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SURFACE TRANSPORTATION BOARD

DECISION

STB Docket No. 41191 (Sub-No. 1)

AEP TEXAS NORTH COMPANY
v.
BNSF RAILWAY COMPANY

Decided: September 7, 2007

The Board finds that the complainant has failed to establish that the challenged rates are unreasonably high. Complainant is offered an opportunity to submit supplemental evidence under the stand-alone cost constraint.

TABLE OF CONTENTS

ACRONYMS

AEO	Annual Energy Outlook
AEP Texas	AEP Texas North Company
AFE	Authorization for Financial Expenditure
AREMA	American Railway Engineering and Maintenance-of-Way Association
ATC	average total cost
BNSF	BNSF Railway Company
CMP	constrained market pricing
CP	Canadian Pacific Railway Company
CSXT	CSX Transportation, Inc.
CTC	centralized traffic control
CWR	continuous welded rail
CY	cubic yards
DCF	discounted cash flow
DTL	direct-to-locomotive
EIA	Energy Information Administration, U.S. Department of Energy
FED	failed equipment detector
FERC	Federal Energy Regulatory Commission
FRA	Federal Railroad Administration
G&A	general and administrative
GAAP	generally accepted accounting principles
GDP	gross domestic product
ICC	Interstate Commerce Commission
IPD	implicit price deflator
IT	information technology
KCS	Kansas City Southern
LF	linear feet
LRP	long range plan
LUM	locomotive unit-mile
MGT	million gross tons
MMM	Maximum Markup Methodology
MOW	maintenance-of-way
MP	milepost
NKCR	Nebraska, Kansas & Colorado Railnet, Inc.
NORAC	Northeast Operations Rules Advisory Committee
NPRM	notice of proposed rulemaking
PRB	Powder River Basin
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
ROW	right-of-way
RTC	Rail Traffic Controller
R/VC	revenue-to-variable cost
SAC	stand-alone cost
SARR	stand-alone railroad

SWCC	switch circuit controllers
T&E	train and engine
TEP	Tuscan Electric Power
TNR	Texas & Northern Railroad
UP	Union Pacific Railroad Company
URCS	Uniform Railroad Costing System
WCS	Wisconsin Central System
WTU	West Texas Utilities Company
WYDOT	Wyoming Department of Transportation

BY THE BOARD:

This decision addresses a complaint filed on August 11, 2003, by AEP Texas North Company (AEP Texas), challenging the reasonableness of rates charged by BNSF Railway Company (BNSF) for movements of coal from mine origins in the Powder River Basin (PRB) of Wyoming to the Oklaunion Generating Station (Oklaunion) near Vernon, TX. Upon considering the record that has been presented, we find that AEP Texas has failed to demonstrate that the challenged rates are unreasonably high. However, in light of the recent changes made to the stand-alone cost procedures, AEP Texas will be afforded the opportunity to submit supplemental evidence under the stand-alone cost constraint, if it so desires.

This case has its origins in a complaint filed in 1994 by AEP Texas' predecessor, West Texas Utilities Company (WTU), in STB Docket No. 41191, challenging the reasonableness of rates charged by BNSF[1] for coal shipped from PRB mines to Oklaunion. In a decision served on April 25, 1996, the Board found that BNSF's rate exceeded the rate allowed under the stand-alone cost (SAC) test and prescribed the maximum rate that could be charged for coal moving from the Rawhide mine. West Texas Utilities Company v. Burlington Northern R.R., 1 S.T.B. 638, aff'd sub nom. Burlington N. R.R. v. STB, 114 F.3d 206 (D.C. Cir. 1997) (West Texas). A detailed discussion of the history of that proceeding is contained in a decision in that lead docket being served concurrently with this decision (West Texas Reopen).

PRELIMINARY MATTERS

Procedural Course of this Proceeding. Consistent with prior practice in rail rate cases, both parties submitted opening presentations (on March 1, 2004), reply evidence (on May 24, 2004), rebuttal evidence (on July 27, 2004), and final briefs (on June 9, 2005). On November 8, 2004, AEP Texas sought to supplement the record with additional evidence (AEP Texas' First Supplemental Opening) and, pursuant to a Board order, BNSF submitted its response on February 14, 2005 (BNSF's First Supplemental Reply).

On February 27, 2006, the Board held this proceeding in abeyance, along with two other pending rail rate cases, so that various recurring methodological issues that had been raised or were implicated in the pending cases could be considered in a rulemaking proceeding with broader public input. See Major Issues in Rail Rate Cases, STB Ex Parte 657 (Sub-No. 1), et al. (STB served Feb. 27, 2006). AEP Texas and BNSF were among the interested parties that filed opening comments on the proposed rules (on May 1, 2006), reply comments (on June 1, 2006), and rebuttal comments (on June 30, 2006).

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[1] The original defendant in this proceeding, Burlington Northern Railroad Company (BN), has since merged with The Atchison, Topeka and Santa Fe Railway Company to form The Burlington Northern and Santa Fe Railway Company. Since that time, the Burlington Northern and Santa Fe Railway Company has changed its name to BNSF Railway Company. For convenience, the defendant is herein referred to as BNSF.

In the meantime, by a decision served on March 17, 2006 (First Compliance Order), the Board directed both parties to file additional evidence in this proceeding to address some gaps in the evidentiary record that had already been developed. In response, AEP Texas submitted its Second Supplemental Opening evidence (on May 15, 2006), BNSF submitted its Second Supplemental Reply evidence (on June 15, 2006), and AEP Texas submitted its Second Supplemental Rebuttal evidence (on July 14, 2006).

After we completed the rulemaking, in Major Issues in Rail Rate Cases, STB Ex Parte 657 (Sub-No. 1) et al. (STB served Oct. 30, 2006) (Major Issues),[2] we issued a further decision in this proceeding on November 8, 2006 (Second Compliance Order), directing the parties to file additional evidence to reflect the methodological changes adopted in Major Issues. Accordingly, AEP Texas filed its Third Supplemental Opening evidence (on February 16, 2007), BNSF filed its Third Supplemental Reply evidence (on March 19, 2007), and AEP Texas filed its Third Supplemental Rebuttal evidence (on April 2, 2007).

BNSF's Motion to Dismiss. BNSF filed a motion to dismiss AEP Texas' complaint on May 13, 2005, to which AEP Texas filed a reply on June 7, 2005. BNSF first objected to AEP Texas' attempt to challenge in this complaint the rates for movements from the Rawhide mine. As discussed above, we are denying AEP Texas' request to amend this complaint to extend to the Rawhide movements.

BNSF further argues that the challenge to the rates for PRB coal movements from non-Rawhide mines also should be dismissed on the ground that, under the current Board policy announced in Texas Municipal Power Agency v. Burlington N.&S.F. Ry., STB Docket No. 42056 (STB served Sept. 27, 2004) (TMPA Reconsid.),[3] the rate prescription in West Texas should be treated as extending to the non-Rawhide mines. However, in West Texas, and in two subsequent decisions in that docket (served November 7, 2000 and March 23, 2001), the Board explicitly ruled that the prescription in that case applied solely to movements from Rawhide. That stands as the law of this case. The Board's subsequent change of policy in TMPA Reconsid. [4] may not be applied retroactively to this case.[5] Moreover, it was BNSF that previously urged the Board to find that the Rawhide prescription was not applicable to the other

[2] Pets. for judicial review pending sub nom. BNSF Ry. v. STB, No. 06-1372 et al. (D.C. Cir. filed Nov. 14, 2006).

[3] In TMPA Reconsid., the Board concluded that the rate prescription in that case should not be limited to mines from which the complainant's traffic had originated but rather should extend to all of the mines to which the challenged rate applied.

[4] TMPA Reconsid. at 29 ("to the extent that there has been a change in Board policy, we are persuaded that the better policy is for a rate prescription to be self-effectuating where a mine is embraced in both the original complaint and the SAC evidence.")

[5] See Pacific Gas & Elec. Co. v. FPC, 506 F.2d 33, 38 (D.C. Cir. 1974).

mines. Thus, BNSF is estopped from arguing that the Board erred in adopting the limitation BNSF had requested.[6]

Accordingly, BNSF's motion to dismiss is denied.

BNSF's Motion to Strike. On September 9, 2004, BNSF filed a motion to strike portions of AEP Texas' rebuttal evidence, and AEP Texas filed a reply to that motion on October 20, 2004. In its motion to strike, BNSF alleges that there are nine instances where AEP Texas improperly introduced new evidence for the first time on rebuttal. To the extent that the challenged evidence has been superseded by later evidence submitted in response to the Board's First Compliance Order and Second Compliance Order, BNSF's motion to strike has been rendered moot.[7] The remaining portions of BNSF's motion to strike are discussed at the places in this decision where the evidence at issue is addressed.

AEP Texas' Petition to Supplement Record. To address errors in its opening evidence that AEP Texas asserts it first became aware of only after BNSF filed its motion to strike, AEP Texas sought leave to file its First Supplemental Opening, containing a revised Rail Traffic Controller (RTC) simulation. BNSF has opposed that request.

Although the Board, in a decision served on January 14, 2005, allowed BNSF to submit a response to AEP Texas' First Supplemental Opening evidence, the Board reserved judgment on whether to grant AEP Texas' petition to supplement. Subsequently, in First Compliance Order, the Board directed the parties to submit further revised RTC simulations which supersede both AEP Texas' First Supplemental Opening RTC simulation and BNSF's First Supplemental Reply evidence. Nonetheless, because some information in those submissions formed the basis for the Board's directives in First Compliance Order, both submissions are accepted into the record.

MARKET DOMINANCE

We can consider the reasonableness of a challenged rail rate 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 rail carriers or modes of transportation for the transportation to which a rate applies." 49 U.S.C. 10707(a). However, even where there is no effective competition, a carrier is not considered to have market dominance if the rate it charges

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[6] See New Hampshire v. Maine, 532 U.S. 742, 749-51 (2001) (estoppel generally prevents a party from prevailing in one phase of a case on an argument and then relying on a contradictory argument to prevail in another phase), quoting Pegram v. Herdrich, 530 U.S. 211, 227 n.8 (2000).

[7] Specifically, BNSF's motion to strike is moot with respect to the following items of AEP Texas' rebuttal evidence: a new and substantially modified RTC analysis purporting to show that the complainant's stand-alone railroad could provide service that is as good or better than BNSF's service for movements originating at southern PRB mines using a different route; and statements about BNSF's production of information in discovery sought for the purpose of addressing movement-specific adjustments to the variable costs of issue-traffic movements.

is less than 180% of its variable cost of providing the service. 49 U.S.C. 10707(d)(1)(A). The 180% revenue-to-variable cost (R/VC) level thus serves as a jurisdictional floor below which we may not provide any rate relief.[8]

Here, BNSF does not dispute AEP Texas' claim that there are no effective competitive alternatives for transporting coal between PRB mines and Oklaunion. Nor is there any dispute that the challenged rate exceeds the 180% R/VC jurisdictional floor for considering the reasonableness of the rate for at least some movements covered by the rates at issue here. However, there is an issue regarding the appropriate calculation of the 180% R/VC level in this case for purposes of the floor for any rate relief that might be available.

In Major Issues, we decided that computing the variable cost of providing the service, we will rely solely on the Uniform Railroad Costing System (URCS) Phase III system-average data. We will no longer consider any movement-specific adjustments to a defendant carrier's system-average variable cost data. See Major Issues at 47-61. The only adjustments we allow to the URCS Phase III program are those allowed in Review of the General Purpose Costing System, 2 S.T.B. 659 (1997).[9]

In its comments in the rulemaking, as well as its pleadings submitted in this case subsequent to our Major Issues decision, AEP Texas has argued that, because the parties had already completed and submitted variable cost presentations that included proposed movement-specific adjustments, we should rely on those presentations in this case. For the reasons discussed in Major Issues (at 76), we deny that request.

Here application of the Phase III costing program demonstrates that the rates on many of the challenged movements exceed 180% of BNSF's variable cost of providing service. Accordingly, the jurisdictional requirement of section 10707(d)(1)(A) is satisfied, and we will now proceed to consider the reasonableness of the rates.

RATE REASONABLENESS STANDARDS

A. Constrained Market Pricing

The Board's general 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), as modified in Major Issues. These guidelines adopt 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

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[8] See Burlington N.R.R. v. STB, 114 F.3d at 210.

[9] Those adjustments include the so-called "270" volume shipment adjustments, the make-whole adjustments, TOFC/COFC adjustments, and RoadRailer adjustments. In addition, the circuity factor is always set to one when actual miles are used to calculate the variable costs.

pay more than is necessary for efficient service. And a captive shipper should not bear the cost of any facilities or services from which it derives no benefit. 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 its captive traffic.[10] 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." Id. at 535-36. The management efficiency constraint protects captive shippers from paying for avoidable inefficiencies (whether short-run or long-run) that are shown to increase a railroad's revenue need to a point where the shipper's rate is affected. Id. at 537-42. The stand-alone cost (SAC) constraint protects a captive shipper from bearing costs of inefficiencies or from cross-subsidizing other traffic by paying more than the revenue needed to replicate rail service to a select subset of the carrier's traffic base. Id. at 542-46. Here, AEP Texas seeks relief under the SAC constraint.

B. SAC Test

A SAC analysis seeks to determine whether a complainant is bearing rail costs resulting from inefficiencies or costs associated with rail facilities or services from which it derives no benefit. The SAC analysis does this by simulating the competitive rate that would exist in a "contestable market," i.e., a market that is free from barriers to entry. The economic theory of contestable markets does not depend on the presence of competing firms in the marketplace to assure a competitive outcome. Guidelines, 1 I.C.C.2d at 528. Rather, in a contestable market, even a monopolist must offer competitive rates or lose its customers to a new entrant. Id. In other words, contestable markets have competitive characteristics which preclude monopoly pricing.

To simulate the competitive price that would result if the market for rail service were contestable, the costs and other limitations associated with entry barriers must be omitted from the SAC analysis. Id. at 529. This removes any advantages that the existing railroad would have over a new entrant that create the existing railroad's monopoly power. A "stand-alone railroad" (SARR) is therefore hypothesized that could serve the traffic at issue if the rail industry were free of entry barriers. 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. This analysis produces a simulated competitive rate against which we judge the challenged rate. Id. at 542.

To make a SAC presentation, the complainant designs a SARR specifically tailored to serve an identified traffic group, using the optimum physical plant or rail system needed for that traffic. Using information on the types and amounts of traffic moving over the railroad's rail

[10] A fourth constraint—phasing—can be used to limit the introduction of otherwise-permissible rate increases when necessary for the greater public good. Guidelines, 1 I.C.C.2d at 546-47.

system, the complainant selects a subset of that traffic (including its own traffic to which the challenged rate applies) that the SARR would serve.

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 for the SARR. Once an operating plan is developed that would accommodate the traffic group selected by the complainant, the SARR's 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, that the SARR would continue to operate into the indefinite future, and that recovery of the investment costs would occur over the economic life of the assets. The Board's SAC analyses are limited to a finite period of time (in this case 20 years)[11] and examine the revenue requirements for the SARR based on the operating expenses that would be incurred over that period and 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 defendant railroad is expected to earn from the traffic group. There is a presumption that the revenue contributions from non-issue traffic should be based on the revenues produced by the current rates. Traffic and rate level trends for that traffic group are forecast into the future to determine the future revenue contributions from that traffic.

The Board then compares the revenue requirements of the SARR against the total revenues to be generated by the traffic group over the full SAC analysis period. A present value analysis is used that takes into account the time value of money, netting the annual over-recovery or under-recovery as of a common point in time.

If the present value of the revenues from the traffic group exceeds the present value of the revenue requirements of the SARR, then the Board must decide what relief to provide to the complainant by allocating the revenue requirements of the SARR among the traffic group and over time. But where, as here, the present value of the revenues that would be generated by the traffic group is less than the present value of the SARR's revenue requirements, then the complainant has failed to demonstrate that the challenged rate levels violate the SAC constraint.

[11] Here, as in most prior SAC cases, the parties used a 20-year SAC analysis period. In Major Issues (at 61-66), we decided that in future cases SAC analyses would be limited to 10 years, but we did not require the parties to shorten the analysis period in this case as their SAC analyses had already been designed based on a 20-year period.

STAND-ALONE COST ANALYSIS

AEP Texas designed a hypothetical SARR called the Texas & Northern Railroad (TNR) to serve a traffic group consisting mostly of coal traffic moving in unit-train service from PRB coal fields in Wyoming. In addition to AEP Texas' Oklaunion traffic, the TNR would serve other PRB coal traffic that would be primarily interchanged with the residual BNSF (i.e., the portion of the BNSF system that would not be replicated by the TNR). The TNR would also interchange coal shipments with Union Pacific Railroad Company (UP) for one destination and with Nebraska, Kansas & Colorado Railnet, Inc. (NKCR) for one destination. Finally, the TNR would provide service for smaller amounts of grain, manifest, and intermodal traffic. The component parts of the SAC analysis are discussed in turn below.

A. TNR Configuration

The TNR would replicate portions of existing BNSF routes from the Wyoming PRB mines to the Oklaunion plant in Texas. It would interchange traffic with the residual part of the BNSF system at West Campbell and South Logan, WY; Northport and Alliance, NE; Las Animas Jct., CO; and Amarillo and Oklaunion, TX; with UP at Northport, NE; and with NKCR at Sterling, CO. A description and map of the TNR's system, as well as our resolution of evidentiary disputes regarding the amount of track that would be needed for the TNR to operate this system, are contained in **Appendix A**.

B. TNR Traffic Group

AEP Texas has selected a traffic group that includes 107 power plants that procure coal from PRB mines in Wyoming. The parties disagree over AEP Texas' inclusion of traffic from three southern PRB mines (discussed below), the inclusion of traffic that would be shipped to some power plants (discussed in **Appendix B**), and some of the revenue calculations for this traffic group (discussed in **Appendix B**).

1. Southern PRB Traffic Rerouting

Under AEP Texas' proposed configuration, the TNR would use a different route than BNSF does for traffic originating at the three southernmost PRB mines: Antelope, Rochelle/North Antelope, and South Black Thunder. Currently, BNSF moves traffic from these mines south through Guernsey and on to Alliance, NE. AEP Texas would have the TNR route this traffic north instead, exiting the PRB at Donkey Creek, then traveling to Edgemont, SD, and on to Alliance, NE, where the traffic would be switched to BNSF for the remainder of the move. AEP Texas argues that the TNR would achieve economies of scale and density by moving all traffic north out of the PRB. BNSF, however, argues that the traffic from the three southernmost mines should be excluded from the SAC analysis.

BNSF originally challenged this routing on the ground that it had not been shown to be workable. BNSF claimed that the computer model used by AEP Texas to simulate the movement of traffic over the TNR (the Rail Traffic Controller or RTC model) would not run successfully with this routing. However, based on the Board's instructions in First Compliance Order, AEP Texas subsequently introduced a new RTC simulation and that simulation showed the routing to be workable. BNSF also argues that, because this routing would result in a longer haul (greater mileage) for this traffic,[12] the routing is presumptively inefficient under the test set forth in Duke/NS, at 25-30.[13] We disagree. Because the routing differences would be confined to within the SARR's own system (i.e., the movement after interchange with the residual BNSF would be routed exactly as it is currently routed by BNSF once it reaches Alliance), any added costs or lost efficiency from using a different route would be borne entirely by the SARR and therefore fully reflected in the SAC analysis.[14] Thus, the concern in Duke/NS—that the SARR's routing would have ramifications extending beyond the SAC analysis to the residual incumbent[15]—is not present here. So as long as the routing is reasonable and would meet the shippers' needs, it is a permissible routing.[16] Here, the parties' agreed-upon RTC simulation shows that, despite the greater length, the TNR transit times for this traffic would be comparable to or shorter than BNSF's actual transit times, even in 2020. Thus, the routing would appear to meet the shippers' needs and the fact that the SARR would achieve increased efficiencies indicates that the reroute is also reasonable.

BNSF further argues that AEP Texas' proposed routing for this traffic should be rejected for the reason articulated in Duke/CSXT[17] that "where traffic does not already utilize the lines replicated by the SARR, the traffic may not be included in the SAC analysis absent 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." Here, BNSF claims that the amount of overlap between its own routing and that of the SARR is extremely small—just 33.6, 36.6, and 48.6 miles respectively, for traffic from the three disputed mines—compared to the length this traffic would travel over the SARR under AEP Texas' routing—270, 283, and 286 miles, respectively.

Contrary to BNSF's claim, this routing is not analogous to the routing that was rejected in Duke/CSXT. There, the attempted rerouting would have affected the off-SARR routing of the movement, resulting in an operational impact on the residual incumbent not accounted for in the

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[12] AEP Texas' routing for the TNR would result in an increased length of haul of 10%, 20%, and 25% for the three mines, respectively. See BNSF Reply Narr. III-A-30.

[13] Duke Energy Corp. v. Norfolk S. Ry., STB Docket No. 42069 (STB served Nov. 6, 2003).

[14] Texas Municipal Power Agency v. Burlington N.&S.F. Ry, 6 S.T.B. 573, 594-96 (2003) (TMPA) and Public Service Co. of Colorado v. Burlington N.&S.F. Ry, STB Docket No. 42057 (STB served June 8, 2004) at 20-21 (Xcel).

[15] See also TMPA, 6 S.T.B. at 595 ("redirecting the off-SARR portion of traffic introduces new variables that extend the inquiry well beyond the original parameters of the SAC analysis.").

[16] TMPA, 6 S.T.B. at 594-95.

[17] Duke Energy Corp. v. CSX Transp., Inc., STB Docket No. 42070 (STB served Feb. 4, 2004).

SAC analysis. Accordingly, the Board in Duke/CSXT (at 16-17) determined that the standards for such reroutes are higher[18] and that these standards were not met by the complainant in that case. In contrast, where a complainant reroutes traffic so that only the SARR is affected (that is, so long as the reroute is internal to the SARR), the standard is lower; a complainant need only show that the reroute is reasonable and meets the shippers' transportation needs. So long as the internal reroute meets this standard, the complainant is permitted to reroute traffic from any location to create densities. That is the situation in this case: AEP Texas is only proposing to reroute traffic on the TNR's portion of the move, and (as discussed) it has shown that the reroute is reasonable and would meet the shippers' transportation needs.

Accordingly, we conclude that AEP Texas' proposed TNR routing of this traffic is acceptable and we include traffic from the three southernmost mines in our SAC analysis.

2. Revenue Allocation

As in many recent SAC cases, the complainant here relies extensively on "cross-over" traffic in its SAC presentation. Cross-over traffic refers to movements for which the TNR would not replicate the full extent of BNSF's movement, but would instead interchange the traffic with the residual portion of the BNSF system. The use of cross-over traffic to simplify a SAC presentation is a well-established practice.[19] It enables the SAC analysis to take into account the economies of scale, scope and density that the defendant carrier enjoys over the routes replicated without unduly complicating the analysis.[20] For a lengthy discussion of the use of this modeling device in SAC decisions, see Xcel at 13-17.

When cross-over traffic is included, the defendant carrier's revenues from that traffic must be divided between the portion of the move that would be handled by the SARR and the portion that would occur off-SARR on the defendant's residual network. The objective of the revenue allocation is to reflect, to the extent practicable, the defendant carrier's relative costs of providing service over each of the two segments.[21] Towards that end, in Major Issues, we adopted a new revenue allocation method, called the "Average Total Cost" (ATC) method. Under this approach, the parties are to calculate the defendant railroad's average total cost for

[18] "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. . . . [Moreover, for off-SARR or external rerouting] 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." Duke/CSXT at 16-17.

[19] See, e.g., Otter Tail Power Co. v. BNSF Ry., STB Docket No. 42071 (STB served Jan. 25. 2006) at 11-13 (Otter Tail); Duke/CSXT at 20-22; TMPA 6 S.T.B. at 590; Bituminous Coal–Hiawatha, UT to Moapa, NV, 10 I.C.C.2d 259, 265-68 (1994) (Nevada Power).

[20] TMPA 6 S.T.B. at 590 (citing Nevada Power, 10 I.C.C.2d at 265 n.12).

[21] Duke/NS at 18-20.

each segment of the move, using the URCS costing model, based on the density and miles of each segment. The revenues for the movement are then to be allocated between the on- and off-SARR portions of the move in proportion to the average total costs of the segments involved.[22]

In its Third Supplemental Opening, AEP Texas submitted its presentation for implementing ATC in this case. In its Third Supplemental Reply, BNSF raised four challenges to AEP Texas' ATC approach and made adjustments to it. In its Third Supplemental Rebuttal, AEP Texas takes issue with BNSF's adjustments. We discuss each of the four issues below, as well as a fifth issue that relates to the way both parties implemented the ATC approach.

a. Matching URCS Data with Density and Routing Data

The base year for the SAC analysis in this case is 2000, but, according to BNSF, routing data for periods prior to 2002 are not available. Accordingly, AEP Texas used BNSF's 2004 routing and density data as a surrogate for coal traffic in the base-year, and BNSF's 2002 routing and density data as a surrogate for the non-coal traffic. AEP Texas then used 2000 URCS costs to develop the ATC revenue allocation. BNSF argues that applying 2000 URCS costs to 2004 or 2002 density data improperly redistributes the costs from one year to traffic handled in another year. To avoid such a mismatch, BNSF advocates applying 2004 URCS costs to 2004 density data (for both coal and non-coal traffic) for the base-year surrogate.

AEP Texas defends its use of 2000 URCS costs as having been mandated by the Board. AEP Texas also claims that, because the 2004 and 2002 data were a surrogate for 2000 traffic, use of 2000 UCRS costs were proper. AEP Texas notes that BNSF has not shown that the 2004 and 2002 routing and density data were meaningfully different from the 2000 routing and density data that BNSF cannot provide. Finally, AEP Texas notes that BNSF's procedure would also produce a mismatch—using 2002 routing data for non-coal traffic but relying on 2004 density data for this same traffic.[23]

We reject AEP Texas' assertion that it was required by the Board to use 2000 URCS costs. The Second Compliance Order stated (at 3) that the parties "should develop the revenue allocations using the base-year densities and URCS fixed and variable costs . . . ." However, we were not aware that base-year density data were not available, and therefore our order could not have addressed this situation. When the parties (of necessity) decided to use data from a different year as a substitute for base-year data, they should have followed the principle enunciated in the Second Compliance Order that the density and mileage data be matched with the corresponding year's URCS. See Second Compliance Order at 3 n.7 ("[i]n effect, we seek a revenue allocation for all movements using a single year's URCS and density information" (emphasis added)).

We agree with BNSF that the use of URCS data drawn from a different year than the density and routing data could distort the results of the ATC calculations. Because 2000 data

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22 See Major Issues at 24-26.

23 AEP Texas Third Suppl. Reb. Narr. at 10-12.

were not available, we have no way of knowing whether there would be a meaningful difference between the sets of data. Rather than presume there is no difference, as AEP Texas would have us do, it is more appropriate that we err on the side of caution and, where possible, use the same year for the URCS data as for the routing and density data. In this way, we avoid any inaccuracies that could result from mismatching data.

While we would have preferred to see 2004 routing data for non-coal traffic in this case, neither party has provided those data to us. Under the circumstances, we are left with a situation in which we must rely on applying 2004 density and URCS data to AEP Texas' 2002 routing data for non-coal traffic as the best evidence of record, because it contains the least amount of mismatching.[24]

b. Interchange Costs

BNSF contends that AEP Texas improperly allocated a larger share of the revenues to the TNR to reflect hypothetical interchanges costs between the SARR and the residual railroad. BNSF argues that the purpose of ATC is to determine the defendant carrier's relative costs for the various line segments, and because the defendant does not incur interchange costs with itself, those costs are irrelevant for purposes of calculating ATC.[25] We agree. The proper place to account for costs that would be introduced by failing to replicate all of the defendant's move is in the computation of the TNR's costs, as it is the SARR that would need to interchange this traffic. Accordingly, the ATC revenue allocation we use here properly focuses on determining the relative costs to the defendant carrier of handling the movement on each part of its system.[26]

c. Trackage Rights Arrangement

BNSF argues that AEP Texas did not properly account for the costs associated with those segments of a move where BNSF uses the track of another carrier under a trackage rights arrangement. Specifically, BNSF complains that AEP Texas included the mileage for these segments in its calculation of the system fixed costs per route-mile, but failed to allocate any fixed costs to these segments. BNSF has suggested two possible ways to fix this problem. The simplest way would be to exclude these segments from the mileage computation for the fixed costs per route-mile calculation, thereby assigning fixed costs only to BNSF-owned segments. Alternatively, BNSF suggests calculating the fixed costs per route mile for trackage rights segments differently than for BNSF-owned segments. Under this proposal, only the "above-the-rail" fixed costs would be used for trackage rights segments—as this is the only cost BNSF

[24] While there are other instances in the record where the routing and density information are not from the same year's data in the parties' ATC calculations, we need not address these matters as the parties have agreed on the use of the data.

[25] BNSF Third Suppl. Reply Narr. at 12.

[26] Major Issues at 31, 35.

incurs for these segments—while it would calculate both above-the-rail and "below-the-wheel" fixed costs for BNSF-owned segments. BNSF has submitted calculations using each approach.[27]

AEP Texas concedes that it neglected to allocate fixed costs to BNSF's trackage rights segments, due to a lack of available data. But AEP Texas does not agree with either of BNSF's suggestions for addressing the problem. AEP Texas argues that it would not be appropriate to exclude the trackage rights segments from the ATC calculation completely. And it argues that BNSF's second (alternative) approach would add an unnecessary layer of complexity to the ATC procedure.[28] Instead, AEP Texas recalculated BNSF's average fixed costs assignable to all route segments, including trackage rights segments, by incorporating the density data for joint facility segments that BNSF provided in its Third Supplemental Reply evidence.[29]

AEP Texas has not explained how its suggested approach would ensure that all miles "bear the appropriate share of total fixed costs," as it claims.[30] Nor has AEP Texas shown that BNSF's alternative approach is flawed or inaccurate. Based on our review of BNSF's submission, we do not find that procedure to be overly complex or burdensome. BNSF simply included those URCS fixed costs that relate to track and roadbed (URCS Worktables D1 and D2) in the below-the-wheel cost, and those URCS fixed costs that relate to road operations, yard operations, equipment and overheads (URCS Worktables D3 through D8) in the above-the-rail cost. Because that approach is both reasonable and not unduly complicated, we use that approach here.

d. Density Segments

In calculating revenue allocations for cross-over traffic, AEP Texas used a weighted average of the densities of the on-SARR and off-SARR portions of a move. BNSF claims that, rather than relying on the average density for these two portions of the move, a more accurate result is achieved by separately measuring individual "density segments" within these two portions.[31] AEP Texas claims that its procedure is required by the Board, citing to the notice of proposed rulemaking (NPRM) for Major Issues.[32] That discussion, however, actually supports BNSF's approach. In describing how ATC would be implemented, the NPRM used a simplified example that referred to the on-SARR segment and off-SARR segment. It stated that the parties "would then need to calculate the average fixed cost (AFC) per ton of traffic using the various

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[27] BNSF Third Suppl. Reply Narr. at 13-14.

