train & Engine Personnel	$8.8	$41.2	$38.8
Locomotive Lease *	15.8	49.5	51.9
Locomotive Maintenance	7.4	27.6	24.1
Locomotive Operations**	23.5	40.7	21.4
Railcars *	5.4	22.1	23.2
Ad Valorem Tax	4.1	4.1	4.1
Operating Managers	7.4	19	14.7
Materials & Supplies	0.8	1.4	1.4
General & Administrative	10.5	23.3	12.6
Start-up Costs	3.4	61.9	8.2
Loss & Damage	0.5	0.5	0.5
Payment to Third Parties *	1.6	50	50.1
Maintenance-of-Way	13.2	46.9	45.7
Insurance	2.6	8.4	7.4
TOTAL ***	$105.0	$396.6	$304.0

* The Board's figures are slightly higher than even CSXT's estimates because, as explained in Appendix B, the Board's coal tonnage figures are higher than those used by CSXT.

** The Board's estimate of locomotive operations expense is lower than either party's because the restatement relies upon CSXT's locomotive unit miles (which are substantially lower than Duke's) and upon Duke's gallons per locomotive-mile and costs per gallon (which are lower than those based on the rejected CSXT fuel study).

*** Columns may not sum to totals due to rounding

A. Locomotives

1. Locomotive Requirements

The parties agree on the unit cost for acquiring (leasing) locomotives (an annual lease cost of $181,305 per AC4400CW locomotive and $92,461 per SD-40-2 locomotive),[19] but as shown in Table C-2, there is a substantial difference in the number of locomotives each party assumes the ACW would need.

Table C-2
Locomotive Requirements

	Duke	CSXT	STB*
Road	80	260	273
Helper	5	9	9
Switch	4	8	8
Total	89	277	290

* The Board's figures are slightly higher than even CSXT's estimates because, as explained in Appendix B, the Board's coal tonnage figures are higher than those used by CSXT.

Locomotive requirements are primarily determined by how the ACW would operate. Because CSXT'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. The parties

[19] *See* Duke Reb. Narr. III-D-2 to -3 (accepting CSXT's annual lease cost).

agree on a 5% spare margin for road and helper locomotives.[20] Duke did not include a spare margin for switching locomotives, but instead included a spare switch locomotive at Bostic. Should a spare be required at other locations, Duke argues that a road locomotive would be used. CSXT included one spare switch locomotive at each switching location. Duke has not offered sufficient evidence to show that spare margin switch locomotives are not required. Because switch locomotives would not move throughout the system, it is appropriate to provide for a spare locomotive at each switching location. Accordingly, the analysis here uses one switch locomotive plus a spare at each of those locations.

2. Locomotive Maintenance Expense

Both parties based their locomotive maintenance expense estimates on a locomotive servicing agreement CSXT has with General Electric (the manufacturer of the AC4400CW locomotives). Duke estimated the average cost of maintaining the AC4400 and SD-40-2 locomotives at $83,043 per annum. Duke derived its average maintenance cost based on the actual charges for the base number of locomotives shown in the CSXT/GE agreement for January 1, 2000 - March 5, 2001, indexed to 1st Quarter 2002 wage and price levels. CSXT used an annual maintenance cost of $100,375 for each AC4400 locomotive and $74,095 for each SD-40-2 locomotive. For AC4400 locomotives, CSXT used the rate applicable to locomotives that exceed the base number specified by the agreement. For SD-40-2 locomotives, CSXT used the rate for the most comparable locomotive type.

CSXT contends that the ACW could not negotiate terms as favorable as those contained in CSXT's servicing agreement because the ACW would have substantially fewer locomotives. Duke notes, however, that the agreement covers only labor and materials and it contends that those costs should vary with the number of units maintained and not depend upon the total number of units involved.

CSXT has offered no credible reason why the ACW would not be able to negotiate an agreement as favorable as that obtained by CSXT. Therefore the base rate contained in the agreement is appropriate to use here.

CSXT also takes issue with Duke's method of indexing, claiming that Duke relied on the RCAF-A to index the initial figures to 2002 levels. However, Duke's workpapers demonstrate that it updated the numbers to 2002 according to the terms of the locomotive maintenance agreement. Therefore, Duke's average locomotive maintenance cost figure is used here.

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 locomotive unit miles (LUMs) to develop total locomotive operating expense.

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[20] CSXT Reply Narr. III-C-9.

Table C-3
Fuel and Servicing Expenses

	Duke	CSXT	STB
Gallons of Fuel per LUM	2.51	4.71	2.51
Fuel Price per Gallon	$0.6904	$0.7763	$0.6904
Loco Servicing Cost per LUM	$0.1968	$0.1968	$0.1968

a. Fuel Costs

Duke used a fuel cost of $0.6904 per gallon, based on the cost reported in CSXT's Annual Report filed with the Board (the R-1 report). CSXT used a $0.7763 per gallon figure, claiming that reliance on the R-1 is improper because that cost does not include the labor cost associated with Duke's proposed use of contractors to fuel locomotives.

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

Total fuel expense also depends on the rate at which fuel is consumed. Duke relied upon CSXT's system-average fuel consumption, while CSXT conducted a special study of fuel consumption for a selected group of locomotives. However, CSXT's study was based on fuel consumption for a type of locomotive that the ACW would not use. In the absence of a study of fuel consumption by the type of locomotives that the ACW 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 $0.1968 per LUM for servicing locomotives. The analysis here applies that unit cost to the total number of LUMs for the ACW to determine the locomotive servicing cost.

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 CSXT's operating plan has been accepted, that plan is used to estimate the number of cars that would be required to move coal and steel. However, because of maintenance considerations, cars would not be available

100% of the time and the ACW would need additional (spare margin) cars. Duke assumed that the ACW would need a 5% spare margin, while CSXT assumed a 10% spare margin based on the Board's findings in prior SAC cases. Because Duke 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

Duke and CSXT agree on the cost of leasing coal cars. The parties disagree on the cost of leasing cars to move steel. On opening, Duke based the cost of leasing cars to move steel on the cost for special flat cars. On reply, CSXT argued that the steel movements require specialized cars because the steel slabs must be loaded at a very high temperature (up to 1,100 degrees Fahrenheit) on a time-sensitive schedule. CSXT claims that it was required to custom fit special cars for this movement. However, instead of describing the type of cars it purchased and the necessary modifications to custom fit the cars, CSXT, with no support provided, assumed that the cost of such cars would approximate the cost of a gondola car and, therefore, based the cost of leasing cars to move steel on the cost for gondolas. On rebuttal, Duke pointed out that it had not used the price for a standard flat car, as claimed by CSXT, but rather for a "special" flat car which, it claims, is the type of car CSXT uses for this service. CSXT provided no evidence of what it actually uses in the service, nor any reasonable basis to rely on the cost of gondola cars rather than special flat cars. Therefore, Duke's evidence is used here.

The parties also disagree on the maintenance cost of the cars used to transport steel. Duke used an annual rate of $750 per car. However, the evidence it offered in support is addressed to maintenance of coal, not steel, cars. CSXT claims that the annual maintenance cost would be equivalent to 5% of the purchase price of the cars. Because Duke, the party with the burden of proof, has not adequately supported its maintenance number, CSXT's maintenance estimate is accepted.

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 ACW would need. Because the operating plan is the prime determinant of the number of T&E personnel and CSXT's operating plan for the ACW is used here, the Board's SAC analysis is based on the number of crew personnel specified by CSXT. CSXT's train personnel estimate is based, however, on the assumption that train personnel could work 270 shifts per year. CSXT argues that 250 shifts per year is more appropriate, in part based on its study of the actual number of days train personnel work during a year on CSXT. The ACW, however, is a least cost railroad that would not have the labor constraints of CSXT. Therefore, the

Board will not depart from the SAC precedent relied upon by Duke here.[21] *See FMC*, 4 S.T.B. at 832-33 (2000).

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.

Table C-4
Non-Train Operating Personnel

	Duke	CSXT	STB
Trainmaster	5	10	10
Assistant Trainmaster	8	16	16
Road Foremen of Engineers	3	9	9
Fueling Personnel	0	54	0
Car/Equipment Inspectors	54	107	107
Dispatchers	18	21	18
Manager - Operations Control	5	6	5
Manager - Mechanical Oper.	1	2	2
District Superintendent	0	4	4
Supervisory Shop Personnel	0	17	17
Crew Callers	5	5	5
Total	99	251	193

1. Trainmasters, Asst. Trainmasters, and Road Foremen of Engineers

CSXT's evidence regarding the number of trainmasters, assistant trainmasters, and road foremen of engineers is used here, because those numbers are primarily dependent on the operating plan.

[21] Duke Reb. Narr. III-D-24.

2. Fueling Personnel

Duke contends that contract employees would fuel locomotives; CSXT would have ACW personnel perform that task. Duke's proposal to use contract personnel is reasonable and is used here.

3. Car/Equipment Inspectors

Duke proposed fewer inspectors than CSXT. Because the number of inspectors is primarily dependent on the operating plan, CSXT's evidence is used.

4. Dispatchers

Duke and CSXT agree on a need for four dispatching desks. Duke points out that 18 dispatchers, working 250 shifts per year, could provide the needed coverage for the four dispatching desks. CSXT has not explained why it would be unreasonable for dispatchers to work 250 shifts per year. Therefore, Duke's staffing estimate is used.

5. Operations Managers

Duke included five positions for operations control management. CSXT would include five chief dispatchers and one chief crew caller. Duke has explained that the managers of operations control would be adequate to perform these functions. Therefore, Duke's evidence is accepted.

Duke proposed one manager of mechanical operations, while CSXT proposed two. Duke has not supported its staffing number, nor has it provided any specific reason why CSXT's proposed staffing is unrealistic. Therefore, CSXT's evidence is used here.

