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SURFACE TRANSPORTATION BOARD

DECISION

Docket No. NOR 42113

ARIZONA ELECTRIC POWER COOPERATIVE, INC.
v.
BNSF RAILWAY COMPANY AND
UNION PACIFIC RAILROAD COMPANY

Digest:[1] The Board finds that the complaining shipper does not have a feasible shipping alternative to defendant railroads for the transportation at issue, and that the challenged rates those railroads charge the complaining shipper are unreasonably high. Therefore, the Board prescribes maximum reasonable rates for future at-issue shipments and orders the defendant railroads to pay reparations for past, excessive charges.

Decided: November 16, 2011

TABLE OF CONTENTS

[1] The digest constitutes no part of the decision of the Board but has been prepared for the convenience of the reader. It may not be cited to or relied upon as precedent. Policy Statement on Plain Language Digests in Decisions, EP 696 (STB served Sept. 2, 2010).

ACRONYMS

AEPCO	Arizona Electric Power Cooperative, Inc.
ANR	The hypothetical "Arizona & Northern Railroad"
ANR-NM	The hypothetical "Arizona & Northern Railroad-New Mexico"
ANR-PRB	The hypothetical "Arizona & Northern Railroad-Powder River Basin"
ATC	Average Total Cost
BNSF	BNSF Railway Company
CMP	constrained market pricing
DCF	discounted cash flow
G&A	general and administrative
MOW	maintenance-of-way
MRL	Montana Rail Link
MMM	Maximum Markup Methodology
PRB	Powder River Basin
PTC	Positive Train Control
R-1	Annual Report Form R-1
ROW	right-of-way
RTC	Rail Traffic Controller
R/VC	revenue-to-variable cost
SAC	stand-alone cost
SARR	stand-alone railroad
T&E	train and engine
UP	Union Pacific Railroad Company
URCS	Uniform Railroad Costing System
WP	workpaper

OVERVIEW

On December 30, 2008, Arizona Electric Power Cooperative, Inc. (AEPCO), filed a complaint challenging the reasonableness of the joint rates established by BNSF Railway Company (BNSF) and Union Pacific Railroad Company (UP) (collectively, defendants) for unit train coal transportation service from New Mexico and the northern portion of the Powder River Basin (PRB) in Wyoming and Montana to AEPCO's Apache Generating Station (Apache) located near Cochise, Ariz. AEPCO requests that the Board prescribe reasonable rates and order reparations for past overcharges. An oral argument before the Board was held in this proceeding on September 28, 2010.

AEPCO pursued relief under the agency's stand-alone cost (SAC) test. Under this test, the parties must hypothesize a stand-alone railroad (SARR) that could serve the traffic at issue if the rail industry were free of entry barriers. Under the SAC test, the challenged rates 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 SAC analysis produces a simulated competitive rate against which we judge the challenged rates.

In this case, AEPCO has demonstrated that the challenged rates are unreasonable under the SAC test. Accordingly, we will order defendants to pay reparations to AEPCO (with interest) for prior shipments, and we will prescribe the maximum lawful rate that defendants can charge through 2018. The maximum lawful rate is expressed as a revenue-to-variable cost (R/VC) ratio. The agency may not prescribe a rate below the 180% R/VC ratio set forth in the statute. Here, the SAC analysis places the maximum reasonable rate below that threshold. Accordingly, we will order the railroads to establish transportation rates no higher than the 180% jurisdictional floor, which will provide AEPCO a 28% reduction in the transportation rate for 2009, and an average reduction of 37% over the 10-year period for which AEPCO is entitled to relief.

Although the record does not provide the data needed to calculate precisely the total amount of reparations due to AEPCO, we estimate that reparations are roughly $4.5 million in 2009. We further estimate that the total relief AEPCO will obtain as a result of this order – including both reparations and the lower prescribed rate through 2018 – will approximate $63 million (in current dollars).

Following our standard practice, the parties are to calculate the total amount of reparations and interest due, in accordance with this decision. If they cannot agree, the parties should bring the dispute to our attention for prompt resolution.

PRELIMINARY MATTER

BNSF's Motion to Hold in Abeyance

On October 18, 2010, BNSF filed a motion regarding the Board's revenue allocation methodology for cross-over traffic contained in the analysis. BNSF notes that the Board's use of the modified Average Total Cost (ATC) methodology to allocate revenues from cross-over

traffic in SAC analyses, as opposed to the ATC methodology adopted in Major Issues in Rail Rate Cases, EP 657 (Sub-No. 1) (STB served Oct. 30, 2006), was remanded to the Board in BNSF Railway v. STB, 604 F.3d 602 (D.C. Cir. 2010), cert. denied, 131 S.Ct. 244 (2011). BNSF states that it does not believe the choice of methods to allocate revenues from cross-over traffic is likely to have an effect in this proceeding. However, BNSF requests that if the choice of revenue allocation method results in a different outcome, the Board should hold this case in abeyance until it resolves the revenue allocation issue on remand.

AEPCO replied to BNSF's motion on October 22, 2010. AEPCO argues that the Board should proceed using the governing methodology, which AEPCO states is modified ATC, until the Board alters its precedent in a legally permissible manner. AEPCO further states that the choice of revenue allocation methodology is immaterial to this proceeding, and the ATC issue should not delay resolution of its rate complaint.

The motion to hold in abeyance will be denied as moot. The choice of revenue allocation methodology, whether original or modified ATC, is inconsequential to the outcome of this case as the resulting reasonable rate is below the 180% R/VC jurisdictional floor under either method. The Board will address the remanded ATC issue in Western Fuels Ass'n v. BNSF Railway, NOR 42088, at a later date.

MARKET DOMINANCE

The Board may 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). There are two components to the Board's threshold market dominance inquiry – a quantitative and qualitative analysis. The quantitative analysis requires a conclusive presumption that a railroad does not have market dominance if the rate it charges produces revenues that are less than 180% of its variable costs of providing the service. 49 U.S.C. § 10707(d)(1)(A). Thus, the 180% R/VC ratio is the floor for regulatory scrutiny of rail rates. That statutory 180% R/VC level is also the floor for any rate relief. See Burlington N. R.R. v. STB, 114 F.3d 206, 210 (D.C. Cir. 1997).

Here, the parties agree that the R/VC ratios exceed the 180% threshold for all coal movements at issue, thus satisfying the quantitative test. The parties also agree that the Board's qualitative market dominance test has been satisfied.

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), aff'd sub nom. Consol. Rail Corp. v. United States, 812 F.2d 1444 (3d Cir. 1987), as modified in Major Issues in Rail Rate Cases. 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 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. Coal Rate Guidelines, Nationwide, 1 I.C.C. 2d at 523-24.

CMP contains three main constraints on the extent to which a railroad may charge differentially higher rates on captive traffic. The revenue adequacy constraint ensures that a captive shipper will "not be required to continue to pay differentially higher rates than other shippers when some or all of that differential is no longer necessary to ensure a financially sound carrier capable of meeting its current and future service needs." 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 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. As stated, AEPCO seeks relief under the SAC constraint.

B. SAC Test

A SAC analysis seeks to determine whether a complainant is bearing the cost of any inefficiencies or the cost of any facilities or services from which it derives no benefit; it does this by simulating the competitive rate that would exist in a "contestable market." A contestable market is defined as one that is free from barriers to entry. The economic theory of contestable markets does not depend on a large number of competing firms in the marketplace to ensure a competitive outcome. Id. at 528. 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 that 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. Coal Rate Guidelines, Nationwide, 1 I.C.C. 2d at 529. This removes any advantages the existing railroad would have over a new entrant that create the existing railroad's monopoly power. A SARR that could serve the traffic at issue if the rail industry were free of entry barriers is therefore hypothesized. 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, a shipper designs a SARR specifically tailored to serve an identified traffic group. Using information on the types and amounts of traffic moving over the defendant's rail 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 system-wide investment requirements and operating expense requirements (including such expenses as locomotive and car leasing, personnel, material and supplies, and

administrative and overhead costs) must be estimated. The parties must provide appropriate documentation to support their estimates.

It is assumed that investments normally would be made prior to the start of service, 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, however, are limited to a finite period of time 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, presuming that the revenue contributions from non-issue traffic are 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 SAC analysis period. A present value analysis is used that takes into account the time value of money, netting annual over-recovery and under-recovery as of a common point in time. If the 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. 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.

STAND-ALONE COST ANALYSIS

Set forth below is the Board's analysis of the SAC evidence presented in this case. The evidence demonstrates that the challenged rates exceed the level permitted by the SAC test. The more significant issues are discussed in this decision, with more technical issues described in the attached appendices.

A. System Configuration

The system configuration of the SARR is the most controversial and critical matter in this proceeding. There are two overarching issues regarding the SARR put forth by AEPCO and challenged by defendants in this proceeding: (1) whether the rates from New Mexico and the PRB can be challenged together in a single SARR configuration; and (2) whether AEPCO may change the location of real world interchanges in its hypothetical SARR. After a brief overview of the SARR submitted by AEPCO in this case, we turn to these contested issues.

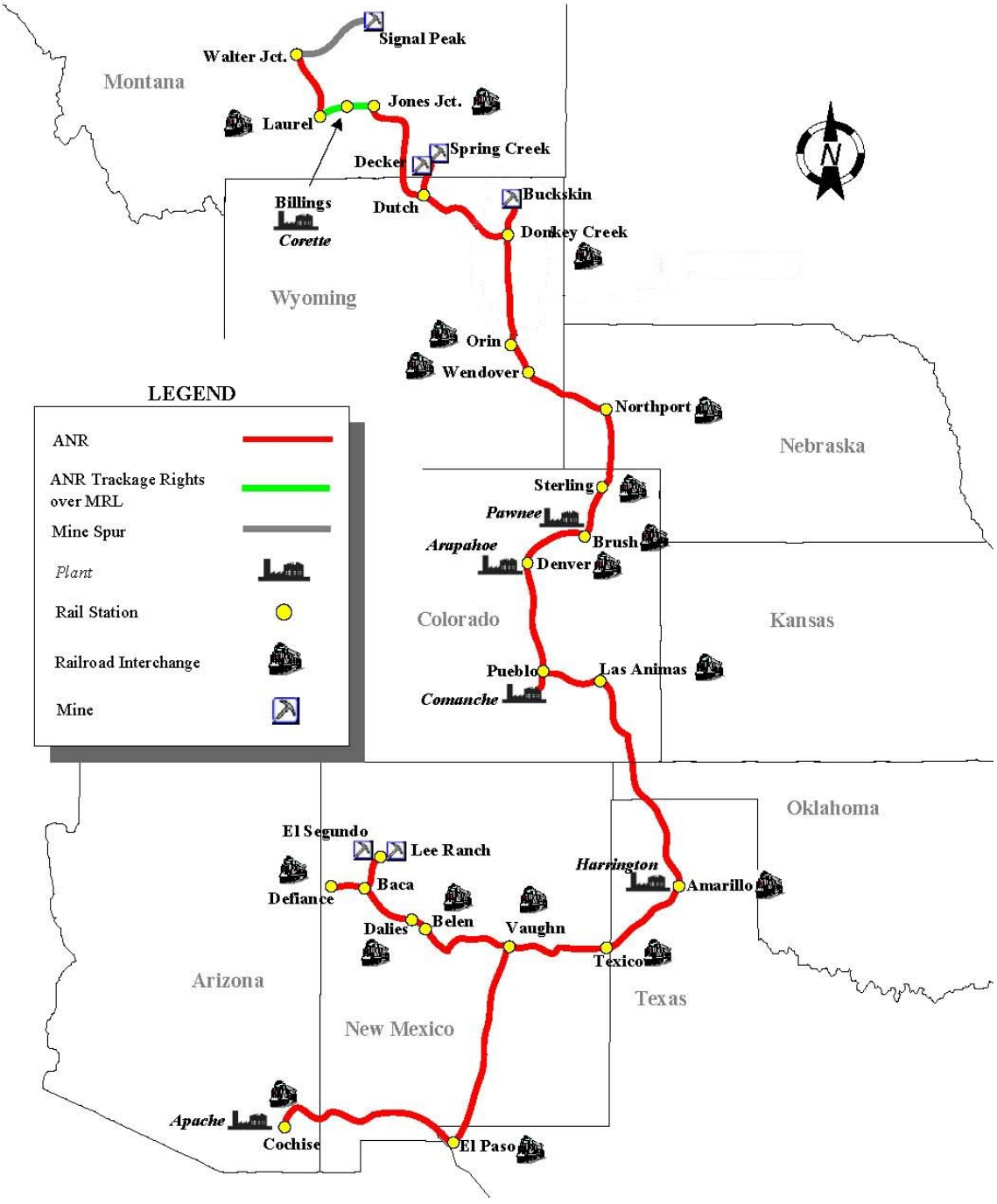
In its SAC presentation, AEPCO submitted a hypothetical SARR that it called the Arizona & Northern Railroad (ANR). The ANR would be a 2,235-mile railroad. It would begin at Laurel, Mont., and run south through the PRB to the following locations: Pueblo, Colo.; Amarillo, Tex.; and west-southwest to Vaughn, N.M.; El Paso, Tex.; and Cochise. A second point of origin, at Defiance, N.M., would run from west to east, connecting at Vaughn. The ANR system would run through eight states: Montana, Wyoming, Nebraska, Colorado, Oklahoma, Texas, New Mexico, and Arizona. Through its system, the ANR would directly serve 20 coal mines and 5 power plants.

The ANR would construct and operate most of its network, but would use trackage rights on the Montana Rail Link (MRL) between Laurel and Jones Jct., Mont. The ANR would also use private trackage to reach certain coal mine origins and power plant destinations. The ANR configuration would not use any trackage rights over BNSF or UP lines, but would have a number of interchange points with the residual BNSF and UP.[2] The ANR would also interchange traffic with the Nebraska Kansas Colorado Railway and the Ferrocarril Mexicano, S.A. de C.V. (FXE). Below is a schematic of the ANR proposed by AEPCO.[3]

[2] The residual BNSF and UP are those carriers' lines not replicated by the SARR from and to which crossover traffic on the SARR flows.