[28] AEP Texas complains that separating the URCS fixed costs in this manner could open the door to other separate fixed-cost calculations (such as for yards, car types, locomotives, etc.).

[29] AEP Texas Third Suppl. Reb. Narr. at 14-15.

[30] Id. at 15.

[31] BNSF Third Suppl. Reply Narr. at 14-16.

[32] Major Issues in Rail Rate Cases, STB Ex Parte No. 657 (Sub-No. 1), et al. (STB served Feb. 27, 2006), at 20.

segments" which "could then be combined with the route miles and the traffic density of any particular segment of the railroad's network."[33] The use of the phrase "any particular segment of the railroad's network" implies that a line could be segmented based upon differing densities, as BNSF has done.

AEP Texas claims that its weighted-average approach reflects the fluidity of traffic over the relevant line segments,[34] but it does not explain how fluidity requires the use of a weighted-average. Rather, fluidity would support BNSF's approach, as the fluidity of any particular movement is not constant but varies as it moves over different segments of the railroad.

AEP Texas argues that BNSF's approach would not ensure against any under- or over-recovery of revenues to the on-SARR portion of a cross-over movement because the assignment of fixed costs is inherently arbitrary.[35] AEP Texas' argument appears to be an attack on the ATC method in general, rather than BNSF's implementation.[36] In any event, AEP Texas does not address how its weighted-average approach would avoid the same alleged misallocation.

Accordingly, we reject AEP Texas' approach and use BNSF's.

e. Application of ATC

After the parties developed their respective relative average total costs, they then allocated the *total revenue* from the cross-over movements in accordance with ATC. However, the traffic group includes considerable traffic with total revenues either below or barely above variable cost. Because the off-SARR segments of the movements have lower densities, the practical effect of the parties' approach would be to drive the R/VC percentages of the movements below 100% (or if the total revenue is already less than variable costs, to reduce the R/VC percentage even lower). This would result in an on-SARR revenue allocation for those movements that would not be sufficient to cover the variable cost (as calculated using URCS) of handling traffic over the highest-density portion of the movement.

To avoid such an illogical and unintended result, we find it necessary to refine the ATC approach here. Instead of applying the ATC allocation procedure to total revenue, we will apply the allocation procedure to total revenue *contribution* (i.e., the revenue in excess of variable cost as calculated by URCS). Accordingly, the revenue assigned to the on-SARR part of a cross-over movement will include at a minimum the variable cost to haul the traffic over the facilities

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[33] Id. (emphasis added).

[34] Id.

[35] AEP Texas Third Suppl. Reb. Narr. at 18.

[36] AEP Texas may not relitigate here arguments against the use of ATC that were presented, considered and properly rejected in Major Issues (at 34-35).

replicated by the SARR, plus the portion of available contribution to fixed costs allocated in accordance with ATC.[37]

This refinement is reasonable and consistent with our objective in Major Issues. Traffic must cover its variable cost before it can be expected to make any contribution to joint and common fixed costs. Therefore, it is the revenue *contribution* after variable costs have been covered that must be allocated between the facilities replicated by the SARR and those of the residual incumbent. We recognize that the language used in Major Issues to explain the basic ATC approach led the parties to allocate total revenues rather than total revenue contribution. However, in that discussion we did not contemplate this situation, where such a procedure would result in other traffic on the SARR having to cross-subsidize those cross-over movements that would result in an on-SARR revenue allocation below variable costs. Such a result would plainly conflict with our express purpose to find a non-biased, cost-based method. See Major Issues at 32.

3. Tonnage and Revenues

The amount of traffic that the TNR would be expected to serve, and the revenues associated with that traffic are addressed in **Appendix B**. As discussed there, for projecting future tonnage and revenues for the traffic group, our analysis relies on actual data for 2000 to 2002, traffic projections from BNSF's Long Range Plan (LRP) for 2003 to 2008, and the coal tonnage and revenue projections for the PRB region obtained from the U.S. Department of Energy, Energy Information Administration (EIA) for 2009 to 2020.

C. Operating Expenses

1. Operating Plan

How a SARR would operate is a prime determinant of the configuration (physical plant) and annual operating expenses of the SARR. The operating plan must be able to meet the transportation needs of the traffic the SARR would serve. It need not match existing practices of the defendant railroad, as the objective of the SAC test is to determine what it would cost to provide the service with optimal efficiency. However, the assumptions used in the SAC analysis, including the operating plan, must be realistic, i.e., consistent with the practicalities of real-world railroading.

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[37] For those movements in the traffic group where total revenues do not exceed the total variable cost to haul the movement from origin to destination (as calculated by URCS), we will apply the same R/VC percentage to both the on-SARR and off-SARR portions of the movement. In addition, because the actual traffic and revenue data is from 2000, 2001 or 2002 and the variable costs used in the ATC calculation are from 2004 (as explained above), we needed to grow the actual traffic and revenues to 2004 levels. Where available, we used growth rates for each specific plant. For plants that did not have movements in 2004 or beyond, we used the average growth rates of the entire traffic group.

To assess the adequacy of its proposed track configuration for the TNR to handle expected traffic, AEP Texas simulated the movement of trains projected for the peak period of the peak year (15 days in 2020) using the Rail Traffic Controller (RTC) computerized model. As discussed above, the simulation relied upon by AEP Texas in its opening evidence contained errors that AEP Texas claims it became aware of only after BNSF filed its motion to strike. AEP Texas then presented another simulation in its First Supplemental Opening. However, BNSF pointed to problems with that simulation as well. In First Compliance Order, the Board directed the parties to submit a simulation based on certain assumptions and with certain adjustments specified in that decision. The parties agree that the RTC simulation produced in response to First Compliance Order shows that AEP's proposed TNR track configuration would be adequate to handle the traffic group and that the train cycle times developed in AEP Texas' RTC simulation are appropriate to generate the TNR operating statistics.[38]

The basis for the assumptions and adjustments the parties were directed to use in First Compliance Order are discussed below.

a. UP Trains at PRB Mines

In the PRB, mines are served by more than one railroad—they are served by both BNSF and UP—and the mine tracks are owned and controlled by the mines. Thus, a railroad cannot place an empty train at a mine for loading at its own convenience; it must do so at a pre-arranged time slot. However, in its opening evidence and First Supplement Opening, AEP Texas had failed to account for the possible presence of UP trains at PRB mines. When BNSF objected, AEP Texas had responded that the average loading time it used for the TNR included a "time cushion" that was sufficient to accommodate the presence of UP trains.[39]

BNSF had challenged AEP Texas' "time cushion" reasoning as flawed. BNSF had argued that the agreed-upon loading time (an average of BNSF's real-world loading times for southern PRB mines) reflected only the activities from arrival to release, and that there was no extra time cushion to account for delayed arrival due to the possible presence of UP trains. BNSF had claimed that the agreed-upon loading time could only be accomplished through "staging" (the process used by BNSF and UP to efficiently coordinate the movement of trains on its jointly owned line into the PRB and the arrival of those trains at the mines for prearranged loading slots), and that AEP Texas had made no provision for staging.

To correct for AEP Texas' exclusion of UP trains, BNSF had first determined the time that UP trains occupied particular mine loading tracks during the same 15-day period in 2002. It then assumed that those mine tracks would be out of service (not permitting the TNR to enter,

[38] See BNSF First Suppl. Reply Narr. at 2 ("BNSF uses AEP Texas' RTC modeling results and main line and yard configuration for this reply supplemental evidence. BNSF also uses the transit times generated by AEP Texas' RTC analysis to develop the SARR's operating statistics.").

[39] AEP Texas Reb. Narr. III-B-10.

exit, or load) during the corresponding time in the peak period (2020) simulation.[40] With that adjustment, BNSF had claimed that the RTC model would not run successfully.

Although we would prefer that a SARR's operations reflect interaction with other railroads on jointly shared track or loading facilities to reflect real world railroading, we disagree with the approach used by BNSF here. Despite the almost 12% increase in tonnage from 2002-2020, BNSF's approach did not provide for any growth in mine loading capacity. This is not realistic, given the increase in PRB loading capacity that has been taking place.[41] Failure to account for any increase in mine loading capacity creates an artificial bottleneck at the mines that produces increased congestion on the SARR, thereby increasing train transit times and commensurately increasing train operating expenses.

BNSF's method for accounting for UP trains—assuming that a mine loading track would be unavailable during the time a UP train actually loaded in 2002—also wrongly gave priority to UP trains in subsequent periods and, in some cases, had the effect of extending the loading time for an already present TNR train by 5.5 hours. This is contrary to the real-world agreement between BNSF and UP, whereby they schedule and stage their trains to fill every available mine loading slot so as to maximize a mine's loading capacity. BNSF's assumption, by increasing mine congestion and "average" cycle times, overstated train operating expenses for 2020.[42]

Finally, even if BNSF's UP train modeling assumption had accurately captured the congestion delay in the peak week of the peak year (which it appears to have overstated), it would not have been proper to use these hyper-inflated average cycle times to determine operating expenses for other years, when the congestion would be less. The Board was unwilling to accept BNSF's UP train modeling assumption for the entire 20-year analysis period without far better evidence on the congestion delay at mines caused by the limitations in the mines' own loading capabilities.

For these reasons, in First Compliance Order the Board properly directed the parties to exclude UP trains from PRB mine slots.

[40] Where a TNR train would otherwise have been assumed to be loading at that time, the adjustment had the effect of increasing the train's loading time from 5.5 hours to 11 hours.

[41] For example, publicly available data on BNSF's website show that the Antelope mine increased its loading capability by upgrading its loading operation from 4,000 tons per hour in 2002 to 8,500 to 12,000 tons per hour in 2006. As demand for PRB coal grows, we would expect that other mines will also increase their loading capacities.

[42] Because the TNR would construct its own tracks into the PRB, its ability to load trains would not be constrained by any current capacity issues on the BNSF/UP joint line. Rather, the only constraining variable for the TNR would be its ability to make trains available at mines to fill prearranged loading slots. Similarly to the current BNSF/UP operation, BNSF/UP and TNR trains would be held at yards around the PRB and dispatched at the appropriate time to permit them to move from the yard to a mine to fill a prearranged loading slot.

b. Random Outages

The parties had also disputed the number of random outages that should be incorporated into the RTC model. A random outage is an event that results in an unscheduled train delay caused by events such as a derailment, train pull-apart, locomotive failure, signal or communication failure or even fire along the right-of-way.

BNSF had argued that 137 random outages should have been incorporated in the RTC simulation, based on the real world outages in 2002 on the lines replicated by the TNR. BNSF had relied on two sources: its Daily Performance Reports[43] (used to determine track-related failures) and non-track-related problems reported to its Service Interruption desk.[44] From these data, BNSF had produced a list of all outages and then winnowed the list down to include only those events "that would have halted traffic or would have resulted in reduced train speeds."[45]

In its rebuttal, AEP Texas had argued that it was improper to assume that the outages that occurred in 2002 would occur in 2020 (the peak period modeled by the RTC model), especially since the TNR lines would be newer and its operations more state-of-the-art than BNSF's. AEP Texas had also claimed that BNSF had not provided sufficient supporting workpapers to show which failures actually affected train operations or caused train delays. According to AEP Texas, the Daily Performance Reports submitted by BNSF only showed the duration of the reported event, but not the length of time a train was delayed. And AEP Texas had criticized BNSF's "2002 random failure event summary file" (which lists the Service Interruption desk reports), claiming that this too did not show the length of train delays. AEP Texas had argued that, without supporting documentation, BNSF's selection of which outages to include was arbitrary.

AEP Texas had its own expert review the full list of random outages, who concluded that most of the events could be excluded because they were either related to: congestion at the mines; discretionary track maintenance; and locomotive or car failures. AEP Texas claimed that outages caused by these problems would be avoided by the TNR. Accordingly, AEP Texas had included only 13 events in its RTC simulation.

AEP Texas had misinterpreted BNSF's data, however, because in its view many of these events as stops or delays were caused by discretionary track maintenance. The data showed that BNSF had included only those events that were unexpected and unavoidable. For example, it showed that the switch-point failures that AEP Texas' expert had considered to be part of routine track maintenance were in fact unplanned failures.

AEP Texas' exclusion of locomotive and car failures was also unpersuasive. AEP Texas had claimed that the TNR would not experience locomotive and car failures because it would use

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[43] See BNSF Reply e-WP. "June to July Engineering Data.xls."

[44] See BNSF Reply WP. III.D-0005-0116.

[45] BNSF Response to Post-Rebuttal Filing, filed Feb. 14, 2005, at 7.

newer locomotives and cars. However, AEP Texas had not shown that newer locomotives would experience no breakdowns (a highly unlikely proposition). Moreover, as BNSF had correctly pointed out, the locomotives used by the TNR would not necessarily be new locomotives. The TNR would lease its locomotives, which could be of mixed vintages by 2020. Also, AEP Texas has assumed that the TNR would enter into a run-through power sharing arrangement with BNSF, with both the TNR and BNSF placing locomotives in a common pool to provide power for the trains originating out of the PRB. A large number of the locomotives in the pool would therefore be BNSF locomotives, making BNSF's data on outages due to its locomotive failures highly relevant. As for car failures, as BNSF pointed out, most cars would be shipper-owned cars and thus not necessarily newer or free from malfunctions.

While it is true that the same number of outages that occurred in 2002 would not likely occur in 2020, AEP Texas had not offered a better method for estimating the number of random outages that could be expected in 2020. In any event, it was unrealistic to assume that, even as traffic grows, train related events such as car failures or train pull-aparts would decrease.

The Board was satisfied that BNSF had adequately supported its random outage figures. BNSF's Daily Performance Reports gave a clear summary of all the information necessary to determine whether such outages should be incorporated into the RTC model, including pertinent details such as the nature of the event, the location, the cause, and the duration. The Board reviewed BNSF's data in great detail and concludes that all 137 events were valid random outages that should be included in the RTC simulation.

It was not necessary that the data show the length of time that a BNSF train was delayed, as the RTC simulation was used to model the TNR's train operations, not BNSF's. If, for example, BNSF's data showed that there was an outage due to a derailment for 3 hours, it does not matter how long BNSF's train was actually delayed, because it is the 3-hour outage that is input into the RTC model. The RTC model will then determine if this 3-hour outage would affect the movement of TNR's trains, given its location on the TNR's lines at the time.[46] Thus, it was the duration of the outage itself that was relevant for purposes of the RTC simulation, not the duration of the train delay.

Accordingly, in First Compliance Order, the Board properly directed the parties to run the RTC model with all 137 random outages, and that is the evidence we use here.

c. Other RTC Adjustments

In First Compliance Order, the Board also specified a number of other RTC modeling adjustments that the parties were directed to make to their simulations, and we explain the

[46] For example, if an outage were to occur on a single-tracked TNR line segment, the line would be out of service for the duration of the outage. On the other hand, if the segment had multiple tracks, the RTC program might be able to route the TNR's trains around the outage, thereby reducing the impact of the outage.

pertinent adjustments here.[47] First, the Board directed the parties to increase the "slow order" train speed limits from 10 mph to 20 mph, to be consistent with Federal Railroad Administration standards.[48]

Second, the Board instructed the parties to use a 6-hour unloading time for Oklaunion trains, as reflected in AEP Texas' post-rebuttal RTC evidence. BNSF had argued that the dwell time should be longer. But as AEP Texas had pointed out, BNSF had improperly included as part of the dwell time a number of hours from after the time the train is released until the time a crew arrives to move the empty train out of the loop track.

Finally, the Board instructed the parties to model the Las Animas yard as reflected in AEP Texas' post-rebuttal RTC simulation evidence. BNSF had argued that AEP Texas' fueling locations for the TNR were infeasible and that the TNR's fueling operations should be moved from Las Animas to Amarillo, which would have resulted in increased dwell times for fueling and inspection. The RTC simulation presented in response to First Compliance Order showed that locating fueling operations at Las Animas would not be infeasible. Accordingly, as discussed in **Appendix A—TNR Configuration**, we use AEP Texas' yard configuration for Las Animas, including its placement of fueling operations at this location.

d. Transit Times

Despite the parties' agreement regarding the RTC model and outputs produced in response to First Compliance Order and their claim that they used the same transit times, they in fact used slightly different transit times, because they relied on different output files. Specifically, AEP Texas relied on the train transit times (simulated run times) from the RTC "report" file, while BNSF calculated its transit times from the RTC "route" file using a proprietary computer program for which BNSF has not submitted the source code. Because BNSF agreed to use the transit times generated by AEP Texas' RTC analysis and has not explained why its transit times differ from AEP Texas' times, we use AEP Texas' transit times here.

2. Calculation of Operating Expenses

The parties modeled only the peak week of the TNR's operations, rather than an entire year's operations. It is therefore necessary to develop the annual operating expenses for the peak year from the peak-week analysis. The parties proposed different annualizing methods. As in Otter Tail[49] (at C-2), we use BNSF's more precise method for annualizing expenses, which is

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[47] The Board's instruction that the parties could make limited manual adjustments to the train schedules within the RTC model (by holding trains at SARR yards longer than the schedule dwell time) is now moot, as the subsequent evidence does not contain any manual adjustments.

[48] See 49 CFR 214.7, 214.321(d), and 214.327(b).

[49] Otter Tail Power Co. v. BNSF Ry., STB Docket No. 42071 (STB served Jan. 25. 2006).

based on the parties' traffic forecast for that year. AEP Texas' approach—in effect, multiplying the peak week operating statistics by 52—risks substantially over- or understating the annual operating statistics.

However, BNSF's method of calculating some operating expenses that are time related (for train and enginemen or for locomotives and freight cars) are not compatible with AEP Texas' transit times. Therefore, we have modified BNSF's method of calculating certain peak-year operating statistics to make them compatible with the use of AEP Texas' transit times. Specifically, where AEP Texas recorded an average transit time for either loaded or empty trains moving between two points, we combine the loaded and empty average transit times to compute an average round-trip transit. Where AEP Texas did not record an average transit time between two points, we use BNSF's calculated transit time.

Our discussion of the specific evidentiary disputes regarding annual operating expenses—including maintenance-of-way (MOW) requirements—is discussed in **Appendix C**.

D. Road Property Investment

There is a substantial difference between the parties' estimates of the level of investment that would be required to construct the TNR system. AEP Texas claims that the TNR system could be built for approximately $2.73 billion, whereas BNSF claims that it would cost approximately $3.81 billion. Our resolution of the disputes concerning the various component parts of these figures is discussed in **Appendix D**. **Table D-1** in **Appendix D** provides a summary of the TNR investment figures by category. As shown there, we find that the total road property investment costs for the TNR would be approximately $2.87 billion.

E. DCF Analysis

A DCF analysis is used to distribute the total capital costs (in current-year dollars) of the TNR over the 20-year SAC analysis period. Operating expenses are calculated for a base year and forecast into other years by indexing for inflation and forecasted changes in tonnage. The TNR's total revenue requirements (needed to cover capital expenditures and operating expenses) are then compared against the stream of revenues that the BNSF is expected to earn from this traffic group, discounted to the starting year (2000).

To adjust the base-year operating expenses for inflation over the analysis period, the parties used projections of the rail cost adjustment factor (RCAF), an index of railroad costs that we publish on a quarterly basis. There are two versions of the RCAF: one that does not take into account changes in the rail industry's productivity (the unadjusted RCAF, or RCAF-U) and one that does (the adjusted RCAF or RCAF-A). See 49 U.S.C. 10708 (requiring quarterly publication by the Board of both versions. In Major Issues (at 40-47), we decided to phase in the productivity gains projected in RCAF-A incrementally over the analysis period. That approach is applied here.

The parties dispute several other aspects of the DCF analysis. Our resolution of these disputes is set forth in **Appendix E**.

The results of our DCF calculations, set forth in **Appendix E**, show that, based on the record presented here, the present value of the revenues the BNSF is expected to earn from the entire traffic group over the 20-year SAC analysis period would not exceed the present value of the TNR's expected revenue requirement. Thus, AEP Texas has not demonstrated that BNSF's rates for the shipment of AEP Texas traffic to Oklaunion are unreasonably high.

F. Implementation of New SAC Procedures

AEP Texas objects to the application of the new procedures adopted in Major Issues to this case. However, we do not believe it is appropriate to apply flawed or discredited procedures—such as our old Modified Straight-Mileage Prorate (MSP) approach for cross-over traffic revenue allocation—rather than the procedures adopted in Major Issues. With regard to the revenue allocation method for cross-over traffic, a federal court has explicitly warned that, if the Board were "presented with a model that took account both of the economies of density and of the diminishing returns thereto, a decision to adhere to its [former, mileage-based] MSP model would be on shaky ground indeed."[50] The complainant, nevertheless, relied on the MSP model in designing the SARR. AEP Texas, however, should have been aware from prior SAC cases that the Board had no established revenue allocation methodology (see,e.g., PPL at 7 n.14; Duke/NS at 17 n.27), that an approach based on mileage alone has long been under attack (see e.g., Xcel at 17-19; Otter Tail at 13-17) and that the Board had stated its preference for an approach that can take into account economies of density (see Duke/NS at 22).

Generally, it is not the Board's practice to permit complainants to redesign their case in light of subsequent Board decisions. In this case, however, as in the Western Fuels decision[51] being served concurrently with this decision, we believe fairness dictates that AEP Texas have an opportunity to modify its SAC presentation in light of the new revenue allocation methodology. The Board's change to the ATC method for allocating revenue from cross-over traffic impacts the basic design of a SAC case. Here, for example, AEP Texas included in its traffic group considerable traffic moving to competitively served plants and, therefore, charged rates offering limited revenue contribution. This may have been a reasonable design choice under MSP, which over-allocated revenue from cross-over traffic to the SARR. But had it known that we would apply ATC, AEP Texas might not have chosen to include all that traffic or might have chosen to change the configuration of the TNR.

Accordingly, AEP Texas should inform the Board, within 30 days of the service date of this decision, if it wishes to supplement or revise its SAC presentation for the limited purpose of making modifications to the design of its case to reflect the new revenue allocation method. AEP Texas may increase or decrease the traffic group, change the configuration of the TNR, and submit evidence on all related issues (such as the revenue from traffic added to the group or construction costs avoided or added due to a revised configuration). Should AEP Texas elect to

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[50] BNSF Ry. v. STB, 453 F.3d 473, 484 (D.C. Cir. 2006).

[51] Western Fuels Association, Inc. and Basin Electric Power Cooperative v. BNSF Ry., STB Docket No. 42088.

submit supplemental evidence, BNSF will have an opportunity to submit reply evidence and AEP Texas to submit rebuttal. However, neither party will be allowed to use this limited reopening of the record to relitigate unrelated issues (such as how to account for non-SARR traffic at the PRB mines). If AEP Texas elects to pursue this option, it should suggest an appropriate procedural schedule. However, the 20-day deadline for seeking reconsideration of this decision to correct any technical or substantive errors in this decision will not be stayed.

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

It is ordered:

1. BNSF's motion to dismiss is denied.

2. AEP Texas's First Supplemental Opening and BNSF's First Supplemental Reply are accepted into the record.

3. BNSF's motion to strike is denied.

4. AEP Texas shall advise the Board within 30 days of the service of this decision whether it wishes to submit supplemental SAC evidence.

5. This decision is effective October 30, 2007.

By the Board, Chairman Nottingham, Vice Chairman Buttrey, and Commissioner Mulvey.

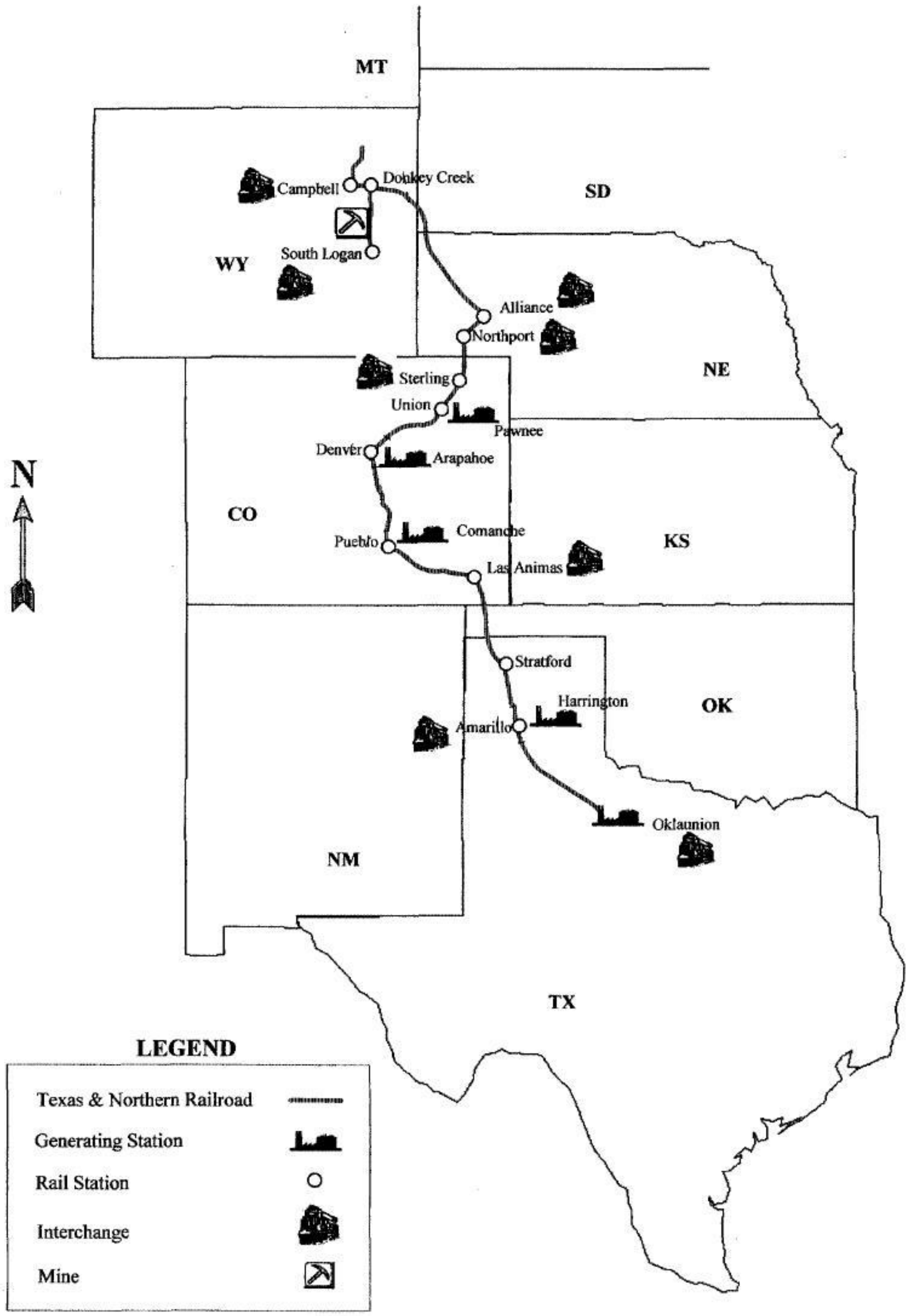
Vernon A. Williams
Secretary

APPENDIX A—TNR CONFIGURATION

As shown in the schematic below, the Texas & Northern Railroad would be approximately 1,200 miles long and replicate portions of existing BNSF lines through 6 states from the Wyoming PRB mines to Oklaunion, TX. The TNR would begin in Wyoming at Buckskin Mine (north of Campbell, WY) and proceed in a southeasterly direction to Alliance, NE via Edgemont, SD. At Alliance, the TNR would turn southwest to Denver, CO, then south to Pueblo, CO. Between Pueblo and Amarillo, TX, the TNR would replicate BNSF's southeastern route via La Junta and Las Animas Junction, CO. From Amarillo, the TNR would continue southeast to Oklaunion, TX, the southern terminus of the TNR. TNR would use approximately 23 miles of trackage rights over UP between Sterling and Union, CO.

The TNR would transport coal traffic moving from PRB mines to 5 power plants and 8 interchange locations. Traffic would be interchanged with the residual BNSF at West Campbell and South Logan, WY, Northport and Alliance, NE, Las Animas Jct., CO, and Amarillo and Oklaunion, TX, with UP at Northport, NE, and with NKCR at Sterling, CO. The TNR would transport non-coal overhead traffic in both directions between Amarillo and Oklaunion.

Schematic of Texas & Northern Railroad



A. Route and Track Miles

The parties differ by 0.3 miles on the appropriate route miles for the TNR. AEP Texas used 1192.24 route miles on opening, then agreed to 5 of 6 changes proposed by BNSF, for a total of 1192.39 miles on rebuttal. BNSF would use a figure of 1192.09 route miles. The small difference is due to BNSF's elimination of 6 of the 16 interchange tracks at the TNR's Alliance East yard, reflecting BNSF's objection to and exclusion of traffic from the three southernmost PRB mines and its resulting reduction in the peak-year interchange coal traffic volume that it claims would move through Alliance East. Because we find that AEP Texas' proposed routing of that traffic is permissible, as discussed in the body of this decision, we use AEP Texas' route miles.

The parties also used different numbers for the TNR track miles. On opening, AEP Texas used 1,597.3 main-line track miles. BNSF would remove a 1.6-mile passing siding (between Amarillo and Oklaunion) that AEP Texas claims would be needed for the larger traffic group it used. In its First Supplemental Opening evidence, AEP Texas added an additional 66.8 main-line track miles, for a total of 1,664.1 main-line track miles. It also added 16 crossovers and a net of 58 additional turnouts. Again, because we accept AEP Texas' larger traffic group, we use AEP Texas' track mile figures.

1. Set-Out Track

On opening, AEP Texas used 15.87 miles of set-out track, each 600 feet in length, for bad order cars and as temporary storage tracks for MOW equipment. AEP Texas located one set-out track on either side of each failed-equipment detector (FED) and one at each interchange point. BNSF accepted the location of set-out tracks but argued that each FED location should have a 951-foot set-out track to ensure 600 feet of clear track to allow trains to fully exit the main line and another 2,000-foot track for storage of MOW equipment. On rebuttal, AEP Texas agreed on the need for 600 feet of clearance but maintained that this could be achieved with a set-out track of 860 feet.

Neither party provided definitive evidence supporting its computation of the length of track needed to ensure that trains could clear the main line. While AEP Texas states that industry standards support its evidence, it has not provided evidence of those standards. For this reason, we accept BNSF's total track length of 951 feet to ensure 600 feet of clear track for set-out and bad-order cars.