6. District Superintendents

The ACW would have two operating divisions, which CSXT claims would be managed by district superintendents. Duke claims that these superintendents are unnecessary supervisory personnel. However, CSXT's operating plan has been accepted, as has its staffing for trainmasters and assistant trainmasters. Because that staffing would require supervision in each division, the analysis here includes these district superintendent positions. However, as discussed below, Duke's general and administrative staffing is used here (with one exception). Therefore, many of the other supervisory layers that Duke has criticized are eliminated.

7. Supervisory Shop Personnel

CSXT would include a shop foreman, clerks, shop managers, shift supervisors, materials managers, and production managers. While Duke concedes that the locomotive maintenance agreement between CSXT and GE requires CSXT to provide supervisory personnel, it contends that it is wrong to assume that an agreement between GE and the ACW would contain such a provision.[22] However, Duke is not free to selectively apply the provisions of that agreement, and Duke has offered no support for its claim that the ACW would be able to negotiate a more favorable agreement. Therefore, the supervisory staffing for the repair shops is included here.

E. General & Administrative Personnel

The parties' general and administrative (G&A) personnel estimates differ substantially with respect to the staffing levels that the ACW 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), Duke proposed a G&A staff of 59 employees for the ACW. Duke's plan includes limited in-house staffing, with various financial, marketing, human resources and information technology (IT) functions outsourced.

CSXT argues that Duke's staffing levels would be insufficient for a Class I railroad (which the ACW would be). CSXT proposed a staff of 142, based on a comparison with CSXT's own staffing levels. But CSXT has not adequately addressed the outsourcing proposed by Duke, which would reduce the ACW's staffing needs. Duke's G&A staffing levels, which are based on the experience of former senior-level railroad employees, are reasonable and supported, and CSXT has not supported a need for the additional staffing it proposed. (Duke's IT staff is accepted here because the funds for the proposed outsourcing are included in the software purchase price.) Therefore, Duke's G&A staffing levels are used here, with one exception noted below.

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

Duke's proposal is unreasonable, as it would result in unconstrained managerial control of the ACW with no oversight. An organization of this size would require significant independent oversight of its management, regardless

[22] Duke Reb. Narr. III-D-27 n.23.

of whether it is publicly or privately held. Therefore, CSXT's proposal for five outside directors is accepted.

Table C-5
G&A Staffing

	Duke	CSXT	STB
President/Exec. Dept.	3	4	3
Engineering and Mechanical	4*	6	4
Transp. & Engin. - Oper.	9*	11	9
Finance & Accounting	21	46	21
Law, Admin. & H.R.	10	25	10
Marketing/Customer Service	12	50	12
Total	59	142	59

* Includes a chief engineer and four clerks referred to in Duke's narrative but omitted from its spreadsheet.

F. Wages and Salaries

1. Crew Compensation

Both parties used CSXT'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 ACW crews would require.

a. Basic Crew Wages

Duke developed basic crew compensation based on each train having an engineer and a conductor and applying the compensation rate for "road" crew personnel. CSXT assumed that crews would be comprised of two engineers and would be compensated at a rate reflecting the wages of "road," "yard," and "way" crews.

Duke's assumption of one engineer and one conductor per train appears to be reasonable, and CSXT has not explained why two engineers would be required. In addition, because the operating plan used here includes limited yard operations and no gathering activities, crew compensation is more appropriately based on the compensation rate for "road" crew personnel, proposed by Duke, rather than a combination of wage rates for road, yard, and way train operations. Therefore, the analysis here uses the compensation rate for road train engineers and conductors, as set forth on the wage forms relied upon by the parties.

b. Constructive Allowance

Duke included a constructive allowance of 8.33% to account for vacation and meal expenses, but excluded allowances for benefits that it asserts would not be available to the ACW's non-unionized work force. CSXT would apply a 35% markup, based on data contained in its 2001 Wage Forms A and B. Because Duke has provided no evidence that non-unionized railroads do not pay the benefits that it would exclude, CSXT'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 687-88.

c. Taxi Expenses

The parties differ on the number and cost of taxi trips that would be required for ACW crews. Because the number of taxi trips that would be needed is primarily dependent on the operating plan, the number of trips estimated by CSXT is used here. Furthermore, CSXT's cost per taxi trip is used, as Duke (the party with the burden of proof on this issue) offered no justification for its $10.28 per taxi trip estimate, which appears to include only trips to and from hotels and not re-crewing trips.

d. Overnight Expenses

The parties differ on the cost and 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 CSXT's operating plan is used here, CSXT's number of overnight stays is also used here. The difference in the cost of an overnight stay as estimated by the parties is minimal, with Duke proposing $40.50 and CSXT proposing $40.00. CSXT's evidence can be viewed as a concession that the cost of overnights is less than proposed by Duke. Because the purpose of the SAC test is to determine the least cost at which the ACW could efficiently construct and operate its system, CSXT's lower-cost evidence 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 ACW. The parties agree on the salary for the President/CEO. For the salaries of other executive positions, Duke relied upon the individual FEC positions that would be comparable to the ACW positions, while CSXT 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, Duke's evidence on executive salaries is used here.

The parties disagree on the amount for executive bonuses. Duke did not provide for any bonuses, while CSXT would include bonuses of approximately 70% of salaries. Because FEC's base compensation (used here) contemplated but did not include bonuses for its executives, bonuses are appropriately included in executive compensation. However, CSXT'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 were 45% of salaries,[23] this percentage is used to calculate the ACW executive bonuses.

3. G&A and Non-Crew Operating Compensation

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

With respect to non-train operating personnel, the parties relied upon CSXT wage data to develop their compensation estimates. Duke, however, made arbitrary adjustments to the salaries. For example, in its "Salaries2001_reb.xls" worksheet, Duke states that it adjusted assistant supervisors' salaries but provided no justification for the adjustment. As the party with the burden of proof on this issue, Duke failed to support its compensation levels. Accordingly, CSXT'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

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

G. Materials, Supplies, and Equipment

Materials, supplies, and equipment would be needed for various ACW personnel, including such items as motor vehicles, office furniture, equipment, utilities, outside services, IT hardware and software, travel, and training. The parties agree on some of these items, but their aggregate cost figures differ due

[23] CSXT Reply WP. III-D-0166.

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 CSXT'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 ACW staff. Duke would provide the ACW's supervisory personnel with Ford pick-up trucks. CSXT 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, Duke's proposal for the type of vehicle for supervisory personnel is reasonable and is used here. However, because the majority of CSXT's supervisory staffing has been accepted, CSXT's evidence is relied upon for the quantity of vehicles.

The parties agree on the unit cost for vehicles used for inspections, but Duke included three vehicles, while CSXT would include four. Because the number of inspectors provided by CSXT has been accepted, the vehicles proposed by CSXT for those inspectors is also accepted.

Duke would provide sedans for the ACW's G&A staff, while CSXT would provide sport utility vehicles. CSXT claims that Duke'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, Duke 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 CSXT's criticism. Duke's evidence is used here. Duke's rebuttal supports its opening cost estimate and CSXT provided no basis for using sport utility vehicles rather than less expensive vehicles.

2. Computer Equipment and Software

The parties disagree on the price of software for a general accounting system. However, as Duke points out and CSXT's workpapers confirm, CSXT double-counted the cost of the first year's subscription.[24] Therefore, Duke's cost is accepted.

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

On reply, CSXT contended that the network hardware proposed by Duke on opening would be inadequate and it proposed alternative hardware. On rebuttal, Duke pointed out that its specified equipment has the same functional

[24] CSXT Reply WP. III-D-0193.

capabilities as CSXT's product. Duke has thus supported on rebuttal the network hardware proposal contained in its opening evidence. Therefore, Duke's network hardware proposal (including routers) is accepted. And because Duke's network hardware is accepted, its network-related software expenses are also used here.

3. Travel & Entertainment

Duke provided no travel allowance for G&A personnel, on the ground that a regional railroad such as the ACW would cover a limited geographic area and would maintain personnel levels so as to minimize travel. Duke further claims that the $50,000 allowance for miscellaneous expenses could be used for travel. CSXT proposed travel expenses equivalent to 5% of compensation for operations and mechanical staff and $11,000 per employee for G&A staff. Given the size of the ACW, 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, Duke's omission of travel expenses is not reasonable. As CSXT's evidence on travel expenses is the only evidence of record, CSXT's proposed travel allowance costs are accepted.

4. Annual Recruiting and Training Expense

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

H. Start-Up Costs

Duke estimates that it would cost the ACW $3.4 million to hire and train its initial personnel, whereas CSXT contends that it would cost $10.7 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.

CSXT would also include recruiting costs (fees paid to recruitment agencies). Duke argues that the ACW could draw on a pool of experienced CSXT employees—those that would be displaced by the ACW's replacement of a portion of the CSXT—obviating the need for the ACW 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 ACW 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 ACW would be $8.2 million.

CSXT also includes as a start-up cost expenses that it assumes the ACW would incur to raise new equity capital. This capital floatation cost is discussed and rejected in the body of the decision. *See* Cost of Capital, *supra*.

I. Ad Valorem Tax

The parties agree that ad valorem taxes would be $4.1 million.

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 in Table C-6. Disputed components of those costs are discussed below.

Table C-6
Maintenance-of-Way Costs
($ millions)

	Duke	CSXT	STB
Staffing	$5.703	$27.837	$27.837
Equipment	$0.333	$2.881	$2.881
Materials	$0.356	$3.434	$3.434
Maintenance Work			
Weed Spraying	$0.636	$0.809	$0.809
Ultrasonic Rail Testing	$0.229	$0.636	$0.388
Track Geometry Testing *	$0.109	$0.103	$0.088
Rail Grinding	$0.179	$1.867	$0.179
Yard Cleaning	$0.060	$0.072	$0.072

Bridge Contract Work	$0.144	$1.000	$1.000
Storm Related Tree Work	$0.090	$0.200	$0.200
Crossing Paving	$0.210	$0.350	$0.350
Blasting Rock Slides	$0.010	$0.024	$0.024
Misc. Engineering	$0.375	$0.750	$0.750
Building Maintenance	$0.113	$0.100	$0.113
Derailment Allowance	$0.500	$3.000	$3.000
Casualties	$0.000	$2.000	$2.000
Snow Removal	$0.250	$0.250	$0.250
Storm Water Prevention	$0.000	$1.000	$1.000
Ditching	$0.125	$0.583	$0.583
Brush Cutting	$0.025	$0.020	$0.020
Shoulder Ballast Cleaning	$0.525	$0.000	$0.000
Ballast Undercutting	$0.700	$0.000	$0.700
Contract Labor	$0.989	$0.000	$0.000
Misc. Maintenance	$1.576	$0.000	$0.000
TOTAL ***	$13.237	$46.914	$45.678

* The Board's figure is lower than either party's figure because the Board used Duke's unit cost (which is lower than CSXT's) and CSXT's frequency (which is lower than Duke's).