[3] The basis for the schematic is AEPCO's Opening Ex. III-A-1.

Schematic Of The Arizona and Northern Stand-Alone Railroad



1. Single-SARR Issue

A key issue in this proceeding is the appropriateness of AEPCO's construction of a single SARR to handle traffic from both New Mexico and PRB mines. Defendants argue that the ANR may not properly include non-issue traffic from the PRB, because a majority of that traffic never shares track or facilities with the New Mexico issue traffic. Defendants argue that the use of a single SARR conflicts with previous guidance to these same parties issued by the Board in 2002 that discouraged the presentation of a combined challenge to New Mexico and PRB rates:

> [A] party is not permitted to 'game' the SAC process in attempting to gain a substantive advantage by combining into a single, consolidated complaint what are essentially [two] separate rate challenges. . . . [A party] may not include any traffic or revenues (or exclude any costs) that could not have been treated in the same manner had [the complainant] filed a separate complaint for that set of rates.

Ariz. Elec. Power Coop. v. Burlington N. & Santa Fe Ry. (Arizona Electric Power Cooperative 2002), 6 S.T.B. 322, 329-30 (2002). Defendants argue that AEPCO's complaint should be dismissed because AEPCO's SARR violates this concept by challenging the rates for both New Mexico and PRB traffic in one complaint, and by so doing "AEPCO creates an impermissible cross-subsidy in favor of the issue traffic."[4] In reply, defendants redesigned AEPCO's configuration and offered two separate SARRs to judge the reasonableness of their joint rates. The first, labeled the "ANR-PRB," would be used to analyze the rates from the PRB and Montana mines.[5] The second, labeled the "ANR-NM," would be used to analyze the rates from the New Mexico mines.[6] Both SARRs submitted by defendants would mirror their real-world configurations, with interchanges in the same location as those used by defendants to move AEPCO's issue traffic.

Defendants' objections to the basic design of the ANR are misplaced for three interrelated reasons. First, the design of the ANR does not violate the precedent in Arizona Electric Power Cooperative 2002. Second, Board policy has evolved since the quoted language

[4] BNSF/UP's Reply I-5.

[5] The ANR-PRB configuration would replicate two routes. The first replicated route would be a BNSF route that starts at Huntley, Mont., runs southeast to Donkey Creek, Wyo., south to Northport, Neb., and then south to Pueblo, Colo. The second replicated route would be a UP route that starts at Pueblo, runs southeast to Stratford, Tex., southwest to Vaughn, and El Paso, and west to Cochise. In 2012, ANR-PRB would construct a line from Laurel to Walter Jct., Mont., to connect with private track serving Signal Peak Mine. The 2012 line would use trackage rights over MRL to Huntley, Mont.

[6] The ANR-NM route would replicate the configuration over which the New Mexico issue traffic moves. This traffic moves from coal mines in northwest New Mexico to Belen, N.M., where it turns south and moves on a BNSF line between Belen and Rincon, N.M. At Rincon, BNSF hands off the traffic to Southwest Railroad (SWRR). SWRR handles the traffic to Deming, N.M., where it is interchanged with UP for movement to Apache.

in question was published – the Board has adjudicated a number of rate cases since that time, and the agency now has an internal cross-subsidy approach to address the concerns in Arizona Electric Power Cooperative 2002. And finally, circumstances existed in the prior proceeding that are not present here. We elaborate on each point below.

First, AEPCO's submission does not violate the precedent in Arizona Electric Power Cooperative 2002. AEPCO has not included any traffic or revenues that could not have been treated in the same manner had it filed separate complaints for the New Mexico coal traffic and the PRB coal traffic. A complainant is permitted to design a hypothetical SARR to utilize the most efficient traffic group, and to use revenues from the PRB traffic to help pay for common costs. And it is well established that there is no requirement that the issue traffic share facilities with all of the traffic on the SARR. See, e.g., Duke Energy Corp. v. CSX Transp., Inc. (Duke/CSXT), 7 S.T.B. 402, 424-26 (2004). The most robust discussion of current Board policy, and its rationale for the general principle that the traffic group need not always share facilities in common with the issue traffic, can be found in Otter Tail Power Co. v. BNSF Railway, NOR 42071, slip op. at 9-10 (STB served Jan. 27, 2006), aff'd sub nom. Otter Tail Power Co. v. STB, 484 F.3d 959 (8th Cir. 2007). While it is clearly to defendants' benefit to strip the high-density, non-issue PRB traffic from the New Mexico issue traffic's group, the railroads offer no reasoned basis to depart from this agency precedent.

Second, the Board's concern in Arizona Electric Power Cooperative 2002 over improper "gaming" is no longer a concern here in light of the Board's now established, and judicially affirmed, internal cross-subsidy analysis. The heart of the railroads' objection here is their claim that permitting this single-SAC analysis creates an impermissible internal cross subsidy within the SARR itself. But the Board now has a well-documented, court-affirmed, internal cross-subsidy analysis to avoid such gaming. See PPL Mont., LLC v. Burlington N. & Santa Fe Ry., 6 S.T.B. 286 (2002), reconsideration denied, PPL Mont. v. Burlington N. & Santa Fe Ry., NOR 42054 (STB served Mar. 24, 2003), aff'd sub nom. PPL Mont. v. STB, 437 F.3d 1240 (D.C. Cir. 2006); Otter Tail Power Co., slip op. at 23-30. Defendants offer no reasoned basis for us to conclude that the internal cross-subsidy approach first developed in PPL Montana and later refined in Otter Tail Power Co. is insufficient. Nor do they apply that analysis to show that the ANR results in an impermissible internal cross subsidy.

Finally, there is a critical factual difference between the Arizona Electric Power Cooperative 2002 case and the one before us: the presence in the former of challenged single-line UP rates. When the agency issued Arizona Electric Power Cooperative 2002, AEPCO was challenging through rates for joint BNSF/UP movements from New Mexico and PRB mine origins and rates for UP single-line service from mines in Colorado. The agency was properly concerned that the combining of costs and sharing of revenues between joint movements and the UP-only movements was improper. In those circumstances, a SAC analysis of the single-line rate should not be combined in a rate complaint that also challenges the jointly-issued through rate. A complaint that combines into a single challenge jointly issued through rates and single-line rates would raise different issues and might, as was suggested in Arizona Electric Power

Cooperative 2002, require separate SAC analyses. But with no single-line movements in this case,[7] the concern in Arizona Electric Power Cooperative 2002 is not present here.

In sum, AEPCO's single-SARR approach is acceptable. If defendants had concerns about an internal cross-subsidy within the SAC analysis, they should have used existing Board precedent to detect and remedy their concerns, or at least offered some explanation for why those tests were insufficient. We will not, however, permit the railroads to undermine fundamental tenets of the SAC analysis by redesigning the geographic scope of the SARR offered by the complainant to test the reasonableness of the challenged joint rates.

2. Movement of Interchanges

In a full-SAC case, complainants are permitted to propose a hypothetical SARR that would provide service in a different way and would use rail configurations different from the actual operations of the defendant railroad. For example, the complainant may propose a SARR that would run longer trains, use fewer locomotives, change crew districts, modify maintenance practices, move the location of yards, single-track lines that are now double-tracked (or vice versa), or make a myriad of other operating or configuration changes to serve the selected group of shippers in the traffic group. Tremendous flexibility is permitted in the design of the SARR. But we require that these hypothetical operations be feasible and supported and that they provide shippers included in the analysis the same or superior service as provided by the actual operations of the defendant railroads.

In this case, AEPCO followed these well-established principles and routed the issue traffic over higher-density corridors in three primary areas: (1) it rerouted the New Mexico issue traffic through El Paso; (2) it rerouted PRB traffic between Stratford and Vaughn; and (3) it rerouted PRB traffic between Donkey Creek and Northport. These reroutings result in the movement of the historical point of interchange between BNSF and UP.[8] In addressing this issue, we will focus on the rerouting of the New Mexico traffic through El Paso, which is the most significant to the outcome of this proceeding. It should be noted, however, that the concerns of defendants are the same for, and our analysis here is applicable to, all of the contested reroutings.

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[7] See Ariz. Elec. Power Coop. v. BNSF Ry., NOR 42113 et al., slip op. at 4 (STB served Apr. 23, 2009) (removing the Colorado, UP-only movement from this proceeding to its own sub-docket).

[8] Stating that AEPCO has proposed to "move an interchange" is a misnomer. In fact, there would be no interchanges for the issue traffic in the SAC analysis proposed by AEPCO. Rather, the proposed SARR is a single entity that would provide service between the New Mexico and PRB coal mines and the plant destination. When we say AEPCO "moves the interchange," we mean two things. First, in its SAC analysis, AEPCO proposes to route the traffic over a different route than what is used to serve the issue movement in reality. And second, that hypothetical route (if actually used by the defendant railroads) would require defendants to change the point of interchange.

Defendants object to how AEPCO proposes to reroute the New Mexico traffic. They claim that AEPCO has impermissibly moved real world interchange points in its proposed ANR, moving the issue traffic to higher density lines and changing the locations of where BNSF and UP interchange this traffic. Defendants make two arguments to support their objection. First, they maintain AEPCO ignores the legal consequences of moving the interchange locations. Second, they argue that moving the interchange points distorts the SAC test, because the results reflect hypothetical and non-existent revenue-sharing arrangements between BNSF and UP.[9] We disagree.

Defendants' arguments run contrary to established SAC theory and are contrary to agency precedent. First, as discussed above, general SAC rules provide AEPCO great flexibility in the design of the hypothetical SARR. Indeed, a SAC analysis by definition is hypothetical in nature; virtually no aspect of the proposed SARR comports exactly with how defendants provide service in the real world. It would be entirely proper for AEPCO to design a hypothetical SARR that would reroute the New Mexico traffic directly on a straight line from the coal mine to the utility plant, replicating none of the facilities used by either railroad. There is nothing wrong with using a different routing for the SARR, including one that would replicate the Vaughn-El Paso route so that it could share the costs of the expensive rail infrastructure with more traffic.

Following these general principles, the agency has previously rejected this precise argument (proffered by the same defendants in a case brought by the same shipper). We observed:

> BNSF and UP are themselves free to alter or vary their routing of AEPCO's movements . . . at any time (by mutually changing the interchange point) without needing AEPCO's consent and without affecting the joint rate charged to (and challenged by) AEPCO. Therefore, basing a SAC presentation on such an alternative routing for the issue traffic would seem to be permissible, so long as AEPCO has not itself specifically requested the routing that the defendants currently use.

Arizona Electric Power Cooperative 2002, 6 S.T.B. at 327.[10] Defendants bear the burden of justifying a departure from this precedent.

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[9] BNSF/UP's Reply I-17-29.

[10] We recognize that in this section of our decision, we are relying on language from the Arizona Electric Power Cooperative 2002 decision, while we distinguished different language from the same decision in the prior section. We do not lightly rely on this case for one purpose but not for another. Yet there is no discrepancy here. In this discussion, the Board's prior statement that a complainant may reroute the issue traffic rests on bedrock SAC principles set forth in Coal Rate Guidelines, Nationwide. In the prior section, the statement of the agency was fact specific and overtaken by the development of the Board's approach to detect and remedy internal cross-subsidies.

Defendants attempt to meet this burden by pointing out (and emphasizing repeatedly at oral argument) that they are distinct entities with distinct responsibilities for the movement of the issue traffic. They cite to Texas Municipal Power Agency v. Burlington Northern & Santa Fe Railway for the general SAC principle that "the analysis of the reasonableness of a defendant carrier's rate should be based on the extent of the defendant carrier's participation in the movement." 7 S.T.B. 803, 821 (2004). They also argue that the incumbent railroad has a statutory right to select the point of interchange, and that if the shippers want an alternative routing they must first satisfy the requirements of 49 U.S.C. § 10705 and the Board's competitive access rules.[11]

We reject defendants' position that their separate status trumps the flexibility that a complainant usually enjoys in designing the SARR. First, their argument ignores the legal realities of jointly-issued through rates. A jointly-issued through rate is provided to a shipper in a single quote; the shipper does not deal independently with each carrier that moves its product.[12] Carriers participating in a joint movement are jointly and severally liable in civil court (and at the agency) for actions arising from this movement.[13] As such, for practical purposes, when carriers elect to offer a through rate, they are treated as a single legal entity.[14] Indeed, the unitary nature of joint rates is reflected in the Congressional language indicating that "the rate standard for the

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[11] Defendants further argue that interchanging at Vaughn is inappropriate because there is no actual interchange facility at that location. BNSF/UP Reply I-15 & Ill.A-23. But a hypothetical SARR need not replicate the track and facilities of an incumbent railroad, as long as the facilities it does propose are sufficient for the job. It is therefore fundamentally inconsistent with the SAC test to argue that facilities must exist in reality to be included in the SARR.

[12] Pennsylvania v. ICC, 561 F.2d 278, 282 (D.C. Cir. 1977) ("Joint through rates result in the simplification of, among other things, routing, documentation, and the calculation of charges and billing; this resultant simplification has been put forth as a major advantage of the joint through rate method for filing tariffs.").

[13] E.g., Louisville & Nashville R.R. v. Sloss-Sheffield Steel & Iron Co., 269 U.S. 217, 232 (1925) ("The Commission held early, and has consistently held since, that carriers who by means of a joint through rate make excessive charges are liable jointly and severally . . . . [T]he establishment of a joint rate by the concurrence of connecting carriers is necessarily the act of each, because the establishment of the rate is done by their joint agreement."); id. at 234 ("The liability in [this] case . . . arises out of the wrongful exaction [of charges] from the shipper . . . . Every carrier who participates in the infliction of this wrong is liable *in solido* like every other joint tort feasor.").