With respect to having a 2,000-foot set-out track at each location, AEP Texas argues that there would be ample room to store MOW equipment on 860-foot set-out tracks. Because we have accepted the majority of BNSF's MOW evidence, including the need for more maintenance equipment than proposed by AEP Texas, we accept BNSF's inclusion of a 2,000 foot set-out track at each FED.

2. Yard and Interchange Track

AEP Texas included 69.41 miles of track for the TNR yards, at Alliance, NE, and Las Animas Junction, CO. At each of the other 6 interchange locations (West Campbell, South Logan, Northport, Sterling, Amarillo, and Oklaunion), the TNR would have 2 interchange tracks. At Amarillo, an additional set of interchange tracks would enable the interchange of both coal and non-coal overhead trains. Empty coal trains would be fueled at Alliance yard, and loaded coal trains would be fueled at Las Animas yard.

BNSF accepts AEP Texas' interchange configuration at West Campbell, South Logan, Northport, and Sterling, but not its yard track configurations at Alliance, Las Animas Junction, Amarillo or Oklaunion. AEP Texas disagrees with BNSF's modifications.

a. Alliance

The main yard at Alliance would be the busiest interchange point between TNR and the residual BNSF. The yard would be used for crew changes, car inspections required by the Federal Railroad Administration (FRA), locomotive fueling, servicing and maintenance, car repairs, and staging of empty trains for loading at PRB mines. All road locomotives would be removed from empty trains at Alliance and replaced with freshly fueled and serviced units. The Alliance yard would be divided into two sections, one (Alliance East) to handle coal trains interchanged with BNSF and one (Alliance South) to handle TNR coal trains moving south of Alliance.

Because BNSF would exclude coal traffic from the three southernmost PRB mines, BNSF would eliminate 6 of the proposed 16 receiving tracks at Alliance East, and 2 of the 8 receiving and departure tracks proposed for Alliance South. Because we use AEP Texas' larger traffic group, we include this track.

BNSF would also add 4 tracks each at Alliance East and Alliance South to accommodate spare cars. AEP Texas maintains that it has already provided sufficient storage space, including several inspection tracks and a variety of storage areas around the car repair shop.[52] We agree that AEP Texas provided sufficient storage capacity.

b. Las Animas

AEP Texas would have the TNR use the Las Animas yard for car inspections, locomotive fueling, and interchange with the residual BNSF (for trains bound for the Holcomb plant). All loaded trains moving through Las Animas Junction would be inspected and fueled there.

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[52] AEP Texas Open. Narr. III-B-26-27.

BNSF contends that certain trains moving beyond Las Animas on the TNR to 8 destinations in parts of Arizona, Louisiana, and Texas would run out of fuel and exceed FRA-mandated 1,500-mile inspection requirements before returning to a fueling or inspection facility on the TNR. Accordingly, BNSF argues that the fueling and inspection tracks should be located at Amarillo, TX, leaving only 2 interchange tracks at Las Animas. This would model BNSF's own practice; it currently fuels and inspects most of these trains in both the loaded and empty directions at Amarillo, and even then needs to provide off-line fueling for empty trains returning from the Nelson plant in Louisiana. BNSF would have the Holcomb trains fueled and inspected at Alliance. With respect to Harrington trains, BNSF would have the TNR replicate BNSF's present practice of fueling these trains at the plant via direct-to-locomotive (DTL) service and having a third party provide inspections at the plant.

In a detailed analysis, AEP Texas shows that, with certain exceptions, fueling and inspections could be performed at Las Animas within the maximum distances indicated by the locomotives' fuel capacity and FRA rules.[53] It further argues that BNSF's assumption that all fueling and inspections would need to be performed by TNR ignores real world practices, and is at odds with BNSF's acceptance of AEP Texas' fueling and inspection proposals for other trains in the traffic group. AEP Texas asserts that those trains that need to be fueled and inspected before returning to the Las Animas yard could be fueled and inspected at various locations on the residual BNSF that currently provide fueling and inspection services. Finally, AEP Texas argues that locating the yard at Las Animas would result in more efficient operations than at Amarillo. BNSF's proposal for the Amarillo yard would require an additional crossover (to allow empty coal trains from Arizona destinations to access the fueling facilities) and 2 interchanges at either end of the yard, which would block the TNR's main line used by high-priority manifest trains. AEP Texas' plan of locating fueling and inspection at Las Animas yard, while providing separate interchange facilities for coal and manifest trains at Amarillo, would avoid these inefficiencies.

We use AEP Texas' proposal for the Las Animas yard because its explanation is feasible and BNSF has not discredited it.

c. Amarillo

AEP Texas provided separate interchange facilities for coal trains and non-coal trains at Amarillo (2 tracks each). Based on its proposal to locate the TNR fueling and inspection services at this yard rather than Las Animas, BNSF would provide 3 tracks, fueling platforms at both ends of the receiving and departure tracks (instead of using tanker trucks to fuel some locomotives), other supporting facilities such as 4 yard tracks, and (as mentioned above) an additional crossover to allow trains interchanged from the residual BNSF to access these fueling facilities. As discussed above, we do not agree that this relocation would be necessary. Therefore we use AEP Texas' design for Amarillo, which has been shown to be feasible and has not been discredited.

[53] AEP Texas Reb. Narr. III-B-34-51.

d. Oklaunion

Due to congestion revealed by its RTC simulation, BNSF added a crossover track at this location. AEP Texas agreed to this change[54] and we therefore incorporate the crossover.

3. Branch Lines and Spurs

The TNR would have 2 branch lines, extending from Campbell to Eagle Butte Jct., WY, and from Reno, WY, to the Black Thunder and Jacobs Ranch mines and spurs. AEP Texas initially included 21.15 miles of track for these branch lines. BNSF argued that the TNR would need 0.62 additional miles of spur track at the Oklaunion power plant, and on rebuttal AEP Texas agreed. BNSF also argued that the TNR would need a 0.91-mile auxiliary track at the Arapahoe plant because the loop track there could only accommodate 60 cars. AEP Texas responded that a 0.68-mile siding near Arapahoe would be sufficient. AEP Texas also added other track on rebuttal (an additional 1.55-mile siding on the Campbell branch) and in its First Supplemental Opening evidence (a 2.0-mile siding on the lead track for Buckskin Mine).

We agree with AEP Texas that a 0.68-mile siding near the Arapahoe plant would be sufficient to accommodate plants coal cars with adequate clearance between coupler ends and clearance for both switches. Accordingly, we use AEP Texas' mileage and configuration for this category of track.

4. Helper Track

AEP Texas included 3.1 miles of helper track on opening. On reply, BNSF argued that the length of the helper tracks at Crawford Hill (MP 422.9) needed to be extended and that the helper track on the Orin Subdivision (at MP 15.4) needed to be double-ended to accommodate the number of locomotives assigned to those locations and the DTL fueling from tanker trucks described in BNSF's Reply. On rebuttal, AEP Texas removed 2 intermediate turnouts on the Crawford Hill helper track, which would not be connected to any other tracks and would serve no apparent purpose, for a total helper track quantity of 3.0 miles. AEP Texas otherwise accepted BNSF's changes, in order to minimize the areas of dispute between the parties, but it did not adjust its spreadsheets to reflect BNSF's figures for helper track miles.

Because AEP Texas has shown that the 2 turnouts would not be needed, and because the parties otherwise agree, we use a total helper track figure of 3.72 miles, reflecting AEP Texas' rebuttal helper track configuration.

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[54] AEP Texas Reb. Narr. III-B-31.

APPENDIX B—TRAFFIC VOLUMES AND REVENUES

In this appendix we examine the amount of traffic that the TNR would transport and the revenues that traffic group is expected to generate over the 20-year SAC analysis period (2000-2020).

A. Tonnage

1. 2000-2002 Coal Traffic

For the third quarter of 2000 though 2002, the parties used BNSF's traffic tapes to establish the actual coal volumes of the traffic included in the group.

2. 2003-2008 Coal Traffic

For the period 2003-2008, the parties agreed to use the traffic projections from BNSF's Long Range Plan (LRP), except for movements to the 13 plants in the TNR's traffic group whose volume of shipments in 2002 were equivalent to the plant operating at or above 85% of capacity. AEP Texas assumed that the volume of shipments to those plants will remain at the 2002 level throughout the SAC analysis.[55] BNSF argues that, consistent with BNSF's overall decline in coal volumes between 2002 and 2003, those volumes should be shown as declining between 2002 and 2003.[56]

BNSF has also moved to strike AEP Texas' rebuttal evidence on this issue, arguing that AEP Texas improperly introduced this method of projecting 2003 coal volumes for these 13 plants for the first time on rebuttal. We disagree. In its reply, BNSF had argued that the method AEP Texas had used in its opening evidence to project 2003 coal volumes was convoluted and erroneous. On rebuttal, rather than stand by its opening evidence, AEP Texas chose to modify its approach to more accurately project 2003 coal volumes. AEP Texas adopted BNSF's approach for many of the plants and adjusted the approach for others. Thus, AEP Texas' change on rebuttal was responsive to criticisms raised in BNSF's reply. Therefore, we shall consider AEP Texas' rebuttal evidence here.

We agree with AEP Texas' criticism of BNSF's declining projections for plants operating at 85% capacity. As the Board noted in West Texas, "as a plant uses more coal, it requires more coal to produce the same output, i.e., it results in decreased efficiency (higher heat rates) as the plant ages. Therefore, as time passes, we would expect each plant to use more coal, rather than less coal." West Texas, 1 S.T.B. at 663 (footnote omitted). Thus, AEP Texas' suggestion to

[55] AEP Texas Reb. Narr. at III-A-4.

[56] BNSF Motion to Strike at 12.

hold the 2002 coal volumes for plants at 85% capacity (the same capacity factor used in West Texas) constant throughout the DCF period, given the lack of a better projection, is a reasonable measure on this record. By this means, we avoid a further understatement of the volume in future years, as the coal consumption of those plants will likely increase. See also Wisconsin Power & Light Co. v. Union Pac. R.R., 5 S.T.B. 955, 975 (2001), modified, STB Docket No. 42051 (STB served May 14, 2002), aff'd, 62 F.App'x 354 (D.C. Cir. Apr. 30, 2003) (WPL) (concluding coal volumes to plants not operating at 85% capacity were likely to increase until the plants reached 85% capacity).

3. 2009-2020 Coal Traffic

For the period 2009-2020, the parties forecast tonnages using data for the PRB and Green River Basin from EIA's 2004 Annual Energy Outlook (AEO). In 2005, EIA refined its forecasts, dividing the single PRB/Green River Basin forecast into three separate forecasts – a western Montana forecast, a PRB forecast, and a western Wyoming (basins other than the PRB) forecast. In First Compliance Order, the Board instructed the parties to update their forecasts based on the western Montana and Wyoming PRB low sulfur (sub-bituminous) coal set forth in the 2006 AEO.[57]

Additionally, in forecasting the amount of coal various power plants will consume, the parties agreed to cap the projected tonnage at 85% of power plant capacity for traffic moving though transloading facilities; hold the capacity factor constant for plants that were at or above the 85% level in 2002; and use the contract to determine volumes to Texas Genco's Parish Plant. The parties also agreed to use 2002 volumes for non-coal traffic and agreed that this traffic is likely to remain constant throughout the SAC analysis. We apply these agreed-upon figures in our tonnage restatement. However, there are certain adjustments on which the parties do not agree, which are discussed below.

a. Nine Uncontested Power Plants

For coal traffic to nine of the generating stations that the TNR would serve, AEP Texas accepts BNSF's methodology for estimating the traffic volumes, and we use the agreed-upon tonnages for this traffic as calculated by BNSF.

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[57] Although EIA has released a more recent forecast in Feburary 2007, we will continue to use the EIA's 2006 AEO that the parties used to model the capacity needs and operating expenses of the SARR. Forecasts are continually shifting and implementing changes to forecasts, particularly volume forecasts, can be burdensome and could necessitate reconfiguration of the network and a new operating model. Accordingly, we will only revise a forecast if we see a significant change between the forecasts in the record and those publicly available from EIA. In this case, there was no significant change between EIA's 2006 forecast and its 2007 forecast.

b. Plants Obtaining Coal from Southern PRB Mines

BNSF would exclude the tonnages from the southern PRB mines. For the reasons discussed in the body of the decision, we include the traffic originating from the southern PRB mines in the SAC analysis. Accordingly, the amount of traffic shipped to the four plants originating from the three southern PRB mines is included here.

On opening, AEP Texas included the Presque Isle traffic in the TNR traffic group but failed to properly calculate the tonnage. On rebuttal, AEP Texas corrected this error. We use AEP Texas' technical correction from its rebuttal for the tonnage moving to the Presque Isle plant.

c. Springerville Power Plant

The parties agreed to include the Springerville traffic in the TNR traffic group, but disagreed on the volume of this traffic. AEP Texas' presentation reflected increased tonnage to the Springerville plant beginning in 2007, due to a new generating unit that is supposed to come on-line. BNSF disagrees with the amount of coal that will be shipped to this new generating unit, arguing that Springerville representatives have indicated that the new generating unit will not take as many tons of coal as AEP Texas claims. But AEP Texas points out that the Manager of Project Development for Tuscan Electric Power (TEP)—the owner of the Springerville plant—has stated that the company will "operate the plant similar to other coal units in the Southwest, of which the Springerville Units 1 and 2 are representative."[58] AEP Texas thus calculated the capacity factor for Springerville Units 1 and 2 and applied that to Unit 3, the new generating unit.

The statement AEP Texas cites did not address timing nor directly address Unit 3's coal usage. Thus, there is no evidence that Unit 3 will reach the capacity of Units 1 and 2 in its initial years of operation. BNSF's claim, on the other hand, is based on statements made specifically about coal usage for Unit 3 and which provide a specific volume quote for the initial operation of this plant. Therefore, we use BNSF's evidence as the best evidence of record.

d. Sunflower Unit 2 Power Plant

The parties agree to include the Sunflower plant traffic in the TNR traffic group, but disagree on whether a new generating unit will come on-line during the SAC analysis period. According to an August 2005 article on Sunflower Electric Power Corporation's website, construction on the new generating unit was to begin within 24 to 42 months and that construction was expected to take 42 months. Even if construction took the maximum amount of time indicated on the website (7 years), the new generating unit should come on-line in 2012,

[58] AEP Texas Reb. Narr. III-A-46.

well before the end of the SAC analysis period in 2020. Accordingly, we include the additional 2.7 million tons of coal the new generating unit is projected to burn but not until 2012.

e. Shawnee Power Plant

On opening, AEP Texas included coal shipments to the Tennessee Valley Authority's Shawnee plant, but BNSF excluded this traffic on the ground that BNSF does not itself actually transport coal to the Shawnee plant. On rebuttal, AEP Texas acknowledged that the traffic tapes produced by BNSF show that the traffic does not in fact go to the Shawnee plant, but rather to a river transloading point. AEP Texas attributes its error to difficulty reading BNSF's traffic tapes. However, AEP Texas argues that this traffic should not be excluded because of this error, but instead, simply attributed to the correct destination. We agree and make the adjustment in our restatement.

f. Coleto Creek Power Plant

UP, not BNSF, transports coal from Colorado mines to the Coleto Creek power plant; but for part of the movements UP uses BNSF lines that UP has the right to operate over pursuant to trackage rights agreements. Because the TNR would replicate the BNSF line segments that UP uses for the Coleto Creek traffic, it may also replicate the trackage rights arrangement that applies to those line segments. Accordingly, AEP Texas properly presumed that the TNR would receive that same trackage right fees that BNSF receives for UP's use of those line segments. BNSF argues, however, that the Coleto Creek traffic should be excluded because BNSF's trackage rights agreements with UP prohibit the bi-directional routing (routing traffic in one direction over one line and in the opposite direction on another line) that AEP Texas would have the TNR apply to this traffic.

Having examined the language in BNSF's trackage rights agreements, we agree with AEP Texas that the TNR could collect trackage rights fees for this traffic. However, the fees that could be collected by the TNR are limited to the routes UP actually uses for this traffic; AEP Texas may not assume the use of a different route in order to increase the TNR's revenues.[59] Accordingly, prior to September 3, 2003, the TNR could collect a fee from UP for trackage rights to the Pueblo, CO-to-Stratford, TX and Amarillo, TX-to-Oklaunion line segments. From September 3, 2003 onward (the date that UP's actual route changed), the TNR could receive a trackage rights fee from UP for use of the Pueblo-to-Oklaunion line segment for southbound loaded UP trains, and for use of the Oklaunion-to-Amarillo line segment for northbound empty UP trains.

The amount of the trackage rights fee depends on the amount of traffic UP moves to Coleto Creek. AEP Texas calculated the Coleto Creek net tonnage for 2000, 2001, and 2002

[59] See Arizona Electric Power Co. v. Burlington N. & S.F. R.R., STB Docket No. 42058 (STB served Aug. 20, 2002), at 7.

from the Federal Energy Regulatory Commission (FERC) Form 423 gross ton data, although it provided no workpaper supporting that calculation. BNSF disagrees with AEP Texas' estimate of 2001 and 2002 volumes. BNSF calculated Coleto Creek tonnage for 2001 and 2002 from its own train data, the same data that AEP Texas used to develop the gross-ton-to-net-ton ratio used elsewhere in AEP Texas evidence. We use BNSF's estimates for 2001 and 2002 because it is the same data used elsewhere by AEP Texas and it produces a net ton estimate consistent with that advanced by AEP Texas for other traffic. For 2000 movements, however, we use AEP Texas' volume estimate, as BNSF did not provide an alternative estimate.

For 2003 to 2020, AEP Texas forecast Coleto Creek coal volumes that UP would move over the TNR based on the estimate of the actual amount of tons UP shipped over BNSF lines in 2002, indexed forward in the same manner as for traffic shipped to other plants. Specifically, for movements between 2003 and 2008, AEP Texas indexed using BNSF's LRP, and for movements for 2009 and onward, AEP Texas indexed using EIA's AEO forecast. However, we find that indexing traffic for UP's movements to Coleto Creek for 2003 to 2008 based on BNSF's LRP is inappropriate because it is the volume of UP traffic, not BNSF traffic, that is at issue. Thus, the more appropriate index for UP traffic from 2003 to 2008 is EIA's AEO forecast.

4. Non-Coal Traffic

Both parties used 2002 volumes for non-coal traffic and assumed those volumes will remain constant throughout the DCF period. Our SAC analysis reflects these agreed-upon volumes for non-coal traffic.

B. Revenue

1. AEP Texas' Traffic

On opening, AEP Texas determined rates for the Oklaunion plant in 2003 and 2004 (based on total revenue for each year's traffic tapes divided by the total tons) and held the rate from 2004 constant through 2020. AEP Texas argues that it did not adjust the rates from 2004 to 2020 because the rates are covered by common carrier pricing authorities that have no provision for periodic rate adjustments.

In its reply, BNSF slightly increased the 2003 rate relied on by AEP Texas (due to a slightly higher total revenue figure), but accepted AEP Texas' 2004 rate. For rates between 2005 and 2014, BNSF increased the rates based on a May 2003 decision in West Texas,[60] where the Board found that for the Rawhide prescription BNSF was permitted to charge the higher of the jurisdictional threshold rate (the 180% R/VC level) or the rate derived from the SAC analysis. For rates between 2015 and 2020, BNSF applied 100% of the RCAF-U, increasing the rates proffered by AEP Texas.

[60] Reported at 6 S.T.B. 919.

On rebuttal, AEP Texas accepted BNSF's adjusted historic rate for 2003, and also agreed that an adjustment to account for future rate increases is required. However, AEP Texas does not accept BNSF's methodology for how to increase those rates for the years 2005 to 2020. AEP Texas disagrees with BNSF's calculation of rate increases between 2005 and 2014 because it argues that the Rawhide prescription was vacated. AEP Texas also argues that use of the RCAF-U for rates from 2015 to 2020 is inappropriate. Instead, AEP Texas argues that we should use BNSF's LRP to escalate rates through 2008, and the EIA forecast for 2009 through 2020.[61]

In regards to the rate increases for the early years of the DCF period, contrary to AEP Texas' claim, we have found in West Texas Reopen. that, due to the court's decision vacating the vacatur, the Rawhide prescription remained in effect throughout the course of this proceeding. Nonetheless, as we have discussed at length in the body of this decision, it has been firmly established that the Rawhide prescription did not apply to other mines. Consequently, the holding in the May 2003 West Texas decision (that BNSF could charge the higher of the 180% R/VC rate or the SAC rate for the Rawhide prescription) also should not be applied to other mines for purposes of determining future rates, as proposed by BNSF. Moreover, in West Texas Reopen., the Rawhide rate prescription was vacated and therefore is inappropriate to use to estimate future revenues, as proposed by BNSF. Accordingly, we accept AEP Texas' method of using BNSF's LRP for the early years of the DCF period.

AEP Texas' reliance on the EIA forecast for the outer years of the DCF period is also more acceptable than BNSF's use of 100% of RCAF-U. The issue traffic, which is covered by a pricing authority with no provision for adjustments, is comparable to post-contract traffic (discussed below), and thus, should be treated similarly. Because AEP Texas' reliance on the EIA forecast is consistent with the methodology that we use for post-contract traffic (and other categories of traffic) for the outer years of the DCF, we also use the EIA forecast for the same purpose here.

2. Revenue Divisions from Inter-Line Traffic

The parties agree that the TNR would receive the same revenue division from inter-line movements as BNSF does.

3. Revenues from Other Common Carriage Movements (Big Stone Gap and Corette)

On opening, AEP Texas assumed, without explanation that the rates to the Big Stone Gap and Corette plants will remain constant through 2020. BNSF argues that the rates for each of these plants will increase and should be adjusted based on the average annual historic change in rates applicable to each movement. On rebuttal, AEP Texas agrees that these rates need to be

[61] See AEP Texas Reb. Narr. at 72-3.

adjusted to account for future increases, but disagrees with BNSF's methodology. As with issue movements, AEP Texas uses BNSF's LRP to calculate escalated rates for these movements through 2008 and the EIA forecast for 2009 to 2020.

As the Board has previously explained, past rate changes only reflect the past and are not the best evidence of what changes in rates can reasonably be expected in the future.[62] Accordingly, we reject BNSF's adjustment and instead rely on AEP Texas' use of BNSF's LRP and EIA's forecast to account for future rate increases for these movements.

4. Traffic Moving Under a Rate Prescription or Under Contract

For traffic moving under contract, the parties calculated revenues from 2003 through the end of the applicable contract term based on the particular (RCAF) escalation factor stated in the individual contracts. On rebuttal, AEP Texas modified its RCAF forecast for certain time periods. BNSF moved to strike AEP Texas' submission of revised figures, on the ground that it was improper use of rebuttal. AEP Texas maintains that it merely used actual RCAF data that were not previously available, consistent with the Board's practice.[63] We agree that AEP Texas' submission of these data are consistent with Board practice of substituting actual, updated data as they become available.[64]

BNSF also claims in its motion to strike that AEP Texas' use of updated RCAF results in an internal inconsistency in AEP Texas' evidence because AEP Texas has not applied to operating expenses the updated RCAF data that it uses for revenues. AEP Texas concedes this error and corrected for it in its response to BNSF's motion to strike, applying the updated RCAF data to both revenues and operating expenses.

For TMPA traffic moving to the Gibbons Creek plant, both parties used the rates prescribed in TMPA. On rebuttal, AEP Texas also relied on the rate prescribed in Xcel for traffic moving to Xcel's Pawnee plant. Use of actual, prescribed rates is appropriate and applied here.

Finally, the parties agree on the 2003 rate for traffic moving to Texas Genco's Limestone plant and the 2002 rates for traffic moving to the plants receiving Montana coal.

5. Post-Contract Traffic

AEP Texas assumes that, upon expiration of a transportation contract, the post-contract rate will equal the expired contract rate and then escalate over time. BNSF argues that, when a

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[62] Duke/CSXT at 48 (citing TMPA at 28-29).

[63] AEP Texas Reply to Motion to Strike at 30-32.

[64] See CP&L at 126-27; TMPA at 39 n.76.

contract expires, the rate generally declines. However, AEP Texas points out that BNSF's position is contradicted by statements that BNSF has made publicly regarding its future goals and stated intentions.

We agree that BNSF's suggestion that rates would decline is contradicted by its own public statements. Therefore, as in Xcel (at 55) and Otter Tail (at B-4), we assume here that the new rate will at first equal the expired contract rate and will then gradually escalate over time.

Regarding the subsequent increase in those rates, on opening AEP Texas calculated the degree of rate escalation using a combination of the EIA's 2003 Transportation Rate Multiplier and the Gross Domestic Product – Implicit Price Deflator (GDP-IPD). BNSF accepted this methodology for 2009 through 2020, although it substituted EIA's 2004 data for the 2003 data. For 2003 through 2008, however, BNSF used its LRP.

On rebuttal, AEP Texas agreed to the use of BNSF's LRP to project revenue from 2003 through 2008. But for 2009 through 2020, even though BNSF had not objected to AEP Texas' earlier approach, AEP Texas changed its approach and instead used the growth rates reflected in EIA's region-specific transportation rate forecasts, which AEP Texas argued was consistent with the Board's approach in Xcel.

BNSF has moved to strike as improper rebuttal AEP Texas' submission of a new approach on rebuttal.[65] We agree that this change to unchallenged earlier evidence was impermissible. Therefore, we use AEP Texas' methodology on opening for determining future post-contract rates with one exception. As noted in First Compliance Order, we will calculate the nominal transportation rate escalator as follows to reflect how EIA applies this factor:

(1 + real growth rate) * (1 + GDP-IDP growth rate) - 1.

Board policy in recent cases has been to use the most up-to-date EIA forecast available at the time the record is being analyzed. Following that policy here, we take official notice of the EIA forecast for 2006, the 2006 Transportation Rate Multiplier for the western U.S. and EIA's GDP-IPD for 2006.

6. Future Contract Traffic

AEP Texas included four movements in its traffic group that commenced subsequent to 2003 and appear on BNSF's LRP as future movements. The parties agreed to adjust the projected revenues for three of those movements through 2008 by taking the first-year revenues for each movement from BNSF's LRP and applying the projected growth rate stated in the LRP. The parties also agreed to adjust the revenues from those movements from 2009 through 2020 based on the projected growth rate in the EIA forecast.

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[65] BNSF also objects to AEP Texas' use of the unpublished EIA "regional" forecast.

BNSF maintains that the fourth movement to the Georgia Power plant should be excluded on the ground that AEP Texas' routing of this traffic is impermissible. For the reasons discussed in the body of this decision, the Georgia Power movement is properly included in the traffic group, and we use the agreed-upon procedures to project revenues from that traffic.

7. Non-Coal Traffic

The parties agreed on the methodology for determining revenue from non-coal traffic movements.

8. Trackage Rights Fees

AEP Texas calculated the trackage rights fees that the TNR would collect from UP for the Coleto Creek traffic on a ton-mile basis, while BNSF argues that the trackage rights fees should be based on train-miles. Because the actual trackage rights agreement governing UP's use of BNSF track provides (or rather, their respective predecessors) states that fees will be based on "per gross-ton-mile charges," we use AEP Texas' methodology for calculating the trackage rights fees.

APPENDIX C—OPERATING EXPENSES

This appendix addresses the annual operating expenses that would be incurred by the TNR. The manner in which a railroad operates and the amount of traffic it handles are the major determinants of the expense a railroad incurs in its day-to-day operations. As discussed in the body of the decision, we use AEP Texas' proposed operating plan for the TNR. Accordingly, except as specifically discussed here, we use AEP Texas' operating assumptions, along with those specified in First Compliance Order, to determine the level of operational resources the TNR would need for a given level of traffic. **Table C-1** summarizes the operating cost estimates reflected in the parties' evidence and the figures used in our analysis.

Table C-1
TNR Operating Costs
($ millions)

	AEP Texas	BNSF	STB
Train & Engine Personnel	$42.6	$61.4	$54.1
Locomotive Lease Expense	25.9	35.8	33.7
Locomotive Maintenance	21.3	32.4	29.7
Locomotive Operating Exp.	74.8	101.8	99.4
Railcar	12.4	18.3	10.2
Materials & Supply Operating	1.2	2.5	1.3
Ad Valorem Tax	6.1	7.5	7.5
Operating Managers	12.8	19.6	18.2
General & Administrative	8.7	17.1	12.5
IT & Communications	4.6	11.2	4.6
Training & Recruitment	14.1	24.5	19.4
Loss & Damage	0.8	0.7	0.7
Maintenance-of-Way	30.0	70.5	53.2
Insurance	7.2	22.4	16.4
Trackage Rights Fees	3.9	4.1	4.1
TOTAL	$266.4	$429.8	$365.2

A. Locomotives

1. Locomotive Requirements

Locomotive requirements are primarily determined by how the TNR would operate. The parties agree that the TNR would use SD70-MAC locomotives for road trains and SD40-2 locomotives for switching and helper service. The parties also agree on the use of a distributed power configuration on coal trains (i.e., two locomotives at the front of a train and one in the rear); the train sizes; the number of helper and switch locomotives; and the helper districts, helper assignments, and number of helper consists. The areas of disagreement between the parties are discussed below.

a. Road Locomotives

AEP Texas developed road locomotive requirements based on the number of locomotive-hours derived from its RTC model analysis of the TNR's peak week in the peak year (2020). AEP Texas then took this figure and annualized it for the peak year. It then reduced its 2020 locomotive estimate to reflect the fewer number of tons that would be carried in the base-year (2000), using a ratio of base year tons to annualized peak-week tons. AEP Texas then applied peaking and spare margin factors,[66] for a total of 192 road locomotives for 2000.

BNSF used a different methodology, based on its approach in TMPA. According to BNSF, it determined the TNR locomotive-hours for each train moving between a specific origin-to-destination (O-D) pair in 2020, by summing the average segment transit times for all TNR segment crossed by the train.[67] BNSF's average transit time for each TNR segment was developed from data generated by the RTC model. BNSF then multiplied this average transit time by the number of locomotives on the train and the number of trains in the year. It divided this annual O-D pair locomotive-hours by the number of hours in the year to derive the fractional number of locomotives needed for those specific O-D pair trains. BNSF then summed these fractional locomotive counts for all trains moving to determine the base number of locomotives, which was then increased by BNSF's spare margin and peaking requirements. BNSF then converted its 2020 count to a 2002 requirement using a ratio of base-year tons to peak-year tons.

We use BNSF's more precise method for determining the road locomotive requirement. As explained in Otter Tail (at C-2), AEP Texas' method of annualizing peak-week traffic can substantially over- or understate the annual operating statistics if the peak-week traffic mix is not representative of the annual traffic. In contrast, BNSF has directly calculated locomotive requirements for 2020 using average O-D pair/transit times, rather than estimating peak-year locomotive requirements based on the peak week, as AEP Texas has done.