** CSXT included this cost in program maintenance.

*** Columns may not sum to totals due to rounding.

1. Staffing and Equipment

The parties included in their respective DCF calculations the necessary funds to replace all of the ACW's assets at the end of their useful lives, thereby obviating the need to provide MOW funds to replace worn-out assets (so-called program maintenance). However, the ACW would need a MOW department to perform day-to-day preventive (operating) maintenance. Duke estimated this annual expense at $13.2 million, while CSXT estimated it at $47.0 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.

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

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

Duke has failed to meet its burden of establishing that a small, cross-trained MOW staff would be available and, even if available, that such a limited MOW staff could provide the unplanned day-to-day maintenance that would be needed by a railroad the size of the ACW. In addition, Duke has not attempted to reflect the higher compensation such skilled, cross-trained workers would command.

Conceding that its opening MOW staffing was insufficient, Duke on rebuttal sought to increase its original size of the MOW department by nearly 60%. However, Duke did not demonstrate that CSXT's MOW staffing would be unrealistic or infeasible. Thus, Duke's alternate evidence on rebuttal is rejected, and CSXT's evidence is used here. *See Duke/NS* 7 S.T.B. at 100-01. CSXT's estimate of the ACW'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

Duke calculated that the materials for operating maintenance would be 5% of the cost of the total (operating and program) annual maintenance cost. CSXT estimated materials costs using a labor-based charge for materials of 30% of overhead. Duke has not explained how it determined that 5% of total maintenance costs would be needed for materials for operating maintenance. Because Duke has failed to meet its burden of proof, CSXT'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 and snow removal. (While its spreadsheets use different numbers, CSXT states in its narrative that it agreed with Duke's numbers for building maintenance.) In its opening evidence, Duke failed to include any funds for a variety of other work (yard cleaning, storm-related tree work, shoulder ballast cleaning, crossing paving, blasting expense for rock slides, ditching and brush cutting). On rebuttal, in response to CSXT's evidence that such work would be necessary, Duke included funds for these purposes. Because Duke has not explained why CSXT's estimates are unrealistic, and because it did not provide any support for its alternative estimate, CSXT's evidence is used here. *See Duke/NS*, 7 S.T.B. at 100-01.

a. Weed Spraying

The parties agree that on portions of the ACW a cost of $500 per track mile would need to be incurred for weed spraying. However, their total costs for spraying differ, in part 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 spraying costs.

In addition to normal weed spraying, CSXT contends that a special "noxious" application would be required in Kentucky and portions of Tennessee to control thistle. CSXT contends that approximately 600 acres of the ACW route in various pasture and agricultural areas would need to be sprayed for noxious weeds, at a unit cost of $100 per acre. Duke did not address this argument on rebuttal. Therefore, the additional cost for these 600 acres is also included in the analysis here.

b. Ultrasonic Rail Testing

For ultrasonic rail testing, Duke used a unit cost of $90.00 per mile, based on a third-party quotation. CSXT argues that Duke's unit cost does not reflect the cost of frequent hand checks that would be required in mountainous territory, but CSXT has not provided any support for its argument. Duke's unit cost is accepted, because it is based on discussions with a third-party contractor and has not been discredited.

Duke would conduct this testing twice per year. According to CSXT, rail lines that handle the tonnage levels proposed for the ACW should be tested every 15 million gross tons (MGT) or a minimum of three times per year. CSXT states this frequency is required to locate internal rail defects and remove portions of rail that are defective, prior to service failures which can result in derailments and interruption of service. Duke acknowledges that a third test per year would be useful, but it argues that, at the ACW's tonnage level, it would not be required. Because Duke has neither discredited CSXT's position nor provided adequate support for its own position, CSXT's testing frequency is used here.

c. 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 all meet Federal Railroad Administration (FRA) and corporate track safety standards. While CSXT accepts Duke's unit cost of $42.63 per test mile for track geometry testing, it mistakenly used a unit cost of $50.00 in its spreadsheet. The parties' agreed-upon unit cost figure for such testing is used here.

The parties disagree on the frequency of the testing. Duke would conduct testing twice per year. CSXT determined a testing interval for each line segment based on traffic characteristics. Duke has provided no evidence supporting its across-the-board testing frequency. Accordingly, CSXT's evidence is used here.

d. Rail Grinding

The parties disagree on both the unit cost and frequency of rail grinding. Duke used a unit cost of $1,000 per mile, based on a quote from a contractor. CSXT used a unit cost of $1,350, based on an internal estimate, but it provided no support for that estimate. Because Duke's figure is supported by a third-party quote and CSXT has not discredited that estimate, Duke's figure is used here.

Duke would have the ACW grind all 136-pound premium rail every 150 MGT on curves exceeding 3 degrees, and every 300 MGT on tangent track. Standard rail used for main tracks and passing sidings would be ground every 50 MGT. CSXT argues that grinding would need to be performed more frequently, due to the rigid track structure resulting from the use of steel ties. However, CSXT has provided no support for its argument. Because Duke's proposed rail grinding schedule (which is based on rail grinding studies conducted by the Canadian National Railroad, and on the experience of a Duke witness) is adequately supported, it is used here.

e. Bridge Contract Work

Duke included $144,232 for bridge maintenance work, while CSXT would include $1,000,000. Because Duke (which has the burden of proof) did not present any evidence to support its figure, CSXT's estimate is used here.

f. Miscellaneous Engineering

The parties agree to a base cost of $750,000 for miscellaneous engineering. Duke allocated 50% of this cost to annual operating maintenance, with the rest assigned to program maintenance. CSXT, on the other hand, allocated the full amount to operating maintenance. Duke, which has not explained the rationale for its allocation, has failed to meet its burden of proof. Accordingly, CSXT's full allocation of the base cost towards annual operating maintenance is used here.

g. Derailment Allowance

Duke has not supported the derailment cost included in its spreadsheets. CSXT's record of FRA reportable accidents shows that in 2001 there were a significant number of coal train related derailments on the lines the ACW would replicate. Some of these were caused by mechanical defects, some by impediments on the track, and some by weather conditions. Accordingly, CSXT includes a higher derailment allowance than Duke. Because Duke has not supported its derailment cost allowance, nor explained why CSXT's derailment cost allowance is unrealistic, CSXT's figure is used here. *See Duke/NS*, 7 S.T.B. at 100-01.

h. Casualties

Based on the mountainous territory the ACW would traverse, CSXT would add $2 million for casualty losses as a result of occurrences such as washouts, floods, land slides, and slope failures. CSXT states that the $3 million appropriated for derailments would not cover casualty losses, citing its own incurrence of more than $21 million in total casualty losses across its system in 2001. Duke claims that casualty losses are factored into its railcar lease costs and that a separate expense is thus unnecessary. However, Duke has not supported its claim that casualty costs are addressed in railcar leasing costs. Therefore, the additional expense is included here.

i. Storm Water Prevention

CSXT included $1 million for addressing storm water. Duke has not commented on this cost. CSXT's cost is therefore accepted as unopposed.

j. Ballast Undercutting

Duke did not include ballast undercutting in its case-in-chief. CSXT briefly mentioned ballast undercutting in its reply narrative, but did not provide a cost for it. Based on CSXT's argument, Duke included a cost for ballast undercutting on rebuttal. Duke's cost for ballast undercutting is accepted as the only cost evidence presented.

k. Contract Labor

Duke included a cost for contract labor. However, as discussed above, Duke's proposal to use contract labor to provide the required MOW staffing for the ACW is rejected. Therefore, there is no need for a contract labor expense.

l. Misc. Maintenance

Duke included a cost for miscellaneous maintenance, but did not specify what costs were included. CSXT 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. Payments to Third Parties

The ACW would replicate CSXT's trackage rights arrangement over the lines of the Vaughan Railroad. The parties agree that the ACW would pay to use these facilities on the same terms as CSXT currently does. Duke, however, would treat these payments as a reduction from revenues, while CSXT would include them as an operating expense. These payments are treated as an expense here, because they would be incurred in the normal course of the ACW's operation and Duke has not provided any explanation why this cost should be treated otherwise.

The parties agree on the unit cost for the ACW's use of NS track between Frisco and Big Stone Gap, but they disagree on how that unit cost should be applied. Duke simply doubled the number of all loaded cars moving over this segment to account for charges for both loaded and empty cars. However, the agreement under which CSXT uses this track provides for a per-unit charge that is based on locomotives as well as loaded and empty cars. Because CSXT properly applied the per-unit charge, its evidence is used here.

CSXT also included costs for the Mayflower-Pennington and Alloy trackage rights. Duke did not address these costs. Therefore, CSXT's undisputed costs are included here.

In addition to trackage rights payments, CSXT included $48.9 million for payments to mines. Duke acknowledges that these payments are made, but it would treat them as reduction from revenues. These payments to mines are treated as an expense here, because they are incurred in the normal course of the ACW's operation and Duke has failed to explain why they should be treated otherwise.

APPENDIX D – ACW ROAD PROPERTY INVESTMENT

This appendix addresses the evidence and arguments of the parties concerning what it would cost to build the ACW. Table D-1 summarizes the parties' cost estimates associated with that construction, as well as the numbers used in the Board's analysis.