[14] Metro. Edison Co. v. Conrail, 5 I.C.C. 2d 385, 403 (1989) (Commission rejects shipper SARR that focused on the potentially unreasonable division rate of a single carrier: "[the joint rate] must be challenged as a whole, and a challenge to a joint through rate fails if the challenger were to demonstrate only the unreasonableness of a portion of it."); Louisville & Nashville R.R., 269 U.S. at 234 ("The division of the joint rate among the participating carriers is a matter which in no way concerns the shipper.").

reasonableness of joint rates shall be the same as for all rates." H.R. Rep. No. 96-1430 at 90 (1980).

Second, defendants are attempting to use selectively their joint and separate status to their benefit, having earlier asserted (successfully) that the Board should *not* look behind the joint rate to determine each carrier's individual responsibilities, costs, and revenues. In a prior case brought by AEPCO against defendants, AEPCO sought discovery of the division between the railroads. UP objected to the discovery request, arguing that rate divisions are not relevant to the development of either variable costs or stand-alone costs. Ariz. Elec. Power Coop. v. Burlington N. & Santa Fe Ry., NOR 42058, slip op. at 7 (STB served Dec. 31, 2001). At the urging of defendants, the Board denied AEPCO access to that information. Now, defendants want to be able to issue a single joint rate, deny the shipper access to their internal divisions of that single rate, but then also be treated as different legal entities for purposes of the SAC analysis. They cannot have it both ways.

Third, defendants could have insulated themselves from a joint-rate challenge by issuing separately challengeable rates to the chosen point of interchange instead of a single joint rate. For example, UP could have quoted a transportation rate from the interchange point with BNSF to the utility plant. Had it done so, AEPCO could have challenged this rate from the interchange to the utility. But because such a rate challenge would not have extended to the service provided by BNSF from the mine to the interchange point, AEPCO's SARR would replicate only the service offered by UP, and not that provided by BNSF. For that reason, the point of interchange would have been fixed for purpose of the rate analysis because that would be the "origin" of the movement for purposes of that rate challenge.

Instead, defendants here made a different choice and quoted a single joint rate for service from the coal mines to the plant. As a result, in a challenge to that rate, AEPCO's only recourse for rate relief is to challenge the single joint rate for service from the origin to the destination. Under agency precedent, the shipper cannot demand separate rates from each of the carriers involved in the movement of its product. Accordingly, we will not treat the single joint rate as we would two separately challengeable rates. BNSF and UP both decided that it was to their mutual benefit to move AEPCO's traffic under a single rate. They cannot now ask the Board to treat them as if they had established a different kind of rate.

Finally, defendants' proposal is inconsistent with core tenets of our SAC test. It is true that a shipper cannot demand a routing of its choice in the real world; such a choice of routing rests first with the railroads. To obtain an alternative routing in the real world, the shipper would need to satisfy the requirement of § 10705 and our competitive access rules. But it is also true that a shipper cannot tell the railroad where to place its yards, or where to build its bridges, or where to double track, or whether to use bridges or culverts, or what to pay its executives, or how to maintain its rail infrastructure. Yet in its SAC analysis, the complainant can propose a hypothetical SARR that would change all these features of the real world operation, as long as the alternative service would itself be feasible and supported. A complainant can propose a hypothetical SARR that would relocate yards, or replace bridges with culverts, or double track what is now single track, or reroute traffic. The basic idea behind this approach to our rate reasonableness inquiry is well established. Using a hypothetical SARR, "railroads functioning in a noncompetitive market will be required to price as if alternatives to their services were

available. That is, their rates will be judged against simulated competitive prices. As a result, the efficiencies of a contestable market will serve as the guide for establishing maximum rates on captive coal traffic." Coal Rate Guidelines, Nationwide, 1 I.C.C. 2d at 542.

Under these guiding SAC principles, rerouting the issue traffic to take advantage of economies of density is plainly permissible. As was observed in Coal Rate Guidelines, Nationwide: "In selecting the route of a SAC railroad, for instance, an overriding factor may be the effort to lower costs by taking advantage of economies of density. . . . Thus, the [SARR] may not represent the shortest route for the captive shipper, but the one with the highest traffic densities." Id. at 543-44. In the end, the reasonableness of the *joint* rates "charged and collected" is in this case properly being judged against a simulated competitive price of a single hypothetical SARR.[15]

Defendants assert that their position is supported by our precedent in Texas Municipal Power Agency and West Texas Utilities v. Burlington Northern Railroad, 1 S.T.B. 638 (1996), but they are incorrect. The issue in West Texas Utilities was whether the SAC analysis could ignore the contractual rights of a *third-party* connecting railroad. The agency held that a complainant may not assume an operating plan that would divert traffic away from other railroads as the analysis of the reasonableness of the defendant carrier's rate should be based on the extent of the defendant carrier's participation in the movement. W. Tex. Utils., 1 S.T.B. at 658 n.41. But there is a material difference between those circumstances (where the complainant proposed to divert traffic from a third-party carrier in violation of express contractual terms) and the situation here, where UP and BNSF provide joint service to AEPCO under a joint rate. Where a third-party, non-defendant connecting carrier is involved, our precedent requires evidence that the connecting carrier would not object to the new routing. Tex. Mun. Power Agency, 7 S.T.B. at 821.[16] In this case, however, the SARR steps into the shoes of both UP and BNSF, and as such, when analyzing the SARR, there is no third party connecting carrier in the movement, making West Texas Utilities and Texas Municipal Power Agency inapplicable.

Equally misplaced are claims that AEPCO's SAC analysis is inconsistent with SAC principles because it allegedly assumes a fictional revenue- or cost-sharing agreement between BNSF and UP. Defendants' argument is that the SARR should not replicate BNSF and UP lines that are not used to move the issue traffic because the carriers do not have agreements on divisions of rates and costs for the hypothetical routing. This argument ignores the

[15] In other words, this decision does not dictate how defendants should interchange the issue movement, and therefore does not run afoul of § 10705, but rather establishes the reasonable rate defendants may charge for the issue movement.

[16] There is another carrier involved in the movement of the New Mexico issue traffic, the Southwest Railroad (SWRR). However, SWRR is utilized by defendants by agreement to complete the movement of the issue traffic, not as a third-party with an independent contract giving it certain rights to traffic, as was the case in West Texas Utilities. Here, AEPCO simply steps into the shoes of defendants and decides it is in its best interest not to utilize SWRR in the movement of the issue traffic.

complainant's latitude in designing the SARR, replicating portions of the defendant's network or none of it at all.

When pressed at oral argument with the proposition that their position is fundamentally at odds with the idea that the complainant could use a coal slurry pipeline or a barge-rail operation to judge the reasonableness of the challenged joint rates, defendants seemed to concur, but then shifted the debate to the traffic that the complainant could properly include in the traffic group. The key issue, they said, "is what traffic is available to offset the costs of the stand-alone facility."[17] They seem to concede (but not clearly so) that AEPCO could design a SARR that goes from the New Mexico mines, to Vaughn, to El Paso, to the plant. But they then seem to object to the non-issue traffic that AEPCO selected to offset the costs of those stand-alone facilities. Yet there is nothing impermissible or improper about the traffic selected. For example, having proposed to construct rail lines from the New Mexico mines and east to Vaughn, AEPCO quite reasonably included in the traffic group BNSF intermodal traffic that travels over the same route. As long as the SARR would provide equivalent or superior service to those shippers, the non-issue traffic included in the SAC analysis is permitted to share the expense of those rail facilities. Similarly, having proposed to construct rail facilities from the utility plant east to El Paso and then north to Vaughn, AEPCO again reasonably proposed to include in the traffic group UP intermodal traffic that travels over that same route. There may be other reasons to exclude the selected non-issue traffic from the SAC analysis, but the absence of a cost- or revenue-sharing agreement between UP and BNSF is not one of them.

For the foregoing reasons, we reject defendants' position that this case must be dismissed because the complainant proposed a hypothetical SARR that would reroute the issue traffic over longer, but higher density, routes in its SAC analysis challenging joint rates.

B. Cross-Subsidy Analysis

Defendants argue that the issue traffic from New Mexico fails the PPL Montana test that we use to determine if a SARR produces an improper cross subsidy. However, defendants only perform the cross-subsidy test on their own ANR-NM SARR, finding that the Belen to Deming segment fails. Defendants do not show that any segment on the ANR fails the PPL Montana test.

Defendants do state that the Board should conduct a PPL Montana cross-subsidy analysis on the ANR to determine whether the revenues generated by traffic using the Vaughn-El Paso segment cover the costs of that segment, and also an analysis of the prescribed rate to ensure that the rate reduction does not itself result in an impermissible cross subsidy, in accordance with guidance in Otter Tail Power Co.[18] However, defendants make no effort to perform these analyses themselves.[19] Defendants have performed a cross-subsidy analysis on the ANR-NM

[17] Hr'g Tr. 70, Sept. 28, 2010.

[18] BNSF/UP's Reply III.H-16-17.

[19] Defendants state that they provide guidance to the Board in how to perform the cross-subsidy analysis using the data they provide. Id. at 17. However, the directions in the referenced worksheets lack the specificity necessary to perform the internal cross-subsidy analysis.

SARR, and give no reason why they have not repeated their efforts on the ANR submitted by AEPCO. Defendants could have also easily performed the Otter Tail Power Co. analysis by using the revenues associated with AEPCO's opening evidence, but have not provided the Board with evidence that the prescribed rate would necessarily have to rise to avoid creating a cross subsidy.

As the Board accepts the ANR SARR configuration, defendants have failed to challenge the relevant SARR utilizing the Board's internal cross-subsidy test. As the Board found in Western Fuels Ass'n v. BNSF Railway (Western Fuels Ass'n 2007), NOR 42088, slip op. at 10 (STB served Sept. 10, 2007), when a defendant fails to identify a section of the SARR that is not self-supporting, it has not met its burden to demonstrate an internal cross subsidy, and the disputed traffic shall be included in the SAC analysis.

C. Traffic Group

A complainant creates a traffic group by using information on the types and amounts of traffic moving over the defendant's rail system, and selecting a subset of that traffic (including its own traffic to which the challenged rate applies) that the SARR would serve. W. Fuels Ass'n v. BNSF Ry. (W. Fuels Ass'n 2009), NOR 42088, slip op. at 8 (STB served Feb. 17, 2009). The selected traffic group is representative of that which would move on the SARR in the future. Carolina Power & Light Co. v. Norfolk S. Ry., 7 S.T.B. 235, 250 (2003). The composition of the traffic group, as with all assumptions used in the SAC analysis, must be realistic, i.e., consistent with the underlying realities of real-world railroading. See W. Fuels Ass'n 2009, slip op. at 15.

AEPCO claims its forecasting methodology fully accounts for the effect of the 2009 economic recession. This claim is disputed by defendants, who allege that AEPCO's traffic group is unrealistic for failing to reflect the full impact of the 2009 economic recession in the volumes of its traffic group, in addition to other concerns. Defendants also allege that the ANR's revenues are overstated, based on several factors. We examine the major issues associated with the traffic group below.[20]

[20] Defendants raise several technical issues in their reply that were not directly addressed by AEPCO in its rebuttal, such as defendants' correction of the projection of the carload traffic growth rate for agricultural and industrial traffic from 2015 through 2018. BNSF/UP's Reply III.A-70. For these issues we assume that AEPCO has agreed to the corrections and has included them in its workpaper numbers. Defendants also make several corrections to data and forecasts used by AEPCO in generating volumes or revenues that AEPCO accepts, while rejecting defendants' treatment of this information. For these issues, we also accept AEPCO's workpaper numbers. One example is defendants' substitution of AEO 2010 Transportation Rates Escalator-West for the April 2009 AEO Update in the calculation of non-issue coal base-year revenues. BNSF/UP's Reply III.A.56. AEPCO accepts defendants' substitution, but claims that defendants misapplied the Gross Domestic Product – Implicit Price Deflator (GDP-IPD) forecast to convert the rate escalators from a real basis to a nominal basis. AEPCO's Rebuttal III.A-91. For this

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1. Base-Year Volumes

One of the central disputes between the parties is whose evidence best addresses the recent economic recession and the corresponding rebound in rail traffic. In this section, we review key issues within the context of coal traffic and non-coal traffic. Our analysis reveals that, although complex, AEPCO's approach is logical, transparent, and fully supported. Generally, AEPCO utilizes actual BNSF/UP traffic volumes provided in discovery for 2Q08 through 1Q09.[21] Thereafter, AEPCO forecasts volume growth.[22]

The parties agree to use AEPCO's actual 2009 volumes as base-year issue coal volumes.[23] For the last three quarters of 2009, AEPCO developed non-issue coal traffic volumes using the Annual Energy Outlook April Update Coal Production Forecast of the EIA (April EIA Forecast).[24]

AEPCO used a complicated approach to calculate non-coal volumes. In general, for base-year 2009 non-coal volumes, AEPCO used actual 1Q09 traffic data from BNSF and UP, and estimated 2Q09-4Q09 traffic volumes by adjusting 2Q08-4Q08 volumes through use of a calculated growth or reduction factor for each commodity group.[25] AEPCO determined BNSF consumer and industrial traffic volumes for 2009 by identifying both types of traffic for 1Q08 and 1Q09 from the BNSF traffic data and determining an ANR reduction factor.[26] The ANR reduction factors for both consumer and industrial traffic were then respectively applied to the BNSF system-wide reduction amount for the consumer and industrial traffic categories, resulting in a year-over-year reduction percentage.[27] The year-over-year reduction percentage was then applied to 2Q08-4Q08 consumer and industrial volumes on a movement-by-movement basis to determine 2Q09-4Q09 volumes.[28] AEPCO treated the intermodal traffic of J.B. Hunt Transport Services, Inc. (JB Hunt) separately, by applying a growth factor of 8.5%, derived from the Securities and Exchange Commission (SEC) Form 10-Q reports of JB Hunt for 2Q09-3Q09, to

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issue, we accept AEPCO's correction, as it matches the correct base year to the AEO 2010 Transportation Rates Escalator-West.