However, as noted above, BNSF has agreed to use AEP Texas' RTC simulation output and transit times contained in that output. Therefore, where possible, we have substituted AEP Texas' average O-D pair train transit time figure for BNSF's and, where AEP Texas does not have an average train transit time for an O-D pair, we use BNSF's average transit time

[66] A peaking factor accounts for the additional locomotives that are needed to move above-average volumes of traffic during a year while the spare margin factor accounts for the fact that additional locomotives would be needed because individual locomotives would not be available 100% of the time during a year.

[67] Each mine origin to TNR interchange with another railroad or TNR destination represents a different O-D pair.

evidence.[68] Because locomotive requirements are based on transit times, we would have expected that substituting one set of average transit times in place of another would have had minimal impact on the total number of locomotive-hours calculated for 2020. However, use of AEP Texas' transit time evidence reduced the total 2020 locomotive hours by almost 10%, or 20 locomotives. Applying BNSF's spare margin evidence and our peaking factor (as discussed below) further reduces the TNR's 2020 locomotive count.

b. Helper Locomotives

Initially, the parties agreed to 42 helper locomotives.[69] In its submission in response to First Compliance Order, BNSF added 18 helper locomotives without explanation other than the general statement that operating expenses were modified to reflect the SARR's revised tonnages and revised transit times. Absent any argument that the 42 helper locomotives originally agreed upon would not be sufficient to handle the traffic volume, we reject the additional helper locomotives.

c. Work Train Locomotives

In its reply, BNSF proposes four work trains[70] with two SD40-2 locomotives each. Although it failed to include work trains in its opening evidence, AEP Texas has acknowledged that some work trains would be needed for annual operating maintenance, and it included two work trains (with one locomotive each) in its rebuttal. AEP Texas argues, however, that no locomotives would be needed for program maintenance. AEP Texas states that, if more than one locomotive per work train were occasionally needed, the TNR could use an extra SD40-2 or a spare SD70MAC that has already been included.

Because program maintenance is not considered an operating expense, we agree with AEP Texas that two work train locomotives would be sufficient. We also agree that only one locomotive per work train would generally be sufficient and that its proposal for supplying additional power on an occasional basis is feasible.

2. Leasing

The parties agree on the cost to lease the SD40-2 locomotives the TNR would need, but not on the cost for the SD70-MAC locomotives. AEP Texas relied on a lease provided by BNSF

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[68] AEP Texas developed its average transit time for the TNR for each O-D pair based on the train transit times for all of the trains moving between that O-D pair after the start of the peak week and prior to the end of the RTC simulation.

[69] Helper locomotives are additional locomotives that are added to a train to help it traverse a steep grade.

[70] Work trains are trains used by railroads in their maintenance activities.

on discovery to develop a lease cost for SD70-MACs. BNSF argues that AEP Texas' approach is flawed because it takes into account only the first two lease payments, which are lower than all but one of the other payments over the term of the lease. BNSF instead determined the present value of all future lease payments using the AAR's Equipment Rents index, and then divided the total present value by the number of years in the lease. On rebuttal, AEP Texas contends that BNSF improperly mismatched inflation indexes. Specifically, AEP Texas argues that, since BNSF uses the RCAF-U to increase operating expenses throughout the DCF modeling period, BNSF should have used this same index to discount future locomotive lease payments.

We find that BNSF's calculation of an average lease cost over the life of the lease is more accurate than AEP Texas' selection of only two payments as the basis of lease costs for SD70-MAC locomotives. Contrary to AEP Texas' claim, it is entirely appropriate to use a component of the RCAF-U for a specific expense item and the overall RCAF-U for aggregate expenses. Accordingly, we use BNSF's evidence of the lease costs for SD70-MAC locomotives.

3. Locomotive Peaking Factor and Spare Margin

Locomotive requirements are calculated based on the TNR's total number of locomotive-hours required to move the traffic group in 2020. The TNR would need enough locomotives to handle the ebbs and flows of its traffic group.

In support of its proposed 5.6% peaking factor, AEP Texas argues that the TNR could satisfy peak demands by borrowing locomotives from the residual BNSF on a run-through arrangement or by leasing locomotives on a short-term basis. It is not appropriate, however, to assume that other railroads would have extra locomotives readily available to help the TNR serve its customers. In addition, although AEP Texas has offered evidence that locomotives can be leased on a short-term basis to meet peak demand,[71] its proposed daily-lease cost—when annualized—is greater than the annual long-term lease cost would be. Because the SARR is intended to be a least-cost operating railroad, we rely on the cheaper long-term lease cost for all locomotives. Accordingly, as in prior SAC cases, we assume that the SARR would keep sufficient locomotives available to handle the forecasted peak-week demand. Although we follow BNSF's procedure, we calculate the road locomotive peaking factor separately for coal and non-coal traffic, using a 7-day rolling average.

Because locomotives would not be available 100% of the time, additional spare locomotives would be needed. AEP Texas proposed a locomotive spare margin of 5%, based on a locomotive maintenance agreement between BNSF and General Motors' Electromotive Division (EMD). BNSF argues that the EMD contract does not account for all instances when locomotives would be unavailable, including repairs or periodic maintenance, and instead proposes a spare margin of 7.9% based on its experience in 2002 for its Alliance locomotive pool.

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[71] Because we reject AEP Texas' proposed use of short-term leases, we need not address BNSF's claim that this evidence was improperly submitted for the first time on rebuttal.

Here, as in Otter Tail (at C-2) and Xcel (at 59-60), BNSF has offered persuasive evidence that a 5% locomotive spare margin would be inadequate. As BNSF notes, there are a number of reasons for which a locomotive would not be available for service but would still be considered "available" under the EMD contract provision (e.g., time spent repositioning excess power, time spent in normal yard service or awaiting placement on a train, and unavailability due to repairs, wrecks, derailments, vandalism, running out of fuel, repositioning, normal servicing, and awaiting placement on a train). Accordingly, we use BNSF's proposed spare margin factor as the best evidence of record.

4. Locomotive Maintenance Expense

The parties agree that a BNSF maintenance contract—which provides tiered costs for maintenance based on locomotive unit-miles (LUMs)—should be used to develop annual locomotive maintenance costs. They also agree on the mileages each train must travel between O-D pairs. However, because the parties use different methods to develop the TNR's annual operating statistics, they do not agree on the number of locomotives or LUMs used to develop locomotive maintenance expense. As discussed previously we use BNSF's method of developing annual operating statistics, and thus we use that method to develop the locomotive statistics needed to calculate locomotive maintenance expense.

The parties agree on the cost to overhaul the SD40-2 locomotives, but disagree on the overhaul cost for the SD70-MAC locomotives. BNSF argues that the maintenance agreement relied on by AEP Texas covers only the cost of materials but not labor. BNSF relies instead on a 2001 invoice. AEP Texas has countered with evidence that BNSF itself provides the labor and then deducts the labor cost from the contractor's invoice. AEP Texas also claims that the invoice BNSF relies on is outdated.

Although AEP Texas is correct that BNSF provides the labor itself, this fact is irrelevant because BNSF still incurs this cost, and thus, the SARR must do likewise. Accordingly, we find that BNSF's evidence is the better evidence of record as it includes labor costs.

5. Locomotive Operating Expense

a. Fuel Cost

Fueling Locations. The parties' fuel cost figures are impacted by their respective proposed fueling locations. AEP Texas would have the TNR fuel loaded coal trains heading toward Oklaunion at Las Animas Junction, empty coal trains heading back to the PRB at Alliance, and those that would not pass through Alliance by DTL tanker trucks at Campbell or South Logan. BNSF would have the TNR fuel loaded trains heading toward Oklaunion at a proposed yard at Amarillo, TX, rather than at Las Animas. As discussed in **Appendix A—TNR Configuration**, we use AEP Texas' proposed fueling locations.

Fuel Prices. AEP Texas based TNR fuel costs on BNSF's 2000 Annual R-1 Form, indexed by the AAR's fuel index. BNSF objected that the R-1 system-average cost does not take into account BNSF's complete fuel costs at Alliance, where AEP Texas would have the TNR dispense fuel. Instead, BNSF originally relied on a database maintained by its Fuel Management Group, which tracks—by location—BNSF's cost of fuel, volume of fuel dispensed, payments to third-party vendors and suppliers, and the cost of transporting the fuel from refineries and pipeline terminals. BNSF used this database to calculate the overall cost for fuel at Alliance. As for the cost of DTL fueling, BNSF assumed that the TNR could obtain fuel at the same cost it would obtain fuel at Alliance (which BNSF claims is a conservative price) and then added a cost for payment to the DTL provider (who would fill the locomotive with the fuel), based on an average cost obtained from the Fuel Management Group database. In response First Compliance Order, BNSF recalculated the cost of fuel at Alliance to eliminate savings from its own fuel hedging program; it also assumed that fuel at Las Animas could be obtained at BNSF's system-average cost.

AEP Texas disputes BNSF's fuel cost evidence. For fueling at Alliance, AEP Texas objects to BNSF's proposal to have the TNR purchase fuel from a supplier in Tulsa, OK. AEP Texas claims that fuel could be purchased from refineries that are closer to Alliance. AEP Texas also argues, that because the TNR would be purchasing such a large amount of fuel, a fuel producer would construct a pipeline to the TNR, resulting in a lower fuel cost (even after factoring in the cost of constructing the pipeline). As for DTL fueling, AEP Texas argues that the cost of service is already reflected in the R-1 data, and it notes in Duke/NS the Board rejected adding a labor cost for contractors to fuel locomotives. Finally, AEP Texas argues that it was inappropriate to introduce the new issue of fuel hedging in response to First Compliance Order.

We find that BNSF has presented better evidence on the price of fuel. In contrast to AEP Texas' evidence, which is based on the system-average cost of fuel at all locations, BNSF's evidence is based on actual fuel costs in the area, and actual experience regarding the cost of DTL fueling. AEP Texas' claim that a fuel provider would simply construct a pipeline to serve TNR is speculative and the costs of such a project are not quantified.

However, we agree that it was inappropriate for BNSF to introduce the fuel hedging issue in its Second Supplemental Reply. Accordingly, we do not consider that issue here. Rather, we rely on BNSF's fuel cost evidence presented in its initial reply evidence with one exception. BNSF was directed by First Compliance Order, to reflect fueling at Las Animas rather than Amarillo. Since BNSF did not provide a fuel price for Las Animas we use the Amarillo fuel price for Las Animas.

Fuel Consumption. AEP Texas based its TNR fuel consumption calculation on BNSF's R-1 system-average figure. BNSF argues, however, that unit-coal trains in the western part of its system consume fuel at a higher rate than the average for its entire fleet. BNSF claims that this is because coal trains are long and heavy, they travel over difficult terrain, and the empty trains face substantial wind resistance. Thus, BNSF relies on results from a fuel study it conducted in the TMPA case to determine the consumption rates for trains that move beyond Denver, and the results from a fuel study it conducted in the Xcel case for trains that do not travel past Denver.

BNSF asserts that the movements in those studies are comparable to the respective movements here.

AEP Texas objects to BNSF's reliance on the studies presented in the TMPA and Xcel cases. AEP Texas argues that BNSF has not shown that the TNR's trains would be similar in size, weight, and locomotive consist to the trains in the two studies or that the routes are similar to those here.

Although there undoubtedly would be some differences between the TNR's trains and operations than those reflected in the two studies relied on by BNSF, we are satisfied that these studies produce results that are more reflective of the fuel consumption rates that the TNR would experience than BNSF's much broader system-average experience. The system-average figures reflect many different geographic areas, classes of traffic, and categories of trains than what the TNR's system would encompass. See Public Serv. Co. of Colo. d/b/a Xcel Energy v. Burlington N. & S.F. Ry., STB Docket No. 42057, slip op. at 14 (STB served Jan. 19, 2005). Therefore, we use BNSF's evidence of fuel consumption rates.

b. Servicing

The parties both rely on BNSF's R-1 figures for determining locomotive servicing costs (which include the costs of adding lube oil and sand). However, BNSF argues that AEP Texas' calculation improperly excluded "costs reported to a yard operations account" that should be included as part of the overall cost, and BNSF thus recalculated locomotive' servicing costs. AEP Texas asserts that BNSF's recalculation is based on the faulty assumption that the TNR's yard LUMs would constitute the same percentage of total LUMs as on BNSF's full system. AEP Texas claims that the TNR's yard LUMs would be only 0.77% of total LUMs, whereas on BNSF's full system this percentage is 3.07%.

Although yard LUMs should not be completely excluded from the servicing cost calculation, we agree that it is more appropriate to use the yard LUMs for the TNR rather than for BNSF's system. Therefore, using AEP Texas' calculation that TNR's yard LUMs would be 0.77% of total LUMs, we calculate a locomotive service cost per LUM of $0.0773.

B. Railcars

1. Railcar Requirement

The parties agree that for most coal movements in the TNR's traffic group the railcars would be privately owned, and that the TNR thus would incur little railcar ownership or lease costs. However, BNSF argues that AEP Texas undercounted the number of railcars that BNSF supplies to each customer, and BNSF adjusted the figures accordingly.

On rebuttal, AEP Texas stated that, for those movements where the parties disagree on the number of railcars provided by BNSF, AEP Texas reviewed BNSF's contract with the customer. According to AEP Texas, in some instances BNSF counted leased cars as being provided by BNSF, even though it is often the customer who leases the cars. AEP Texas thus argues it was improper for BNSF to simply assume that leased cars should be considered railroad-provided cars. AEP Texas also noted that BNSF counted cars that it supplies to the Western Farmers Electric Cooperative, even though Western Farmers also provides cars to BNSF as part of a swap agreement. Thus, AEP Texas asserts that the cars BNSF provides to Western Farmers should not be considered an expense.

We agree that BNSF improperly assumed that all leased cars would be supplied by the railroad rather than the shipper. AEP Texas is also correct that cars provided to Western Farmers would be negated by the cars provided by Western Farmers. Accordingly, we use AEP Texas' percentages of railroad-provided cars per customer.

Like locomotives, rail car requirements depend on the transit times for the TNR. Our use of AEP Texas' transit times serves to reduce the number of cars the TNR would need to provide.

2. Railcar Peaking Factor and Spare Margin

AEP Texas used a peaking factor of 5.6%, whereas BNSF proposes a factor of 24%. The parties agree on non-coal railcar expense. For coal car peaking we use the same rolling average for peak-week coal traffic that we apply to locomotives engaged in coal traffic.

AEP Texas used a 5% spare margin, compared to BNSF's 10% spare margin. AEP Texas points out that 15 of the 25 coal transportation contracts BNSF provided in discovery require a spare margin of 5%, whereas only two contracts specify a 10% spare margin. Moreover, at least one of the contracts requires a spare margin of only 2.6%. Based on this evidence, we agree that AEP Texas' 5% figure is more reasonable, and we use that percentage here.

3. Railcar Leasing, Maintenance, Foreign Cars, and Private Car Allowance Expenses

The parties agree on railcar lease and maintenance expenses for both coal and non-coal cars. The parties also agree on foreign car and private car allowances. The agreed-upon unit costs are used here.

C. Train Crew Personnel

There is a substantial difference in the parties' estimates of the number of train and engine (T&E) personnel that the TNR would need. The parties agree that train crews could work 270 shifts per year, but they disagree on the total number of crew starts the TNR would require. The discrepancy is primarily due to differences in the parties' traffic groups and differences in translating peak-week crew requirements into annual base-year crew requirements.

AEP Texas developed T&E crew requirements based on the number of employees that would be necessary to move the peak-period train volumes assuming that, if a crew exceeded its maximum 12-hour day, its relief crew would simply pick up the train at some point in the previous crew district and move the train through its own district. Thus, AEP Texas did not account for additional crews that would be needed to take over for crews that "outlaw" (i.e., would not be able to complete their shift within the 12 hours permitted by Federal hours-of-service rules). AEP Texas adjusted the estimated peak-year (2020) crew requirements to determine the base-year (2000) requirements, using a ratio of base-year total net tons to annualized peak-week tons as a multiplier.[72] BNSF generally accepts AEP Texas' method of developing the number of road-crews required for the peak year, but objects to its method for converting peak-year crew requirements to base-year crew requirements. BNSF maintains that the denominator of the ratio should be the forecast 2020 total net tons rather than the annualized peak-week tons. BNSF also added a recrew in those instances where the RTC model analysis indicated that a crew would not be able to complete its shift within the 12 hours permitted by Federal hours-of-service rules.

As discussed above in connection with locomotives, AEP Texas has not justified its method of deriving base-year estimates from peak-week estimates. Furthermore, as BNSF has shown the TNR would require a significant number of recrews in adjoining crew districts. AEP Texas' method of providing relief would exacerbate the outlaw problem, since the relief crew would stand a significant chance of outlawing in its own crew district.

For these reasons, we use BNSF's methodology for converting peak-year requirements to base-year requirements and BNSF's adjustment to reflect Federal hours-of-service rules. However, BNSF's estimate would result in a T&E crew staffing level that would require fewer shifts per year than the 270 shifts per year agreed on. Therefore, we use BNSF's spreadsheets but not its method of calculating crew requirements. Rather, we sum the total number of crew starts (including relief crew starts) to move the entire traffic group in 2020 and divide this number by the agreed-upon number of shifts per annum to estimate the number of crews that would be needed by the TNR. Our road crew requirement for the TNR is slightly less than BNSF's (520 v. 539). Thus, consistent with SAC precedent, we adjust the resulting crew counts to reflect an average week.[73]

AEP Texas has failed to support the feasibility of its proposal of 12-hour shifts for switch and helper crews. Therefore, we use BNSF's 8-hour shifts for switch and helper crews, for a total of 34 switching crew members and 63 helper crew members. Because we include two work trains, rather than four as proposed by BNSF, we use AEP Texas' four crew members for work trains rather than the eight proposed by BNSF.

In response to First Compliance Order, BNSF increased T&E employees by 10, presumably in connection with the increase in helper locomotives. Because (as discussed above)

[72] AEP Texas employed the same method in connection with locomotives.

[73] See Xcel at 62, citing Duke/CSXT; Carolina Power & Light Co. v. Norfolk S. Ry., STB Docket No. 42072 (STB served Dec. 23, 2003) (CP&L); Duke/NS; and TMPA.

we reject the increase in helper locomotives, we reject the additional 10 employees associated with helper service.

Based on our findings here and our acceptance of AEP Texas' traffic group, our SAC analysis is based on 542 crew personnel.

D. Non-Train Operating Personnel

There is a modest difference between the parties' estimates for the number of non-train operating personnel. **Table C-2** shows the parties' staffing requirements and the figures we use. The areas of dispute are discussed below.

Table C-2
Non-Train Operating Personnel

	AEP Texas	BNSF	STB
Director-Operations Control	1	1	1
Manager-Operations Control	5	5	5
Dispatchers	18	18	18
Crew Callers	5	5	5
Manager-Train Operations	9	9	9
Director-Train and Loco. Operations	1	1	1
Manager of Oper. Rules and Safety	1	1	1
Equipment Inspectors	108	108	108
Assist. Manager-Train and Loco. Oper.	22	22	22
Managers-Loco., Mech. Operations	10	10	10
Crew Haulers	0	6	6
Hostlers	0	41	41
TOTAL	**180**	**227**	**227**

1. Crew Hauler/Utility Clerk

BNSF included a crew hauler/utility clerk position at Alliance, to be filled by 6 employees. According to BNSF, the main duty of the position would be to transport train crews and hostlers[74] within the Alliance yard, with further duties consisting of: maintaining the transport vehicle, maintaining printers and computers in the crew facility, posting bulletins and general orders, and performing miscellaneous janitorial tasks. AEP Texas argues that this position is a vestige of Class I railroad work rules and would be unnecessary because the crews could drive themselves. Although the parties agree to the limited use of a taxi service between yards, there would still be a need for transportation around Alliance. Furthermore, the other

[74] Hostlers are personnel that move locomotives around a yard.

tasks that BNSF has identified would need to be performed, and AEP Texas has not accounted for these needs. Therefore, we use BNSF's evidence on this matter.

2. Hostlers

BNSF would include 41 hostlers to reposition locomotives. BNSF claims that the hostlers would be necessary to implement AEP Texas' operating plan, which would require the servicing and fueling of all locomotives arriving at Alliance. BNSF claims that crews that deliver trains cannot be required to detach and move the locomotives to the service area. AEP Texas argues that, although hostler positions may be required under BNSF's collective bargaining agreements, they would not be necessary for a non-unionized railroad such as the TNR. AEP Texas claims that the inbound and outbound train crews could detach and move the lead locomotive, or an employee of the fueling /servicing contractor could move the locomotives.

AEP Texas has not shown that it would be feasible to divert employees from other duties to move locomotives. In addition, there is no evidence that road crews would have the time available to move locomotives in the yard. Therefore, we use BNSF's evidence on hostlers.

3. Mine Loading Costs

The parties agree on the need to account for third-party mine loading costs. AEP Texas accepts BNSF's loading-fee per ton, but the parties disagree over the mines to which this cost should be applied. BNSF would apply the cost to 13 of the 14 mines, whereas AEP Texas would apply it to only 6 of the 14 mines.

We agree with AEP Texas that third-party loading costs need not be applied to the 5 mines on the Campbell Branch because the TNR train crews (whose costs are already accounted for) would accompany trains through the loading process and handle mine loading. Thus, no additional cost for mine loading is necessary for those 5 mines. See TMPA at 110. For the other 2 remaining mines in dispute, BNSF has provided no evidence that it incurs a cost at these mines. Indeed, BNSF's spreadsheets have the notations "No Third Party Loader" and "N.A." in the cost-per-ton column for these 2 mines.

Finally, the parties differ in their application of this cost. AEP Texas applies the cost beginning in 2004, as BNSF itself did not begin using third-party loading contractors until 2004. However, the TNR would have its own operating procedures, and AEP Texas has proposed using third parties for loading. Because AEP Texas has not shown that the TNR would not begin incurring this cost until 4 years into the DCF period, we apply this cost beginning in 2000.

E. General & Administrative Personnel

The parties' general and administrative (G&A) personnel estimates for the TNR differ substantially. **Table C-3** sets forth the numbers included by each party and the numbers we use.

Table C-3
G&A Staffing

	AEP Texas	BNSF	STB
1. Board of Directors	**5**	**7**	**5**
Outside Directors	**3**	**5**	**3**
2. President's Office			
President/CEO	**1**	**1**	**1**
Director—Corporate Relations	**1**	**1**	**1**
Administrative Assistant	**1**	**1**	**1**
3. Transportation Department			
Executive Function:			
V.P.—Transportation	**1**	**1**	**1**
Administrative Assistant (V.P.)	**0**	**1**	**1**
Secretary	**0**	**1**	**1**
Customer Service/Marketing Functions:			
Director—Customer Service	**1**	***1**	**1**
Customer Service Managers	**8**	***8**	**8**
Vice President—Marketing	**0**	**1**	**0**
Asst. V.P.—Coal Marketing	**0**	**1**	**0**
Manager—Coal Marketing	**2**	**2**	**2**
Marketing Manager—Other	**0**	**4**	**0**
Secretary (Customer Srvc/Mktg.)	**0**	**1**	**0**
4. Engineering/Mechanical Department			
V.P.—Engrg./Mech.	**1**	**1**	**1**
Director—Mechanical Services	**1**	***1**	**1**
Manager—Budgets/Purchasing	**1**	**0**	**0**
Manager—Testing/Environmental	**1**	***0**	**1**
Clerk	**1**	**1**	**1**
Administrative Assistant	**0**	**1**	**1**

5. Finance/Accounting Department			
Executive/Treasury Function:			
V.P./Treasurer	**1**	**1**	**1**
Admin. Asst./Secretary	**0**	**1**	**1**
Secretary	**0**	**1**	**1**
Assistant V.P./Treasurer	**0**	**1**	**0**
Asst. Treasurer	**0**	**1**	**0**
Manager of Administration	**1**	**1**	**1**
Cash Manager	**0**	**2**	**0**
Controller Function:			
Controller	**1**	**1**	**1**
Asst. Controller—Revenue	**1**	**1**	**1**
Asst. Controller—Disbursements	**1**	**1**	**1**
Revenue Accounting Clerks	**2**	**6**	**2**
Disbursements Clerks	**0**	**2**	**2**
Payroll Function:			
Payroll Manager	**1**	**1**	**1**
Payroll Coordinator	**0**	**1**	**1**
Tax Function:			
Director—Taxes	**1**	**1**	**1**
Financial Reporting Function:			
Manager—Financial Reporting	**1**	**1**	**1**
Miscellaneous Staff	**0**	**8**	**0**
Revenue Analysis/Budgeting Function:			
Manager—Revenue Analysis	**0**	**1**	**0**
Director—Budgeting/Analysis	**1**	**1**	**1**
Analyst	**0**	**1**	**0**
Equipment Accounting/Misc. Billing Function:			
Manager—Car Equipmt. Acctg.	**1**	**1**	**1**
Manager—Misc. Billing	**0**	**1**	**0**
Internal Audit Function:			
Director—Internal Audit	**0**	**1**	**1**
Real Estate Function:			
Director—Real Estate	**0**	**1**	**0**
Manager—Real Estate	**0**	**1**	**0**
Purchasing Function:			
Director—Purchasing	**0**	**1**	**1**
Manager—Purchasing	**1**	**2**	**2**
IT Function:			
Asst. V.P.—IT	**0**	**1**	**0**
Director—IT	**1**	**1**	**1**
IT Specialists	**10**	**10**	**10**

6. Law and Administration			
Legal Function:			
V.P.—Law and Administration	**1**	**1**	**1**
General Attorneys	**2**	**2**	**2**
Paralegal/Secretary	**0**	**1**	**1**
Safety/Claims Function:			
Asst. V.P.—Safety/Claims	**0**	**1**	**0**
Director—Safety/Claims	**1**	**1**	**1**
Managers—Safety/Claims	**2**	**3**	**2**
Human Capital Function:			
Asst. V.P.—Human Capital	**0**	**1**	**0**
Directors—Human Capital	**1**	**3**	**1**
Analyst (Human Capital)	**0**	**1**	**0**
Coordinators (Human Resources)	**0**	**4**	**0**
Manager—Training	**1**	**1**	**1**
Asst. Managers—Training	**0**	**2**	**0**
Secretarial Pool/Law & Administrative Secretaries:			
Secretaries	**4**	**0**	**0**
TOTAL**	**59**	**108**	**66**

* **BNSF included these positions as operating personnel.**
** **The President/CEO and one Vice President serve on the Board of Directors and are only included once in the totals.**

The TNR would have a board of directors, a president's office, and various executive-level positions. Before addressing the staffing of each of these positions, we first address the common issue of secretarial staffing.

Secretarial Function. For the TNR, AEP Texas proposes a secretarial pool managed by the director of human resources and consisting of four secretaries that would be available for assignments in any of the TNR's departments. BNSF maintains that one secretary would need to be assigned to each of the TNR's vice-presidents, and additional support staff to various departments. Because of the specialized work involved in each department, we reject the use of a shared secretarial pool, and address the necessity of support staff by individual department.

1. Board of Directors

AEP Texas proposed a 5-person board of directors, consisting of the president, one vice-president, and 3 outside directors. BNSF argues for a 7-member board composed of the president, one vice-president, and 5 outside directors. As we have found in prior cases, AEP Texas' proposal is reasonable, as it would provide sufficient independent oversight from outside the TNR management. See Xcel at 66; Duke/CSXT at 60; CP&L at 62; Duke/NS at 74; TMPA at 95. Therefore, we use a 5-person board.

2. President's Office

The parties agree that the president's office would consist of the president (acting as chief executive officer), a director of corporate relations, and one administrative assistant.

3. Transportation Department

Executive Function. The parties agree on the need for a vice-president of transportation to oversee all transportation, customer service, and marketing functions. BNSF would add an administrative assistant and a secretary to the department. Given the importance of the vice-president's position and the wide range of responsibilities of the department, we agree that an administrative assistant and a secretary would be necessary, and we add these positions to the staffing level for this department.

Customer Service Function. Within the transportation department, AEP Texas proposed including a director of customer service, and 8 customer service managers. BNSF agreed with this staffing level, but would include these employees as part of operating personnel rather than as part of G&A staffing. We see no reason not to classify these employees as part of the G&A staff.

Marketing Function. Also within the transportation department, AEP Texas provided for 2 marketing positions. AEP Texas assumed that the majority of the TNR's marketing needs would be outsourced, under the supervision of the director of customer service and a marketing manager. AEP Texas contends that outsourcing the marketing function would be cost-efficient, because the TNR would have a limited and repetitive traffic group consisting primarily of originated unit-train coal traffic moving to a known set of power plants, a relatively modest volume of overhead non-coal traffic that the residual incumbent would originate and terminate, and a stable customer base with a consistent and regular traffic volume. BNSF argues that AEP Texas' plan would be insufficient for a railroad the size of the TNR, and BNSF compares the proposed marketing budget of TNR to the marketing budgets of other Class I railroads. BNSF also disputes AEP Texas' assumption that the TNR could retain the traffic in its traffic group throughout the full SAC analysis period without incurring ordinary marketing expenditures.

In prior cases, we have rejected as infeasible attempts to outsource entire marketing departments at nominal cost. See, e.g., Xcel at 67. But we have accepted the premise that a SARR serving only a subset of the incumbent railroad's customer base would not need a marketing department as large as that of the incumbent carrier. See Otter Tail at C-11. Because BNSF's proposal here would "gold-plate" the marketing department of the much smaller TNR, we use AEP Texas' proposal—which recognizes that some in-house marketing positions would be needed—as the best evidence of record.

4. Engineering/Mechanical Department

AEP Texas would have the TNR outsource the maintenance of locomotives, freight cars, and other vehicles and mobile equipment. To oversee the maintenance contractors, AEP Texas proposes an engineering and mechanical department, headed by a vice-president and staffed by a director of mechanical services, a manager of testing/environmental, a manager of budgets and purchasing, and a clerk (to assist the director of mechanical services).[75]

BNSF argues that, given the importance and expected workload of the vice-president, an administrative assistant would also be necessary. We agree.

BNSF argues that the director of mechanical services and the manager of testing/environmental should be classified as operating personnel. AEP Texas contends that these positions would be administrative staff positions and should be included as part of G&A personnel. We see no reason why this position may not be considered part of G&A personnel.

Finally, BNSF argues that, instead of a manager of budgets and purchasing, the TNR would need centralized purchasing authority within the finance/accounting department. As discussed below, we use BNSF's staffing for the purchasing function because BNSF has shown that AEP Texas' proposed staffing level would be insufficient. Therefore we exclude the manager of budget and purchasing here and include it in the finance/accounting department.