Table D-1
ACW Construction Costs
($ millions)

	Duke	CSXT	STB
A. Land	$28.63	$100.99	$61.36
B. Roadbed Preparation	559.17	1,753.41	870.97
C. Track Construction	723.46	946.23	824.84
D. Tunnels	345.75	482.03	345.75
E. Bridges	170.48	473.24	294.22
F. Signals & Communications	132.95	205.64	182.88
G. Buildings & Facilities	18.35	59.85	57.42
H. Public Improvements	1.44	53.29	12.90
I. Mobilization	13.75	93.60	70.37
J. Engineering	132.76	531.59	261.49
K. Contingencies	156.13	395.24	258.90
L. Off-System Investment	0.00	18.87	18.87
TOTAL*	$2,282.88	$5,113.99	$3,259.98

* Columns may not sum to totals because of rounding.

A. Land

The parties' estimates for the total amount of land that the ACW would need differ only slightly. The parties agree that the width of the ACW right-of-way (ROW) would be 100 feet, except in industrial, urban, and commercial areas in and around the towns of Greenville, SC, Johnson City, TN, and Charleston and

Huntington, WV, where it would be 75 feet.[25] Moreover, the acreage figures submitted by Duke for the 10 yards that it presented on opening were not contested by CSXT. Therefore, Duke's attempt to revise that acreage on rebuttal is inappropriate and rejected.

The land values used by the parties, however, differ substantially. The record does not permit combination of one party's acreage estimates with the other party's valuation. Therefore, where one party's valuation of a section of the ACW is used, that same party's estimate of the amount of acres that would be needed for that section is used.

Table D-2
Real Estate Costs

	Duke	CSXT	STB
ROW	$27,814,506	$99,165,832	$60,432,301
Yards	816,500	1,824,440	927,955
Easements	1,235	—	1,235
TOTAL	$28,632,241	$100,990,272	$61,361,491

For valuation purposes, Duke physically inspected 85% of the existing CSXT ROW; for inaccessible areas, Duke used a variety of mapping sources to develop land costs. Duke divided the ROW into 78 large segments (averaging 16 miles in length) and valued each segment based on the value of unimproved land in the general area.

CSXT asserts that in urban areas Duke'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. CSXT inspected 8.7% of the ROW (located in the Charleston-Huntington, WV; Greenville-Spartanburg, SC; and Kingsport-Johnson City, TN areas) and assigned values to each segment based on a physical inspection and an analysis of local land sales. For the remaining 91.3% of the ROW that it did not inspect, CSXT simply tripled Duke's values, based on the ratio of CSXT's valuation to Duke's valuation for the areas both had inspected.

For the segments of the ACW route inspected by both parties, CSXT's valuation method is superior. CSXT used a greater number of comparable sales, which provides a more complete, and thus more accurate, representation of market values. Moreover, CSXT examined parcels along the ROW, whereas Duke 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 ACW route that CSXT did not inspect, Duke has provided the best evidence. CSXT's approach is unacceptable, as CSXT

[25] *See* CSXT Reply Narr. III-F-4.

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.

Finally, Duke included a one-time easement payment for certain parcels of land based upon the terms under which CSXT 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, the agreed-upon easement acreage and Duke's 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. Table D-3 shows the parties' estimates for the costs necessary to prepare the ACW roadbed, as well as the numbers used here.

Table D-3
Roadbed Preparation Costs
($ millions)

	Duke	CSXT	STB
Clearing	$25.58	$66.08	$27.13
Grubbing	7.02	15.73	7.64
Earthwork	477.61	1,535.25	747.36
Drainage			
Lateral Drainage	0.15	0.19	0.15
Yard Drainage	1.17	11.85	4.07
Culverts	37.21	47.45	37.42
Retaining Walls	6.07	34.14	32.55
Rip Rap	3.51	7.68	7.32
Relocation of Utilities	0.00	0.00	0.00
Seeding/Topsoil Placement	0.30	0.31	0.31
Water for Compaction	0.00	11.16	0.00
Waste Excavation	0.55	0.60	0.59
Road Surfacing	0.00	16.33	0.00
Erosion Mitigation			
Silt Fences	0.00	0.87	0.83
Slope Drains	0.00	1.73	1.65
Big Sandy and Beaver Junction	0.00	4.04	3.96
TOTAL*	$559.17	$1,753.41	$870.97

* 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 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 that time. The data continue to be useful as a baseline for estimating current earthwork requirements, subject to adjustments for modern engineering standards. The parties disagree on the cost to clear and grub land, due to their differing assumptions regarding track configuration, the size of trees to be removed, and 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 ACW would require. *See* Appendix A – ACW Configuration.

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, Duke used the removal costs for 12-inch-diameter trees, whereas CSXT used the costs for 24-inch-diameter trees. Duke inspected portions of the CSXT route that the ACW would replicate and, based on that inspection, determined that trees in the area were generally 12 inches in diameter or less. In contrast, CSXT provided no support for its assumption that 24-inch-diameter trees would need to be removed. Accordingly, the cost for removing 12-inch-diameter trees is used here.

Finally, Duke'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 ACW). CSXT's indexation procedure erroneously increased, rather than decreased, the *Means* mid-year costs. Accordingly, Duke's indexation is accepted, and Duke's clearing and grubbing cost figures ($3,376 and $2,257 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 (24 feet on single-track segments and 39 feet on double-track segments) except in daylighted tunnels, 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

Duke excluded costs for access roads, claiming that they would be unnecessary. CSXT argues that the ACW would need to construct almost 48,000 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 has not been included where such roads did not exist when the line that the SARR would replicate was originally built or where the carrier did not incur the costs of building such roads. *See, e.g., TMPA*, 6 S.T.B at 701-02. Here, CSXT has provided no evidence that it (or its predecessors) incurred any costs for access roads. Moreover, as Duke points out, remote areas could be reached by using the cleared ROW. Therefore, costs for access roads are not included here.

b. ACW Yards

For yards that would replicate existing CSXT 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. Duke assumed that new yards would have the same fill requirement as CSXT's existing yards. CSXT calculated the grading for new yards except Fayette using the method it used for grading of the main line. CSXT used topographical maps to estimate the amount of excavation that would be required to construct the Fayette yard.

Other than for the Fayette yard, there is no apparent reason, and CSXT has not explained, why the amount of grading in new yards would be different from what has historically been undertaken in existing yards. Therefore, Duke's method of calculating earthwork quantities for new yards other than Fayette is accepted. For the Fayette yard, CSXT's 12.7 million cubic yards of excavation is used here because Duke has acknowledged that its cost proposal is understated.

c. Tunnel Daylighting

Duke assumed that the ACW would daylight (i.e., use an open cut, rather than a tunnel) in 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 ACW route than when the CSXT line was built (when it was more economical to construct tunnels). CSXT 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 ACW route.

CSXT first argues that Duke understated earthwork quantities (by an average of 49%) because Duke assumed a side slope ratio of 0.5:1 for the cuts, whereas CSXT asserts that the minimum standard for a side slope ratio is 1:1. As Duke points out, however, the reference manual *Railroad Engineering* by William H. Hay recognizes that cuts can have the side slopes proposed by Duke. Duke also notes that it provided for 10-foot benches for every 30 feet of vertical height excavation to make the cuts even more stable.[26] Because Duke's proposed side slopes for daylighted tunnels are supported, they are used here.

Finally, CSXT applied the assumption contained in Duke'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, Duke narrowed the width of single-track daylighted tunnels to 24 feet to be consistent with its

[26] *See* Duke Reb. WP. Vol. 1 at 0140-45.

assumption for the rest of the ACW.[27] CSXT has objected, claiming that there was no error and that a 28-foot width is necessary.[28] 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.

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 ACW, Duke assumed, as has been the assumption in many prior SAC cases, that 50% of the quantities classified as solid rock in *Engrg Rpts* would be rippable using modern equipment. CSXT argues that much of the rock classified by *Engrg Rpts* as solid rock would require blasting rather than removal by modern ripping equipment. CSXT points out that the ACW 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 Duke's assumption that 90% of the material encountered in daylighting tunnels would be solid rock, CSXT concluded that 90% of the material classified in *Engrg Rpts* as solid rock would need to be removed by blasting.

CSXT has misinterpreted Duke's evidence. While Duke 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, CSXT 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 CSXT addresses only tunnel construction. Finally, CSXT has elsewhere acknowledged that "[m]ost of the mountainous area [that the ACW would traverse] contains hard shale rock,"[29] a material that its own workpapers indicate is rippable.[30] Thus, Duke'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, Duke proposed a mix of earthwork equipment for use in various soil conditions. CSXT generally agrees that the equipment proposed by Duke for excavating common earth would be appropriate for the portion of the ACW south of Bostic. However, CSXT contends that bulldozers, in addition to the scrapers proposed by Duke, 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, CSXT's proposal for additional bulldozers south of Bostic is rejected.

[27] Duke Reb. Narr. III-F-38 n.26.
[28] CSXT Br. at 13 n.27.
[29] *See* CSXT Reply Narr. III-F-25.
[30] *See* CSXT Reply WP. III-F-0113.

For grading the ACW through areas of loose and solid rock, CSXT contends the equipment proposed by Duke would be inadequate, and CSXT has proposed a different mix of larger, more powerful earthwork equipment. On rebuttal, Duke 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 CSXT proposed.

Having failed in its opening evidence to account for the difficulty of grading areas of solid and loose rock in mountainous terrain, Duke is limited in what it may present on rebuttal on this issue. Duke objects to CSXT's unsupported rough-terrain markup for grading the line north of Bostic. Because CSXT has not demonstrated the need for such an adjustment, it is rejected. In addition, Duke has shown that some of the equipment proposed by CSXT would be unrealistic. Duke points out that the backhoe-type equipment CSXT 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 grading of a railroad ROW. Therefore, Duke's rebuttal proposal to use a power shovel—equipment more suited for excavation than a backhoe—is used here. *See Duke/NS*, 7 S.T.B. at 100-01.