[21] AEPCO's Opening III.A-16.

[22] Id. III.A-17-19.

[23] BNSF/UP's Reply III.A-27; AEPCO's Rebuttal III.A-48.

[24] AEPCO's Opening III.A-18.

[25] Id. III.A-22-25.

[26] Id. III.A-23.

[27] Id. III.A-23-24.

[28] Id.

2Q08-4Q08 intermodal moves identified as moving under JB Hunt contracts in the BNSF waybill data.[29]

AEPCO determined BNSF agricultural traffic based on the 2009 USDA Agricultural Projections to 2018 report (2009 USDA Report), which shows a 4.5% reduction in aggregate crop production from 2008 to 2009.[30] The 4.5% reduction was applied to 2Q08-4Q08 agricultural traffic volumes to derive 2Q09-4Q09 levels.

Similarly, for UP non-coal traffic, AEPCO calculated volumes for 2009 through use of actual 1Q09 UP traffic data, and through forecasted 2Q09-4Q09 traffic volumes.[31] The 2Q09-4Q09 traffic volumes were developed by calculating a percentage factor reflecting the change between 2Q08-4Q08 waybill data and 2Q09-4Q09 data provided in discovery.[32] The factor was then applied to system-wide projected volume changes for UP automotive traffic, industrial traffic, and intermodal traffic, with minor variations for each category.[33] As stated earlier, the forecasting for both BNSF and UP non-coal volumes was more complicated than the straightforward approach used for coal traffic.

Defendants argue that AEPCO's forecasting approach does not adequately address the economic recession experienced by these carriers in 2009. In response, defendants look at actual shipments for the entire year of 2009 from their traffic data files, claiming that this method more accurately reflects the recession. Defendants also state they made a number of other complex alterations to better calculate coal volumes.

For single-line BNSF coal moves, these alterations include accounting for origin switching between mines for PRB movements and for movements originating outside the PRB by developing regional growth factors for each destination; categorizing the mines into 6 origin groups and comparing 2Q08-4Q08 volumes from each region to 2Q09-4Q09 volumes from each region for each individual destination in the coal traffic group to develop a destination-specific growth factor; and applying the destination-specific growth factor to the 2Q08-4Q08 traffic levels to project 2Q09-4Q09 traffic levels, which was then added to the actual 1Q09 traffic.[34] For the base-year non-issue coal volumes of single-line UP moves, defendants state that as origin shifting is not an issue, 2009 coal volumes for single-line UP moves are calculated by identifying actual movements between UP origin/destination pairs in UP's 2Q09 through 4Q09 waybill data, and adding those volumes to 1Q09 volumes identified by AEPCO in its opening evidence.[35] For joint BNSF/UP coal movements, defendants develop 2009 volumes using the same waybill data

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[29] AEPCO's Opening III.A-23 n.18.

[30] Id. III.A-24.

[31] Id. III.A-24-25.

[32] Id. III.A-25.

[33] Id. III.A-25-26.

[34] BNSF/UP's Reply III.A-29-30.

[35] Id. III.A-30.

used by AEPCO.[36] Defendants additionally argue that AEPCO had no reason not to use the post-1Q09 waybill data, and state that this information was provided to AEPCO as soon as it became available.

Defendants also assert that AEPCO's methodology for calculating consumer and industrial traffic volumes results in an overstatement of 2009 volumes for these categories, although defendants accept AEPCO's approach of using non-coal traffic volumes for 1Q09 as reported in BNSF's traffic data.[37] Defendants also claim that AEPCO's use of the 2009 USDA Report results in an overstatement of agricultural traffic volumes for 2009, and should be rejected.[38]

Defendants propose their own complex forecasting approach for non-coal traffic volumes. Defendants use a two-step process to calculate base-year BNSF non-coal traffic volumes for 2Q09-4Q09 in which they: (1) use BNSF train symbols from 2Q08-4Q08 and BNSF waybill records from 2Q09-4Q09 to match BNSF train symbols with actual BNSF shipments; and (2) develop an ANR growth rate for each commodity group, based on a comparison of 2Q08-4Q08 BNSF non-coal traffic volumes to 2Q09-4Q09 BNSF non-coal traffic volumes, and apply it on a movement-by-movement basis to 2Q08-4Q08 ANR non-coal traffic, to determine ANR 2Q09-4Q09 non-coal traffic volumes.[39] Defendants also reject AEPCO's separate adjustment of JB Hunt traffic, and claim that AEPCO's method results in a "double count" of JB Hunt traffic within BNSF's volumes.[40] Instead, defendants apply the overall change derived for 2009 base-year volumes for BNSF intermodal traffic in the group to all BNSF intermodal volumes in the traffic group, including JB Hunt.[41] Defendants' methodology results in a slight increase in BNSF consumer traffic volume for 2Q09-4Q09 and significant decreases in volume for the industrial and agricultural categories.[42]

For UP non-coal traffic, defendants accept the 2Q08-1Q09 traffic identified by AEPCO, as well as AEPCO's division of UP non-coal traffic into the following commodity groups: agricultural; auto; chemical; industrial; and intermodal.[43] For the remaining three quarters of 2009, defendants use a calculation methodology, similar to that used for BNSF Consumer and Industrial traffic, to determine UP commodity group-specific volumes for 2009.[44]

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[36] Id.

[37] Id. III.A-35-36.

[38] Id.

[39] Id. III.A-36.

[40] BNSF/UP's Reply III.A-37.

[41] Id.

[42] Id. Table III.A.4 BNSF Non-Coal Growth Rates (2Q-4Q08 to 2Q-4Q09).

[43] Id. III.A-40.

[44] Id.

In its rebuttal, AEPCO claims that defendants' method for calculating volumes systematically understates SARR traffic and is ultimately an infeasible approach due to the time constraints of the procedural schedule of a rate case.[45] AEPCO also claims that UP provided only a summary of its waybill data instead of the actual waybill data, and states that it also has not received the full 2009 car and train movement data to be used with the BNSF waybill data received previously.[46] AEPCO further claims defendants' overall method of using historical traffic data to determine the base-year traffic group is not a viable method, as it would force a shipper to begin the development of its traffic group fifteen months after filing the case, among other delays.[47] AEPCO further states that defendants fail to adequately incorporate the full effects of origin-shifting, as they do not reflect traffic that may be lost at one destination and gained at another in the 2Q09-4Q09 period, or traffic moving to a destination that is switched from one origin region to another.[48] Finally, AEPCO states that defendants' approach artificially constricts the base-year traffic[49] and uses a different traffic group than the one selected by AEPCO.[50]

Our role is to decide which party's base-year volumes are the best evidence of record. In this case, the parties have offered complex dueling calculations for coal and non-coal shipments. But the submission of the defendant railroads is unsupported. They relied on internal traffic data to develop actual 2009 volumes. While defendants represented to the Board in reply testimony that they provided the 2009 traffic information to AEPCO, this does not appear to have happened.[51] Indeed, at oral argument, counsel for AEPCO emphasized that it had still not received the underlying data from defendants.[52] Counsel for defendants did not attempt to rebut this contention during oral argument. For this reason, we accept AEPCO's entire rebuttal evidence on base-year volumes as the best evidence of record.[53]

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[45] AEPCO's Rebuttal III.A-51, 55.

[46] Id. III.A-54.

[47] Id. III.A-55-56, 65.

[48] Id. III.A-52, III.A-80.

[49] Id. III.A-68.

[50] Id. III.A-71.

[51] BNSF/UP's Br. 22 n.4

[52] Hr'g Tr. 28-38, Sept. 28, 2010.

[53] AEPCO's ANR would replicate BNSF between Denver and Pueblo, and, as a result, should include only BNSF traffic that traverses that segment in its traffic group. Yet AEPCO included a small amount of UP traffic that in reality moves under a trackage rights agreement. Defendants object, observing that the inclusion was insignificant in this proceeding, but asking the agency to advise AEPCO and future litigants that this is not permissible. BNSF/UP's Br. 20. We agree that the UP traffic should not have been included in the ANR's traffic group for that segment, but as defendants concede that the error is not material, and as no party offered any

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Moreover, we compared AEPCO's evidence to the public Quarterly Commodity Statistics Reports (QCS Reports) filed by the railroads with the Board.[54] We found that AEPCO's estimates of the coal and non-coal traffic volumes reasonably match the system-wide decline in traffic levels of the carriers between 2008 and 2009, unlike the forecasts submitted by defendants.

For example, the QCS Reports reflect a 3.9% reduction in BNSF coal traffic and a 15.4% reduction in UP coal traffic, based on a comparison of 2Q08-4Q08 against 2Q09-4Q09. Because the overwhelming preponderance of the traffic subject to the complaint (over 99%) is carried by BNSF, the overall coal traffic reduction for the SARR, as reflected in the QCS reports, would be just over 4%. For its traffic group, AEPCO shows a 7% reduction in BNSF coal traffic volumes and a 10.2% reduction in UP coal traffic volumes in its coal traffic forecast rebuttal workpapers, which, when weighted to reflect volume of traffic subject to the complaint, would produce a reduction of slightly over 7% for the coal traffic in the SARR. While that figure is higher than the figure derived from the QCS Reports, defendants' approach produces an even larger discrepancy. Defendants show a 9.3% reduction for BNSF coal traffic and a 6.1% reduction for UP coal traffic in their coal traffic forecast reply workpapers. That figure, when weighted to reflect volume, would produce an aggregate reduction of over 9%, a reduction much more extreme than that derived using the QCS Reports. A similar comparison of QCS Reports for non-coal traffic shows that AEPCO's evidence appears reasonable. Our workpapers comparing the traffic changes shown in the public QCS Reports and the dueling forecasts are available to the parties upon request.

Accordingly, we accept AEPCO's rebuttal base-year volumes as the best evidence of record.

2. Volume Projections

On opening, AEPCO developed coal volume forecasts using the April 2009 EIA Forecast,[55] but capped the annual coal consumption for each individual plant at the greater of 85% of the plant's capacity or the base-year volume. Defendants used the EIA AEO 2010 Early Release December 2009 forecast (AEO December 2009 Forecast).[56] On rebuttal, AEPCO updated its presentation. It used the most current EIA forecasts that were available when it

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means of correcting the error, we will accept this small amount of traffic within the traffic group as harmless error.

[54] For purposes of this decision, the Board is taking official notice of the QCS Reports. See, e.g., BNSF Ry. v. STB, 453 F.3d 473 (D.C. Cir. 2006).

[55] AEPCO's Opening III.A-18.

[56] BNSF/UP's Reply III.A-32.

submitted its rebuttal testimony, which is the final 2010 AEO forecasts released by the EIA in May 2010 (AEO May 2010 Forecast).[57]

After the record closed in this case, the U.S. Department of Energy released revised EIA rate and volume forecasts for PRB coal shipments. Our practice is to use these updated forecasts if the change is significant. W. Fuels Ass'n 2007, slip op. at 27. Here, the revised forecasts are significantly different from the EIA forecasts used by the parties to forecast coal volume and revenues through the 10-year DCF period. And while the parties do not agree on how to use the EIA forecasts, they do appear to agree that we should use the best available EIA forecasts (as each party used the most recent forecast on opening, reply, and rebuttal). As such, we take official notice of these revised forecasts and incorporate them into the SAC analysis here.[58]

AEPCO utilized a variety of forecasting models for the non-coal traffic. The BNSF consumer and industrial traffic volumes for 2010 to 2014 were developed by adjusting prior-year traffic volumes for each movement by the forecasted percentage change in BNSF's internal forecasts.[59] For 2015 through 2018, BNSF consumer and industrial volumes were developed in a similar manner, through an adjustment of the 2013-2014 growth rate, as reported in BNSF's internal forecasts.[60] BNSF agricultural traffic for 2010 to 2018 was projected by adjusting prior-year traffic volumes for each movement by a forecasted aggregate crop production change, as reported in the 2009 USDA Agricultural Projections to 2018 Report.[61] UP non-coal volumes for 2010 were developed by adjusting 2009 volumes for each movement by the forecasted percentage change acquired by comparing system-wide UP 2010 data to system-wide UP 3Q09 data derived from the UP SEC Form 10-Q report plus UP 4Q09 data.[62] UP non-coal volumes for 2011 to 2018 were developed by adjusting prior-year traffic volumes for each movement.[63]

Defendants accept AEPCO's methodology for projecting volumes for BNSF consumer and industrial traffic.[64] Defendants also accept AEPCO's volumes for UP auto, chemical, industrial, and intermodal traffic for 2010 through 2018.[65] However, for BNSF agricultural

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[57] AEPCO's Rebuttal III.A-59-60.

[58] Pub. Serv. Co. of Colo. v. Burlington N. & S.F. Ry. (PSCo/Xcel I), 7 S.T.B. 589 (2004), petition for reconsideration granted in part and denied in part (PSCo/Xcel II) NOR 42057 (STB served Jan. 19, 2005), aff'd sub nom. BNSF Ry. v. STB, 453 F.3d 473 (D.C. Cir. 2006) (affirming the Board's taking official notice of new EIA forecast in preference to prior EIA forecasts proffered by the parties).

[59] AEPCO's Opening III.A-24.

[60] Id.

[61] Id.

[62] Id. III.A-27.

[63] Id.

[64] BNSF/UP's Reply III.A-38.