5. Finance/Accounting Department

Executive/Treasury Function. The parties agree on the need for a vice-president of finance and accounting, who would also serve as the TNR's treasurer and primary liaison with outside auditors. AEP Texas includes only a manager of administration to work with the vice-president/treasurer. We agree with BNSF that, given the importance of the vice-president's position and the workload of the department, there would also need to be an administrative assistant and a secretary. But we do not agree with BNSF that three other additional positions would be needed to perform this function. AEP Texas' evidence demonstrates that its smaller treasurer's staff is feasible, as the TNR would outsource and/or computerize many accounting functions performed in-house by other Class I railroads.

Controller Function. The parties agree on the need for a controller, who would be responsible for all accounting functions, including billing, vendor payment processing, payroll, budgeting, and auditing. AEP Texas includes two assistant controllers (for revenues and disbursements) and two clerks. BNSF presented a different staffing arrangement (replacing AEP Texas' two assistant controllers with two managers—one for revenue accounting and one for accounts payable), and would include six revenue accounting clerks, as well as two disbursement clerks. Overall, BNSF has not shown why AEP Texas' proposal would be insufficient.

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[75] AEP Texas notes that the chief engineer and that position's assistants (including 2 clerks) would be considered part of operating (MOW) employees.

However, because AEP Texas has not accounted for the TNR's daily disbursement needs, we add the two disbursement clerks proposed by BNSF to AEP Texas' proposed staffing levels.

Payroll Function. The parties agree on a payroll manager position. BNSF would add a payroll coordinator. AEP Texas argues that, because the payroll function would be outsourced, a coordinator would not be necessary. Given the size of the TNR and the need to oversee any outsourcing, it is not reasonable to assume that one position would be sufficient for handling these functions. Therefore, we use BNSF's proposed staffing level for the payroll function.

Tax Function. The parties agree to one director position to perform the TNR's tax function.

Financial Reporting Function. AEP Texas would staff the TNR with a manager of financial reporting, who would be responsible for overseeing the closing of accounting records, preparation of financial reports, and maintenance of the TNR's chart of accounts. According to AEP Texas, one manager would be sufficient to perform the TNR's financial and accounting reporting functions, because the TNR would not be a publicly held company and thus would not need to prepare reports for the SEC or for the equity-investment community. BNSF agrees on the need for a manager position but, based on a comparison of the TNR and the Wisconsin Central System (WCS), it would add eight additional employees (a director of financial reporting, property accounting analyst, three senior financial analyst, manager of accounting, manager of accounts payable, and manager of revenue). Because the TNR would not be a public company, we agree with AEP Texas that one manager would be sufficient staffing of this function.

Revenue Analysis/Budgeting Function. AEP Texas would include one director of budgeting and analysis to, among other duties, handle the preparation of the annual company budget and prepare forecasts and cost/revenue analyses as needed. Based on a comparison between the TNR and the WCS, BNSF would add two positions: a manager of revenue analysis and an analyst. We agree with AEP Texas that BNSF's proposed staffing is consistent with the requirements of a carrier that transports large volumes of single-car and mixed-freight traffic, but not the TNR. BNSF has not shown why AEP Texas' staffing levels would be insufficient for the traffic handled by the TNR. Therefore, we use AEP Texas' staffing for this function.

Equipment Accounting/Miscellaneous Billing Function. BNSF proposes two managers to handle this function: a manager of equipment accounting, to manage the car hire payable and receivable issues and to oversee outsourced routine transactions, and a manager of miscellaneous billing. On rebuttal, AEP Texas agrees with BNSF on the need for an additional individual to be responsible for equipment accounting matters. We agree with AEP Texas that BNSF's proposal for a second manager position is excessive for the relatively simple TNR operation, and therefore, we include only one manager to perform this function.

Internal Audit Function. AEP Texas would have the TNR outsource this function, whereas BNSF would staff the TNR with a director of internal audit. According to BNSF, a company the size of the TNR should not operate without an internal auditor to ensure company controls remain intact and to ensure the efficacy of the relationship between operating organizations and the finance group. We agree with BNSF that sound business practice requires an internal auditor to oversee the various finance functions.

Real Estate Function. AEP Texas does not provide for any personnel to handle the real estate function for the TNR, because it argues that the TNR would not need to acquire new property. BNSF contends that, nevertheless, real estate issues would likely arise relating to crossings, licenses and easements for utility lines, or purchases of additional land. We agree with AEP Texas that little or no real estate issues would be likely to arise and it is therefore unnecessary to include dedicated personnel for the real estate function.

Purchasing Function. AEP Texas did not provide for a purchasing department for the TNR. It contends that a manager of budgets/purchasing in the Engineering/Mechanical department and a manager of purchasing in the Finance/Accounting department, along with appropriate contractors, would be sufficient to meet the TNR's purchasing needs. BNSF advocates expanding the Finance/Accounting department, adding a director of purchasing to review and approve larger purchases. Under BNSF's proposal, the director would report to the vice-president of finance and would supervise two purchasing managers working directly with vendors and the individual operating departments.

All departments in the SARR would need supplies and purchasing support. See Otter Tail at C-9. We conclude that the limited purchasing staff proposed by AEP Texas would be insufficient for the needs of the entire rail operation. We therefore use BNSF's proposed staffing levels.

Information Technology Function. The parties agree on the need for an IT director, and 10 IT specialists. BNSF would add an assistant vice-president of IT. Because AEP Texas would outsource much of the TNR's IT work, an assistant vice-president position would not be necessary. Therefore, we use AEP Texas' proposed staffing levels.

6. Law and Administration Department

Legal Function. The parties agree that the TNR would need a general counsel/vice-president, and two staff attorneys. Having rejected AEP Texas' proposed secretarial pool in favor of dedicated secretaries for each department, we include BNSF's proposed secretary/paralegal position.

Safety/Claims Function. Both parties agree to a director of safety/claims, and to two managers of safety/claims. BNSF would add another manager as well as an assistant vice-president position. Because BNSF has not shown that AEP Texas' proposal is infeasible for a railroad the size of TNR, we use AEP Texas' proposed staffing levels.

Human Resources Function. To account for human resources needs, AEP Texas would staff the TNR with a director of human capital and a manager of training, and would have the TNR outsource its start-up and training needs. BNSF proposes a 12-person staff for the human resources function. However, AEP Texas' outsourcing proposal accounts for the duties BNSF maintains are necessary, and BNSF has not shown why that plan would not be feasible. Therefore, we use AEP Texas' proposed staffing level.

F. Wages and Salaries

1. Crew Compensation

a. Basic Crew Wages

The parties agree that each train would be manned by an engineer and a conductor, with each crew member working 270 shifts per year. AEP Texas developed the base wages for engineers and conductors using BNSF's Wage Forms A&B for "Thru Engineers and Thru Conductors." BNSF disputes the appropriateness of those calculations, arguing that those wages were based on crews that generally work fewer shifts per year, and that engineers and conductors working 270 shifts per year would require higher compensation. BNSF based its TNR crew wage evidence on a sub-group of BNSF engineers and conductors that worked between 255 and 284 shifts per year.

We agree with BNSF that employees working more shifts would command more compensation. Because BNSF's calculations are reasonable, we use BNSF's base crew wage estimate here. See Xcel at 68; Otter Tail at C-11.

b. Constructive Allowance

AEP Texas contends that, because the TNR would be a new, non-union railroad and would not be the product of a merger, it would not incur many of the payments included by BNSF as constructive allowances.[76] AEP Texas includes only the constructive allowances agreed to by the WCS in October 1998. BNSF disagrees with AEP Texas' exclusion of some of the constructive allowances that BNSF currently pays. BNSF argues that constructive allowances are merely an accounting mechanism used to categorize total compensation and that it has not been shown that TNR employees would be willing to forgo this compensation.

We agree with BNSF. As explained in Xcel (at 68), constructive allowances are an integral part of the total compensation that BNSF pays its conductors and engineers. Whether that payment is labeled as "salary" or an "allowance," the payment is part of the prevailing market wage that the TNR would have to match to attract and retain train crews. AEP Texas has not demonstrated that a non-unionized railroad could attract and retain a sufficient work force without paying such benefits. Nor has it justified using the WCS as the basis for the constructive allowances that the TNR would pay, as the WCS crews do not have the high number of yearly

[76] Constructive allowances include elements of employee compensation other than wages and fringe benefits.

crew starts as AEP Texas assumes the TNR would have. Constructive allowances generally increase as crew starts increase. Thus, the TNR's constructive allowance payments likely would not be similar to those of the WCS. Accordingly, we use BNSF's evidence of constructive allowances. Accord Duke/NS at 75; Xcel at 69; Otter Tail at C-12.

c. Taxi Expenses

The parties agreed on the per-trip taxi costs. BNSF, however, added inter-mine taxi trips where train frequency was too low for a crew arriving with an empty train to depart from the same mine with a loaded train. On rebuttal, AEP Texas instead added a general shuttle service item to its spreadsheets. Because AEP Texas concedes that some cost would be needed for this item, but has failed to explain the basis for its objection to BNSF's evidence and for its own rebuttal proposal, we use BNSF's cost evidence for this expense.

d. Overnight Expenses

The parties agree on the cost for overnight lodging, but they differ on the number of overnight stays that would be required by train crews. We have developed the number of stays that would reflect the LUMs and car-mile calculations we use, and applied the parties' agreed-upon cost to compute the total cost for overnight lodging.

e. Executive Compensation

AEP Texas developed executive compensation for the TNR based on a comparison with the executive salaries (including bonuses) paid at the WCS in 2000. AEP Texas would have the TNR pay its president $356,043, its vice presidents $229,935 each, and its controller $191,503.

BNSF has provided testimony from the former president of the WCS that he was paid more than AEP Texas asserts: a total compensation (salary and bonus) of $358,590, plus stock options with a current value of $520,000. BNSF also has provided a chart showing the compensation for various executive positions on Class I and shortline railroads. Based on a comparison with the amount that the Kansas City Southern (KCS) paid its president, BNSF argues that the TNR would need to pay its president $540,000. Based on its witness testimony, BNSF argues that the TNR would need to pay its vice presidents of major departments $300,000, and its vice presidents of smaller departments $250,000.

We use AEP Texas' proposed compensation for the TNR's president. BNSF's reliance on KCS' president's compensation is misplaced as KCS' president is responsible for managing a much larger system than the TNR. Although the former WCS president was given stock options, AEP Texas points out on rebuttal that these stock options were not counted as an expense by the railroad. Once stock options are excluded, AEP Texas' proposed compensation, which includes both salary and bonus, is close to the compensation the former WCS president received in salary and bonus.

With respect to the vice president positions, AEP Texas' estimates fall within the wide range of executive compensation shown by BNSF's evidence.[77] AEP Texas' estimates also are supported by reference to the WCS. As BNSF has not provided convincing evidence that the compensation at the WCS is unreasonably low, we use AEP Texas' proposed salaries for vice presidents and similar positions.

f. Administrative Assistants

The parties used different accounting classifications for the secretaries and administrative assistants. AEP Texas used BNSF's Wage Forms A&B for clerical staff assistants and lead clerks. BNSF argues the position is more of an executive secretarial position, not a clerical position, and BNSF would apply the wage scale for secretary, stenographer, and typists. We use BNSF's proposed wage figure, as it specifically applies to secretarial-type positions.

g. G&A and Non-Crew Operating Personnel

Both parties used BNSF's Wage Forms A&B to develop salaries for non-executive G&A and non-crew operating personnel. In many instances, the parties agree on the appropriate salary. Where they do not agree on salary, we use the more specific evidence provided by AEP Texas. In those few instances where we use a position proposed only by BNSF, we use BNSF's proposed salary.

h. Outside Directors

AEP Texas assumed that the TNR would select outside directors that would have a direct and substantial interest in the TNR's affairs and success and thus would be willing to serve on the TNR board for minimal compensation (for the travel expenses associated with attending board meetings). BNSF argues that even outside directors with a financial stake in the venture would demand compensation; it argues that the TNR would need to compensate the Chairman at a rate of $70,000 per year (including travel and expenses), and the other board members at a rate of $40,000 per year (including travel and expenses).

We find AEP Texas' assumptions on this issue to be feasible and consistent with precedent in prior SAC cases (see Xcel at 70-71; Duke/CSXT at 62; CP&L at 64; Duke/NS at 77; TMPA at 95). Accordingly, we use AEP Texas' evidence here.

i. Fringe Benefits

AEP Texas calculated a fringe benefit markup of 33.9% of wages, based on the ratio of total supplements to total base wages for all Class I carriers. (That information was derived from

[77] BNSF Reply Narr. III-D-117.

the second quarter 2000 calculations of RCAF.) BNSF used 43.2%, which it states is a 3-year average of transportation-specific fringe benefits reported in the R-1 filings of those Class I railroads with less than $1 billion in freight expenses per year.

On rebuttal, AEP Texas points out that for the 2000 base year used to develop costs here, several Class I railroads (UP, NS, KCS) all had fringe benefit ratios lower than 33.9%. Because AEP Texas has provided evidence that individual railroad fringe benefits can average about one-third of wages, we use AEP Texas' 33.9% factor.

j. Indexing Methodology

The parties agree on the indexing methodology.

G. Materials, Supplies, and Equipment

Materials, supplies, and equipment would be needed to support TNR personnel, including such items as motor vehicles, office furniture, equipment, utilities, outside services, IT hardware and software. The parties agree on the unit costs for some of these items, but their aggregate expenses differ due to the difference in their proposed staffing levels. For unit costs on which the parties agree, the costs are restated to the staffing levels used here and are not further discussed. Likewise, decisions that are driven by the use of AEP Texas' operating plan are not addressed separately. The remaining disputes are discussed below.

1. Vehicles

AEP Texas would have the TNR purchase 43 Ford Explorer SUVs and 3 Dodge Dakotas for inspectors. BNSF would have the TNR purchase 1 Chevrolet Suburban for crew hauling, 6 Dodge Dakotas and 39 Ford Explorers (with an additional 12 Explorers included in G&A).

Neither party provided much, if anything, in the way of textual explanation or support for its vehicle choices or counts. However, BNSF detailed its development of vehicles by position for both non-operating and G&A personnel, and therefore provided the better evidence of record. Accordingly, we use its vehicle counts, as modified by our revisions to staffing levels (resulting in only 6 Ford Explorers for G&A personnel).

Although both parties claim to have relied on Edmunds.com for the price of vehicles, there is a modest difference in the cost for Ford Explorers between the parties. However, only AEP Texas provided documentation for the prices it used. Therefore, we use AEP Texas' evidence here for Ford Explorers and Dodge Dakotas. Because AEP Texas does not provide a price for Chevrolet Suburbans, we use the price used by BNSF.

The parties agree that the vehicles would have an average life of 6 years and a salvage value of 13% of the initial acquisition cost, and agreed to use the cost-of-capital rate for amortization of the vehicles.

2. Desks

The parties agree on a cost of $2,438 per desk. AEP Texas provided for 49 desks for non-MOW operating personnel,[78] whereas BNSF used a quantity of 53 desks. BNSF's slightly higher quantity is due to the fact that BNSF included desks for 5 Managers—Operations Control, whereas AEP Texas provided only one because only one manager would be on duty at a time. We agree with AEP Texas that only one desk would be necessary for this position. BNSF included an additional 36 desks for MOW personnel, while AEP Texas did not include any for MOW personnel. Because we accept BNSF's MOW staffing level, we accept its inclusion of desks for these employees. Accordingly, we use a desk quantity of 85 for operating personnel. For G&A personnel, both parties would provide one desk for each employee.

Finally, the parties agree to a 5% sales tax and an amortization rate of 11% for desks. However, the parties disagree on the amortization period—BNSF argues for 5 years, AEP Texas for 10 years—and the need to include a replacement cost. Based on past SAC decisions, see Otter Tail at C-15; Xcel at 73, we accept BNSF's 5-year amortization period, but reject its inclusion of a replacement cost.

3. Safety Equipment

The parties do not agree on the amount of safety equipment that the TNR would be expected to provide its T&E employees. AEP Texas used a figure of $16.46 per trainman and $24.13 per inspector. BNSF proposed a figure of $240.81 per trainman and $287.35 per inspector, which would include such items as prescription glasses, safety shoes, and gloves. Because BNSF has not provided evidence that railroads generally provide such equipment to their T&E employees, we use AEP Texas' evidence on this cost item.

4. End-of-Train Devices

The parties agree on this issue.

[78] In its spreadsheets, AEP Texas actually included 50 desks, due to its inclusion of 12 desks for the 22 Assistant Managers—Train & Locomotive Operations. See AEP Texas Errata to Reb., e-WP. TNR_OP_EXP_Rebut.xls. We presume this to be an error, as only one desk would be needed for every two positions. (BNSF included only 11 desks for these 22 positions). Accordingly, we have subtracted one desk from AEP Texas' quantity.

5. Locomotive Remote Control Systems

The parties agree on this issue.

6. Inspection Tools and Supplies

The parties agree on the number and cost for tool sets and car parts for TNR inspectors. Without any explanation, BNSF doubled AEP Texas' $50,000 annual gasoline cost and would provide for a larger car part inventory. Absent an explanation for these additions, we use AEP Texas' evidence.

7. Office Supplies

The parties agree on the unit cost per staff member for office supplies ($248.52), but AEP Texas would apply this to each person, whereas BNSF would apply this cost to each desk for non-train operating personnel and to each employee for G&A personnel. We believe that the amount of office supplies needed is more likely to be based on the number of persons. Therefore, we use AEP Texas' approach.

8. Utilities

AEP Texas estimated a utilities expense of $310,000 per year. BNSF accepts this as a base number, but would increase it to reflect its proposed increase in non-train operating personnel. However, BNSF has offered no explanation for why utilities expenses should increase in direct proportion to the number of employees. Therefore, we use AEP Texas' estimate.

9. Travel Expenses

AEP Texas included travel expenses of $8,000 for persons at the director level or higher, based on an annual survey of corporate travel performed by Runzheimer International. BNSF would estimate travel expenses as 5% of the total wages and salaries of all operating managers and personnel. AEP Texas has provided support for its evidence whereas BSNF has not explained how it developed its estimate. Therefore, we will use AEP Texas' evidence.

10. IT Systems & Communications

AEP Texas developed these expenses in a detailed item-by-item analysis. BNSF used a figure of 3% of other expenses for this expense category. We prefer AEP Texas' more detailed, specific analysis.

11. Miscellaneous Expenses

We use AEP Texas' evidence for outside auditing, litigation, tax preparation, and marketing and contract administration. BNSF has not sufficiently justified its higher amounts. We also use AEP Texas' evidence for outsourced claims. (BNSF did not include any expenses for this item.) AEP Texas maintains that the TNR would not need to use many of the services BNSF has included under miscellaneous expenses. We agree, and therefore use AEP Texas' lower amount. Finally, we agree with AEP Texas that there is no need to include expenses for safety awards and incentives.

H. Training and Recruitment

The parties agree that the TNR would incur costs to recruit professional employees and to train other employees. They also agree on the cost and time to train IT programmers, equipment inspectors, experienced conductors and the costs for recertification of experienced engineers. However, the parties do not agree on the recruitment or training costs for other employees or generally whether to expense or capitalize the start-up training and recruitment costs.

1. Training

The parties disagree on the weeks of training for conductors seeking to become engineers, and for MOW laborers. We use AEP Texas' assumption of 12 weeks of on-the-job training for conductors seeking to become engineers, rather than BNSF's assumption of 15 weeks of on-the-job training, because AEP Texas' assumption is based on FRA standards. Additionally, we accept AEP Texas' assumption that 1 week of training for MOW laborers would be reasonable.

BNSF would increase the cost of training novice conductors and conductors training to be engineers by 20% and 10%, respectively, to account for dropouts. AEP Texas claims that these additives overstate these expenses because BNSF's evidence indicates that the dropouts fall out about halfway through the course and therefore only half of the costs of the training should be added to deal with the dropout rate. We agree with AEP Texas that, if 20% and 10% trainees drop out halfway through, this calls for increasing the expenses by 10% and 5%, respectively.

2. Wages While Training

Except as discussed below, the parties agreed to use 80% of wages plus full benefits when calculating the compensation of trainees, but the parties do not agree on the actual costs because they each used different wage, compensation and salary numbers. The parties agree that IT specialists would receive full wages and benefits during training.

AEP Texas would not have the TNR pay for the classroom portion of training costs for novice conductors. It points out that according to AMDG, a firm used by other Class I carriers as a resource for training new conductors, novice students pay for their own tuition and room and board until graduation from the program. However, once hired, AEP Texas would have the TNR pay $670 per week for 13.5 weeks of on-the-job training. BNSF claims that the TNR would need to pay 80% of salary plus benefits for 12 weeks. Because BNSF has not shown that AEP Texas' plan is unreasonable or infeasible, we use AEP Texas' evidence for on-the-job training.

For dispatchers, AEP Texas would have the TNR reimburse tuition cost based on a program offered at Tarrant County College in Fort Worth, TX, but not additional costs associated with training because the course work would be pre-employment schooling that would be covered by the student. BNSF would have the TNR include travel expense, salary, and fringe benefits for the length of the course. Because BNSF has not shown that AEP Texas' plan is unreasonable or infeasible, we use AEP Texas' costs for dispatchers during training.

For MOW supervisors and laborers, AEP Texas would have the TNR pay 80% of full salary during training. BNSF would have it pay their full salary during training (rather than the 80% paid to other employees in training), as well as an unexplained $70 per individual hiring cost. However, because BNSF has not provided any reason to pay these specific employees full salary during training while agreeing that others would only be paid 80%, we use AEP Texas' cost evidence.

3. Travel, Meals, Lodging

AEP Texas would have the TNR provide $75 per diem and $300 for travel for experienced conductors and for engineers. BNSF would have it provide $75 per diem, $180 per week lodging, and $300 air fare for each dispatcher, conductor, and engineer. Because we use AEP Texas' wage evidence for training, we also use its travel, meals, and lodging costs during training.

4. Recruitment Cost Per Employee

The TNR would incur recruitment costs for employees who would not require any training, such as executives and managers. For non-executives, the parties agree on the methodology and hours that would need to be devoted to the hiring process, but due to differences in the salary figures they used, they derive different estimates per candidate. We use the agreed-upon methodology and apply it to our restated number of employees.

For personnel above first-level supervisor, AEP Texas assumed, based on a survey by an employment services company that 60% would be hired by word of mouth, 10% through headhunters, 15% through advertisements, and 15% by other means. Based on these percentages, AEP Texas calculated a weighted average hiring cost for these management level positions. BNSF maintains that every employee beyond first-level supervisors would need to be hired though recruiters. We disagree, and use AEP Texas' cost evidence because it is reasonable.

For each executive, BNSF maintains that 25% of the first year's salary would need to be paid to recruiters. However, AEP Texas has provided evidence that recruitment firms charge as little as 10% of salaries for executives. It is reasonable to assume that the TNR could recruit executives using lower-cost recruitment firms. Therefore, we use AEP Texas' 10% figure for that expense.

The parties agree on a $75 per employee expense for pre-employment physicals. BNSF would also have us allocate $100 per employee for pre-employment testing, pointing out that WCS incurs such costs. AEP Texas argues that this expense would not be necessary, as it could be done as part of the initial training for crews or pre-employment interviews. We agree, and we exclude this additional expense.

5. Start-Up Recruitment & Training Expenses

AEP Texas would capitalize, rather than expense, the initial recruitment and training costs that the TNR would incur. AEP Texas' principal argument on opening was that this up-front expense should be treated like other start-up capital investments and the expenses should be matched with the revenues those expenses are used to produce.[79] However, in previous SAC cases the Board found that, under the accounting industry's Generally Accepted Accounting Practices (GAAP), the cost of training and recruiting employees is treated as an operating expense that is not capitalized. See American Institute of Certified Public Accountants, Statement of Position 98-5, Reporting on the Costs of Start-Up Activities (1998) (SOP 98-5); Otter Tail at C-17; Xcel at 75; and Duke/CSXT at 64-65.

On rebuttal, AEP Texas argues that its position is actually consistent with SOP 98-5 and with GAAP. It refers to Publication 535: Business Expenses, For use in preparing 2003 Returns, from the Internal Revenue Service (IRS).[80] This merely shows, however, that start-up training and recruitment costs may be treated differently for tax purposes than for accounting purposes. AEP Texas has not explained why this tax rule mandates the same treatment here. We will not depart from GAAP principles without a showing that a different approach is more consistent with the underlying economic theories and objectives of the SAC test and without consideration of the implications (if any) on other aspects of the SAC analysis. Therefore, consistent with Board precedent, we include recruitment and training costs here as an operating expense.

6. Subsequent Annual Recruitment & Training Expenses

The TNR, like all businesses, would need to replace employees lost to attrition. AEP Texas assumed an attrition rate of 3% annually, based on CSXT's attrition rate. BNSF maintains

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[79] AEP Texas Open. Narr. III-D-48-49.

[80] AEP Texas Reb. Narr. III-G-33-34.

that the TNR would have an attrition rate of 5.5% annually. We use the attrition rate from AEP Texas' evidence because AEP Texas provided support for that rate, and BNSF has not discredited it.

I. Ad Valorem Tax

AEP Texas adjusted ad valorem taxes to exclude certain portions of BNSF's leased property. BNSF, however, has presented evidence that it pays such taxes on leased property in several states and that the expense should be included here. Accordingly, we do so.

J. Loss and Damage

The parties agree on the loss and damage methodology. We have calculated the loss and damage expense by applying that methodology to the tonnages the TNR would handle.

K. Maintenance-of-Way

1. Staffing

AEP Texas proposed a MOW staff for the TNR of 150 employees, significantly less than the 488 employees BNSF argues that the TNR would need. AEP Texas defends its proposed lower staffing level on three grounds: the TNR would rely on outsourcing; it would cross-train employees to perform a variety of functions; and it would not be constrained by the labor agreements and merger conditions to which BNSF and other Class I railroads are subject. As other shippers have proposed in recent SAC cases, AEP Texas asserts that the TNR would contract out the majority of its program maintenance, leaving its staff free to perform the routine, day-to-day spot maintenance, although it would outsource some of its spot maintenance functions as well.

BNSF argues that AEP Texas' reliance on outside contractors would prevent prompt response to maintenance problems. BNSF is also critical of AEP Texas' proposal to contract out some spot maintenance, specifically building maintenance, communication maintenance, and bridge and culvert maintenance. BNSF argues that the MOW plan proposed by AEP Texas would be insufficient to handle "random failures" and other unexpected maintenance problems that would arise. BNSF argues that the TNR would experience greater maintenance requirements than does BNSF, and thus require a greater staffing level, because of the traffic densities and volumes per line segment that the TNR would be projected to handle. Finally, BNSF argues that cross-training would not be feasible.

AEP Texas states that, even if the TNR were to employ an in-house MOW workforce, its employees would experience response time issues.[81] AEP Texas claims that outside contractors might actually respond faster than in-house employees would, because they would not be burdened by spot maintenance demands. Further, AEP Texas argues that, because the TNR's buildings and bridges would be newly constructed, they would require less maintenance than those structures on BNSF's system.

AEP Texas' proposed MOW staffing plan does not remedy the serious flaws that the Board has found with similar plans in past SAC cases. As the Board explained in Otter Tail (at C-21), to be able to adequately handle emergencies in a timely manner, a team of on-call MOW workers would need to be immediately deployable, without the delay associated with selecting or making arrangements with a contractor. Moreover, internal MOW staff would be more familiar with the system and would presumably be able to make repairs more quickly.

AEP Texas' plan is even more problematic than those presented by shippers in past cases, as AEP Texas would have the TNR also contract out a good portion of its spot maintenance duties. Spot maintenance, by definition, includes those problems that occur on a day-to-day basis, and as such, require necessary personnel on duty at all times. For that reason, the Board has disfavored the notion that spot MOW functions could be outsourced. See, e.g., Xcel at 79. AEP Texas argues that its system would be newer and more durable, and therefore would experience fewer spot MOW problems, but it has not attempted to quantify such an impact. See Otter Tail at C-21. But even if it were to have fewer problems than the BNSF, it is not reasonable to assume that a high-density system like the TNR would not experience a variety of problems on a daily basis. It would need sufficient personnel available to deal with those situations in a timely manner.

Overall, outsourcing maintenance is questionable, whether for spot or emergency repairs. For example, AEP Texas claims that the TNR would train an outside contractor to perform communications systems maintenance. But if problems were to occur to the communications system, that could create severe safety problems and widespread traffic disruptions. Accordingly, it would be of the utmost importance to restore communications as quickly as possible, which would be more easily and readily accomplished with internal MOW employees. Moreover, AEP Texas provides no evidence of outside contractors available to do such work or the means and costs of providing necessary training to contract workers on the specifics of the TNR system.

Finally, as explained in prior SAC cases, it seems unlikely that a cross-trained work force, even if available, could provide the unplanned day-to-day maintenance that would be needed for a railroad the size of the TNR. See Xcel at 79; Duke/CSXT at 67. AEP Texas points to the Huron Central Railway and Quebec Gatineau Railway as examples of carriers that have utilized cross-trained MOW employees. We do not view this as an apt comparison because those two railroads are light-density systems that likely do not experience the same level of MOW

[81] AEP Texas Reb. Narr. III-D-186.

problems that a railroad such as the TNR would likely encounter. For all these reasons, we use the MOW staffing level proposed by BNSF.

2. Equipment

The type and amount of MOW equipment proposed reflects the differing staffing and amount of maintenance foreseen by the parties. Because we use BNSF's staffing and its maintenance plan, we use its estimate of the amount and type of maintenance equipment that would be needed.

However, as AEP Texas points out, BNSF double-counted labor costs by including labor directly in its equipment estimate and also as a separate labor cost. We have restated BNSF's equipment cost to remove the additional labor cost.[82]

AEP Texas included costs to contract out maintenance of company owned or leased equipment. BNSF did not separately include this cost. Because we use BNSF's equipment cost evidence, to avoid double counting we reflect BNSF's treatment of this cost.

3. Contract Maintenance

The parties agree that some maintenance would be handled by contractors rather than by TNR staff, although they disagree on the cost of some of that work. The disputed items are discussed below. Because we use BNSF's proposed MOW staffing, it is unnecessary to include AEP Texas' proposed contract costs for Communications System Inspection and General Building Maintenance.[83]

a. Rail Grinding

AEP Texas argues that recent studies indicate that premium rail in high-density territory can withstand greater than 150 million gross tons (MGT) without grinding.[84] AEP Texas would have the TNR grind track every 50 MGT on curves equal to or exceeding 3 degrees. Elsewhere, grinding would occur at 100 MGT intervals except where premium 136-pound rail would be used; in those areas grinding would occur every 300 MGT. Switches, rail crossings (diamonds) and rail located at crossings would be ground as required. On rebuttal, AEP Texas offers testimony based on the rail grinding practice of Canadian Pacific Railway Company (CP).