Duke has not shown, however, that the larger bulldozer that CSXT specifies for ripping rock in the mountainous terrain north of Bostic is unrealistic. Furthermore, Duke now concedes that its original proposal for earthmoving equipment was flawed.[31] And Duke has not shown that CSXT's proposal to use a 22-cubic-yard off-road dump truck to move excavated material is unrealistic. Thus, while Duke'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 CSXT's realistic alternative. Therefore, CSXT's bulldozer and dump truck proposal is used here.

For solid rock excavation, because much of the ACW would be in remote areas requiring significant drilling and blasting, Duke used an average of the *Means* costs for "bulk drilling and blasting" and "drilling and blasting over 1,500 cubic yards." CSXT 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 Duke is not the minimum cost for such activities, but rather an average figure for blasting large quantities of rock.[32] Moreover, there is no indication that the figure used by Duke 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, Duke's unit cost for blasting is reasonable and is used here.

Duke 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),

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[31] Duke Reb. Narr. III-F-48-50.

[32] *See* CSXT Reply WP. III-F-0112 (referencing *Means*).

claiming that these separate activities would not be necessary. CSXT 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 CSXT'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, CSXT has not explained why the normal grading activities would not include fine grading. Therefore, the analysis here does not include such costs.

e. Big Sandy and Beaver Junction

To proceed southbound today on the Big Sandy Subdivision from the Kanawha Subdivision, CSXT trains must first proceed northbound on the Big Sandy, pull into a siding, and run the locomotives around from the north end to the south end of the train. CSXT would have the ACW construct a 1,560-foot wye track, 990 feet of which would be elevated, at Big Sandy. CSXT also claims that a connection to permit southbound movement from the Beaver Valley Subdivision onto the Big Sandy would be needed.[33] And because these are tracks and connections that CSXT does not have itself, CSXT would include the environmental, permitting and other costs associated with such new construction that CSXT would incur if it were to build them today. On rebuttal, Duke did not respond to CSXT's proposed addition of the Beaver Junction connection, but it argued that there is no need for the Big Sandy wye track and that the ACW should replicate the existing CSXT alignment at that location.[34] Because CSXT's operating plan (which includes the new track and connection) are used here, the track and connection are included here. And because CSXT has submitted the only evidence regarding the costs of building the additional track and connection, those costs are used here.

3. Drainage

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

a. Lateral Drainage

Duke would have the ACW install lateral drainage along the ACW ROW at the same time as the other roadbed excavation is performed. Duke 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, CSXT would have the ACW install the drainage by re-excavating after completion of the

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[33] *See* CSXT Reply Narr. III-F-19-20; CSXT Reply e-WP. "III F Construction Total CSX.xls," sheets "Unit Cost and Quantity" & "DCF Summary"; CSXT Reply WP. III-F-0146-55.

[34] *See* Duke Reb. Narr. III-B-15-16 & Exh. III-B-4.

initial roadbed grading, and CSXT 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 306-07. CSXT has not demonstrated why that procedure would be infeasible for the ACW. In addition, CSXT has not shown why geotextile fabric would be necessary. Therefore, Duke's evidence on lateral drainage is used here.

b. Yard Drainage

Duke did not include in its case-in-chief any cost for installing yard drainage. While CSXT did not discuss the need for yard drainage, its electronic spreadsheets included $11.85 million for such investments.[35] On rebuttal, Duke conceded that yard drainage would be necessary, but it argued that the investment proposed by CSXT is excessive and not typically used for rail yards. Duke would include $1.17 million for yard drainage.

Because CSXT did not discuss why such a high level of investment would be needed, and because Duke points out that the elaborate drainage system shown in CSXT's workpapers is not generally used by railroads, Duke's rebuttal proposal for yard drainage, which appears reasonable, is used here for all yards except the Fayette yard. *See Duke/NS*, 7 S.T.B. at 100-01. CSXT's drainage costs are used for the Fayette yard because Duke did not provide drainage costs for this yard.

4. Culverts

a. Quantity

The parties agree that in most situations culverts would be used, instead of bridges, to span spaces of less than 20 LF. The parties agree that a total of 6,037 culverts would be needed.

b. Costs

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

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[35] *See* CSXT Reply e-WP. "III F2 Grading.xls" & "III F2 Yard Drainage Summary.xls."

CSXT asserts that the ACW should use bituminous coated, thicker gauge pipe in order to deter corrosion. CSXT would also have the ACW 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, CSXT would have the ACW add wing walls, headwalls and scour pads to culverts. Finally, CSXT would include costs for stream diversion.

Non-coated corrugated metal pipe and RCB culverts without wing walls, headwalls, or scour pads should be sufficient for the ACW, given CSXT's use of such culverts on its existing line. Furthermore, Duke has satisfactorily explained that the ACW 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, Duke'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 ACW ROW. On opening, Duke 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 Duke conceded that the ACW would need additional gabions to replicate other types of retaining walls identified in *Engrg Rpts.* Duke 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.

CSXT argues that the ACW would need to use structurally stronger, retaining wall gabions, which have specialized anchoring and holding hardware needed for retaining walls. In addition, CSXT would increase Duke's retaining wall quantities to reflect the higher walls necessitated by the ACW'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, CSXT would include costs to transport, stockpile, and grade the stone used to fill the gabions.

Given Duke's proposal to use gabions for retaining walls, the ACW 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 ACW'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 ACW 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, CSXT has not demonstrated that the costs must be increased to reflect walls installed after the *Engrg Rpts.* CSXT's photographs allegedly showing post-*Engrg Rpts* walls do not specify on which lines these walls are located or when they were constructed,[36] and its workpapers do not include costs for walls installed after the *Engrg Rpts* and those costs are not included.

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[36] *See* CSXT Reply WP. III-F-0194-200.

6. Rip Rap

Duke 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. Duke asserts that the ACW would collect material from nearby blasted or ripped rock and that the ACW would place this material using equipment already present. Duke contends that, because rip rap can include a wide variety of rock sizes, sorting and grading would be unnecessary.

Duke 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 stockpiling the needed rock material. Therefore, the analysis here uses CSXT's evidence, which includes costs to handle, stockpile, and transport rip rap.

7. Relocation of Utilities

The parties agree that, consistent with Board policy, costs for the relocation of utilities should not be included, as CSXT and its predecessors did not incur such costs.[37]

8. Seeding/Topsoil Placement

The difference in the parties' costs for seeding and topsoil placement is due to the difference in total track miles. Because CSXT's total mileage is accepted, its cost for seeding and topsoil placement is used.

9. Water for Compaction

CSXT would include $11.16 million to cover the cost of one water truck for every 3-5 dozers, arguing that this water would be required for compacting soil. Duke 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, Duke provided rainfall charts showing that the ACW would not be located in an arid or semi-arid area.[38]

The area traversed by the ACW is not particularly arid, and CSXT 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.

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

[38] *See* Duke Reb. WP. Vol. 1 at 0162-66.

10. Waste Excavation

The parties used $500 per acre for waste area land. The parties differ in the number of acres needed for this land because they disagree on the amount of grading that would be needed for yards and tunnel daylighting. The agreed-upon unit cost is applied to the acreage needed for the grading, as determined above.

11. Road Surfacing

Duke did not include costs for surfacing existing and detour roads during construction, arguing that CSXT's predecessors would not have incurred those costs when the lines were originally constructed. Duke also did not include costs for surfacing access roads, arguing that access roads would not be needed. CSXT included surfacing costs of $16.33 million. However, there is no evidence that CSXT or its predecessors incurred these costs. Furthermore, as discussed above, costs for access roads are not included. Accordingly, no road surfacing costs are included here.

12. Erosion Mitigation

Duke excluded costs for silt fences that would be used during construction of the ACW, 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 need to be incurred to address the damage from runoff.

Duke also excluded costs for slope drains (pipes that carry collected water down a slope, protecting the slope face from soil saturation and erosion) on the ground that CSXT 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 ACW. Table D-4 summarizes the cost estimates associated with this aspect of constructing the ACW.

Table D-4
Track Construction Cost
($ millions)

	Duke	CSXT	STB
Sub-ballast	$51.37	60.28	$59.67
Ballast	49.49	78.48	56.50
Ballast Offloading	0.00	14.47	0.00
Geotextiles	0.00	8.56	0.74
Steel Ties (12mm)	71.77	79.20	79.20
Steel Ties (10mm)	63.99	78.58	75.14
Timber Ties	5.13	7.07	6.86
Transition Ties	0.00	2.30	2.26
New Rail	80.76	101.67	85.66
Relay Rail	68.00	81.55	81.06
Rail Offloading	0.00	7.31	0.00
Field Welds	0.51	3.31	0.56
Joint Bars	0.90	1.27	1.23
Insulated Joints	0.08	0.93	0.20
14-inch Tie Plates**	2.79	3.17	3.62
18-inch Tie Plates	0.00	1.13	0.23
6-inch Spikes	0.31	0.47	0.42
Rail Anchors	0.11	0.16	0.16
Spring Clip Assemblies	112.52	134.06	129.29
Switches	18.11	59.50	25.72
Rail Lubricators	3.02	3.02	3.02
Track Construction	194.60	219.74	213.30
Beaver Junction	0.00	1.34	1.34
TOTAL*	$723.46	$946.23	$824.84

* Columns may not sum to totals because of rounding.

** As explained below, the Board uses 14-inch tie plates, rather than 18-inch plates, for ties on open deck bridges. As a result, the Board's cost figure for 14-inch tie plates is greater than either party's cost estimate.

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 10 inches of ballast for yards and set-out tracks. They disagree on the need for sub-ballast in yards and for set-out tracks.

a. Yards

Duke would have the ACW install 10 inches of ballast and no sub-ballast in yards and set-out tracks. Duke argues that 10 inches of ballast over 1 foot of compacted fill would provide sufficient support for the track structure in yards, and Duke 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).[39] Duke has not discussed its exclusion of sub-ballast under set-out tracks. CSXT would have the ACW add 6 inches of sub-ballast (in addition to the 10 inches of ballast) in yards and set-out tracks because of the heavy axle loads of ACW trains, the poor soil conditions, and Duke's exclusion of geotextile fabric in the yards.