[65] Id. III.A-44.

traffic, defendants calculate volumes from 2010 through 2014 by adjusting the prior year's volumes by the volume assumptions for agricultural traffic in BNSF's long-range plan.[66] For 2015 to 2018, defendants propose adjusting the prior year's volumes for agricultural traffic based upon the 2013 to 2014 growth rate in BNSF's long-range plan.[67] Similarly, defendants reject AEPCO's calculations for UP agricultural traffic from 2010 through 2018, and instead use a different methodology that relies upon a forecasted percentage change and BNSF's internal forecasts.[68]

In the categories where the parties disagree on traffic projections, defendants tend to use their own internal long-range plan, while AEPCO uses a public forecast. The USDA agricultural projection does not seem to be significantly different from BNSF's long-range plan. Both are top-down and depend on macroeconomic data, which are not shipper- or lane-specific. We accept AEPCO's traffic projections under these circumstances because they rely on government forecasts that are unbiased, independent and updated regularly.

3. Traffic Group Revenues

a. Montana Rail Link Traffic

Defendants claim that AEPCO improperly includes millions of tons of cross-over traffic that never use a SARR-constructed facility. AEPCO accomplishes this via the use of BNSF's trackage rights over MRL's line between Laurel and Jones Junction, Mont. Defendants state that this results in the inclusion of millions of dollars of revenue associated with cross-over movements that AEPCO assumes would move over portions of the ANR, solely based on trackage rights over the MRL line, before interchange with BNSF.[69] Defendants accept AEPCO's right to assume that its SARR steps into BNSF's shoes with respect to BNSF's trackage rights over MRL in order to bridge traffic between the BNSF lines replicated by the SARR, but claim that AEPCO is not entitled to include MRL trackage rights traffic in its traffic group, as that traffic does not share any facilities with the ANR, and therefore its revenues should not contribute to the costs of the ANR facilities.[70] Defendants therefore exclude MRL trackage-rights traffic.[71]

In its rebuttal, AEPCO claims that the ANR has the right to stand in BNSF's place with respect to the MRL trackage rights, as it uses the MRL trackage rights in the same way.[72]

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[66] Id. III.A-39.

[67] Id.

[68] Id. III.A-44.

[69] Id. III.A-9.

[70] BNSF/UP's Reply III.A-9-10.

[71] Id. III.A-10.

[72] AEPCO's Rebuttal III.A-27.

AEPCO also claims that defendants' approach would constitute an impermissible entry barrier,[73] and that AEPCO should retain the inclusion of MRL trackage rights, associated traffic, and associated revenues.[74]

We find that AEPCO has satisfied all the necessary conditions to use these trackage rights, and that defendants' objections to the ANR's utilization of MRL trackage rights are unfounded. BNSF already utilizes these trackage rights in its real-world rail operations. As AEPCO states in its rebuttal, AEPCO is not attempting to reroute any traffic over the trackage rights; instead, AEPCO is merely incorporating into its traffic group traffic that BNSF already handles over this segment.[75] The only traffic moving over the MRL that is included in AEPCO's traffic group is BNSF traffic.[76] AEPCO also states that the ANR would compensate MRL on the same basis that BNSF does under its trackage rights agreement.[77] Because it is permissible for the ANR to use the MRL trackage rights, we find that the MRL traffic and associated revenues may be included to defray the joint and common costs (e.g., executive salaries) of the SARR.[78]

b. Revenue Projections

Defendants accept AEPCO's base rates and revenues for issue coal traffic, with defendants' modifications to the base-year issue traffic volumes described previously in this decision.[79] Defendants also generally accept AEPCO's approach to calculating base-year revenues for non-issue coal traffic, but substitute the AEO 2010 Transportation Rates Escalator-West (2010 AEO Escalator) for AEPCO's use of the April EIA Forecast to project forward contract rates at the end of the contract term.[80]

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[73] Id. III.A-30.

[74] Id. III.A-31.

[75] Id. III.A-28.

[76] Id. III.A-27.

[77] AEPCO's Opening III.B-18.

[78] In their reply, defendants alter the revenues forecast for several coal movements, claiming that AEPCO failed to take account of the actual contract rates used to move non-issue coal. BNSF/UP's Reply III.A-56. In its rebuttal, AEPCO uses the actual contract rates provided in defendants' reply for certain non-issue coal movements, but claims that defendants miscalculate the ATC divisions on the new rates by improperly removing the MRL portion of each movement, leaving AEPCO with the operating costs of the segment, including trackage rights fees, but none of the revenues. AEPCO instead alters the ATC revenue allocation to reflect ANR service to Signal Peak. We accept AEPCO's rebuttal methodology. See AEPCO's Rebuttal III.A-91-92.

[79] BNSF/UP's Reply III.A-51.

[80] Id. III.A-56.

Defendants object to AEPCO's method of developing 2008 rates per unit, exclusive of fuel surcharge, for certain classes of UP non-coal traffic.[81] Because the waybill for UP traffic does not provide a breakdown between the base rate and fuel surcharges, AEPCO applied a system-wide ratio of total revenues to fuel surcharge revenues to each class of traffic to determine the base rate. Defendants state that UP's system-wide ratio of total revenues misinterprets the ratio that applies to UP intermodal and automotive traffic included in the traffic group.[82] Defendants argue that AEPCO should use a contract-specific methodology reflecting defendants' evaluation of selected traffic moving under UP-provided contracts to determine the proper ratios of total revenues to fuel surcharge revenues for intermodal and automotive traffic.[83] Defendants accept AEPCO's approach to calculating 2008 rates per unit and projecting those rates from 2009 through 2018 for carload traffic (agricultural, chemical, and industrial traffic), with the following two exceptions: (1) defendants alter AEPCO's statement of UP's 2008 base rates per unit for carload traffic, exclusive of fuel surcharge; and (2) defendants alter the growth rate projection for agricultural and industrial traffic from 2015 to 2018.[84] In addition, defendants alter AEPCO's use of indices for non-coal traffic by substituting annual figures for first quarter figures for 2008 through 2011 in the calculation of growth rates for the All-Inclusive Index Less Fuel Index (AII-LF) and Rail Cost Adjustment Factor Index (RCAF) that were applied to non-coal rates.[85]

In its rebuttal, AEPCO accepts defendants' use of the 2010 AEO Escalator, noting that it was not available at the time AEPCO prepared its opening evidence. However, AEPCO disputes defendants' inclusion of costs for liquidated damages for certain movements when forecasted volumes fall below contractual minimum levels, stating that the volumes are above contractual minimums when proper traffic forecasting is used. AEPCO therefore maintains that liquidated damages are not an issue on the ANR.[86] Aside from the fuel surcharge argument, AEPCO accepts defendants' corrections to BNSF non-coal traffic revenues. For UP non-coal traffic, AEPCO states that as fuel surcharges are a major portion of UP's revenue stream, it is expected that UP tracks the source and amount of fuel surcharge payments. AEPCO further states that defendants' suggestion that AEPCO should engage in a contract-specific analysis similar to that submitted by defendants is time-consuming and burdensome.[87] Therefore, AEPCO continues to use its methodology for calculating UP non-coal traffic revenues. AEPCO additionally contests defendants' use of annual figures for calculation of the growth rates for the AII-LF and RCAF indices, stating that AEPCO's use of quarterly figures is preferable for the following reasons:

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[81] Id. III.A-63.

[82] Id. III.A-64.

[83] Id.

[84] Id. III.A-70.

[85] BNSF/UP's Reply III.A-72.

[86] AEPCO's Rebuttal III.A-93.

[87] Id. III.A-97-98.

(1) 1Q09 is the last quarter that defendants provided actual railroad data; (2) use of first-quarter indices provides a better match to the DCF model; and (3) quarterly data is more detailed than annual data.[88]

We accept AEPCO's rebuttal calculation of revenues for coal traffic and non-coal traffic. Because fuel surcharges are clearly a major portion of UP's revenues, UP's claim that it does not track or record fuel surcharges separately is insufficient reason for us to accept defendants' argument. We also believe that defendants' suggestion that AEPCO conduct a contract-by-contract review of selected traffic moving under UP-provided contracts would be overly time-consuming and burdensome. We further agree with AEPCO's use of first quarter values for the 2008-2011 period in the calculation of growth rates for the AII-LF and RCAF indices applied to non-coal rates, as the data for 1Q09 is the last set of railroad data provided by defendants, and the use of quarterly data is clearly more detailed and more accurate than the use of yearly data. We therefore accept AEPCO's calculation methodology for traffic group revenues, as reflected in AEPCO's rebuttal.

c. Fuel Surcharge Projections

Defendants do not accept AEPCO's calculation of fuel surcharge revenues for coal and non-coal traffic and present a number of arguments that dispute specific aspects of AEPCO's methodology. As these arguments against AEPCO's fuel surcharge revenue calculation methodology are similar for both coal and non-coal traffic, we will examine these arguments and AEPCO's rebuttal largely within the context of coal traffic.

AEPCO uses EIA's January 2010 Short Term Energy Outlook (January 2010 STEO) to forecast fuel prices for 2009 through 2011, and EIA's December 2009 Annual Energy Outlook (December 2009 AEO Report) to forecast fuel prices for 2012 through 2018. Defendants claim that AEPCO's approach overstates the fuel surcharge revenues for issue coal traffic by improperly blending short-term and long-term fuel price forecasts from the EIA to create inaccurate price projections for the period 2012 through 2018.[89]

Defendants also claim that the short-term and long-term forecasts generated by EIA are based on different models and rely on different assumptions, thus causing AEPCO's combination methodology to incorrectly result in issue traffic fuel prices for 2012 through 2018 that are dramatically higher than those in the December 2009 AEO Report.[90] Therefore, defendants reject AEPCO's method of combining the forecasts, although they accept using the updated April 2010 Short Term Energy Outlook (April 2010 STEO) as a short-term forecast of fuel

[88] Id. III.A-108.

[89] BNSF/UP's Reply III.A-52-53.

[90] Id.

prices through 2011 in place of the January 2010 STEO.[91] Defendants also accept using the December 2009 AEO Report for fuel prices from 2012 through 2018.[92]

Defendants disagree with AEPCO's decision to charge all non-issue BNSF coal traffic the BNSF standard coal fuel surcharge upon expiration of the current contract or price authority, even if the current contract has neither a fuel surcharge nor a non-standard fuel surcharge.[93] Defendants state that instead of simply accepting a standard fuel surcharge, all of BNSF's coal customers without standard coal fuel surcharges have entered negotiations with BNSF over this issue.[94]

In its rebuttal, AEPCO claims that defendants' methodology for calculating issue coal traffic fuel surcharge revenues produces a 4.3% reduction in highway diesel fuel (HDF) prices in 2012, and states that such a reduction results from defendants' switch from the April 2010 STEO to the December 2009 AEO in 2012.[95] AEPCO further claims that the EIA suggests that fuel prices will continue to rise in 2012 and onward.[96] Thus, AEPCO continues to support the use of its methodology, although it substitutes HDF forecasts from the EIA's June 2010 Short Term Energy Outlook (June 2010 STEO) and the EIA's May 2010 Annual Energy Outlook (May 2010 AEO).[97] AEPCO disagrees with defendants' criticism of AEPCO's assumption that all non-issue BNSF coal traffic would be charged BNSF's standard coal fuel surcharge upon expiration of the current contracts, stating that prior SAC cases before the Board have relied upon the assumption that general fuel surcharge mechanisms will be applied upon contract expiration.[98] AEPCO further states that the use of any fuel surcharge mechanism other than the standard creates an inconsistency with the use of EIA forecasts to project changes in base rates.

We find that AEPCO's methodology for calculating fuel surcharge revenues for both coal and non-coal traffic is the best approach. There are many different acceptable methods for combining projections and forecasts, and we find that AEPCO has utilized one of these methods,

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[91] Id. III.A-53-54.

[92] Id. III.A-54.

[93] Id. III.A-60.

[94] For UP non-coal traffic, defendants additionally disagree with AEPCO's decision to charge the standard UP fuel surcharge to consumer traffic covered by contracts produced in discovery that do not provide details about the fuel surcharge calculation. Id. III.A-60. In its rebuttal, AEPCO claims it is reasonable to charge the standard fuel surcharge to this consumer traffic, as UP did not provide the fuel surcharge calculation method in the contracts and UP has previously stated that 85% of UP's business is covered by some type of fuel surcharge program. AEPCO's Rebuttal III.A-96.

[95] Id. III.A-88.

[96] Id. III.A-89.

[97] Id. III.A-90.

[98] Id. III.A-95.

thus producing reasonably accurate estimates in this case. This is in direct contrast to the results obtained by the methodology used by defendants, which produces an inexplicable reduction in fuel prices at the start of 2012, without an explanation. We additionally find unpersuasive defendants' claim that AEPCO is incorrect to assume that coal customers will become subject to fuel surcharges as their contracts expire. It is clear to us from the publicly available information submitted by AEPCO that defendants are attempting to improve their fuel cost recovery as contracts come up for renewal.[99] While it is true that some renegotiated contracts may not be subject to the fuel surcharge, the record evidence demonstrates that it is likely that a majority of shippers will end up with the fuel surcharge, which makes AEPCO's assumptions on this issue reasonable.[100] We therefore use AEPCO's methodology for calculating fuel surcharge revenues for coal and non-coal traffic.

D. Operating Expenses

1. Operating Plan

How a SARR would operate influences both its configuration and annual operating expenses. W. Fuels Ass'n 2009, slip op. at 15. The operating plan must be able to meet the transportation needs of the traffic to be served, but it need not match the existing practices of the defendant railroads, as the objective of the SAC test is to determine what it would cost to provide the service with optimal efficiency. The assumptions used in the SAC analysis, including the operating plan, nonetheless must be realistic, i.e., consistent with the underlying realities of real-world transportation.