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[82] See Otter Tail at C-23.

[83] See BNSF Reply Narr. III-D-195.

[84] See AEP Texas Open Narr. III-D-102, citing Kevin Sawley & John Robinson, "Rail Grinding on CN," Railway Track & Structures, Dec. 2000; AEP Texas Reb. Narr. III-D-202.

BNSF argues that the study AEP Texas relies on does not support AEP Texas' conclusions and does not reflect the industry's most current thinking regarding rail grinding.[85] BNSF would include grinding at a frequency of 50 MGT, including switches and crossings. BNSF argues that the rail grinding unit cost should also include additional costs for fuel, rail lubricants, and the purchase and supply of water and fire retardant.

Neither the study AEP Texas has submitted nor its expert testimony supports the feasibility of its proposed rail grinding. The study was performed on a short line segment under constant supervision. The study also indicates a more frequent grind cycle than that proposed by AEP Texas. The assertions regarding CP's rail grinding practices are also unsupported. Therefore, we use BNSF's evidence.

b. Track Geometry Testing

The parties agree that the TNR would have to perform track geometry testing 6 times per year, but they disagree on the unit cost. BNSF argues that AEP Texas has understated this cost by applying incorrect production rates and failing to include weekend mobilization charges. Because AEP Texas has not documented or supported its costs and based its unit costs on an unverifiable estimate, we use BNSF's evidence.

c. Ultrasonic Rail Testing

The TNR would have to perform ultrasonic testing of the rail to locate internal rail defects. The parties agree on the unit cost of ultrasonic rail testing, but BNSF disputes AEP Texas' proposed testing interval. AEP Texas would have the TNR test 3 times per year, based on CP's practice. AEP Texas bolstered its support on rebuttal by providing CP's Standard Practices Circular for the year 2000.[86] We use AEP Texas' proposal, because it is feasible and supported.

d. Surfacing

AEP Texas included costs for surfacing all track carrying heavy tonnages once every 3 years and light tonnage track once every 4 years. BNSF included surfacing as a capital expense, except for minimal surfacing that would be performed as part of spot maintenance. We agree with AEP Texas that surfacing is appropriately considered an operating expense because it involves preventative maintenance needed to keep the rail system in operating condition. See TMPA at 106. Therefore, we use AEP Texas' evidence on surfacing cost.

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85 See BNSF Reply Narr. III-D-214, citing Peter Sroba, Eric Magel, & Fred Prahl, "Getting The Most From Rail Grinding," Railway Track & Structures, Dec. 2003, at 30.

86 See AEP Texas Reb. e-WP. "Krestinski.pdf."

e. Weed Spraying

The parties agree that non-noxious weed spraying would cost $296 per mile. BNSF would also include an additional unit cost for noxious weed spraying, based on its own cost for this activity, but it has not provided sufficient support for the number of track miles to which it would apply this cost. BNSF also argues that a cost must be included for vegetation control under bridges. However, BNSF has presented no evidence that such a cost is necessary. See Otter Tail at C-24 (there appears to be no FRA regulation requiring vegetation control under bridges). Accordingly, we use only the parties' agreed-upon unit cost for non-noxious weed spraying.

f. Brush Cutting/Mowing

AEP Texas supplied the only evidence of record on the cost of brush cutting/mowing. Accordingly, we use AEP Texas' cost.

g. Crossing Paving

AEP Texas' proposed cost of $382,000 for crossing paving is not disputed by BNSF. Accordingly, we use AEP Texas' evidence.

h. Ditching

The parties agree that 10% of the TNR would require annual ditching. BNSF argues that AEP Texas understated the cost of ditching by incorrectly dividing the total cost obtained from BNSF during discovery by the total number of pass miles, rather than the total number of track miles.[87] On rebuttal, AEP Texas did not address this issue. Thus, it appears that AEP Texas has conceded this point, and we use BNSF's evidence.

i. Bridge Inspection Contracting & Repair

The parties agree to the base cost for bridge work. BNSF would add costs for concrete repair or underwater inspection. Because AEP Texas does not discuss this issue, we use BNSF's evidence for bridge work cost.

AEP Texas argues that new bridges would have a builder's warranty and require less maintenance during the initial years of operation. We cannot simply assume, however, that only minimal repairs would be required throughout the entire SAC analysis period, and AEP Texas

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[87] BNSF Reply Narr. III-D-218.

failed to support such an assumption. Therefore, we use BNSF's cost evidence for bridge repairs.

j. Miscellaneous Engineering

AEP Texas proposed an allowance for miscellaneous engineering and inspection work to cover non-routine maintenance. AEP Texas included $750,000, stating that this cost is consistent with TMPA (at 109), but it provided no evidence to show that those costs are appropriate here. BNSF developed separate costs for bridge engineering (based on the experience of its witness), and for building engineering (0.5% of the construction cost of such facilities). We find AEP Texas' cost evidence unsupported. Because AEP Texas failed to support its figure, we use BNSF's miscellaneous engineering evidence.

k. Snow Removal & Debris

AEP Texas included $150,000 for contract snow removal on parking lots and roadways, and for in-house staffing to provide for the minimal on-track snow removal needs. BNSF developed a unit cost per mile, based on its own 2002 snow removal and weather-related costs across its system, which it would apply to the TNR's 1168 route miles.

BNSF's cost for snow removal might be on the high side because its system-average cost is based in part on routes in high snow areas. However, AEP Texas has not provided support for its cost figure, nor has it specified how much of the right-of-way (ROW) would potentially require snow removal. Therefore, we use BNSF's cost figure as the best evidence of record.

l. Coal Dust

As BNSF notes, coal dust is a substantial maintenance challenge and a safety hazard because it covers the track and fouls the ballast. While the parties agree that coal dust mitigation would need to be performed, they disagree on how to allocate the costs. AEP Texas addressed coal dust removal needs as part of the TNR's capital program. According to AEP Texas, it included 48 miles of annual undercutting to address deteriorating ballast, as well as ballast fouled by coal dust.

Under AEP Texas' proposal, only approximately 4% of the TNR would undergo coal dust mitigation annually. However, AEP Texas has not shown that mitigation could be delayed until regularly scheduled undercutting. Accordingly, we use BNSF's evidence, which includes coal dust mitigation costs as an annual expense.

m. Environmental Mitigation

AEP Texas asserts that the cost of environmental cleanup at fueling facilities would not exceed $80,000 because the TNR would provide protective drip pads and impermeable dikes around storage tanks, ensuring that oil emissions from idling locomotives would be contained. BNSF argues that AEP Texas has understated the costs, and BNSF points to its own costs for the past 10 years at its state-of-the-art fueling facility at Belen, NM. AEP Texas claims that an efficient operator could perform this function more effectively than BNSF. However, AEP Texas has not provided evidence to support its $80,000 figure. Because BNSF bases its cost figures on actual experience, we use BNSF's evidence on this cost.

n. Stabilization Issues & Crawford Hill

BNSF argues that, based on its own experience, the TNR would incur additional costs at certain locations to ensure soil stability. Specifically, BNSF states that there are annual costs associated with the poor clay conditions from Ardmore to Joder (MP 440-446) on the Butte Subdivision, which regularly require stabilization of subgrade and re-sloping of cuts and fills. BNSF also claims that there are annual costs associated with the sandy/silty soils at MP 11-12 and MP 23-25 on the Angora Subdivision, which require regular stabilization of the embankment and slopes. BNSF also incurs costs for cleaning up rock falls, and ditching and slope stabilization at MP 19-25, south of the Canadian River Bridge on the Boise City Subdivision. In addition, BNSF states it incurs costs to address stability problems at MP 234-MP 238.1 in the Red River Valley Subdivision for rip rap protection and restoration, and placing jetties to direct the river to prevent erosion. Finally, BNSF states that Crawford Hill (MP 410-420), with its 1.5% grade and severe curvature, has proven difficult to maintain and requires additional costs.

AEP Texas asserts that these are construction-related problems that would be remedied by AEP Texas during construction of the TNR. However, AEP Texas has not provided evidence to show that these costs could be eliminated by the new construction of the TNR. Because the TNR line would generally replicate BNSF's current route, we would expect the TNR to encounter the same difficulties that BNSF encounters. Accordingly, we include BNSF's cost evidence for these expenses.

L. Insurance

AEP Texas calculated an insurance expense—2.94% of total operating expenses—based on BNSF's 2000 Annual Report R-1. BNSF argues that larger Class I railroads can obtain lower insurance rates than the TNR could obtain because Class I railroads self-insure for the first $25 million. BNSF claims that the TNR would have a rate of 5.49%, based on statistics of insurance costs for 2000 (6.30%) and 2001 (4.69%) for Class I railroads earning less than $1 billion in annual revenues. BNSF's evidence of insurance costs is the best evidence of record. However, that evidence shows a downward trend in insurance costs, with the most recent rate in the record being 4.69% of total operating expenses. We use this latest figure here.

M. Trackage Rights Fee

The TNR would have trackage rights over certain lines. The parties agree on the trackage rights fee per gross ton-mile. We apply that number to the number of gross ton-miles based on our tonnage findings.

APPENDIX D—TNR ROAD PROPERTY INVESTMENT

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

Table D-1
TNR Construction Costs

	AEP Texas	BNSF	STB
A. Land	$89,500,000	$326,846,407	$105,288,366
B. Roadbed Preparation	691,101,228	910,291,459	700,507,836
C. Track	1,085,966,450	1,090659,197	1,093,255,420
D. Tunnels	0	0	0
E. Bridges	166,661,562	206,167,910	182,587,836
F. Signals & Communication	145,534,454	163,032,083	145,534,454
G. Buildings & Facilities	61,738,907	96,200,504	76,895,525
H. Public Improvements	38,413,558	76,845,825	63,911,459
I. Mobilization	11,004,615	61,036,727	54,254,060
J. Engineering	218,730,948	369,092,352	226,058,585
K. Contingencies	218,730,948	508,639,395	226,058,585
TOTAL	**$2,727,382,669**	**$3,808,811,859**	**$2,874,352,128**

A. Land

For the most part, the parties agree on the acreage that would be necessary to construct the TNR. They agree that the width of the TNR ROW generally would be 100 feet. They also agree to an average width of 75 feet in certain industrial, commercial, and urban areas. The parties disagree, however, on the acreage necessary for yards and an interchange facility at Amarillo, TX. **Table D-2** summarizes the acreage used by the parties and our findings.

Table D-2
Real Estate Acreage

	AEP Texas	BNSF	STB
ROW	13,100.35	13,134.97	13,100.35
Yards	283.74[88]	252.11	283.74
Easements	755.42	755.42	755.42
Microwave Towers	61.5	61.5	61.5
TOTAL	**14,201.01**	**14,204.00**	**14,201.01**

The small difference between the parties' estimates of ROW acreage is due to differences in their Amarillo interchange configuration in Potter County, TX.[89] The parties also disagree on the amount of land necessary for yards at Alliance, NE, and Las Animas, CO. Because we have generally used AEP Texas' configuration, see **Appendix A—TNR Configuration**, we will use its acreage at these locations.

The parties generally agree on the per-acre cost of acquiring land for the TNR, except for land in Denver, CO, and Potter County, TX. The cost for acquiring the ROW excluding Denver and Potter County is based on the agreed-upon cost per acre and the number of route miles used in our analysis. **Table D-3** summarizes the parties' land values and our findings. The areas of dispute are discussed below.

Table D-3
Real Estate Costs

	AEP Texas	BNSF	STB
ROW (excl. Denver)	$46,797,835	$46,755,753	$46,797,835
Denver, CO	41,563,525	279,108,198	57,309,428
Yards & Other Facilities	944,000	745,352	944,000
Easements	49,102	49,102	49,102
Microwave Towers	188,001	188,001	188,001
TOTAL	**$89,542,463**	**$326,846,407**	**$105,288,366**

1. Denver, CO

AEP Texas estimated the cost of acquiring land in Denver by comparing the ROW parcels to the sale of similar properties. AEP Texas states that it divided the data into quartiles and utilized the lowermost quartile of comparable sales, consistent with the SAC principle of constructing the lowest-cost, most efficient railroad. BNSF points out that this approach is

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[88] AEP states that it has included 273.34 acres for the yard at Alliance. See AEP Texas Open. Narr. III-F-5; AEP Texas Reb. Narr. III-F-2. However, AEP Texas Reb. Errata e-WP. "Yardcomputations.xls" lists the number of acres at Alliance as 257.58 and Las Animas as 26.16, which totals 283.74.

[89] See BNSF Reply e-WP. "iii F 1 Land.xls"; AEP Texas Reb. Exh. III-F-15 at 2.

different than the method used by AEP Texas for other parts of the ROW and argues that it artificially lowers the estimated cost of the ROW by comparing the ROW parcels to only the lowest comparable land sales. BNSF bases land values in Denver on the average of all of the comparables identified by AEP Texas. On rebuttal, AEP Texas utilized the two lowest quartiles. BNSF argues in its motion to strike that AEP Texas presented its justification for this quartile approach for the first time on rebuttal.

AEP Texas' method of developing the TNR's land cost in Denver is inappropriate. Although a SARR is presumed to be a low-cost, most-efficient carrier, that does not permit the complainant to selectively choose data that supports its position, while ignoring other relevant data. In this instance, just because one parcel had been purchased at a relatively low price does not imply that all parcels could be obtained for the same bargain price.[90] AEP Texas thus understates the average cost per acre for land. Accordingly, we use the average price of the sales identified by AEP Texas, as advocated by BNSF, to more accurately reflect the cost of procuring all of the real estate in Denver necessary to build the TNR.

2. Potter County, TX

AEP Texas values the land for the interchange facility at Amarillo at $15,000 per acre, based on comparable sales, while BNSF offers no support for its higher valuation. We use AEP Texas' valuation as the only supported evidence of record.

[90] Moreover, AEP Texas failed to properly follow the quartile methodology it advocates. Under the quartile methodology, one is supposed to look at the middle two quartiles and exclude the low-end and high-end quartiles. AEP Texas Reb. Narr. III-F-4. Instead, AEP Texas excluded the two high-cost quartiles.

B. Roadbed Preparation

Table D-4
Roadbed Preparation Costs

	AEP Texas	BNSF	STB
Clearing, Grubbing	$2,437,198	$2,308,041	$2,437,198
Earthwork	632,450,520	813,967,224	639,970,100
Lateral Drainage	152,850	152,850	152,850
Culverts	26,946,597	35,376,858	27,083,515
Retaining Walls	5,107,564	10,307,478	5,107,564
Rip Rap	4,560,227	4,560,225	4,560,227
Relocation & Protecting Utilities	1,811,131	2,477,305	1,811,131
Seeding/Topsoil Placement	1,478,062	6,965,141	1,478,062
Water for Compaction	11,046,909	12,925,665	12,282,945
Road Surfacing	4,266,106	19,487,242	4,266,106
Environmental Compliance	694,199	1,604,474	1,208,046
Waste Excavation	149,865	158,956	150,093
TOTAL	**$691,101,228**	**$910,291,459**	**$700,507,836**

1. Clearing, Grubbing and Stripping

"Clearing" is the cutting of trees, brush, shrubs and other vegetation to a level of not more than 6 inches above ground, and the disposal of all cut material, and surface litter. "Grubbing" is the removal and disposal of stumps, roots, boulders and debris visible on the surface. The parties agree on the acreage that would require clearing and grubbing, but they disagree on the unit costs for such work. "Stripping" is the removal of all vegetation, sod, topsoil and unsuitable material (including leaves, branches and wood chips left over from clearing and grubbing activities). BNSF would include stripping costs, whereas AEP Texas argues that there is no need to include these costs.

The parties agree to apply clearing and grubbing costs to parcels where the Interstate Commerce Commission (ICC) Engineering Reports (Engrg Rpts)[91] identified clearing and grubbing costs for the BNSF line segments that the TNR would replicate. For segments that were constructed after Engrg Rpts were compiled, clearing and grubbing costs were included where the incumbent railroad incurred such costs.

[91] Engrg Rpts is a compendium of data collected in the early part of the 20th century by the ICC detailing the material quantities required to build most rail lines in place in the United States at the time.

For segments that would require both clearing and grubbing, AEP Texas uses the R.S. Means Manual (Means) cost of $4,063.22 per acre for medium cutting and $2,557.44 per acre for grubbing. For segments that would not require grubbing, AEP Texas applied a cost of $181.65 per acre for clearing based on use of a dozer and brush rake. BNSF accepts the unit costs for those segments that would require both clearing and grubbing, but challenges as unsupported AEP Texas' lower unit cost for segments that would only require clearing. BNSF argues that AEP Texas' unit cost does not include the cost of hauling cleared brush away. But rather than including a higher unit cost for clearing, BNSF substituted a cost for stripping. BNSF claims that the American Railway Engineering and Maintenance-of-Way Association (AREMA) specifications call for stripping whenever surface organic material would weaken the final earth mass, and that stripping is consistent with current construction practice.

We use AEP Texas' lower unit cost for segments that would require only clearing, as they are reasonably based on the use of equipment suitable for clearing. Although stripping is an activity discussed in AREMA specifications, BNSF has not shown that it would be needed here or that it is a suitable substitute for clearing costs. Indeed, because the top 6 inches of soil would be removed during excavation and because topsoil removal is included in waste costs, there is no need for a separate charge for stripping.[92]

Finally, BNSF argues that undercutting would be required to remove materials that would be unsuitable for railroad subgrade, such as materials from swamps and low lying areas, as well as large rocks and boulders. However, BNSF has failed to demonstrate that such unsuitable materials would generally be encountered in construction of the TNR. Thus, no costs for undercutting are included here.

2. Earthwork

a. Specifications

i. Roadbed Width

The parties agree on the roadbed width for most of the TNR. However, BNSF disagrees with the use of a 24-foot roadbed width between Donkey Creek and South Logan, between Eagle Butte Jct. and Campbell, and between Reno and Black Thunder. BNSF argues that the width for those segments would need to be 28 feet, because the comparable BNSF segments were built with a 28-foot roadbed width and the soils along those lines could not support the anticipated traffic volumes on a narrower, 24-foot roadbed.

BNSF has not supported its claim that the soil could not support a narrower, 24-foot roadbed. When asked to provide information to support the contention that the soil along these lines necessitates a 28-foot roadbed, BNSF merely responded that its lines were built with 28-

[92] Stripping costs have not been included in prior SAC cases.

foot roadbeds. Because the parties generally agree that a 24-foot wide roadbed would be feasible for the expected traffic densities, we use that width for all segments of the TNR for which the parties have not agreed to a different roadbed width.

ii. Center-to-Center Track Spacing

AEP Texas used 15-foot track centers for adjacent main line track on the entire TNR. BNSF contends that the TNR would need 25-foot track centers for adjacent main line track in places where BNSF itself has that track-center spacing, to ensure similar levels of service. However, BNSF has failed to provide evidence to rebut a complainant's use of 15-foot track centers. Because 15-foot track centers are in place on many main lines and BNSF has failed to show that AEP Texas' proposal would not be feasible, we use AEP Texas' proposed 15-foot track centers.

iii. Side Slopes

The parties agree to 1.5:1 side slopes.

iv. Access Roads

AEP argues that access roads would not be necessary for construction of the TNR. BNSF would include costs for 24-foot roadways with 4-inch stone base surfacing.

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 itself incur the costs of building such roads. See, e.g., TMPA at 117. Here BNSF has not provided any evidence that it (or its predecessors) incurred costs for access roads. Moreover, as AEP points out, the TNR ROW would be accessible from highways and roads. Therefore, we do not include costs for access roads here.

b. Grading Quantities

Except for the disagreement over the use of a 24-foot roadbed on certain segments (discussed above) and other disagreements discussed below, the parties agree on the methodology for estimating earthwork quantities. Because we use AEP Texas' 24-foot roadbed width, we use its earthwork quantities for those segments.

i. Eagle Butte Jct. to Campbell, WY

For the Eagle Butte-to-Campbell segment, there is a dispute as to the amount of grading that would be required. AEP Texas estimated grading quantities by using the Orin Line quantity for this segment, adjusted to reflect a 24-foot roadbed width. BNSF, in contrast, used the original specifications for this line, including contract documents and bid specifications. AEP Texas criticizes BNSF for not producing this information in discovery.

AEP Texas reasonably relied on the information it received from BNSF in developing its evidence, and BNSF may not impeach that evidence with information it failed to produce during discovery. Therefore, we use AEP Texas' estimates of grading quantities for the Eagle Butte-to Campbell line segment.[93]

ii. Yard Grading

AEP Texas calculated the yard and interchange track grading requirements based on an average fill height of 1 foot and either 15-foot or 25-foot track centers. BNSF accepted this methodology but adjusted the earthwork quantities to its proposed yard configuration. BNSF would also include $0.8 million for the demolition of several buildings at Alliance, NE, due to the expansion of the Alliance yard proposed by AEP Texas. The TNR need not incur costs that the incumbent did not bear. Therefore, we will not include BNSF's yard building demolition cost. Because we use AEP Texas's yard configuration, BNSF's additional grading costs are unwarranted.

c. Unit Costs

Engrg Rpts classifies earthwork into various categories: excavation of common earth, loose rock, and solid rock and borrow (material moved to the construction site for fill). The parties agree to use 5 cubic yard (CY) wheeled front-end loaders to load 20 CY capacity dump trucks for hauling material, and bulldozers to spread borrow and waste material.

For common excavation, AEP Texas would use an 11 CY elevating scraper. BNSF claims that this type of scraper would be unsuitable for excavating the materials encountered during construction of the TNR and that different equipment would be needed to compact the soil. BNSF also claims that 35% of the common excavation would involve removing clay at a higher cost than other common excavation. AEP Texas argues that this type of scraper, along with a dozer, is capable of accomplishing the work of other scrapers. AEP Texas' common excavation costs are supported by Means. Moreover, BNSF has not shown that AEP Texas' mix of equipment would not be capable of compacting the soil. Therefore, we use AEP Texas' cost figures for common excavation.

For loose rock excavation, AEP Texas would use 200- and 300-horsepower (HP) dozers, 3 CY power shovels, and 42 CY haulers (off-road trucks), based on U.S. Army earthwork training materials. BNSF proposes the use of 300-480 HP dozers and hydraulic backhoes. BNSF accepts AEP Texas' use of a 42 CY hauler, but would also include additional bulldozers to push rock into piles for loading onto trucks; a 60% additive to shovel costs for moving heavy soils or clay; and a 15% additive to shovel costs for loading materials into trucks.

We use AEP Texas' equipment mix here because it is supported and BNSF has not discredited it. The additional dozers would not be necessary because AEP Texas has

[93] See Xcel at 92-93.

demonstrated that its shovel is designed to excavate and BNSF did not show that hourly production rates could not be met. Because BNSF offers no evidence in support of its 60% additive to shovel costs, we reject it. Similarly, we do not include the 15% additive because BNSF has not supported its claim for this cost. BNSF argues that Means requires this additive, but cites no workpapers in support of its claim. AEP Texas rebutted this additive by showing that it is only applicable where the excavated material requires additional piling before being loaded into trucks. BNSF has not shown that piling would be necessary.

For solid rock excavation, AEP Texas included an average cost from Means for "Drilling and Blasting Rock over 1500 CY" and "Bulk Drilling and Blasting." AEP Texas then added the costs of excavating, loading, hauling, spreading and compacting blasted rock. BNSF contends that drilling and blasting costs should be derived solely from Drilling and Blasting Rock over 1500 CY. However, AEP Texas' averaging methodology is reasonable and consistent with SAC precedent. See WPL at 81-82; Xcel at 97 (recognizing that concentrations of blasting make the use of average figures for blasting large quantities appropriate); Duke/NS at 95; Carolina at 81; and Duke/CSXT at 79. Therefore, we rely on AEP Texas' evidence.

AEP Texas used Means cost for excavating and loading blasted rock using a 3 CY power shovel. BNSF argues that the blasted rock could not be handled at that cost. Rather, BNSF suggests two additional costs that it argues the TNR would incur to handle the blasted materials: (1) costs to reblast 30% of the rock used in embankment and 5% of the waste rock; and (2) costs of loading ½ CY boulders onto a truck. As AEP Texas notes, while BNSF's assumptions are based on observation of the Central City Highway project in Blackhawk, CO, BNSF does not explain how its percentages were developed.

BNSF argues that AEP Texas submitted improper rebuttal evidence regarding the Central City Highway project. However, even if we were to find that this evidence is impermissible, BNSF failed to support its contention that the end result of the initial blasting would produce a large quantity of rocks exceeding 24 inches. As AEP Texas points out, blasting is planned with a number of end results in mind, including the size of rocks that are desired, and it may be that with that highway project blasting was done in a manner so as not to produce rocks that were less than 24 inches. Regarding BNSF's proposed loading cost, Means confirmed that its cost assumes that blasting would produce materials small enough to be handled by AEP Texas' 3 CY shovel. For these reasons, we do not accept the additional costs for reblasting and loading.

Finally, BNSF argues that AEP Texas failed to include costs for fine grading. On rebuttal, AEP Texas acknowledges that we included the cost of fine grading in Xcel, but argues that BNSF's evidence here goes beyond the Means costs accepted there. In Xcel, the Board explained that fine grading costs should be included because fine grading is typically an element of railroad construction and because Means has a separate costs category.[94] Here BNSF has failed to explain why anything beyond the Means fine grading crew and equipment costs are necessary. Because both parties already included costs for water, scrapers and compacting

[94] See Xcel at 97-98.

equipment, BNSF's additional costs will not be included here. We use AEP Texas' rebuttal evidence on the fine grading equipment and unit costs.

3. Drainage

a. Lateral Drainage

The parties agree on a cost of $0.15 million for lateral drainage.

b. Yard Drainage

AEP Texas includes 5,001 linear feet (LF) of 24-inch galvanized pipe for the main collector lines and 425 LF of 12-inch pipe for cross drains. BNSF agrees with the type of pipes and cross drains, but would include 4,245 LF of 24-inch pipe and 375 LF of 12-inch pipe. Because we have accepted AEP Texas' yard configuration, we accept its estimate of pipe needed for yard drainage. However, we correct AEP Texas' use of 2001 Means costs to 2000 Means costs, consistent with the source used for costing other road property investment components.

4. Culverts

AEP Texas included 476 culverts, based on BNSF's culvert inventory list obtained through discovery. BNSF argues that 481 culverts would be required on the lines being replicated by the TNR. BNSF would also add 44 approach culverts, of which, AEP Texas contends, only three were included in BNSF's inventory. On rebuttal, AEP Texas added these three approach culverts, but objects to the inclusion of the other 41 because they did not appear on the inventory list provided in discovery.

We use AEP Texas' culvert quantity because AEP Texas reasonably relied on the information it received from BNSF in developing its evidence, and BNSF may not impeach that evidence with information it failed to produce during discovery.

AEP Texas proposes to have all culverts installed during the early stages of the subgrade preparation. It assumes that no deep trenches and no waterway diversions would be necessary. More specifically, the bed for the corrugated metal pipe or reinforced concrete box culverts would be excavated 1 foot wider on each side than the culvert width. The bottom of the excavation bed would be covered with 4 inches of gravel. BNSF would use a separate culvert crew to perform the necessary re-excavation, backfill and compaction for culvert installation. BNSF also assumes that excavation would have sloping sides to facilitate backfilling based on AREMA. BNSF also proposed bituminous coated pipes rather than the galvanized and uncoated pipes AEP Texas would use.

BNSF failed to explain why bituminous coated pipe would be necessary. Therefore, we use AEP Texas' specification for galvanized, uncoated pipes.[95] However, we use BNSF's excavation quantities, based on AREMA standards requiring sloping excavation.

5. Retaining Walls

AEP Texas included $5.1 million for retaining wall investment based on quantities from Engrg Rpts and unit costs from Means. BNSF would include $10.3 million for retaining walls. Although BNSF accepts AEP Texas' use of the base quantities from Engrg Rpts, it would double the retaining wall quantities to account for the TNR's wider roadbed, as well as the additional retaining walls that have been built since the original construction of BNSF's lines. BNSF would also add trenching costs for gabion installation to account for installation after the grading process, rather than AEP Texas' approach of installation during the grading process.

BNSF has failed to provide adequate and specific support for additional quantities for lines constructed after Engrg Rpts. Furthermore, BNSF provided only general calculations showing the effect widening the embankment would have on the retaining wall requirements without identifying the location, quantity or requirements of any of the proposed additional retaining walls.[96] Therefore, we use AEP Texas' retaining wall evidence.

6. Rip Rap

Rip rap are large stones placed at the ends of drains and culverts to slow and deflect drainage. AEP Texas included $4.56 million for rip rap, based on quantities developed from Engrg Rpts, Orin Line construction documents, and unit cost from Means. BNSF includes $4.54 million for rip rap. The difference results from: (1) the parties' differing route miles; (2) a small difference in the location factor; and (3) BNSF's exclusion of 0.91 miles of the Harrington Spur and 6.61 miles for the Crawford Hill re-route. We use AEP Texas' figure because it is reasonable and is supported by evidence.

7. Relocating and Protecting Utilities

AEP Texas included costs for relocating utilities on line segments that were built after utility structures were already in place. BNSF accepts AEP Texas' evidence but would add utility relocation costs to 71 miles of track where AEP Texas would increase capacity beyond what BNSF has on its system today, and to 55 miles of track where BNSF has itself added capacity in the last 10 years. Because BNSF has failed to show that it paid for utility relocation during its capacity enhancements, we do not include utility relocation costs for capacity enhancement projects.

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[95] See Duke/CSXT at 82; CP&L at 84; Duke/NS at 97.

[96] Cf. Duke/CSXT at 82; Xcel at 99.

8. Seeding/Topsoil Placement

AEP Texas included costs for seeding and topsoil placement for those ROW segments for which BNSF incurred such costs. For the line segments from Eagle Butte Jct. to Campbell and Donkey Creek to South Logan (including the Reno branch and the TNR-owned portions of the mine spurs), AEP Texas based its cost estimate on actual topsoil placement costs from the Orin Line construction. For the remaining segments, AEP Texas relied on Engrg Rpts (embankment protection quantities) to estimate seeding and topsoil costs. BNSF would add costs for segments where it has itself added capacity over the years and where the TNR would build more track than BNSF has now. BNSF also disputes the claim that seeding costs are included in the Orin Line topsoil costs, on the ground that seeding costs are generally incurred after the topsoil is spread. BNSF would use costs from Means for topsoil and seeding for the entire line.

It is inappropriate to include topsoil placement and seeding costs unless the incumbent railroad or its predecessors actually incurred such costs. See FMC Wyo. Corp. & FMC Corp. v. Union Pac. R.R., 4 S.T.B. 699, 801 (2000) (FMC); WPL at 85. BNSF's claim that seeding costs were not included in the Orin Line topsoil costs is not supported by any evidence. Accordingly, we use AEP Texas' evidence for these costs.