Duke's reliance on the AREMA industry standards is reasonable, and CSXT 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 Duke did not address the issue of sub-ballast under set-out tracks nor support its exclusion of costs, CSXT's costs are used for set-out tracks.

b. Quantities of Materials

Duke's calculation for quantities of sub-ballast and ballast excluded the volume occupied by ties embedded in the ballast, whereas CSXT's did not. Duke's calculation is more accurate, as it recognizes that ties and ballast cannot occupy the same space.

In determining the amount of rock the ACW would require, quantities expressed in tons must be converted into quantities expressed in cubic yards (CY). To accomplish this, Duke used a conversion factor of 1.5 tons/CY for sub-ballast and ballast, which it submits is conservative in light of a published 1.325 tons/CY conversion factor for compacted granite ballast.[40] CSXT used conversion factors of 1.76 tons/CY and 1.62 tons/CY for sub-ballast and ballast, respectively. Because Duke's conversion factor is supported by a published reference and has not been discredited by CSXT, it is used here.

[39] *See* Duke Reb. WP. Vol. 1 at 0176-82.
[40] *See* Duke Reb. WP. Vol. 1 at 0175.

c. Unit Cost

For ballast, Duke used a unit cost of $8.65 per ton, comprised of a $5.65 per ton cost for rock and $3.00 per ton for transportation.[41] However, CSXT shows that Duke's cost is based on an average distance from quarry to railhead of 17.67 miles,[42] whereas the closest quarry to the ACW would be 44 miles away. Duke assumes that another quarry would open to supply ballast to the ACW. But in designing a SARR, the proponent of the design must show that its proposal is feasible. It is inappropriate to assume that a source of construction material that is not currently available would nevertheless be available to the SARR. CSXT used a range of costs based on third-party quotations and transportation costs that vary with distance from the ACW.[43] Duke complains that CSXT's pricing fails to account for economies of scale and is otherwise unsupported. Because Duke has failed to correct its faulty transportation allowance, CSXT's ballast unit costs are used. (CSXT's costs are less than Duke's costs would be if they were adjusted to accurately reflect the distance from the source quarries to the ACW.)

For sub-ballast, Duke used a unit cost of $8.05 per ton, comprised of a $5.05 per ton cost for rock and $3.00 per ton for transportation.[44] CSXT adjusted Duke's unit cost to account for the distance between the source quarry and the ACW. On rebuttal, Duke neither responded to CSXT's adjustments nor defended its own unit cost presented on opening. Because CSXT has discredited Duke's evidence, CSXT's costs are used here.

CSXT would also add a separate ballast offloading cost for the labor and equipment needed to move the delivered ballast onto the track structure after the laying of the rail. Duke 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.

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[41] *See* Duke Open. WP. 05862.
[42] *See* CSXT Reply Narr. III-F-60.
[43] CSXT Reply WP. 130.
[44] *See* Duke Open. WP. 05862.

2. Geotextile Fabric

Duke excluded geotextile fabric on the ground that CSXT did not incur this cost, because geotextile fabric was not developed until 1968 and virtually all of the CSXT lines that would be replicated by the ACW were built before that time. CSXT 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. CSXT further argues that Duke'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, CSXT would have the ACW include geotextile fabric costs for all turnouts and crossings, for all curves greater than 6 degrees, and for 10% of the remainder of the ACW to account for poor soil structure. CSXT 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 Public Service Co. and Pacificorp v. The Atchison, Topeka and Santa Fe Ry. Co.*, 2 S.T.B. 367, 406 (1997) (*Arizona*). However, because CSXT has provided no support for its claim 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 ACW.

3. Ties

Duke and CSXT would include $140.89 million and $167.15 million, respectively, for ties.[45] The parties agree that the ACW would be constructed with heavy-duty (12mm) steel ties for main lines, and industrial duty (10mm) steel ties for mine leads 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 the cost of wood ties, steel ties, and associated hardware. 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 – ACW Configuration.

[45] *See* Duke Reb. e-WP. "IIIF Total.xls;" CSXT Reply e-WP. "IIIF Construction Total CSX.xls."

a. Transition Ties

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

While Duke 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 CSXT, 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 CSXT's proposal is unrealistic. Accordingly, CSXT's cost figure for transition ties is used here.

b. Transportation Cost

CSXT would include costs for transloading steel ties from a barge in Cincinnati, OH, and transporting them to the various ACW construction railheads. Because Duke did not respond to CSXT's proposed transportation costs, CSXT's transportation costs are used here. The parties did not discuss any costs for transportation of wood ties.

c. Tie Spacing

Duke would use the same tie spacing on tangent track and curves, while CSXT would have the ACW 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 CSXT has not demonstrated that Duke's spacing of steel ties would need to be reduced. Therefore, the analysis here uses Duke's evidence on this point.

4. New Rail

The parties agree that the ACW would use 136-pound premium continuous welded rail (CWR) on main-line track between Bostic and Lancer, KY, and on all curves of 3 degrees or more, and that it would use 136-pound standard CWR on main-line track from Lancer to Gauley, WV. These specifications are used in conjunction with the miles of track accepted in Appendix A – ACW Configuration to develop the quantity of each type of track needed.

Duke used a price of $500 per ton for standard CWR and $550 per ton for premium CWR. CSXT used a cost figure of $593 per ton for standard CWR and $647 per ton for premium CWR. CSXT argues that Duke'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 ACW. However, CSXT has not shown that Duke's supplier would be any less capable of supplying rail to the ACW than the supplier that CSXT used for its price quote. Accordingly, Duke's unit cost figures are used here.

5. Relay Rail

The parties agree that the ACW would use 115-pound relay rail on the remaining main line and on mine leads, 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, CSXT would increase Duke's cost (from $400 per ton to $475 per ton) to account for transportation costs. Duke's evidence indicates that its cost estimate did not include transportation costs to ACW railheads.[46] Therefore, CSXT's $475 per ton figure is used here.

6. Rail Offloading

CSXT would add separate costs for offloading and distributing rail materials along the ACW 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

The parties agree on eight welds per track mile, but CSXT would include additional welds at crossings, turnouts, and interlockings. Duke has not addressed CSXT's proposed additional welds. Because its track configuration is used here, CSXT's quantity for welds is used.

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

8. Joint Bars

Joint bars are required where CWR is not used. The parties agree on the unit cost for joint bars,[47] but they differ on the quantity due to the differences in their track configuration. Because CSXT's track configuration is used here, CSXT's quantities are used.

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 ACW. On opening, Duke used a cost of $80 each, based on a third-party quotation and, without any support, proposed a quantity of 100

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[46] *See* Duke Open. WP. 05885.
[47] *See* Duke Reb. Exh. III-F-26.

insulated joints. CSXT included a cost of $375 per insulated joint, also based on a third-party quotation, and a quantity of 2,476 insulated joints. On rebuttal, Duke increased the number of insulated joints it would install to 990.[48]

Because Duke's unit-cost estimate is supported by evidence and CSXT has not shown why its higher cost should be used, Duke's unit-cost figure for insulated joints is used here. However, because Duke offers no support for the number of joints, CSXT's proposed quantity is used.

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

The parties agree that the ACW would use pandrol clips for steel ties instead of spikes, plates, and anchors. They also agree on the use of 14-inch tie plates (four spikes per tie) and a set of four rail anchors every fifth tie for wood ties in yards and set-out tracks. Differences in quantities between the parties are due to differences in track configuration. CSXT's quantities are used because its track configuration is accepted.

For ties on open deck bridges, Duke would have the ACW use 14-inch tie plates. CSXT argues that 18-inch tie plates would need to be used. However, CSXT itself currently uses 14-inch tie plates. Therefore, it would seem reasonable for the ACW to do so as well.

CSXT would also use 18-inch tie plates on all transition ties. Duke (which did not include specialized transition ties) has not rebutted that proposal. Accordingly, the use of 18-inch tie plates for transition ties is accepted.

The parties agree on the unit costs for clips, spikes, rail anchors, joints, and 14-inch tie plates. Because Duke does not dispute CSXT's cost figures for 18-inch tie plates, CSXT'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. 20 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 and 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 ACW. As discussed in Appendix A – ACW Configuration, CSXT's proposed network configuration for the ACW, with limited modifications, is used here. The switch count used here is based on that restated network configuration.

Duke's cost estimates were based on quotations for switches and switch components. CSXT's cost estimates were for complete switch packages, rather than individual components. CSXT claims that Duke's method of pricing individual components produces an unrealistic estimate of the total cost of switch

[48] *See* Duke Reb. -WP. "Rebuttal Signals.xls."

installation. However, CSXT has failed to demonstrate that switch costs cannot be developed from a combination of component parts. Accordingly, Duke's cost estimates are used in the restatement here.

12. Rail Lubricators

The agreed-upon quantity and unit cost for rail lubricators is used.

13. Track Construction (Labor and Equipment)

Duke and CSXT included $194.6 million and $219.74 million, respectively, for track construction costs. The difference in their estimates is due to their differing configurations for the ACW. Because CSXT's proposed basic configuration for the ACW is used here, its estimate is also used here.

14. Beaver Junction

Because the Beaver Junction connection is included in the ACW's configuration, *see* "Roadbed Preparation" *supra,* CSXT's track construction costs for this connection are used as they are the only evidence of record.

D. Tunnels

The parties disagree on the number of tunnels to be built. On opening, Duke would have the ACW construct 53 tunnels. CSXT would have the ACW construct 59 tunnels (including 3 tunnels that are not on CSXT track charts, valuation maps or United States Geological Survey (USGS) maps and omitting a tunnel included by Duke on opening), with a combined total length of 66,735 feet. On rebuttal, Duke revises its number of tunnels. Duke includes a tunnel not included by CSXT and excludes, without explanation, two of the tunnels it had included on opening. Duke's combined total tunnel length on rebuttal is 67,136 feet, including relocation of the Smiley tunnel.