In this case, AEPCO and defendants submitted competing operating plans on how the SARR would handle the traffic group. Both use the commercially available Rail Traffic Controller (RTC) model to determine the feasibility of the ANR's operating plan and develop key operating characteristics of the SARR. For the most part, the RTC configurations of the parties were the same. In general, the operating plans of the parties are very similar, though they contain some significant differences.

Upon review of these operating plans, we find defendants' operating plan to be the best evidence of record for two reasons. First, defendants' operating plan models the impact of program maintenance on the operation of the SARR. For its part, AEPCO relies on the correct observation that heretofore the agency has never required a party to model program maintenance in the operation of the SARR. But this is an issue of first impression, so our prior acceptance of operating plans that ignore program maintenance provide no rational basis for a decision to

[99] Id. III.A-104, 105.

[100] Additionally, we agree with AEPCO's decision to charge UP consumer traffic the standard UP fuel surcharge, where such traffic is covered by contracts produced in discovery that do not explain the method of calculating the fuel surcharge. UP had ample opportunity to provide the fuel calculation methodology to AEPCO; in the absence of such information, we conclude that it is reasonable for AEPCO to rely upon the standard UP fuel surcharge.

continue to ignore this real-world practice when we are presented with an operating plan that offers a more reasonable approach.

Second, defendants' operating plan better reflects dwell times by generally relying on real-world data at the origins and destinations that would be served by the SARR, while AEPCO relies instead on assumptions drawn from pricing authorities, which include both tariffs and railroad-shipper contracts. A SARR must account for the amount of time that a train on its system is not moving. Routinely there are dwell times at the origin and destination and in yards at which various activities may occur: crew changes, interchanges to another carrier, inspections, fueling, swapping of blocked cars, and car set-out and pick-up. For the five plants located on the ANR, AEPCO uses as the dwell time the maximum "free time" in defendants' applicable pricing authorities. But free time is simply the amount of time specified in the contract or tariff before the shipper would incur demurrage fees for detaining the cars; it does little to indicate actual dwell times at particular points. For the majority of the power plants on the ANR, in contrast, defendants rely on their real-world data to calculate an average dwell time at each plant.[101] Similarly, for the vast majority of the 20 mine origins on the ANR, defendants use an average calculated from their dwell-time data for each origin.[102] In contrast, AEPCO uses a mix of the free time specified in the pricing authorities for the coal origins and defendants' dwell-time data, though it calculates the average dwell time using a different method than that of defendants.[103]

AEPCO criticizes defendants' data as riddled with incorrect entries and unrealistic dwell-times, and argues that defendants' data is not a good representation because it is from 2008, a year in which the traffic volume of PRB coal reached an all time high.[104] But as AEPCO concedes, the Board in past cases has accepted a defendant's dwell-time data as the better evidence.[105] E.g., W. Fuels Ass'n 2007, slip op. at 15-17. While there is some outlier data used to calculate average dwell times, we nonetheless find that the averages defendants have provided here better approximate dwell times because they reflect real-world railroading. Moreover, we are not overly concerned that using the 2008 data would cause a problem with the accuracy of dwell times. When there is a high demand for coal, both the shipper (a power plant that needs sufficient coal to meet the high electricity demand) and the railroad (which earns more money as more coal is delivered) would have the incentive to reduce dwell times as much as possible, so as to keep the unit-train system operating smoothly and transporting as much coal as possible. Here, AEPCO has not provided a convincing reason to use the free time specified in the pricing authorities instead of averages based upon real-world data.

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[101] BNSF/UP's Reply III.C-27.

[102] Id. III.C-28-29.

[103] AEPCO's Rebuttal III-C-26.

[104] Id. III-C-23.

[105] Id.

Additionally, there is a debate over the random outages on the UP lines replicated by the ANR. Defendants argue that the operating plan should model random outages over the entire SARR, while AEPCO's operating plan only includes random outages over the portion of the SARR that would replicate facilities owned by BNSF, arguing that none of the incidents described in Train Delay Reports provided by UP in discovery was likely to cause train delay.

Unscheduled train delays can be caused by a variety of events, such as a derailment, train pull-apart, locomotive failure, signal or communication failure, or even fire along the right-of-way (ROW). AEP Tex. N. Co. v. BNSF Ry. (AEP Tex. 2007), NOR 41191 (Sub-No. 1), slip op. at 19 (STB served Sept. 10, 2007). Undoubtedly, such events would occur on the UP-replicated lines. Failing to provide for any unexpected train delays on 470 miles of railroad for a 15-day period does not comport with real-world railroading. Therefore, we believe that defendants have taken the better stance here – that random outages should be imputed over the entire SARR.

However, it appears that defendants did not input any random outages on the replicated UP lines into their RTC simulation.[106] Therefore, while we agree with defendants' argument, this disagreement is inconsequential, as defendants' RTC simulation, which we accept, does not appear to include outages on the UP replicated lines.

There are other minor discrepancies between the parties, but the major differences above are the most significant and all weigh in favor of accepting defendants' operating plan. In short, we find that AEPCO's operating plan is not as good at modeling the underlying realities of real-world rail transportation as is that of defendants. We will therefore use defendants' operating plan in this SAC analysis.

2. Configuration[107]

The difference between the parties' configurations is modest. As a general rule, having accepted defendants' operating plan as better supported than AEPCO's, logically we would also accept defendants' configuration as the best evidence of record because the system configuration forms the basis for an operating plan. However, we are unable to verify defendants' system-configuration data.[108]

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[106] AEPCO's Rebuttal III-C-39.

[107] The term "configuration" is used in two distinct discussions within this decision. The previous discussion speaks of the general configuration of the SARR and the Board's acceptance of the ANR configuration, as opposed to defendants' proposed SARRs. In the context of this discussion, configuration refers to the configuration of track, yard, siding, etc., associated with the parties' operating plan for the ANR.

[108] Defendants' quantities for materials are dependent on their configuration, but we are unable to verify if their quantities actually represent that configuration. Quantity workpapers are referenced in defendants' cost calculations, but those quantity workpapers were not actually submitted. For example, we were unable to locate the linked "'X:\PROJ\2514616 and 2514618

(continued . . .)

In contrast, AEPCO has provided the underlying workpapers in support of its system configuration, thereby allowing us to verify its data. Accordingly, we accept AEPCO's system configuration as the better evidence on this issue.[109]

Tables 1 & **2** summarize our conclusions on the route miles and constructed track miles of the ANR.

Table 1

Route Mileage			
	AEPCO	**BNSF/UP**	**STB**
Route Mileage - ANR Constructed Single Mainline & Branch Lines	**2,205.47**	**2,208.03**	**2,205.47**
Montana Rail Link	**29.57**	**24.24**	**29.57**
Total Route Miles	**2,235.04**	**2,232.27**	**2,235.04**

(. . . continued)
AEPCO v UPRR and BNSF\III-F\III-F-3\[ANR Track Construction working.xls]Total Track Quant.'!C23" workpapers.

[109] We make some minor adjustments to AEPCO's system configuration, as explained below.

On rebuttal, AEPCO corrects the number of constructed track-miles in its opening evidence to reflect a 3.5-mile increase in the length of a double-track main line between Vaughn and Defiance. AEPCO's Rebuttal III-B-8. But a review of its tables shows that AEPCO mistakenly adds a total of 10.5 miles (3 times 3.5) rather than 7.0 miles (2 times 3.5). Therefore, we subtract 3.5 miles from AEPCO's rebuttal calculation of constructed mainline track.

AEPCO adds 1.74 miles to its total of constructed track-miles to reflect recategorizing that length from interchange track to passing side track. Id. III-B-9. AEPCO did not subtract 1.74 miles from the inventory of interchange track, however. Therefore, we remove 1.74 miles because changing the category would not change the quantity of track to be constructed.

AEPCO provides set-out tracks for bad-ordered cars on each side of Failed-Equipment Detectors along its rail system. AEPCO states that each set-out track is 860 feet from point of switch (PS) to PS, and defendants concur. AEPCO's Opening III-B-12; BNSF/UP's Reply III. B-11. This mutually accepted length equals 0.1629 miles. Nevertheless, in their calculations, both parties use the figure 0.18 miles, which corresponds to 951 feet PS to PS. Accordingly, we accept 951 feet as the length of the set-out tracks.

Table 2

Constructed Track Mileage			
	AEPCO	**BNSF/UP**	**STB**
Single Mainline & Branch Lines	**2,208.82**	**2,208.03**	**2,205.47**
Other Mainline - 2nd Main Line & Passing Sidings	**1,120.92**	**1,111.38**	**1,120.77**
Total Mainline Track	**3,329.74**	**3,319.41**	**3,326.24**
Helper Pocket, Setout, & MOW Equip. Tracks	**41.26**	**29.38**	**37.42**
Yard Tracks	**237.75**	**239.11**	**234.88**
Total Constructed Track Miles	**3,608.75**	**3,587.90**	**3,598.54**

3. Peaking Factor

To estimate the operating costs of the SARR, we require the parties to estimate a "peaking factor" so that the SARR will have sufficient equipment to handle the peak week traffic demands. In recent SAC cases, the peaking factor was calculated by forecasting the average number of train starts during the peak week of the peak year for traffic volume. This number is divided by the average number of weekly train starts during the forecasted peak year to yield the peaking factor. See W. Fuels Ass'n 2007, slip op. at 33-34; PSCo/Xcel II, slip op. at 13.

AEPCO followed our precedent by dividing the number of train starts in the peak week of the peak traffic year by the number of trains starts in the peak traffic year. Using this method, AEPCO initially calculated a peaking factor of 5.7%. Defendants note that AEPCO removed certain duplicate trains from the peak week but did not make a corresponding reduction in the total number of trains in the peak year prior to calculating the average number of trains per week.[110] AEPCO accepted this objection and, on rebuttal, corrected the number of trains in the peak year, yielding a peaking factor of 5.9%.[111]

Defendants also object to the fact that AEPCO removed a number of loaded and empty coal trains from the peak week. Because the train starts for those trains were generated by the RTC model, defendants argue it would be "difficult" to determine if those removals were proper.[112] Rather than perform this work, defendants used their own train movement records for

[110] BNSF/UP's Reply III.C-14.

[111] AEPCO's Rebuttal III-C-9.

[112] BNSF/UP's Reply III.C-14.

the base year and then recalculated the peak week number of trains and the total annual train count. This analysis resulted in a peaking factor of 17.7%.[113]

Where, as here, a complainant has followed established agency precedent, defendants carry the burden to justify a departure from that methodology. In this case, defendants have not justified a departure from the Board's established approach to calculating the peaking factor. The fact that it might be "difficult" to assess whether AEPCO properly followed the established approach does not, standing alone, provide a reasoned basis to throw out the approach entirely. Moreover, defendants do not provide any support for their claim that the effort is too difficult to undertake, and their bald assertions are insufficient. Nor have defendants offered any explanation for why their new approach is superior to the established approach followed by AEPCO in this case. Accordingly, we will accept the peaking factor submitted by AEPCO.

4. Operating Expenses

As discussed above, we use defendants' operating plan as the best evidence of record. All other evidentiary disputes are discussed and resolved in Appendix A.

E. Road Property Investment

In the Road Property Investment (RPI) section of the SAC analysis, the Board determines the investment that would be required to build the SARR's physical facilities. Numerous issues involved in determining what it would cost to build the ANR are addressed in Appendix B.

The parties disagree about whether Positive Train Control (PTC) costs should be included in the ANR. Defendants observed that AEPCO omitted the costs of instituting PTC on the ANR lines over which PTC would be required under the Rail Safety Improvement Act of 2008, even though that statute requires that this system be in place by December 2015. In their reply, therefore, defendants developed the cost of PTC for those lines carrying hazardous materials and assumed PTC implementation in the year 2015.

On rebuttal, AEPCO offered no reasoned basis for its decision to exclude PTC costs. It cited as agency precedent the decision in US Magnesium, L.L.C. v. Union Pacific Railroad, NOR 42114 (STB served Jan. 28, 2010), aff'd sub nom. Union Pac. R.R. v. STB, 628 F.3d 597 (D.C. Cir. 2010), a case in which the agency excluded PTC costs from its rate reasonableness analysis. But that was a rate case decided under the Board's simplified Three-Benchmark methodology, in which a rate is set based on rates that are *currently* charged to other similar traffic. Parties may submit evidence of "other relevant factors" to demonstrate that the maximum reasonable rate for the issue traffic should be adjusted higher or lower. Simplified Standards for Rail Rate Cases, EP 646 (Sub-No. 1), slip op. at 22, 77 (STB served Sept. 5, 2007). In US Magnesium, slip op. at 16-17, the Board found that the defendant carrier had not demonstrated that future PTC investments were sufficiently defined such that the defendant could quantify its costs or fairly attribute those costs to the complainant's traffic, and therefore

[113] Id.; see also AEPCO's Rebuttal III-C-11.

the other relevant factor was not considered. In a SAC case, by contrast, the full costs that would be needed to operate the SARR during the 10-year analysis period should be included in the analysis. In short, the Board did not reject PTC costs in US Magnesium on the ground that they are not potential real-world costs, but because the defendant did not present a reasonable quantification of those costs to qualify as a relevant factor to adjust the Three-Benchmark rate.

Alternatively, AEPCO argues that PTC costs are too uncertain to quantify because of significant, outstanding issues regarding whether railroads will obtain tax breaks or other benefits to cover the costs of PTC implementation and whether railroads will be successful at delaying the implementation of PTC requirements. But we must follow existing law, and existing law requires that these systems be in place by December 2015.[114] We have no reason in this 10-year DCF analysis to exclude costs that are required by Federal law because of the possibility that the law might change in the future or tax breaks that do not currently exist may be enacted.