9. Water for Compaction

The parties agree that water would need to be added to the roadbed to achieve adequate compaction. AEP Texas included $10.91 million for water, based on data from construction of the Orin Line and from the Wyoming Department of Transportation (WYDOT). BNSF accepts AEP Texas' quantity of water per cubic yard of earthwork, but argues that the unit cost derived from WYDOT contract specifications includes the cost for transporting and spreading the water, but not the cost of the water itself. Therefore, BNSF added costs for water based on Means. The WYDOT contract specifications relied on by AEP Texas show that WYDOT was responsible for the cost of acquiring water, and that the contractor-bidders were responsible only for the cost of transporting and applying the water to the project. Therefore, we add the cost of acquiring water.

10. Road Surfacing

The parties agree to include costs for road surfacing for those line segments that were built after the establishment of surfaced roads. The parties disagree, however, on whether the TNR would need to resurface roads along older lines. Because BNSF has not shown that it incurred resurfacing costs on these older lines, we exclude such costs. See, e.g., Duke/NS at 100; TMPA at 122-123.

11. Environmental Compliance

The parties agree on the cost per route mile for erosion control, but they do not agree on the number of route miles that would require such environmental compliance. BNSF would include 55 miles of track where it claims it has made capacity improvements after publication of Engrg Rpts, and 71 miles where AEP Texas would build more track than BNSF currently has in place. Because BNSF has failed to show that it had to pay for environmental compliance for its capacity improvements, we do not assume that the TNR would be saddled with such costs.

12. Waste Excavation

The TNR would need land for disposal of excess excavation (waste) material. The parties agree on a unit cost of $300 per acre, and they agree that 30% of the material excavated during construction would be waste. The difference between the parties' figures is due to the difference in their proposed track configurations. Because generally we use AEP Texas' track configuration, we use its waste excavation costs.

C. Track Construction

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

Table D-5
TNR Track Construction

	AEP Texas	BNSF	STB
Ballast & Subballast	$217,762,073	$239,054,321	$217,762,073
Geotextile Fabric	669,051	757,127	669,051
Ties	166,642,841	185,256,290	167,429,447
Rail	229,926,683	236,792,090	233,867,987
Other Track Materials	97,098,131	98,457,011	95,739,523
Turnouts	46,429,121	46,657,945	48,699,932
Labor	327,438,550	283,684,413	329,087,408
TOTAL	**$1,085,966,450**	**$1,090,659,197**	**$1,093,255,420**

1. Ballast and Sub-ballast

The parties agree on the need for 8 inches of ballast and 12 inches of sub-ballast on tangent main line track and passing sidings, and on the amount of ballast and sub-ballast necessary on curves over 3 degrees. They disagree on the need for sub-ballast in yards and on the amount of ballast on curves between 1 and 3 degrees.

a. Quantities

AEP Texas would not include sub-ballast in TNR yards because of the absence of dynamic loading and because the bearing capacity of the subgrade would be sufficient for yard operations with 10 inches of ballast. While BNSF has presented evidence of the importance of sub-ballast, it has not presented any specific evidence that sub-ballast would be required in the yards and, in fact, BNSF does not itself use sub-ballast in some of its yards. Because AEP Texas' proposal to exclude sub-ballast in yards is feasible, as demonstrated by the absence of sub-ballast in some BNSF yards, we do not include costs for sub-ballast in yards.[97]

BNSF argues that the TNR would need additional ballast under curves (super-elevation). Super-elevation on curves offsets centrifugal forces. On rebuttal, AEP Texas notes that FRA regulations allow railroads to design and build curved track with an unbalanced tolerance of up to 4 inches below equilibrium. Because AEP Texas has provided evidence that a certain amount of unbalance is allowable, we use AEP Texas' ballast depths under curves.

b. Unit Costs

The parties agree on the general method for developing a unit price for ballast, although BNSF would adjust the ballast cost to reflect transportation to an additional railhead. While BNSF agrees that Northport would be a sufficient delivery location for ballast, it would have another railhead placed at Alliance (35 miles north of Northport), without explaining why this additional railhead would be necessary. We use AEP Texas' railhead location for ballast and its unit cost, as BNSF has not supported the need to move ballast to a railhead at Alliance. However, as BNSF points out in its motion to strike, AEP Texas treated the ballast unit cost as a 2003 cost, which it then indexed downward to 2000, even though AEP Texas actually derived the unit cost from a 2000 BNSF price list. Rather than strike this evidence, we simply correct this error by not indexing AEP Texas' unit cost, as it is already based on a 2000 cost.

The parties agree to use a unit cost of $2.50 per net ton for sub-ballast and they agree on the labor cost of placing the sub-ballast. BNSF disagrees with AEP Texas' use of a dump train rental fee for moving ballast 5 miles. We agree with BNSF that the TNR would have to move the ballast 208 miles from quarry to jobsite. Therefore, we use BNSF's evidence on the transportation cost for sub-ballast.

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[97] See Duke/CSXT at 87.

2. Geotextiles

The parties agree on the unit cost for geotextile fabric, and on its placement under turnouts, railroad crossings, and at-grade crossings constructed of rubber/asphalt. BNSF would add geotextile fabric under other types of road crossings and transition ties. AEP Texas objects, arguing that the TNR would only have rubber/asphalt crossings and that it would not have transition ties. We agree that use of only rubber/asphalt crossings is feasible. However, we include costs for placement of geotextile fabric under transition ties because we accept BNSF's contention that transition ties would be necessary, as discussed below.

3. Ties

AEP Texas and BNSF agree that timber ties could be used for all TNR tracks (AREMA Grade 5 ties for the main line; AREMA Grade 3 ties for yard, set-out and helper track). For main line track, the parties agree on a tie spacing of 20.5 inches; and for yard, set-out, and helper track, a tie spacing of 24 inches.

The parties agree on the unit costs for Grade 5 and 3 ties, but disagree on how to account for contractor overhead and profit for installing Grade 5 ties, and transportation costs for Grade 3 ties. AEP Texas includes overhead and profit for Grade 5 ties, and transportation costs for Grade 3 ties, within its track labor costs. BNSF, in contrast, added these costs to the agreed-upon base unit costs. While AEP Texas' approach for accounting for these in labor costs is reasonable, it has not supported its track labor costs, as discussed below in **Section C.9.**, and we cannot separate out these cost components. Thus, we use BNSF's method for calculating overhead and profit for Grade 5 ties, and BNSF's method for calculating transportation costs for Grade 3 ties.

BNSF would also add costs for placing transition ties before the switch point at each turnout and for constructing crossings. AEP Texas argues that transition ties would not be necessary. We use BNSF's specifications for transition ties at turnout switch points because such ties are part of BNSF's current track specifications for lines that the TNR would replicate and AEP Texas has not explained why it would be feasible to omit such ties. However, BNSF has not provided evidence to support its assertion that transition ties should be used at crossings, and we do not include costs for those ties.

4. Rail

The parties agree that generally the TNR could be built with standard 136-pound continuous welded rail (CWR), with premium 136-pound rail for the track between Donkey Creek and Alliance, between Donkey Creek and South Logan, and on main line areas with curves of 3 degrees or greater. The parties agree on the use of 115-pound relay CWR for yard, interchange and set-out tracks, and standard 136-pound CWR for the main running tracks through yards. The parties agree on the unit costs for standard and premium 136-pound rail and 115-pound relay CWR, but BNSF would include a transportation additive to account for moving the rail from Pueblo, CO, to the railheads. AEP Texas asserts that BNSF's mileages from Pueblo to the railheads are overstated. Because AEP Texas has supported its mileage by submitting a map into evidence, we apply BNSF's transportation additive to AEP Texas' miles. We restate the quantities of standard and premium 136-pound rail and 115-pound relay CWR based on the network configuration we use.

The parties agree on the use of 136-pound premium rail on branch line curves greater than 3 degrees, and 136-pound standard rail on the remaining branch lines and mine spurs. AEP Texas has agreed to BNSF's proposal to include labor costs associated with laying the track for branch and spur lines, including the Campbell Subdivision. Accordingly, we use BNSF's cost evidence.

Due to their different track configurations, the parties disagree on the quantity of rail that would be needed for set-out tracks. Because, as discussed in **Appendix A—TNR Configuration**, we use BNSF's set-out track configuration, we also use its quantities.

5. Field Welds & Compromise Joints

AEP Texas included costs for field welding rail drawn from six BNSF Authorization for Financial Expenditure (AFE) documents. BNSF agrees to AEP Texas' cost figure.

Where AEP Texas' track specifications called for transitioning from 115-pound rail to 136-pound rail, AEP Texas included compromise welds to join the rail sections together. BNSF argues that a transition from 115-pound to 136-pound rail is too extreme for compromise welds and that a compromise joint must be used instead. However, AEP Texas has included evidence that 115-pound to 136-pound compromise welds are not only possible, but are a standard practice in the industry.[98] While the unit cost for compromise joints is slightly lower than the unit cost for compromise welds, AEP Texas would use the compromise welds because of the high maintenance costs involved with compromise joints. AEP Texas' proposal is feasible, and BNSF has not shown that a compromise weld would be inappropriate. Thus, we use AEP Texas' proposal for compromise welds.

6. Materials Transportation

The parties agree to the cost for moving materials over the TNR ROW. They also agree on the "off-line" transportation costs for getting turnouts, rail anchors, and tie plates to TNR railheads. They disagree, however, on the off-line transportation costs for ties, pandrol plates, spikes, screws, and rail lubricators. BNSF argues that AEP Texas did not include sufficient off-line transportation costs for this second group of materials. AEP Texas states that transportation costs are included in the costs for individual materials, either as a component of the unit cost or as an additive that AEP Texas calculated and applied to the unit cost. But AEP Texas has not

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[98] See AEP Texas Reb. WP. III-F-00895-96.

provided evidence that transportation costs were included in the quotes it received. Also, AEP Texas does not specify where this second group of materials would need to be delivered.

In determining transportation costs, AEP Texas used the average distance necessary to deliver materials to the railheads. BNSF points out that the off-line transportation costs are inconsistent, because some materials would be delivered to one railhead and others to multiple railheads, and that because of this inconsistency the costs are insufficiently supported. BNSF states that between 6-7 railheads would need to be placed approximately every 313 miles to meet AEP Texas' proposed construction schedule. BNSF would have these railheads placed at locations that are served by existing railroad lines, not including the BNSF lines that would be replicated.

AEP has failed to support its off-line transportation costs here. It has failed to specify where the materials would need to be delivered and has failed to show that transportation costs were included in the third-party contractor quotations it relies on. In contrast, BNSF's costing method represents an analytically sound method of developing delivery costs. Thus, we use BNSF's costs here.

7. Other Track Materials

The parties agree on the unit costs and quantities of derailment devices and wheel stops.

a. Rail Lubricators

The parties agree on the unit costs and installation costs for rail lubricators but disagree on where they would be needed. AEP Texas asserts that it followed the manufacturer's "rule of thumb" in placing lubricators every 3 miles on curves of 4 degrees or greater. BNSF argues that lubricators must be used at each curve over 3 degrees. AEP Texas has provided evidence showing that BNSF does not place lubricators at every curve over 3 degrees. Because AEP Texas' proposal is supported by BNSF's actual practice and the manufacturer's recommendations, we use AEP Texas' lubricator placement and quantity, restated based on the network configuration used in our analysis.

b. Tie Plates, Spikes, Anchors and Clips

For all track segments, excluding curves greater than 3 degrees, AEP Texas proposes use of 14-inch tie plates with 2 spikes per plate. AEP Texas supports its proposal with photographs of 4 locations along the Boise City Subdivision where BNSF itself has tie plates with 2 spikes, and by reliance on AREMA standards requiring a minimum of 2 spikes per plate. BNSF states that its own minimum standard is 3 spikes per plate. BNSF points out that, in the over 170 photographs where the fastening system can be seen, the majority show either 3 or 4 spikes per plate on wood ties. BNSF states that the occasional locations where only 2 spikes remain in a plate is the exception, not the norm. The photographic evidence presented by the parties shows that the BNSF lines that would be replicated use various spiking patterns. Because AEP Texas submitted evidence that AREMA standards support its spiking pattern, we use 2 spikes per plate.

The parties agree on the specifications for box anchors but disagree on quantity due to differences in their configurations. BNSF points out that, although AEP Texas' opening narrative states that it would box anchor every fifth tie in yards and on set-out tracks, its cost evidence reflected enough anchors for every other tie. BNSF asserts that AEP Texas did not place anchors at approaches to at-grade crossings. On rebuttal, AEP Texas corrected its quantity of box anchors in yards and on set-out tracks to reflect anchors on every fifth tie. AEP Texas explained that it did specify anchors on every tie at approaches to at-grade crossings because that cost is included in the overall cost of the crossing installation. We use AEP Texas' rebuttal evidence, as it corrected the error pointed out by BNSF and justified why there was not a separate cost for anchors at approaches to at-grade crossings.

The parties agree on the unit costs for spikes, clips, plates and anchors but differ on the transportation costs for spikes and clips. We use BNSF's costs because, as discussed above in Materials Transportation, AEP Texas has failed to show that transportation costs are included in its evidence.

8. Turnouts

The parties agree on the quantity of rail, unit cost and number of crossing diamonds that would be needed for interchange tracks. The parties also agree on the unit costs for turnout materials, except for those discussed below.

a. Switch Heaters

The parties agree on the unit cost, including installation, for switch heaters. But, BNSF argues that switch heaters must be integrated into the signal system. AEP Texas argues that integration would not be necessary because the switch heaters would be independent of the main signal system. Because BNSF has not explained why heaters would need to be integrated into the signaling system, we accept AEP Texas' position.

b. Switch Stands

On opening, AEP Texas omitted costs for switch stands. BNSF proposed low- and high-target switch stands. On rebuttal, AEP Texas agreed to the low target switch stands, but, without explanation, substituted electric switch stands for BNSF's high-target stands. Because AEP Texas fundamentally changed its position on rebuttal without explanation, and because BNSF had no chance to respond to AEP Texas' rebuttal proposals, we use BNSF's low- and high-target switch stands.

c. Insulation Joints

AEP Texas proposed a quantity and unit cost for insulated joints in its opening evidence. In BNSF's reply and AEP Texas' rebuttal narratives, the parties state that they address insulated joints in Section III-F-6, Signals and Communications.[99] However, we find no discussion of insulated joints in those or other sections of the parties' submissions. Therefore, we use AEP Texas' opening evidence on insulated joints, as it is the only evidence of record.

9. Track Labor and Equipment

BNSF included labor and equipment costs for placing sub-ballast in yards. As discussed above in **Section C.1.**, we agree with AEP Texas' proposal to exclude sub-ballast in yards, so BNSF's additives are also excluded. For other materials, AEP Texas concedes that it made several errors in developing labor and equipment costs, and it does not explain the basis for the revised costs contained in its rebuttal evidence. Because AEP Texas acknowledges that its opening evidence is flawed and has not supported its rebuttal evidence, we use BNSF's evidence.

D. Tunnels

There would be no traditional tunnels located on the TNR. There would be, however, a structure located on the Spanish Peaks Subdivision at milepost 122.11, characterized as a "super span," that would serve a similar function to a tunnel. The "super span," which BNSF alternatively describes as a very large structural plate pipe or culvert, allows trains to travel under the Bessemer Irrigation Ditch. The parties agree on the cost ($218,528).

E. Bridges

1. Inventory

The parties agree on the number and length of bridges on the TNR, with one exception. BNSF includes a 314-foot long bridge over the Southern Platte River, identified as Bridge 2.43. AEP Texas agrees that a bridge would be necessary, but states that the bridge should be 181 feet long, based on BNSF's own bridge inventory list. It appears that BNSF developed its proposed 314-foot long bridge length through estimates created by its engineers, whereas AEP Texas relied on BNSF's actual bridge inventory list. AEP Texas has a right to rely on information obtained in discovery, and BNSF has not discredited those data. Accordingly, we use AEP Texas' length for Bridge 2.43.

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[99] See BNSF Reply Narr. III-F-117; AEP Texas Reb. Narr. III-F-111.

2. Bridge Design

The parties agree that bridges 20 feet or less in length could be replaced with culverts. AEP Texas provided for the bridges to have the same lengths as the BNSF bridges they would replicate, but AEP Texas adjusted individual span lengths to provide the most economical design. AEP Texas follows these criteria for adjusting the number and length of spans: (1) if the existing BNSF bridge is 10 feet high or less, the existing span configuration would be used, unless the BNSF bridge is timber and beyond a certain age (in which case it would be redesigned for efficiency); (2) if the existing BNSF bridge is higher than 10 feet, the span configuration would be adjusted to make it more "economical;" and (3) if the existing bridge is constructed with multiple spans, it would not be redesigned as a single-span bridge. BNSF does not challenge these criteria. However, BNSF found 97 instances on bridges less than 10 feet tall where it argues that the adjustments to span length are inconsistent with AEP Texas' stated criteria. AEP Texas responds that the adjustments were made because of the age of the existing bridges. We use AEP Texas' evidence, as it is consistent with the stated criteria and BNSF has not shown that AEP Texas' bridge designs would not be feasible.

Where the existing BNSF bridges have metal spans and AEP Texas would use concrete spans, BNSF argues that 13 bridges would need to be increased in length by 7% to maintain water flow under the bridges. Although BNSF provides the Federal Emergency Management Agency guidelines for water flow, it does not specify which bridges would fall under the guidelines. AEP Texas disputes BNSF's assumption that a change from steel girders to concrete girders would reduce water flow under a bridge; it points to a bridge on BNSF's line as an example supporting AEP Texas' proposal. AEP Texas also states that many of the 13 bridges would cross dry canyons and that water flow would thus not be a construction consideration. Because AEP Texas' design adjustments have not been discredited, we use AEP Texas' evidence.

3. Unit Costs

AEP Texas used a single unit cost for all bridges regardless of length. BNSF, in contrast, divides the bridges into two length categories for purposes of costing. On rebuttal, AEP Texas acknowledges that it made errors in its cost estimation, but states that its errors actually overstated costs. AEP Texas omitted costs for bearing pads, expansion joints, deck plates, washers and brackets, deck waterproofing and other similar costs, but claims that these missing costs are made up for in the cost overstatements in other areas.

We disagree with AEP Texas that its unit cost, which is based on a span of 26.8 feet, is a reasonable approximation of the TNR's bridge cost where the average span length would be approximately 34 feet. AEP Texas does not show that span costs remain the same as span lengths increase. Rather, BNSF's bridge costing model shows that longer spans cost 15% more per linear foot than do shorter spans. More fundamentally, we reject AEP Texas' claim that, although flawed, its costs should be accepted because they are overstated. AEP Texas' error in excluding costs for many necessary items cannot be remedied without a proper accounting. Therefore, we use BNSF's unit costs.

The parties disagree on the costs of transporting bridge materials. At issue are two items. First, BNSF's design incorporates pre-cast components (which would need to be transported to bridge sites), whereas AEP Texas would use a cast-in-place design. AEP Texas argues that its cast-in-place design would obviate much of the transportation cost of the large-scale components. Because we reject AEP Texas' costing methodology for bridge components, including its unit costs for cast-in-place components, transportation costs for pre-cast components must be included.

Second, BNSF uses an average haul of 478 miles compared to AEP Texas' 139-mile hauls to estimate transportation costs. AEP Texas has provided evidence that concrete contractors located closer to the ROW than the average of 478 miles could fabricate the necessary bridge components. Because BNSF has failed to discredit that evidence, we use AEP Texas' mileage as the basis for developing transportation costs.

F. Signals and Communications

Table D-6
Communications and Signal Systems

	AEP Texas	BNSF	STB
CTC	$126,179,072	$141,676,218	$126,179,072
Failed Equipment Detectors	2,481,638	2,539,467	2,481,638
Communications	15,233,840	17,192,336	15,233,840
Powered Switch Stands	1,639,904	1,624,062	1,639,904
Electric Locks	0	0	0
TOTAL	**$145,534,454**	**$163,032,083**	**$145,534,454**

1. Centralized Traffic Control

The TNR's main lines, as well as the Campbell, Orin and Reno subdivisions, would be equipped with Centralized Traffic Control (CTC). AEP Texas and BNSF disagree, however, on the costs for certain materials and on the need for others.

AEP Texas proposes that power for signal equipment would come from overhead wire where available and from solar panels where overhead power drops were not available. Because AEP Texas provides documentation supporting its proposal to use solar panels, and because BNSF has not shown that this approach is unreasonable, we use AEP Texas' costs.

For control point installation costs, the parties agree that the cost of cable used to connect pre-wired bungalows to the various control point components should be included in CTC costs. However, BNSF argues that AEP Texas failed to do so. AEP Texas states that it included "miscellaneous" costs, equal to 10% of material and labor costs, specifically to cover costs for incidental items such as the cables.[100] We accept AEP Texas' claim that this cost is accounted for in its "miscellaneous" factor, as it is reasonable to account for incidental expenses in this manner.

For control point protection, AEP Texas proposes (and BNSF accepts) the use of hot air blowers to keep snow and ice from accumulating on and interfering with the devices. However, BNSF asserts that AEP Texas' opening evidence did not include costs for the material and installation of cables for the hot air blowers. BNSF furthermore states that AEP Texas' calculation for auxiliary power (i.e., generators) did not include the overhead and profit costs quoted by Means. On rebuttal, AEP Texas notes that its opening electronic workpapers list installation as a separate line-item,[101] and show overhead and profit costs incorporated into the calculation of final costs.[102] We use AEP Texas' evidence, based on the documentation provided in its opening workpapers.

2. Detectors

The parties agree to the number of failed equipment detectors (FEDs) that would be included along the main line, but disagree as to the unit cost of the FEDs. Specifically, BNSF argues for higher costs to account for getting electricity to all detectors. AEP Texas notes that solar power would be used for some FEDs to keep costs down. We use AEP Texas' unit cost, as AEP Texas has shown that solar panels provide a reasonable alternative to more expensive power drops.

3. Communications System

The parties agree to use AEP Texas' overall design of the microwave communications system but to incorporate BNSF's proposal for two additional antennas on each tower to improve reliability. However, AEP Texas disputes BNSF's cost increase of $10,000 per tower (with corresponding $1,498 in transportation costs). Because BNSF has not shown that structurally stronger towers would be necessary to support the additional 2 antenna dishes, we use AEP Texas' cost.

AEP Texas and BNSF disagree on the type, number and unit cost of hand-held radios, based on differences in their proposed configurations and staffing levels. On opening, AEP Texas provided for hand-held radios only for TNR train crews, operating managers, MOW employees and inspection teams and not for the remaining operating personnel. BNSF argues

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[100] See AEP Texas Open. e-WP. "III-F-6/CTC Systems & Signals/Individual Cost Calcs."

[101] AEP Texas Open. e-WP. "III-F-Total/Totals."

[102] AEP Texas Open. e-WP. "III-F-6/CTC System & Signals/Individual Cost Calcs."

that mobile radios would be needed for all employees. On rebuttal, AEP Texas agreed to include mobile radios for certain employees, but continued to rely on its opening proposal for hand-held radios for other employees, with additional support.[103] Because AEP Texas has adjusted its initial position to reflect the concerns raised by BNSF regarding the types and numbers of radios that would be used by the TNR's operating personnel, and has shown that BNSF's proposal for all mobile radios would not be necessary, we use AEP Texas' rebuttal radio costs.

Finally, BNSF argues, without support, that the unit cost for the mobile radios cited by AEP Texas would be inadequate to provide the quality needed for railroad communications. AEP Texas notes on rebuttal that its radio quality would be comparable to that specified by BNSF. Because BNSF has not shown why the radios specified by AEP Texas would be insufficient, we use AEP Texas' specifications and unit costs.

4. Switch Circuit Controllers and End-of Siding Switches

The parties agree on the use of both powered and hand-thrown (non-powered) switches on the main line. They also agree that the hand-thrown switches used for FEDs along the main line would not require electric locks. While the parties agree that hand-thrown switches must be equipped with switch circuit controllers (SWCC) at a cost of $9,000, they disagree on installation costs. AEP Texas proposes solar power units as a more efficient method of recharging SWCC batteries. BNSF would include SWCC power drops and labor costs for seven days of installation. While AEP Texas agrees that labor costs should be added to installation costs, it notes that 5 days of labor costs would be sufficient because solar power charging units would be easier to install. Because AEP's proposal to use solar power is reasonable, we use AEP Texas' SWCC installation costs.

BNSF also argues that AEP Texas did not include the necessary end-of-siding signals at wye switches. AEP Texas states that it did provide for the powered switches, on the inside switches of the spur tracks going in and out of the mines. We use AEP Texas' evidence as its opening workpapers indicate that it included the necessary end-of-siding signals.[104]

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[103] AEP Texas Reb. Narr. III-F-153-55, citing AEP Texas Reb. WP. III-F-00966-68; AEP Texas Reb. e-WP. "III-F-6/TNR Radio System Cost Model/Radios."

[104] AEP Texas Open. WP. III-F-10979-11024.

G. Buildings and Facilities

Table D-7
Buildings and Facilities

	AEP Texas	BNSF	STB
Fueling Facilities	$14,950,982	$22,930,355	$22,487,543
Locomotive Repair	15,685,953	16,774,414	15,685,953
Car Repair	0	3,147,040	0
Headquarters Bldgs	1,623,860	2,338,355	1,650,398
MOW/Roadway Bldgs	3,487,991	13,130,995	8,295,270
Waste Water Treat. Plt	643,760	1,245,401	1,245,401
Miscellaneous	25,346,361	36,633,944	27,530,961
TOTAL	**$61,738,907**	**$96,200,504**	**$76,895,525**

1. Fueling Facilities

AEP Texas proposes eight fueling locations at the Alliance Yard, with dedicated tracks for fueling, sanding and inspection of the locomotives at a cost of $7.8 million. BNSF proposes 4 platforms serving 8 tracks at Alliance, at a cost of $15.3 million. BNSF includes several components omitted in AEP Texas' cost estimate. Because we find AEP Texas' evidence to be unreliable (AEP Texas'witness states that he is unfamiliar with the construction project and site), we use BNSF's evidence for the Alliance yard.

BNSF argues that AEP Texas' original proposal to fuel locomotives at Las Animas with contractor tanker trucks would be infeasible. Therefore, BNSF proposes a second facility at Amarillo, TX, with 4 platforms serving 8 tracks at an estimated cost of $14.2 million. On rebuttal AEP Texas proposes a permanent fueling facility at Las Animas, half the size of that proposed by BNSF. We use AEP Texas' evidence for facilities at Los Animas, as few locomotives would need to be fueled at this second location.

2. Locomotive Repair

AEP Texas and BNSF agree on the cost for a 118,000-square-foot locomotive repair shop at the Alliance Yard to service the TNR fleet. They disagree as to whether maintenance tools for the locomotive fleet would be supplied by the repair contractor or would have to be purchased by the TNR. AEP Texas references a contract between UP and a third-party maintenance provider where the contractor provided the tools. BNSF argues that this contract is not probative, as it covers locomotives different than those that would be used by the TNR. BNSF, however, concedes that the tools listed in this contract are generic and could be used to service any locomotive. Because AEP Texas' proposal to have the contractor supply maintenance tools is feasible, the additional equipment proposed by BNSF is excluded.

The parties disagree about whether a single- or double-track wash house would be needed. AEP Texas notes that its single-track design could handle an average of 100 locomotives per day. BNSF argues that a two-track system would be necessary to handle the anticipated traffic of the TNR. We use the single-track design, because a wash house that could handle 100 locomotives a day would be more than adequate for the TNR fleet.

The parties disagree about whether to pave and fence the storage area surrounding the locomotive shop. AEP Texas contends that paving would not be necessary, and provides photographs of BNSF's Denver and Pueblo yards, which are not paved. Because BNSF does not show that a concrete pad and security fencing would be necessary, we use the AEP Texas design.

3. Car Repair

AEP Texas did not include any 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. While BNSF agrees that repair of TNR cars could be covered under a lease, it estimates that it would cost $6.3 million for two car repair facilities—one at the Alliance Yard and another at Amarillo, TX—to handle repairs for interchanged cars. We use AEP Texas' plan. The TNR would not need car repair facilities, as repairs for interchanged cars could be done at the contractors' facilities and billed to the originating railroad.

4. Headquarters Buildings

AEP Texas and BNSF agree on a unit cost for the Alliance, NE headquarters building of $92.14 per square foot. AEP Texas calculates the total cost for the building at $1.4 million, based on a two-story, 15,650-square-foot design. The building would house the TNR's senior operating and mechanical staff, clerical and dispatch staff, customer service personnel, the CTC dispatching control center, and general administrative staff. AEP Texas bases its proposed building size on a 1994 American Institute for Architects (AIA) publication, "Architectural Graphic Standards." BNSF proposes a 21,316-square-foot building, with increased square-footage for all categories of office space, restrooms, a lunch room, and a data processing room, at an estimated cost of $2.1 million. BNSF bases its design on a 1991 AREMA publication, "Design Criteria for Railway Office Buildings."

We use AEP Texas' building size, except that we restate the restroom sizes according to BNSF's design at 168-square-feet to provide privacy screens. (The AEP Texas design did not show that privacy screens were included.) BNSF failed to show that an additional 1,300-square-foot space for a lunch room would be necessary. AEP Texas' "Crew Work Area 1" would be suitable as a lunch room, accommodating 12-16 people. Also, BNSF has not shown that an additional 2,000-square-foot space for data processing would be necessary. AEP Texas includes office space for data processing in 5 different 300-square-foot clerical areas. BNSF has not argued that the AIA specifications should not be used for a railroad headquarters building and the AIA specifications on which AEP Texas relies are more current than are the AREMA specifications.

AEP Texas and BNSF agree on the unit costs for lighting the 100-car parking lot adjacent to the headquarters building. They disagree, however, on the number of light fixtures that would be needed. AEP Texas proposes 4 light fixtures, which would illuminate an area covering 119,040 square feet. BNSF proposes 4 additional light fixtures, but has not demonstrated why AEP Texas' proposal is unreasonable for a parking lot that would only be 61,200 square feet. Therefore, we use AEP Texas' 4 light fixtures.

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

AEP Texas proposes 6 MOW facilities (at Donkey Creek, Alliance, Englewood, Las Animas, Amarillo and Oklaunion yards), totaling 18 buildings and 5 crew change facilities (at Donkey Creek, South Logan, Denver, Amarillo and Oklaunion). AEP Texas estimates a cost of $3.5 million. BNSF proposes 8 major MOW buildings and 18 smaller MOW buildings, each larger than what AEP Texas proposes. BNSF also proposes 5 crew change facilities, but each larger than those proposed under the AEP Texas plan. BNSF estimates a cost of $8.8 million. BNSF argues that AEP Texas' proposed use of modular buildings for crew change and yard office facilities would be neither appropriate nor cost effective.