A tunnel count of 57, with a restated combined total length of 66,136 feet, is used here. The tunnels Duke and CSXT agree upon are included. The three tunnels that do not appear on CSXT track charts, valuation maps, or USGS maps are excluded; the tunnel included by Duke but not by CSXT is included because CSXT does not state why it should be omitted; the two tunnels that Duke attempted to exclude on rebuttal are included because Duke did not support their exclusion.[49] Duke's relocation of the Smiley tunnel is rejected because its elimination of the switchback at Hagans, WV is rejected.

The parties agreed to base the cost for tunnels on the $2,561 per LF figure developed in *Coal Trading Corp. v. Baltimore & O.R.R.,* 6 I.C.C.2d 361, 422 (1990) (*Coal Trading*). Using *Means*, Duke indexed this cost from 1980 to 2002, arriving at a current unit cost of $5,150 per LF. In contrast, CSXT used

[49] *See* Duke Reb. WP. Vol. 1 at 227.

an AAR index to inflate the costs from 1978 to 2002, arriving at a current unit cost for 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.[50] 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, Duke's figure for tunnels is used here.

E. 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-5 below.

Table D-5
Railroad Bridge Costs
($ millions)

	Duke	CSXT	STB
Type I	$4.43	$27.33	$13.20
Type II	15.97	55.13	30.15
Type III	143.35	378.48	239.41
River Big Sandy	6.73	9.53	8.75
Wye Connecting Track Bridge	0.00	2.77	2.71
TOTAL	$170.48	$473.24	$294.22

1. Number of Railroad Bridges

CSXT has challenged the number and size of bridges initially included in Duke's cost estimates. Duke generally agrees with CSXT's revised bridge inventory.[51] But Duke argues that CSXT wrongly assumed that some bridges would be multi-tracked rather than single-tracked, and that the cost of 10 railroad bridges over highways should be excluded because CSXT did not bear the cost of constructing those bridges. Also, Duke would not construct the wye

[50] *See Coal Trading*, 6 I.C.C.2d at 378.
[51] *See* Duke Reb. Narr. at III-F-103; *cf*. Duke Reb. e-WP. "CSX_acw compare bridge qty.xls."

connecting track bridge for the Big Sandy Junction; instead on rebuttal Duke proposed to reconfigure the track at the Big Sandy Junction to eliminate the connecting wye track.

Because CSXT's general network configuration for the ACW is used here, the Board's analysis uses the multi-tracked bridges and Big Sandy Junction connecting track proposed by CSXT. 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 costs associated with constructing the 10 bridges over highways identified by Duke, as there is no evidence that CSXT 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 CSXT bridges that they assumed the ACW would replicate. As discussed above, the analysis here excludes costs for the 10 bridges over highways that CSXT would have included. Accordingly, the average bridge span length here is based on the restated number of bridges used here.

b. Handrails

Duke proposed to use 34-inch high handrails, whereas CSXT would have the ACW use 42-inch handrails based on AREMA standards. Duke argues that AREMA standards are guidelines rather than requirements and that CSXT's own bridges often do not even have handrails.[52] However, Duke has relied on the AREMA specifications in other aspects of its bridge design. And the single photograph of a CSXT bridge that Duke submits as evidence of a lack of handrails on CSXT's bridges is not persuasive, as it does not identify the line 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 Duke's workpapers do not show that it included the cost of reinforcing steel. As CSXT points out, Duke's proposed bridges include concrete abutments, wing walls, and piers—all

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[52] *See* Duke Reb. WP. Vol. 1 at 0206.

of which would require reinforcing steel.[53] CSXT's evidence on this cost is thus used here.

d. Cofferdams

Duke initially did not include any costs for cofferdams (watertight enclosures from which water is pumped to expose the bottom of a body of water to permit construction of a pier). On rebuttal Duke 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, Duke has not demonstrated that CSXT's proposal is unrealistic, as cofferdams are generally used for underwater construction. Accordingly, CSXT's cost evidence for cofferdams is used here.

e. Rip Rap

As discussed above, Duke included the costs to place rip rap, but not any costs for acquiring, transporting, sorting, grading, and stockpiling materials for rip rap. Duke 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 construction crews gathering and stockpiling the needed rock material. Therefore, the analysis here uses CSXT's evidence, which includes costs to handle, stockpile and transport rip rap.

f. Transportation

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

g. Big Sandy River Bridge

Duke would modify CSXT's design and costs for this bridge. However, because CSXT's bridge components are supported while Duke's are not, CSXT's design and costs are accepted.

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[53] *See* Duke Open. WP. Vol. 12 at 05986-88; CSXT Reply WP. III-F-0353-54.

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. Duke notes that AREMA guidelines allow a minimum 2-foot-wide gravel shoulder to be used, instead of a separate walkway, on ballasted deck bridges. Because Duke'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. Duke's opening evidence did not include hook bolts. CSXT would have the ACW include hook bolts on every bridge tie, allegedly based on AREMA standards. However, a review of the AREMA guidelines reveals no hook bolt standards. Moreover, as Duke pointed out on rebuttal, CSXT's own standard is to place a hook bolt only at every fifth tie.[54] Therefore, Duke's rebuttal evidence, which would place a hook bolt on every fourth timber, is accepted and used here.

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

c. Type III Bridges

As with Type II bridges, Duke's placement of hook bolts on every fourth tie and CSXT'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

CSXT notes that the type of pile proposed by Duke is no longer manufactured, and CSXT has proposed a substitute pile. Duke assumes that another manufacturer would enter the business and make those piles for the ACW. But in designing a SARR, the proponent of the design must show that its

[54] *See* Duke Reb. WP. Vol. 1 at 0199, 0206.

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, CSXT's pile design is used here.

CSXT also argues that Duke understated the bearing requirements for each type of bridge, because the local soil conditions cannot support bridges with the number of piles specified by Duke. Because Duke has not adequately supported its pile quantity and because CSXT's pile design is used, CSXT's pile quantity is used as well.

b. Abutments

While CSXT accepts Duke's abutment types, CSXT asserts that Duke failed to show the structural adequacy of its abutment components. CSXT would change the footing design based on the loads that would be applied to the abutments, AREMA standards, and the number of piles required. Duke argues that its abutment components are designed to meet industry standard "Cooper E80" loading requirements for railroad bridges and they have been used in actual bridge construction projects and bids,[55] although Duke has not provided support for this statement. Because CSXT's piles are used and Duke failed to adequately support the feasibility of its abutments, CSXT's abutment figures are used here. The Board has corrected for CSXT's double-counting of abutments.

c. Pier Height

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

F. Signals and Communications

As shown in Table D-6, the parties disagree on the costs of providing a signaling and communication system.

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[55] *See* Duke Reb. Narr. III-F-107.

Table D-6
Signals and Communications
($ millions)

	Duke	CSXT	STB
CTC	$38.80	$79.08	$77.71
Signals in Dark Areas	26.54	32.39	32.13
Failed Equipment Detectors	3.04	3.09	3.09
Slide Fences	0.00	6.14	6.14
Communications (Microwave Sys.)	64.57	84.94	63.81
TOTAL	$132.95	$205.64	$182.88

1. Centralized Traffic Control

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

2. Signals in Dark Areas

Duke and CSXT 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 ACW. Because CSXT's proposed configuration is used here, CSXT's estimate for signaling in dark areas is also used.

3. Failed Equipment Detectors

The parties agree on the quantity of failed equipment detectors (FEDs) and on the unit cost for single-track FEDs. However, CSXT would apply a higher unit cost to FEDs intended for double-track installation. Because CSXT has provided the only evidence of cost for the double-track FEDs, its cost is used for those FEDs.

4. Slide Fences

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

5. Communications

On opening, Duke proposed a satellite-based communication system. On rebuttal, it adopted CSXT's proposed microwave-based system, but noted that certain equipment costs are already reflected as operating expenses. Accordingly, CSXT's microwave costs are accepted, but restated to exclude costs for equipment already included in operating expenses.

G. Building 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-7 below summarizes the parties' cost estimates and the Board's restatement.

Table D-7
Buildings and Facilities
($ millions)

	Duke	CSXT	STB
Fueling Facilities	$9.32	$21.23	$20.51
Wastewater Treatment	0.20	2.50	2.50
Locomotive Shop	3.54	15.89	15.89
Car Repair	0.00	6.71	6.71
Headquarters	1.35	1.86	1.35
MOW & Roadway Buildings	2.31	6.65	6.65
Scales	0.00	1.20	0.00
Yard Air and Lighting	1.63	3.81	3.81
TOTAL*	$18.35	$59.85	$57.42

* Columns may not sum to totals because of rounding.

1. Fueling Facilities

Duke would locate ACW locomotive fueling facilities at Fayette, Ceredo, and Bostic, at a cost of $9.32 million. CSXT argues that Duke's estimate is based on a smaller locomotive fleet than would be needed and therefore understates the size of fueling facilities. CSXT estimated a cost of $21.23 million for fueling facilities at these locations. Duke objects to CSXT's 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 ACW locomotives.

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

2. Wastewater Treatment

On opening, Duke included $172,294 for wastewater treatment, but it did not provide any support for that figure. CSXT included a cost of $2.5 million. On rebuttal, Duke increased its cost to $200,294, but neither contested CSXT's evidence nor offered support for its own figure. Accordingly, CSXT's cost estimate is used here.

3. Locomotive Shop

Duke and CSXT would include $3.54 million and $15.89 million, respectively, for locomotive repair facilities. The parties agree on the size of the buildings, but they disagree on unit costs and equipment.

a. Unit Costs

Duke's building cost per square foot was based on third-party quotations. CSXT relied on building costs per square foot based on AREMA standards.[56] Under those standards, locomotive repair facilities require 44-foot ceilings, whereas Duke's quotations are for facilities with only 24-foot ceilings. At times, engines are removed from locomotives by overhead cranes, and a 24-foot ceiling would not provide enough clearance for such operations. CSXT's unit costs are therefore used here, as they provide for the required ceiling height.