AEPCO did not challenge the PTC cost estimate proposed by the railroads, observing that "even if [defendants'] figure were included in full, it would not materially alter the SAC DCF analysis."[115] As AEPCO has not provided contrary evidence on the costs of PTC, and as we find those costs have been reasonably quantified by defendants, we will use defendants' PTC cost estimates in the SAC analysis.

F. DCF Analysis

A DCF analysis is used to distribute the total capital costs (in current year dollars) of the ANR over the SAC analysis period (10 years). Operating expenses are calculated for a base year and forecasted into other years by indexing for inflation and forecasted changes in tonnage. The ANR's total revenue requirements (capital and operating expenses) are then compared against the stream of revenues defendants are expected to earn from the revised traffic group, discounted to the starting year (2008). Operating expenses are discussed in Appendix A.

To adjust the base-year operating expenses for inflation over the analysis period, the parties use projections of the Rail Cost Adjustment Factor (RCAF), which is an index of railroad costs that we publish quarterly. There are two versions of the RCAF that are relevant to SAC proceedings: one that does not take into account changes in the rail industry's productivity (the unadjusted RCAF, or RCAF-U) and a second 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 in Rail Rate Cases, slip op. at 40-47, the Board decided to phase in the productivity gains projected in RCAF-A incrementally over the analysis period. That approach is applied here.

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[114] On January 15, 2010, the Federal Railroad Administration published final PTC rules in the Federal Register. 75 Fed. Reg. 2,598. On August 24, 2011, the FRA published a notice of proposed amendments to those regulations. 76 Fed. Reg. 52,918 (August 24, 2011).

[115] AEPCO's Brief 31.

The parties dispute aspects of the DCF analysis. Our resolution of these disputes is set forth in Appendix C.

G. Rate Prescription

In Major Issues in Rail Rate Cases, slip op. at 14-15, the Board adopted a new rate prescription approach called the Maximum Markup Methodology (MMM). MMM seeks to determine how much differential pricing the defendant carrier must be permitted in order to recover the total SAC costs and thereby earn a reasonable return on its capital investments. If the defendant has a significant amount of low-rated traffic (traffic with low R/VC ratios), more differential pricing is needed. If the railroad moves a greater amount of high-rated traffic, less differential pricing is needed. The MMM analysis is based on the actual distribution of R/VC ratios of the traffic group, thus reflecting the ability (or inability) of the railroad to recover a pro-rata share of SAC costs from all its traffic due to the presence of competitive alternatives and real market forces.

1. Non-Issue Traffic Costing

On June 27, 2011, the Board issued a decision directing the parties to submit new costing evidence reflecting operating characteristics of the movements on the SARR. The Board was concerned that while a majority of AEPCO's traffic group moves in trainload service, most of the variable costs calculated for that group were costed assuming it was moved in carload and multi-car service. The Board directed the parties to provide these new costs for use in MMM. Because the variable costs of the traffic group are an integral part of the MMM calculation, any change to those costs would affect the benchmark, and therefore the rate prescription.

AEPCO's July 5, 2011 opening supplemental submission in response to the June 27 decision indicates that the rate prescription changed minimally as a result of the recosting of the traffic group. In their July 19, 2011 supplemental reply, defendants argue that the empty/return ratio used by AEPCO for some of the SARR's traffic group is not representative of those movements.[116] AEPCO uses an empty/return ratio of 2 for all trainload movements. Defendants claim that this ratio improperly negates the efficiency benefits associated with the trainload movements. Defendants submit evidence using car-type specific empty/return ratios, and the resulting change to the rate prescription is significant. Defendants further argue that the revenue allocations to crossover traffic, determined using the Board's ATC methodology, should be adjusted to take into account these same contemplated changed variable costs of the movements

[116] The empty/return ratio is a measure of empty car miles incidental to the loaded movement. An example of this is a coal movement that typically has an empty/return ratio of 2.0—for every 1 carload of coal that moves from the mine to the plant, 1 empty carload moves back from the plant to the mine, resulting in 2 total movements of equal miles. Other types of movements using different cars have different ratios. For instance, the current BNSF system-wide average for intermodal flat cars is 1.11—representing that this car type generates only 11 empty miles for every 100 loaded miles.

in the traffic group. As with the MMM, the changes to revenue distributions affect the final rate prescription.

In its July 21, 2001 supplemental rebuttal, AEPCO argues that defendants' presentation goes beyond the specific direction of the Board that the variable costs be recalculated for purposes of MMM. AEPCO further argues that its use of the empty/return ratio of 2 is proper as the Uniform Railroad Costing System (URCS) program defaults to that ratio for all unit trains. AEPCO maintains that defendants had to override the URCS default for unit trains to input specific empty/return ratios that correspond to certain car types, and that this action is a movement-specific adjustment that Major Issues in Rail Rate Cases specifically disallows in rate cases.

We need not resolve these issues here, as the supplemental evidence shows that this debate is immaterial to the outcome of this case. These issues were not thoroughly briefed by the parties, and we are thus hesitant to decide a matter with potentially broad ramifications across future proceedings without a full record. The June 27 decision has properly framed this issue for future rate litigants to consider and brief. However, the rate prescription with either the evidence submitted by AEPCO or defendants results in a rate below the 180% jurisdictional floor. These issues are thus not determinative in this case.

2. New Mexico Issue Traffic R/VC

A key issue in this case is how we calculate the R/VC ratios for the issue traffic for purposes of the MMM analysis. In its underlying rate reasonableness challenge, AEPCO chose to design a hypothetical SARR serving the New Mexico traffic using a route much longer than the actual route used by defendants. That way, it could capture more revenues from other traffic, which it would weigh against the SAC costs of this longer route, thereby enhancing the efficiency of its SARR. But for the rate prescription phase of the proceeding, when we must allocate SAC costs among the traffic group (which is what MMM does), AEPCO would use the variable costs associated with the shorter historical route actually operated by BNSF and UP. As a result, the costs of its service would appear lower, the R/VC ratios would appear higher, and its rate prescription would be more favorable.

We agree with defendants that AEPCO's approach is improper. It is entirely permissible for a complainant to use a configuration different from the actual operations in its SAC presentation. For example, a complainant may convert the routing of a movement at issue from a 100-mile trip over the defendant railroad into a rerouted 200-mile movement over a hypothetical SARR to take advantage of economies of density. But the MMM analysis may not then convert the movement at issue back to the actual miles. The issue traffic must help pay for the facilities over all of the track, bridges, and other rail infrastructure that it utilizes that is part of the SARR. It would be contrary to the goals of MMM to permit the complainant to construct a hypothetical 200-mile network to serve the issue traffic, but then require the complainant to pay for only 50% of the infrastructure costs because it moves only 100 miles on the defendant railroad. The point of MMM is to allocate the costs of the SARR to the traffic group. As such, it should not matter how much (or little) of defendants' networks the complainant uses, but only how much of the SARR it would use.

Yet, although we may agree with defendants as to this issue, the solution they offer is unnecessarily complicated and conflicts with agency precedent. Defendants would use the URCS to develop the variable costs for the traffic on the hypothetical SARR, and use the results for the MMM calculation. It appears from their workpapers that defendants developed these SARR URCS costs using the opening SAC evidence of the complainant. Moreover, this approach is inconsistent with the Board's practice of using "defendant's variable costs estimated by URCS, not the variable costs of the SARR." See W. Fuels Ass'n 2009, slip op. at 30. Instead, using URCS variable costs for the MMM calculation, we will calculate the variable costs for the issue New Mexico traffic, assuming the traffic moves to Vaughn and then on to the plant in Cochise. This approach should address the valid concerns raised by defendants.

But rate prescriptions apply to actual movements, so when we prescribe a rate, we must return to the characteristics of the actual movement. Thus, to calculate the prescribed R/VC levels, we must translate the MMM results in this case to R/VC ratios based on the variable costs for the actual routing, keeping in mind the 180% regulatory floor.[117] The resulting prescribed R/VC ratios, regardless of either the costing approach used for the traffic group, or the choice of ATC methodologies, are below the 180% floor. Therefore, the rate prescription R/VC level in all years is set at 180%.

As discussed above in the Market Dominance section, a complainant cannot challenge a rate unless that rate produces revenues that are in excess of 180% of its variable costs of providing the service. 49 U.S.C. § 10707(d)(1)(A). The 180% R/VC ratio is the floor for regulatory scrutiny of rail rates, and the Board has previously employed the statutory 180% R/VC level as the floor for any rate relief. See Burlington N. R.R. v. STB, 114 F.3d at 210.

Defendants argue that the 180% regulatory floor should be based on the hypothetical ANR routing. We disagree. It would be inconsistent with our historical interpretation of 49 U.S.C. § 10707(d)(1)(A) – that the rate floor is 180% of the variable costs of providing that service – to use anything besides defendants' actual costs, as they are the parties providing the service. The fact that the hypothetical SARR would provide different service, at different costs, affects the SAC analysis. But it is irrelevant to the regulatory floor, which depends on the actual variable costs of the defendant railroad, rather than the hypothetical variable costs of the SARR, to provide service. Had the complainant proposed a SARR that used a shorter route, defendants would likely (and correctly) argue that we still use their actual variable costs to set the regulatory

[117] For purposes of the MMM calculation, we use the Board's western average URCS costs, which are based on a combination of the BNSF and UP system costs, to estimate the variable costs of the issue movements. We believe this is appropriate to avoid adding interchange costs within the SARR that are not part of the SAC analysis. To translate the MMM results, we then compare these western average URCS costs used in the MMM analysis against the URCS costs for the issue traffic over the actual route used by defendants. We then use this conversion factor for the entire DCF analysis period. We believe this is a reasonable approach because it offers a simple and fair solution where there is no guarantee that a more sophisticated mathematical approach, if any, would lead to a more accurate and definitive result. For the issue traffic from the New Mexico origins, the resulting rounded translation factor is 1.21.

floor on relief. We therefore use defendants' actual variable costs to determine the 180% regulatory floor for the rates.

3. The Southwest Railroad

There is a dispute between the parties regarding how to calculate the variable costs of the New Mexico issue traffic with regard to the Southwest Railroad (SWRR). The issue traffic originating in New Mexico is handled by BNSF until it hands off the traffic to SWRR in Rincon, N.M. SWRR then handles the traffic to Deming, N.M., where it is interchanged with UP for movement to Apache. AEPCO argues that SWRR should not be treated as an interline carrier, stating that SWRR is merely a sub-contractor to BNSF that has no bearing on the joint BNSF/UP rate. Defendants counter that AEPCO's argument ignores the real-world costs of the interchanges with SWRR, and that the Board held in Kansas City Power & Light Co. v. Union Pacific Railroad, NOR 42095 (STB served May 19, 2008), that costs are determined using URCS as carried out with the participation of the short line railroad. We agree with defendants that a short line railroad's participation must be reflected in the variable costs.

4. Montana and Wyoming Issue Traffic

Finally, defendants argue that the Board should not prescribe a rate for the Montana and Wyoming issue traffic. Defendants claim that a SAC analysis of the challenged rates with respect to origins in the PRB is relevant only to the two trainloads of coal that moved from Decker Mine in the PRB to the Apache plant in 2009, and that AEPCO does not project to utilize Signal Peak coal from Montana until sometime in the future (the precise year is confidential and need not be disclosed in this decision). They argue that this traffic is a relatively small percentage of the annual tonnage from the New Mexico source mines, and that AEPCO has only included the traffic to take advantage of the Board's processes. Defendants provide two rationales for why the Board should not prescribe rates from the PRB: (1) that the Board is statutorily prohibited from doing so; and (2) that it would be bad policy to regulate tariff rates that are not imminent and where the parties still have time to contract for the future traffic.

We find these arguments unpersuasive, and prescribe rates and order reparations for the prior movements. Defendants imply that the Board does not have statutory authority to prescribe the PRB rates, comparing this proceeding to the situation in Burlington Northern Railroad v. STB, 75 F.3d 685 (D.C. Cir. 1996). There, the D.C. Circuit stated that our predecessor, the Interstate Commerce Commission, did not have "statutory authority to impose upon a rail carrier a current obligation to file a tariff specifying a rate for traffic . . . that would not be ready to move under the rate until months or years down the road." Id. at 692. But this proceeding clearly involves a different situation, where we have a rate already established by defendants that we find to be unlawfully high.

Where, as here, the evidence shows that the joint rates established by defendants are in violation of Federal law, these circumstances strongly favor issuing a rate prescription. It is true that in AEP Texas 2007, the Board elected not to prescribe rates where the evidence indicated that the challenged rates were not projected to become unlawful until the last few years of a 20-year rate prescription period. Here, in contrast, the DCF model shows that AEPCO is entitled to

rate relief over the entire prescription period. With this evidence, we believe that prescribing rates is appropriate for the PRB traffic, and we will exercise our discretion to do so here.

5. Rate Prescription

Defendants will be ordered to reimburse AEPCO for amounts previously collected above the prescribed levels, together with interest to be calculated in accordance with 49 C.F.R. pt. 1141. Also, defendants will be ordered to establish and maintain rates for movements of the issue traffic that do not exceed 180% of the variable costs of providing the service. For purposes of calculating reparations and setting the maximum rate for future movements, the variable costs of the issue movements must be calculated pursuant to unadjusted URCS, with indexing as appropriate. If the parties cannot agree on the amount of reparations due, or if there is a dispute over how to calculate the variable costs of the movements at issue, AEPCO should bring those disputes to our attention.

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

It is ordered:

1. Defendants' motion to hold the proceeding in abeyance is denied.

2. Defendants are ordered to pay reparations to AEPCO in accordance with this decision and to establish and maintain rates for movements of the issue traffic that do not exceed the maximum reasonable revenue-to-variable cost levels prescribed in this decision.

3. This decision is effective on the date of service.

By the Board, Chairman Elliott, Vice Chairman Begeman, and Commissioner Mulvey.