We use BNSF's evidence on MOW buildings because we generally use BNSF's MOW plan, as discussed in **Appendix C—Operating Expenses**. In addition, AEP Texas has not shown that its proposal for crews to work outside would be feasible year-round. Further, AEP Texas' argument that its tool allocation already includes funding for equipment maintenance is not supported. The tool allocation is designed to cover the cost to maintain the line, not the MOW vehicles, as AEP Texas has proposed.

We use AEP Texas' square footage for crew change facilities and its unit costs for small and midsize crew change facilities. However, AEP Texas has not adequately supported its unit cost for large crew change facilities, because the buildings on which AEP Texas' unit cost is based would be inappropriate for use as large crew change facilities on the TNR. Therefore, we use BNSF's unit cost for the large crew buildings, applied to AEP Texas' square footage.

6. Waste Water Treatment Plant

The parties agree on the need for seventeen 400-gallon waste water treatment plants at each of the small and medium-sized MOW/crew change facilities. AEP Texas also proposes three 5,000-gallon waste water treatment plants, two at the Alliance Yard and one at the Donkey Creek MOW/crew change facility. AEP Texas estimates a cost of $650,000 for the 5,000-gallon treatment plants. AEP Texas provides for a gravity oil-water separator, but BNSF argues that a dissolved air flotation unit would be necessary to remove emulsions created by soap and petroleum products. BNSF proposes a system based on a UP facility, at a cost of $1.25 million. Because BNSF has raised sufficient questions regarding the ability of AEP Texas' proposed treatment plants to treat all effluents from train and yard facilities, and because BNSF's own design and costs are supported, we use BNSF's evidence.

H. Public Improvements

Table D-8
Public Improvements

	AEP Texas	BNSF	STB
Fencing	$7,584,003	$32,990,344	$25,349,566
Roadway Signs	200,671	380,477	218,645
At-Grade Crossings	2,653,380	13,831,859	8,538,079
Crossing Protection	2,708,022	4,537,688	4,537,688
Grade Separation	25,267,481	25,105,457	25,267,481
TOTAL	**$38,413,558**	**$76,845,825**	**$63,911,459**

1. Fencing

AEP Texas and BNSF agree on the fencing requirements for the TNR's Campbell and Orin subdivisions. The parties disagree, however, on the amount of fencing for the remainder of the TNR. AEP Texas included fencing for 25% of the remainder of the ROW, while BNSF would have the TNR fence 100%. Based on observation and photographs, AEP Texas states that the existing fencing along BNSF's ROW varies in style and type, which it suggests indicates that adjacent landowners, not BNSF, constructed the fencing. However, this evidence fails to demonstrate that BNSF was responsible for constructing only 25% of the fencing along the ROW. Therefore, in the absence of evidence showing what percentage of the ROW BNSF itself fenced, we use BNSF's 100% fencing proposal for lines other than the Campbell and Orin subdivisions.

Additionally, the parties disagree on fencing costs. AEP Texas used average fencing costs from the 2002-03 BNSF AFEs it received through discovery, and asserts these costs include costs for gates. BNSF argues that additional gate costs would be necessary and that it is inappropriate to cherry pick only the lowest fencing costs because that would not be adequate to pay for the fencing that is in place today. However, fencing is not unique and the TNR would be entitled to purchase fencing at the lowest feasible cost. In addition, BNSF has failed to show that AEP Texas neglected to include gate costs in its average costs. Therefore, we use AEP Texas' fencing costs which are supported by BNSF's AFEs.

The parties also disagree on the inclusion of cattle guard costs. BNSF argues that cattle guard costs are warranted based on data found in Engrg Rpts. AEP Texas states that it did not include cattle guard costs because Engrg Rpts reflect replacement costs and not the costs originally incurred by the railroad. Because AEP Texas failed to show that cattle guards would be unnecessary, and because we generally accept Engrg Rpts as evidence of costs borne by the railroad, we include BNSF's cattle guard costs with the quantity based on the configuration of the TNR that we use.

Finally, the parties disagree on the use of snow fences. AEP Texas excluded snow fencing, based on its observations and photographs of BNSF's ROW. BNSF included snow fence quantities taken from Engrg Rpts. As discussed above, we do not find AEP Texas' observation and photographic evidence persuasive on the issue of fencing. Because Engrg Rpts provides for snow fencing,[105] and AEP Texas failed to show that snow fencing is no longer used along BNSF's ROW, we include costs for snow fences based on the quantities identified in Engrg Rpts.

2. Roadway Signs

a. Types and Quantities

AEP Texas included a standard set of signs consisting of milepost, whistle posts and certain advance warning and crossing signs. BNSF argues that additional signs would be necessary. AEP Texas asserts that certain signs that BNSF includes would be unnecessary because the function they serve could be replicated by TNR timetables, citing the Northeast Operations Rules Advisory Committee (NORAC) Operating Rules. However, the NORAC rules are only applicable to eastern railroads that have adopted them and do not supersede the General Code of Operating Rules that have been adopted by western carriers. Therefore, we include the use and placement of the additional signs proposed by BNSF.

The parties disagree on the inclusion of "Danger- Keep Off Bridge" signs. AEP Texas excludes these signs based on its observations and photographs, which show that not all of BNSF bridges have such signs. AEP Texas further notes that FRA does not require these signs. Because AEP Texas has demonstrated that these bridge signs would not be necessary, we exclude them.

The parties also disagree on the use of flanger signs. Again, AEP Texas did not include any flanger signs, based on its observations and photographs of BNSF's ROW. BNSF would place flanger signs at turnouts, crossing planks, FEDs and lubricators north of Pueblo. However, AEP Texas' evidence shows that use of flanger signs would not be a necessity.

b. Unit Costs

The parties agree on the base unit costs, but BNSF would add contractor overhead and profit to installation costs. On rebuttal, AEP Texas agreed with this addition but did not make the same modifications as BNSF to the unit costs in its spreadsheet. Because AEP Texas does not explain why it made different modifications we use BNSF's unit costs.

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[105] In past cases, the Board has relied on Engrg Rpts as evidence of original costs where there was no other evidence. See Xcel at 116; TMPA at 154.

3. Crossings

a. At-Grade Crossings

AEP Texas included costs for at-grade crossings on the Orin, Campbell, Reno and Boise City subdivisions, and between Las Animas Jct. and Amarillo, because those BNSF segments were constructed after the establishment of roads. AEP Texas excluded at-grade crossings for other portions of the TNR on barrier-to-entry grounds. BNSF would include costs for at-grade crossings over the entire TNR, claiming that Engrg Rpts shows that the railroad contributed to the costs of all road crossings. AEP Texas argues that Engrg Rpts are not helpful because they do not indicate which party originally paid for a crossing. Because Engrg Rpts are adequate to show that the railroad incurred some investment for crossings, see, e.g., TMPA at 154, we use BNSF's at-grade crossing quantity and costs.

The parties also disagree on the crossing materials to be used. AEP Texas used a combination of asphalt and rubber. BNSF argues that concrete would be the best material to use, but it included other materials such as rubber and timber because they are used today on BNSF's own line. The TNR could use any feasible materials for crossings, and the use of asphalt and rubber is clearly feasible as demonstrated by the fact that it is currently used by BNSF. Therefore, we use AEP Texas' crossing materials.

The parties agree on the need to resurface 119 private highway crossings and 116 public highway crossings, but they disagree on the need to resurface crossings on older lines. AEP Texas would not resurface crossings where the rail line was built prior to construction of the road, on barrier-to-entry grounds. BNSF argues that its predecessors incurred costs for at-grade crossings even though such investment is not specifically listed in Engrg Rpts. Because Engrg Rpts do not indicate that the railroad incurred such costs, we use AEP Texas' evidence on resurfacing.[106]

The parties agree on unit costs for active warning devices at crossings, and that costs for "1-800" signs (signs with a toll-free phone number) should be included. BNSF would also include costs for passive warning devices at all crossings. AEP Texas does not contest the inclusion of passive warning devices but claims that it already included costs for "1-800" signs. We have been unable to find where those costs are included in the spreadsheets. Therefore, we use BNSF's evidence for all of these signs.

b. Highway Overpasses

The parties agree to include overpasses on the more recently constructed Orin, Campbell and Reno subdivisions. However, AEP Texas disagrees with BNSF's proposed inclusion of overpasses at other locations. On opening, AEP Texas excluded those overpasses on the ground

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[106] See TMPA 2004 at 25-26.

that BNSF did not incur the costs for overpasses when the lines were originally built. However, BNSF has identified 7 overpasses found in Engrg Rpts on the older line segments. On rebuttal, AEP Texas agrees to the inclusion of those overpasses for which Engrg Rpts indicates that BNSF or its predecessors paid part of the investment costs.

Where Engrg Rpts does not specify a percentage of costs, BNSF uses a 10% figure based on a 1999 Colorado Department of Transportation bid for a highway overpass in Sterling, CO. It is reasonable to assume that BNSF or its predecessors incurred some investment costs for overpasses identified in Engrg Rpts, and AEP Texas has not provided any alternative cost evidence. Therefore, we use BNSF's crossing cost evidence. We do not include any costs, however, where there is no evidence that BNSF or its predecessors incurred costs associated with highway overpasses.

4. Crossing Protection

Both parties agree to the inclusion of costs for crossing signals on the Campbell, Orin, Reno, and Boise City subdivisions, because the roads on those line segments pre-date the BNSF lines being replicated. AEP Texas would exclude these costs for the other segments of the TNR, on the ground that BNSF has not shown that it (or its predecessors) initially paid for crossing signals. On reply, BNSF argued that AEP Texas should not have excluded these costs, because BNSF has upgraded crossing control equipment on all line segments currently equipped with CTC, and because the TNR includes trackage where BNSF does not currently have CTC installed. On rebuttal, AEP Texas argued that BNSF has not shown that it upgraded the signals, nor that it paid for those upgrades, in light of the availability of federal funds for upgrading crossing signals. AEP Texas further asserts that BNSF has not explained its application of upgrading costs to 50% of the signals. We agree with AEP Texas that BNSF has failed to justify the additional cost of upgrading crossing signals, and that BNSF has not demonstrated that it upgraded the signals or paid for an upgrade. Therefore, we use AEP Texas' evidence for crossing signals.

I. Mobilization

Mobilization involves the marshaling and movement of people, equipment, and supplies to the various construction sites. On opening, AEP Texas applied a 1% mobilization additive to various cost categories where labor and equipment would be required and where that cost item was not otherwise covered by a bid. BNSF, on the other hand, proposed an estimated 2.4% total mobilization cost, covering initial mobilization, demobilization and performance bonds. BNSF supports this mobilization factor by describing the costs necessary for mobilization of field offices and staging areas; grading, culvert and bridge equipment; signals and communications; and buildings and facilities.

We use BNSF's mobilization factor, because AEP Texas failed to include performance bonds and demobilization costs, which have been included in prior SAC cases. BNSF's factor is also in line with the factor used in prior SAC cases. See Duke/CSXT (2.7% mobilization factor);

CP&L (2.6%); Duke/NS (2.5%); TMPA (2.0%); WPL (2.6%); FMC (2.4%). Cf. Xcel (parties agreed to 3.5% factor); West Texas (3.2%).

J. Engineering

AEP Texas proposed an overall engineering factor of 6.8% on opening, while BNSF has proposed a factor of approximately 14.6%. On rebuttal, AEP Texas proposed a 10% factor, consistent with the Board's conclusion in Xcel (at 118) and WPL (at 103-104) that a 10% factor is an appropriate estimate for the aggregate of all engineering cost components.

In its motion to strike, BNSF objects to AEP Texas' use of a 10% factor on rebuttal. BNSF argues that the Board cannot simply adopt the engineering factor from another case when there is evidence in the record on the specific engineering costs for this case. BNSF claims that AEP Texas has not refuted BNSF's proposed engineering factor.

Contrary to BNSF's claim, AEP Texas has sufficiently demonstrated that BNSF's engineering factor is excessive. AEP Texas notes several flaws with BNSF's calculation, including: its assumption that construction of the TNR would be "above average" in complexity; a double count in the engineering study phase and in surveying; and inflation of costs for construction stakeout, material testing during construction, and test borings and soil investigation. Because AEP Texas has sufficiently refuted BNSF's engineering costs, leaving us without proper evidence of engineering costs by either party, we agree with AEP Texas that use of a 10% factor, based on prior decisions, is appropriate.

K. Contingencies

A contingency account provides funds to address unforeseen costs that may arise during construction. Relying on recent past Board decisions, AEP Texas included a 10% contingency factor. BNSF would have us use a 20% contingency factor here. It argues that a 10% factor is appropriate only for the final design stage of a project, whereas the TNR design is at an early stage of development with many unresolved design and construction issues.

BNSF incorrectly assumes that the design of the TNR is at an early stage. To the contrary, the SAC analysis includes funds for all aspects of design and planning.[107] A contingency to account for the changes between initial planning and final design is inappropriate. Rather, a contingency fund would be needed only to fund unforeseen costs that might occur during construction. Thus, as in prior SAC cases, we use a 10% contingency factor here.

[107] See FMC, 4 S.T.B. 699, 823 (2000).

APPENDIX E—DISCOUNTED CASH FLOW ANALYSIS

The DCF analysis first estimates the revenue stream that a SARR would need to cover operating costs and provide a reasonable return on capital. It then compares these revenue requirements of the SARR to the revenue the defendant railroad earns to determine if the revenues produced by the traffic in the group (based on existing and projected rate levels) would be greater or less than the amount required by the SARR. See generally Nevada Power, 10 I.C.C.2d at 274-77. This procedure is discussed in more detail below.

The estimated revenue requirements of the TNR would need to cover expected operating expenses and provide a reasonable return on the capital investment the TNR would make if it were to enter the marketplace to serve the selected traffic group. Because entry would not be instantaneous, the revenue requirements would need to cover the interest on debt during the construction period of the TNR. Finally, the revenue requirements would need to cover the program maintenance needed to maintain the rail network once constructed.

The need to deal with taxes complicates the estimation of the TNR's revenue requirements, because taxes are a function of the flow of revenue over the analysis period, and not just the present value of revenue. This means that we must determine the flow of capital recovery that, after taxes, interest payments and operating expenses, would have a present value equal to the present value of the initial road-property investment, plus interest during construction, together with the present value of scheduled programmed maintenance of the railroad. It is the necessity of dealing with taxes that precludes the use of a simpler model that would directly compute the SAC constraint without reference to the pattern of capital recovery over time.

The DCF model uses an iterative approach to determine the pattern of capital recovery that would attract entry in a contestable marketplace. The first step is to assume an amount of capital recovery in the first year. This annual capital recovery is then indexed for inflation over the SAC analysis period (in this case 20 years). Indexes for the various components of the road-property investment (such as land, grading, rail) are used in the analysis.

The second step is to determine the value of the SARR at the end of the SAC analysis period. Because the assets the SARR would construct would have a longer useful life, the SARR would not need to recover the full investment in rail assets (here $2.8 billion) in the first 20 years. We must therefore estimate the economic value of the assets at the end of the 20-year analysis period. This "terminal value" of the SARR equals the capital recovery in the 20th year divided by the estimated real cost of capital. This calculation yields the value (at year 20) of a perpetual income stream held constant (in real terms) at the capital return projected for the 20th year. (Thus, in effect, the DCF model is an in-perpetuity analysis, although it is referred to here as a 20-year DCF analysis.)

The third step is to determine the taxes the SARR would pay. The starting point is the capital recovery in a particular year, which conceptually is the net revenue (total revenues less operating expenses) for tax purposes. The parties submit a complex tax analysis that estimates the taxes, which are a function of interest on debt, depreciation of assets, and applicable state and federal taxes. Because the SARR could take advantage of various tax loss provisions, the SARR would often pay no taxes for the first few years of operation.

The DCF model then calculates the present value of the projected capital recovery over the 20-year analysis period, together with the present value of the terminal value, minus the present value of taxes. If this total is less than the initial capital investment, plus interest, adjusted for depreciation and programmed maintenance, then the projected capital recovery would be too low to provide a reasonable return on investment and would not entice a SARR to enter the market. In that case, the initial capital recovery in the first year is adjusted upwards (or downwards if the flow of capital recovery is too low) and the steps described above are repeated.

This iterative process continues until the model finds the point at which the flow of capital recovery would, after taxes, provide a reasonable return on the initial capital investment. Once the necessary amount of capital recovery has been determined using this iterative process, the total revenue requirements of the SARR can be determined by combining the capital recovery with the projected operating expenses.

There are several inputs needed to perform this analysis, and the parties largely agree as to most of them. The areas of disagreement are described below.

Cost of Capital

1. Cost of Debt

There are two significant disputes between the parties regarding the TNR's debt. First, AEP Texas proposes to have the TNR refinance its debt in 2002, thus changing the interest rate on its debt during the DCF period. Accordingly, AEP Texas splits the DCF period into two sub-periods: a pre-refinance period and a post-refinance period. AEP Texas argues that refinancing debt is consistent with the practices of Class I railroads. BNSF objects to the proposed refinancing, arguing that AEP Texas has not accounted for the refinancing fees and has provided no evidence that lenders would be willing to refinance such an enormous debt at lower interest rates. On rebuttal, AEP Texas cites publicly available data for Class I railroad debt issued over the years 1998-2003 that shows that the major railroads (including BNSF) were able to obtain $14.3 billion in debt financing over that time period, an average of almost $2.4 billion per year. Thus, AEP Texas argues that the market could accommodate the $1.05 billion in debt the TNR would need to refinance in 2002.

We agree with BNSF that the TNR would incur significant transactions fees for refinancing such a large debt (in addition to the flotation fees included in the cost-of-debt calculation that is part of the Board's cost-of-capital determinations). AEP Texas has not quantified these costs. Moreover, AEP Texas has provided no evidence that lenders would be willing to refinance this debt at current low rates. AEP Texas' evidence pertains to the issuance of new debt, not the refinancing of existing debt. This distinction is important because, to the extent that the TNR would issue bonds to generate capital, AEP Texas has not demonstrated that the TNR could buy back its bonds (and that it could do so at no cost). If interest rates fall, the

TNR would have to pay a premium for the bonds to repurchase them as part of refinancing. For these reasons, we find that AEP Texas' refinancing of its debt is insufficiently supported. Accordingly, we rely on Board precedent of applying a weighted average cost of debt during the construction period, weighted by the construction dollars expended in each year. Because we disallow AEP Texas' proposal to refinance, we reject its use of two separate DCF models (one before refinancing and one after).

Second, AEP Texas would amortize the TNR's debt over 212 quarters, or 53 years, rather than the usual 20 years consistently used in past SAC cases. BNSF argues that AEP Texas has not demonstrated that financing could be obtained for that 53-year term. AEP Texas argues that amortizing the debt over this long a time period matches the life of the assets that would be purchased or constructed with the funds raised by the debt issuance and is consistent with the practices of the Class I railroads.[108] However, an examination of AEP Texas' evidence of the amortization of debt by Class I railroads shows that the weighted average of amortization of the Class I railroad fixed-income issuances is only 13 years. Thus, although some debt may be issued for longer than 20 years, most debt is amortized over considerably less than 20 years. Therefore, we follow the long-standing precedent of amortizing the SARR debt over a 20-year period.[109]

2. Cost of Equity

On opening, AEP Texas used the Board's calculation of the railroad industry cost of equity from a single year (2002) to project the cost of capital for the TNR for the future years of the DCF period. AEP Texas acknowledges that this differs from the Board's approach of using an average of the cost of equity for a historic time period, but AEP Texas argues that the cost of equity has begun to decline in recent years. AEP Texas also asserts that the TNR would refinance its debt in 2002 and therefore avail itself of lower capital costs. For these reasons, AEP Texas relies solely on the 2002 industry-average cost of equity. After BNSF objected to this departure from precedent, on rebuttal AEP Texas changed its approach to include the 2003 cost of equity. Then, in its Second Supplemental Opening evidence, AEP Texas added the 2004 cost of equity into its average.

AEP Texas has not provided a sufficient justification for us to depart from the Board practice of using an average over a recent historical time period (usually all years dating back to the SARR's construction start date). As explained in West Texas, using data for a single year increases the risk that the single year is an aberration. Here, although AEP Texas uses a 3-year average rather than just a single year's data, the concern remains. An examination of the cost of equity back to 1998 shows that the cost of equity dipped in 2002 through 2004 (the years AEP Texas relies on) but then increased in 2005 back to levels more in line with the pre-2002 years,

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[108] See AEP Texas Reb. Exh. III-G-13.

[109] We note that AEP Texas uses an 83-quarter DCF period instead of the standard 80-quarter (20-year) DCF period. However, BNSF accepts AEP Texas' use of 83 quarters for the DCF. Accordingly, we will accept the parties' use of an 83-quarter DCF period here.

suggesting that the years AEP Texas used may have been an aberration. In any event, as many years as possible should be examined to derive a more accurate average. Therefore, we calculate the TNR's future cost of equity by relying on an average of all years dating back to the construction of the TNR (1998).

AEP Texas argues that the 2005 railroad-industry cost of equity should not be included because that figure is hotly contested.[110] However, our 2005 cost of capital determination is final and should not be excluded here. Although we are currently evaluating how best to compute the cost of capital in the future,[111] whatever change we may adopt would not be applied retroactively to the 2005 determination.

BNSF argues that fees for floating equity should be added to the TNR's investment base. Although the Board has consistently rejected this addition in prior SAC cases,[112] BNSF argues that the reason for rejecting this cost was lack of support and that here it has provided the support for this cost. AEP Texas agrees that an equity flotation fee should be included, but argues that BNSF's use of a 4% premium is insufficiently supported and that BNSF's method of incorporating this cost into the equation is inconsistent with Board precedent. AEP Texas instead derives the equity flotation fee by looking at the fee from the Board's cost-of-capital decision in the year in which a new equity was last issued (1991), then multiplying that percentage by the percentage contribution of the issuing carriers' market valuation to the overall industry market valuation. AEP Texas asserts that this calculated percentage should then be added to the weighted industry-average cost of equity capital, rather than simply adding the financing fee to the investment based of the SARR, as BNSF has done.

We agree with AEP Texas that its method for calculating the equity flotation fee and incorporating it into the cost of capital equation is consistent with Board precedent and consistent with how debt flotation fees are reflected in the cost of capital. We adjust the cost of capital accordingly.

3. Cost of Capital Application

The cost of capital is used in the second step of the DCF to estimate the value of the SARR at the end of the SAC analysis period. As noted above, the terminal value of the SARR equals the capital recovery in the 20th year divided by the estimated real cost of capital. The real cost of capital is calculated from the nominal cost of capital. On opening, AEP Texas used an average of the past periods' industry average cost of capital to calculate the nominal cost of

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[110] Railroad Cost of Capital—2005, STB Ex Parte No. 558 (Sub-No. 9) (STB served Sept. 20, 2006). pet. for review pending sub nom. Western Coal Traffic League v. STB, No. 07-1064 (U.S.C.A. D.C. Cir. filed Mar.13, 2007).

[111] Methodology To Be Employed In Determining Railroad Industry's Cost Of Capital, STB Ex Parte No. 664 (STB served Sept. 20, 2006).

[112] See, e.g., Otter Tail at E-2; TMPA at 162.

capital, as the Board has done in past cases. On reply, without explanation, BNSF changed this calculation to be the cost of capital for the SARR in the last year of the DCF period. We agree with AEP Texas that the average industry cost of capital should be used. However, we update this calculation with values through 2005, similar to our calculation of the cost of equity.

Inflation Indices

The annual inflation forecast used by AEP Texas to calculate the value of the TNR's road property assets is based on a Global Insights September 2003 forecast for rail labor and rail materials and supplies. As AEP Texas points out, this is the same procedure utilized by the Board in Duke/NS and CP&L. BNSF agrees with AEP Texas' index for road property assets. For land assets, AEP Texas used a composite index for all land owned by the TNR. In its reply, BNSF agrees with AEP Texas' land inflation value. Finally, as previously noted, we use a combination of RCAF-A and RCAF-U, as set forth in Major Issues, to account for productivity gains when indexing for operating expenses. Because the DCF period in this case is 20 years, rather than the 10 years that will be applied in future cases, a 5% annual conversion from RCAF-U to RCAF-A is used.

Results

Our calculation of the TNR's total revenue requirements over the 20-year analysis period is shown below. We find that the TNR's initial road property investment would be $2,793,973,791; that interest during construction would be $290,418,060; that the present value of roadway property replacement would be $154,158,034; and that the resulting total road property investment would be $3,238,549,885.

Table E-1 shows the results of the iterative methodology described above. As it shows, the net present value of the capital recovery, less taxes, plus the present value of the terminal value would be $3,238,549,885. This flow of capital recovery would provide the TNR a reasonable return on its capital investment, and it would therefore be sufficient to attract entry to serve the selected traffic group.

Table E-1
TNR Capital Recovery

Year	RPI Capital Recovery	Taxes	Cash Flow	Present Value
2000	$163,783,569	$0	$163,783,569	$159,311,828
2001	311,322,703	0	311,322,703	279,600,007
2002	317,186,997	0	317,186,997	257,731,434
2003	324,247,305	0	324,247,305	238,182,199
2004	339,360,707	0	339,360,707	225,103,273
2005	350,941,384	0	350,941,384	208,790,228
2006	367,939,500	0	367,939,500	196,252,201
2007	376,015,048	0	376,015,048	180,712,381
2008	382,295,658	97,991,022	284,304,636	123,215,851
2009	388,546,244	108,193,479	280,352,765	109,360,180
2010	394,684,102	111,734,702	282,949,400	99,436,190
2011	401,014,467	115,467,755	285,546,712	90,403,919
2012	409,671,795	120,137,055	289,534,740	82,577,752
2013	420,642,919	125,797,640	294,845,279	75,757,126
2014	432,119,355	131,735,848	300,383,507	69,532,286
2015	443,844,604	142,754,795	301,089,808	62,788,680
2016	455,802,723	152,041,506	303,761,217	57,068,491
2017	468,020,918	158,672,196	309,348,723	52,358,784
2018	480,626,849	165,601,737	315,025,113	48,035,642
2019	493,633,473	172,846,402	320,787,071	44,066,903
2020	507,054,189	180,423,477	326,630,712	40,423,135
			Terminal Value	$537,841,397
			Total	$3,238,549,885

The total revenue requirements of the TNR over the 20-year analysis period, shown in **Table E-2**, are the sum of the capital return and the projected operating expenses.

Table E-2
TNR Total Revenue Requirements

Year	RPI Capital Recovery	Operating Expenses	TNR Revenue Requirements
2000	$163,783,569	$208,107,973	$371,891,542
2001	311,322,703	367,702,397	679,025,100
2002	317,186,997	361,425,735	678,612,732
2003	324,247,305	369,090,751	693,338,056
2004	339,360,707	397,532,808	736,893,515
2005	350,941,384	422,342,730	773,284,114
2006	367,939,500	438,830,421	806,769,921
2007	376,015,048	450,364,377	826,379,424
2008	382,295,658	455,409,386	837,705,044
2009	388,546,244	465,439,084	853,985,328
2010	394,684,102	470,068,772	864,752,874
2011	401,014,467	483,723,461	884,737,928
2012	409,671,795	494,543,597	904,215,392
2013	420,642,919	504,188,048	924,830,967
2014	432,119,355	512,481,741	944,601,096
2015	443,844,604	517,612,715	961,457,319
2016	455,802,723	527,800,659	983,603,382
2017	468,020,918	540,591,545	1,008,612,464
2018	480,626,849	553,196,739	1,033,823,588
2019	493,633,473	565,291,941	1,058,925,414
2020	507,054,189	585,668,303	1,092,722,492

The second part of the DCF analysis compares the revenues the defendant is expected to earn from the traffic group against what the SARR would need to serve the same traffic. In general, if the present value of the revenue stream is less than the SARR's revenue requirements, then the analysis has not demonstrated that the challenged rate is unreasonable. If the opposite is true, then the Board must determine what relief to provide to the complainant by allocating the revenue requirements of the SARR among the traffic group and over time.[113] Here, **Table E-3** shows that BNSF is not earning more revenues from the traffic group than the TNR would need to serve that same traffic. Accordingly, AEP Texas has not demonstrated that the challenged rates are unreasonably high.

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[113] In the DCF model, both parties use the same formula to discount any overpayments or underpayments to the present value. The Board has some concerns whether that formula discounts those payments to the proper period. However, because there was no disagreement between the parties, we do not modify the parties' evidence. While the parties' formula appears to be off by one period, it is not material to the outcome of the case.

Table E-3
Discounted Cash Flow Analysis

Year	TNR Revenue Requirements	Forecast Revenues	Difference	Present Value	Cumulative Difference
2000	$371,891,542	$384,175,596	$12,284,054	$12,173,809	$12,173,809
2001	679,025,100	711,010,614	31,985,514	29,318,421	41,492,230
2002	678,612,732	720,952,078	42,339,346	35,157,854	76,650,084
2003	693,338,056	695,120,747	1,782,691	1,488,746	78,138,830
2004	736,893,515	723,898,071	(12,995,444)	(8,372,055)	69,766,776
2005	773,284,114	728,731,044	(44,553,070)	(24,459,533)	45,307,242
2006	806,769,921	755,063,884	(51,706,037)	(26,932,250)	18,374,992
2007	826,379,424	780,155,662	(46,223,762)	(21,690,706)	(3,315,714)
2008	837,705,044	788,224,103	(49,480,941)	(20,918,155)	(24,233,869)
2009	853,985,328	813,197,663	(40,787,665)	(15,534,286)	(39,768,155)
2010	864,752,874	825,250,588	(39,502,286)	(13,553,819)	(53,321,974)
2011	884,737,928	851,360,174	(33,377,754)	(10,317,479)	(63,639,453)
2012	904,215,392	895,746,957	(8,468,435)	(2,358,287)	(65,997,740)
2013	924,830,967	919,887,586	(4,943,381)	(1,240,208)	(67,237,949)
2014	944,601,096	939,811,521	(4,789,575)	(1,082,541)	(68,320,490)
2015	961,457,319	952,049,446	(9,407,873)	(1,915,649)	(70,236,139)
2016	983,603,382	977,635,740	(5,967,642)	(1,094,723)	(71,330,863)
2017	1,008,612,464	1,009,952,198	1,339,735	221,410	(71,109,452)
2018	1,033,823,588	1,042,664,724	8,841,135	1,316,327	(69,793,126)
2019	1,058,925,414	1,076,415,439	17,490,025	2,345,973	(67,447,152)
2020	1,092,722,492	1,126,401,309	33,678,817	4,069,738	(63,377,414)