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[56] CSXT Reply WP. III-F-0656; CSXT Reply e-WP. III-F-7 "Facilities.xls."

b. Equipment

Duke claims that, because the ACW would acquire locomotives under a full-service lease agreement, it would not need to provide all of the equipment required for locomotive repairs. CSXT argues that, even under a full-service lease agreement, the ACW would need to provide the necessary equipment to service the locomotives. Duke disagrees, but on rebuttal, included additional equipment and increased its total equipment cost by 33%. Because Duke has not supported its cost evidence, CSXT's estimate for equipment that the ACW would need to provide at the locomotive repair facility is used here.

4. Car Repair

Duke 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 facilities. (Duke included the cost of the full-service lease as an operating expense.) Claiming that there are no contractor facilities close to the ACW route, CSXT would include $6.71 million to construct and equip a 26,000-square-foot car repair facility at Ceredo and small car repair tracks where 1,000 mile inspections would be performed.[57] Duke has not shown that there is an existing car repair facility close to the ACW lines or that a car repair facility would be provided by an outside contractor under a full-service railcar lease agreement. Accordingly, the ACW would need to build its own car repair shop, and CSXT's cost estimates are used as the only evidence of record.

5. Headquarters Building

Duke would locate the ACW's headquarters building at Dante, VA. The facility would accommodate the ACW's senior operating supervisory staff, clerical and dispatching staff, customer service personnel, CTC control center, and general and administrative staff. This building would also serve as an away-from-home terminal for train crews, as well as the base for the mechanical and MOW personnel stationed at Dante.

The parties generally agree on the building size and the cost per square foot, but they disagree on site development costs. Duke estimates site development cost at $125,047, while CSXT estimates the cost at $655,530. (CSXT's estimate is higher because it includes funds for insurance, surveys, and other costs that would be incurred before constructing a building. Because Duke has failed to account for all of the necessary costs, CSXT's cost estimate is used here.

[57] *See* CSXT Reply Narr. III-F-109; CSXT Reply Narr. III-D-11-16; CSXT Reply e-WP. "IIII F 7 Car Shop Building.xls" & "IIII F 7 Facilities.xls."

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

For MOW facilities, based on their respective MOW plans for the ACW, Duke included 15 buildings, while CSXT included 17. For roadway crew change buildings, Duke included seven buildings, while CSXT included six. The difference in the cost estimates is due not only to the difference in the number of MOW buildings, but also to differences in the square footage allotment per employee. CSXT adjusted Duke's building size to accommodate CSXT's proposed staffing requirements. Because CSXT'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.

7. Scales

CSXT asserts that the ACW would require weigh-in-motion scales at four locations, at a cost of $300,000 each, including the communications equipment necessary to transmit the weights to the ACW billing system. However, as Duke notes,[58] industry practice is to weigh large-volume movements of coal at either origin or destination. Accordingly, the ACW would not need scales.

8. Yard Air and Lighting

CSXT would have the ACW 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. Duke argues that such systems would not be required because locomotives attached to the trains would maintain air pressure for brakes. However, Duke has not shown that a locomotive would be attached to all sets of cars at all times. Thus, the ACW yards would appear to need an air system.

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

H. Public Improvements

Table D-8 lists the type of public improvements and associated costs that the parties estimate would be necessary along the ACW ROW.

[58] Duke Reb. Narr. III-B-29-31.

Table D-8
Public Improvements
($ millions)

	Duke	CSXT	STB
Fences	$0.00	$22.29	$0.00
Signs	0.16	0.70	0.16
Road Crossing Protection	0.00	4.95	4.95
At-Grade Highway Crossings	0.00	10.92	2.80
Grade-Separated Highway Crossings	0.00	13.15	3.71
Yard Access Roads	1.28	1.28	1.28
TOTAL*	$1.44	$53.29	$12.90

* Columns may not sum to totals because of rounding.

1. Fences

Duke inspected about 70% of the CSXT lines that the ACW would replicate, and it did not encounter any fencing there.[59] Thus, it did not include any cost for fencing for the ACW. CSXT would include costs to fence approximately 44% of the line, relying on *Engrg Rpts.*

While *Engrg Rpts* indicates some fencing of the lines that would be replicated by the ACW, Duke's line inspection provides a more up-to-date assessment of current fencing. Because Duke has presented the best evidence of record on this issue, no fencing costs are included here.

2. Signs

Duke included costs for installation of milepost, whistle post, and flanger signs, as well as some speed restriction and resume speed signs. CSXT 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. CSXT acknowledges that speed restrictions and other relevant information 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 trip. On rebuttal, Duke pointed out that crews are required to be familiar with conditions on the line over which they operate before beginning a trip.

[59] *See* Duke Reb. WP. Vol. 1 at 0219-24.

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

3. Road Crossing Protection

Duke included no costs for crossing protection. CSXT would include crossing protection costs for those grade crossings included in *Engrg Rpts.* CSXT estimates that it incurred 10% of the cost for crossing protection at those crossings. CSXT 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, CSXT's crossing protection cost estimates are used here.

4. At-Grade and Grade-Separated Highway Crossings

CSXT would include costs for at-grade and grade-separated highway crossings identified in *Engrg Rpts*. Duke argues that *Engrg Rpts* are not helpful in determining whether CSXT 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, CSXT maintains that, even where the railroad preceded the highway, the railroad was typically responsible for a substantial amount of the cost of the crossing. Here, CSXT would include in the SAC analysis 39% of the cost of the at-grade crossings and 35% of the cost of the grade-separated crossings.

It is reasonable to presume that, where a group of assets is 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. However, while CSXT has provided the only estimate of crossing costs, CSXT provides no support for those estimates. Because other railroads have indicated that their predecessors paid for about 10% of the costs associated with crossings,[60] it seems reasonable to use this factor in SAC cases.

[60] *See CP&L/NS*, 7 S.T.B. at 337; *Duke/NS*, 7 S.T.B. at 200; *TMPA*, 6 S.T.B. at 743-44.

5. Yard Access Roads

The parties agree that $1.3 million would be needed for yard access roads.

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). Duke only included funds for initial mobilization, which it estimated at $13.75 million, or approximately 1% of those construction costs that it claims do not already include such costs. Duke argues that a 1% markup is sufficient, because the construction bids it used include mobilization and demobilization costs and *Means* supports low mobilization costs.[61] Duke notes that a 1.2% markup was used for mobilization in *WPL*, 5 S.T.B. at 1036. But that figure was in addition to separate costs for performance bonds and demobilization that were included in *WPL*.

CSXT does not contest using a 1% markup for track, signals and communications, and buildings and facilities, but CSXT would apply a higher markup to roadbed preparation, tunnels, and bridges. CSXT would also include additional mobilization costs for establishing field offices and staging areas along the ACW. Unlike Duke, CSXT would include costs for demobilization and a greater allowance for performance bonds. CSXT estimated total mobilization costs (covering initial mobilization, demobilization, and performance bonds) to be approximately 2.7% of total construction costs.

Duke's evidence is unacceptable, as it ignores or minimizes several cost elements (bridge mobilization, performance bonds, and demobilization) that have been included in prior SAC cases. Because Duke has failed to meet its burden of establishing the reasonableness of its cost estimate on this issue, its evidence is rejected, and CSXT's overall 2.7% mobilization factor is used as the best evidence of record. CSXT's evidence is in line with the factor accepted in prior cases. *See TMPA* (2.0% mobilization factor); *PPL* (2.2%); *WPL* (2.6%); *FMC (*2.4%); *Arizona* (2.8%); *West Texas* (3.2%).

J. Engineering

Engineering costs would be incurred to plan, design, and manage the construction of the ACW. The parties calculated engineering costs as a percentage of most categories of investment costs (except land). Table D-9 below summarizes the parties' evidence on this cost.

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[61] *See* Duke Open. Narr. III-F-54; Duke Reb. Narr. III-F-128-29.

Table D-9
Engineering Costs

		Duke	CSXT	STB
Percentage of Investment	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	$9.8	
	Environmental Permitting ($M)	$0.0	$7.9	$0.0

The parties disagree as to what activities should be encompassed within the basic engineering services designation. Duke argues that planning and geotechnical studies, as well as management of the construction project, are part of basic engineering services. Duke 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 Duke relied. CSXT asserts that basic engineering services do not include planning/feasibility studies, location and design surveys, and geotechnical subsurface investigations.[62] However, CSXT provided no support for that assertion. Therefore, Duke'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 ACW construction. CSXT asserts, without support, that all of the ACW's construction would be above-average in difficulty. Because Duke has supported its evidence on the scope of the basic engineering services, Duke's evidence is relied upon here.

The remaining dispute centers on whether the ACW would use a construction management firm to oversee the project. As Duke recognizes, the use of such firms has been the standard practice for large modern construction projects for some 40 years. Nevertheless, Duke argues that, because the original

[62] *See* CSXT Reply Narr. III-F-137-38.

CSXT 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 CSXT points out, Duke assumes that the ACW 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 CSXT 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 Duke asserts that 20% of its basic engineering service estimate is attributable to construction management, Duke's 5% basic engineering factor is reduced here to 4% to ensure against a double count of construction management costs.

Finally, CSXT argues that location and design surveys, as well as environmental permitting, should be added to the engineering costs. However, CSXT 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 Duke. 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 ACW 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%); *WPL* (10.0%); *FMC* (11.7%); *McCarty Farms* (10.0%); *Arizona* (9.5%); *West Texas* (9.7%).

K. Contingencies

A contingency account provides funds to cover unforeseen costs that might arise during construction. Duke has proposed an 8% markup for contingencies. CSXT 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. CSXT cites U.S. Army Corps of Engineers data showing 10% or higher contingency markups for multi-million dollar construction projects.[63]

Duke 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, Duke has not shown that project management software and risk management techniques would

[63] *See* CSXT Reply Narr. III-F-146 n.90.

reduce the risk of contingencies on the ACW. Also, Duke'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. Duke'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, Duke 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

As discussed in Appendix A – ACW Configuration, $18.9 million is included as off-SARR investment to upgrade portions of the residual CSXT needed to handle rerouted traffic.