APPENDIX A—OPERATING EXPENSES

This appendix addresses the annual operating expenses that would be incurred by the ANR, the SARR in this proceeding. The manner in which a railroad operates and the amount of traffic it handles are major determinants of the expenses a railroad incurs in its day-to-day operations. As discussed earlier, we primarily use defendants' proposed operating plan for the ANR. Accordingly, except as specifically discussed and indicated in the following tables, we use defendants' operating assumptions to determine the level of resources the ANR would need for a given level of traffic.

Table A-1

ANR 2009 Operating Costs ($ millions)			
	AEPCO	**BNSF/UP**	**STB**
Train & Engine Personnel	128.6	141.5	127.6
Locomotive Ownership	36.1	43.5	40.5
Locomotive Maintenance	70.4	77.8	77.3
Locomotive Operations	299.3	336.6	343.7
Railcar Lease	77.1	84.0	77.8
Materials & Supply - Operating	2.2	3.8	3.2
Ad Valorem Tax	18.8	36.5	18.8
Operating Managers	51.5	68.6	56.7
General & Administrative	32.7	62.2	58.3
Loss & Damage	2.7	2.7	2.7
Maintenance-Of-Way	63.2	142.0	85.8
Trackage Rights	0.1	0.0	0.1
Intermodal Lift and Ramp	2.8	2.0	2.8
Texico Train Expense[118]	0.0	0.0	0.0
Insurance	30.2	51.7	34.3
Startup and Training	39.6	60.4	43.9
Ongoing Hiring and Training	1.2	3.4	3.1
TOTAL	**856.5**	**1,116.7**	**976.6**

[118] There is an expense associated with the ANR's Texico Yard, but it is less than $0.05 million, and therefore is reflected as 0.0 in the table.

A. Locomotives

1. Locomotive Requirements

The parties agree on the use of ES44-AC locomotives for road and helper service, and SW1500 locomotives for yard switching and work-train service.[119] Both parties also agree on the unit cost of leasing locomotives. Due to disagreement over the operating plan, however, the parties disagree on the number of locomotives that would be required.[120] As addressed in the main body of this decision's discussion of the ANR's operating plan, we accept defendants' operating plan, but not necessarily all of defendants' operating statistics.[121] Therefore, we adjusted the locomotive requirements to reflect the appropriate operating plan and operating statistics. We computed the following locomotive requirements:

Table A-2

Total ANR Locomotive Requirements			
Locomotive Type	**AEPCO**	**BNSF/UP**	**STB**
Road/Helper—ES44-AC	365	440	409
Switch/Work Train Service–SW1500	16	18	18
TOTAL	**381**	**458**	**427**

2. Maintenance

The parties do not dispute the maintenance cost-per-mile for the SW1500 switch locomotives.[122] Both parties agree on the cost of and frequency of performing locomotive overhauls of the ES44-AC units.[123] However, the parties present different computations, because they use a different number of locomotives. We restate the SW1500 locomotive maintenance costs and the overhaul costs using our operating statistics and parties' submissions.

Both parties base the ES44-AC locomotive maintenance costs per mile for the ES44-AC locomotives on a BNSF agreement with GE Rail Services that includes maintenance costs

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[119] AEPCO's Opening III-D-3; BNSF/UP's Reply III.D-2.

[120] AEPCO's Rebuttal III-D-4.

[121] Many of the operating statistics, and in turn the operating costs, are dependent upon the SARR's traffic group. Because we have accepted AEPCO's traffic group—which is different than the traffic group suggested by defendants and used in defendants' operating statistics computations—in those areas where we have accepted defendants' operating plan arguments, the final associated operating costs does not necessarily match the figure that defendants have submitted. The Board, among other adjustments, has recalculated the operating statistics based on the Board-accepted traffic group.

[122] Id. III-D-4-6.

[123] Id.

associated with mileage in excess of the monthly minimum mileage per unit.[124] Because none of the parties provided explanations and calculations as to how they arrived at their costs, we are unable to verify with certainty either party's claims for this item. Because we accept defendants' operating plan, we accept its methodology for this category and apply that formula to the locomotive count and locomotive unit miles that have been developed.

3. Fuel

a. Fuel Costs

On opening, AEPCO bases ANR's fuel costs on the price per gallon paid by BNSF, in the first quarter of 2009, at each of BNSF's fueling locations along the ANR route, including the cost of fuel, transportation and taxes.[125] AEPCO weighted the cost per gallon at each location based upon the maximum number of trains fueled per day at each location.[126] In its reply, defendants raise specific arguments concerning fueling at West Vaughn and El Paso, and direct train locomotive (DTL) fueling. These issues are discussed below:

i. West Vaughn

Defendants argue that it is an unfair comparison for AEPCO to base its West Vaughn fuel costs on fuel costs at Belen.[127] Defendants assert that a fuel pipeline serves Belen and is 100 miles from Vaughn (which is not served by a pipeline), and that fuel costs at the West Vaughn Yard therefore should reflect the additional cost of transporting fuel by tanker car.[128] These transportation costs amount to an additional $0.057 per gallon above the price of fuel at Belen.[129]

On rebuttal, AEPCO argues that its opening figures are conservative. To support this assertion, AEPCO states that NuStar Logistics – a third party owner of a pipeline 30 miles from West Vaughn – could build a pipeline to the West Vaughn Yard.[130] This new pipeline would cost approximately $27.6 million dollars.[131] AEPCO calculates that, even after taking into account a premium to recoup the pipeline construction costs, the resulting total delivered cost of

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[124] Id.; BNSF/UP's Reply III.D-3-6.

[125] AEPCO's Opening III-D-7-8.

[126] Id.

[127] BNSF/UP's Reply III.D-8-9.

[128] Id.

[129] See id.

[130] AEPCO's Rebuttal III-D-7-12.

[131] Id. III-D-10.

fuel by pipeline at West Vaughn would be less than the $1.441 per gallon figure presented by AEPCO on opening.[132]

We will accept defendants' fuel cost for the West Vaughn Yard, because it is based on site-specific costs, along with reasonable costs to transport the fuel from Belen to Vaughn. Further, AEPCO's rebuttal evidence on pipeline construction is impermissible new evidence.

"Rebuttal may not be used as an opportunity to introduce new evidence that could and should have been submitted on opening to support the opening submissions." Gen. Procedures for Presenting Evidence in Stand-Alone Cost Rate Cases, 5 S.T.B. 441, 446 (2001). While defendants, in their reply, cite to the lack of a pipeline as a cost difference between Belen and West Vaughn, introducing a new 30-mile pipeline on rebuttal is not responsive to defendants' reply argument, which is that fuel costs at Belen are not comparable to those at West Vaughn. The pipeline is an entirely different mechanism for calculating fuel costs, and attempting to introduce this evidence on rebuttal violates stand-alone rate case evidentiary rules, because defendants do not have an opportunity to challenge the specifics of building such a pipeline. As such, we will reject AEPCO's evidence of a new pipeline to West Vaughn. Accordingly, defendants' fuel cost data for the West Vaughn Yard will be accepted.

ii. West El Paso

On reply, defendants argue that AEPCO should not have used Belen as a proxy for fuel costs at West El Paso. Rather, defendants maintain that fuel costs should have been calculated using 2008 UP fuel costs from the El Paso-Dallas Street Yard that they provided in discovery, indexed to the first quarter 2009, plus the cost of transporting fuel 15 miles to the ANR's West El Paso Yard.[133] On rebuttal, AEPCO accepts that the fuel used by the ANR at the West El Paso Yard should be sourced from the Dallas Street Yard.[134] AEPCO disagrees, however, with defendants' indexing methodology, which is based, in part, on system-wide BNSF data. Therefore, AEPCO has developed an alternative index based on fixed fueling facilities with a closer geographical proximity to the Dallas Street Yard.[135] AEPCO argues that, even if fuel is sourced from the Dallas Street Yard, it is still less costly than the amount that AEPCO presented on opening, which shows its opening evidence is conservative and should be accepted.[136]

As we have noted, rebuttal may not be used in SAC cases as an opportunity to introduce new evidence that could and should have been submitted in the party's case-in-chief. The Board has previously declared:

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[132] Id. III-D-12.

[133] BNSF/UP's Reply III.D-9-11.

[134] AEPCO's Rebuttal III-D-13.

[135] Id. III-D-13-17.

[136] Id. III-D-17.

> [T]he shipper must plan to submit its best, least-cost, fully supported case on opening. It may not hold back to see the railroad's reply evidence before finalizing or supporting its own case, as an opportunity to correct deficiencies in its opening evidence is not assured. On the other hand, a railroad may not take unfair advantage of weakness in the shipper's opening evidence by submitting reply evidence that is itself unsupported, infeasible, or unrealistic, or that presents criticism without appropriate evidence that can be used in the Board's SAC analysis. If it does, the shipper may use rebuttal to correct deficiencies that have been identified. Thus, it is the nature and quality of both the opening and reply evidence that determines the extent to which rebuttal evidence may be considered.

Duke Energy Corp. v. Norfolk S. Ry. (Duke/NS), 7 S.T.B. 89, 101 (2003).

On rebuttal, AEPCO agreed that the Dallas Street Yard should be used as a proxy for fuel costs at West El Paso. However, on rebuttal AEPCO introduced an alternative indexing method for translating 2008 fuel costs at the Dallas Street Yard into an estimate of first quarter 2009 figures. Yet, AEPCO did not show that defendants' indexing method used on reply was unsupported, infeasible, or unrealistic. Accordingly, we will not accept AEPCO's rebuttal evidence. We accept defendants' fuel costs for the West El Paso Yard.

iii. Direct-to-Locomotive (DTL) Fueling

Parties disagree about whether DTL fueling is necessary at Donkey Creek, Wyo. DTL fueling is a process by which a fuel truck directly refuels a locomotive. AEPCO argues DTL fueling is unnecessary given the existing fueling facilities at Alliance, Neb.[137] Also, AEPCO concludes that, as defendants do not include the costs for DTL fueling at Defiance, ANR must fuel those trains at either the final destination or somewhere further west than Defiance.[138] Lastly, the parties disagree about whether the intermodal trains stopping at the Texico Yard for block-swapping will also need refueling: AEPCO contends that fueling from Clovis, N.M., 6 miles away, could be used, rather than defendants' plan to bring fuel in by tanker car and to store fuel at the Texico Yard.[139]

The existing fueling facility at Alliance is not in close proximity to Donkey Creek, Wyo. While AEPCO is correct that defendants do not appear to include the costs for DTL fueling at Defiance, defendants state that the westbound New Mexico coal trains will be fueled from trucks at Defiance. Defendants did include costs for Gallup, N.M., which is in close proximity to Defiance. Because we accept defendants' operating plan, we will accept their costs for DTL fueling for Donkey Creek, Defiance, and Texico Yard and substitute Gallup costs included in its discovery for DTL costs at Defiance.

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[137] AEPCO's Rebuttal III-D-17.

[138] Id. III-D-17-18.

[139] Id.

b. Fuel Consumption

On opening, AEPCO calculates a fuel consumption rate by applying BNSF's and UP's 2008 URCS fuel consumption factors per locomotive unit mile (LUM) and gross ton-mile (GTM) to the ANR's corresponding LUM and GTM statistics during the peak period of the peak year, resulting in 2.39 gallons per LUM.[140]

Defendants argue that using a system-average figure is inaccurate, because ANR's trains are mostly heavy coal trains and high speed intermodal trains, which consume more fuel than the BNSF or UP system average.[141] Instead, defendants created an in-depth analysis of fuel consumption broken down for all types of train movements on ANR routes that are powered by 4400-HP type locomotives traversing across the ANR system.[142] Their analysis produces an average fuel consumption rate of 2.75 gallons per LUM.

On rebuttal, AEPCO does not rely on URCS system-wide fuel consumption data, but argues that defendants' fuel consumption calculations do not reflect the fuel saving advantages of the ES44-AC road locomotives selected by AEPCO and accepted by defendants for road locomotive operations on the ANR.[143] Strictly using the ES44-AC data, AEPCO calculates a revised consumption rate of 2.605 gallons per LUM.[144] Defendants' analysis incorporates a larger universe of locomotives and extrapolates the fuel consumption figures over the different types of train movements on the ANR in its calculation of fuel expense; therefore, we find it the best evidence of record and will accept defendants' fuel consumption rate.

c. Servicing (Sand and Lubrication)

AEPCO developed its servicing costs based on schedule 410, line 411, of BNSF's 2008 Annual Report Form R-1 (R-1).[145] Defendants state that UP's costs for locomotive servicing for the same period were higher than BNSF's costs reported from line 411.[146] They also argue that the lubrication oil costs need to be included in the total costs and this figure is included in schedule 410, line 202, which AEPCO failed to include.[147]

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[140] AEPCO's Opening III-D-8.

[141] BNSF/UP's Reply III.D-12.

[142] See id.

[143] AEPCO's Rebuttal III-D-18-20.

[144] Id.

[145] Id. III-D-21.

[146] See BNSF/UP's Reply III.D-14.

[147] Id.

On rebuttal, AEPCO continues to use only BNSF data, but updates that data to reflect BNSF's 2009 R-1.[148] In choosing not to use UP's costs, AEPCO claims that it is "entitled" to choose the lowest feasible cost for each category of expense, citing FMC Wyoming Corp. v. Union Pacific Railroad, 4 S.T.B. 699, 800 (2000).[149] AEPCO points out that the only substantiation of the lubrication oil cost is an internal email, containing a number, to BNSF's consultants.[150] They also claim that in previous SAC cases, both parties used the same data from the R-1 for the calculation of servicing costs.

AEPCO correctly asserts that it may choose the lowest feasible cost for each category of expense, and we agree that the email provided by defendants is insufficient documentation for analysis by AEPCO's experts. We accept AEPCO's servicing costs.

B. Railcars

The parties agree on the full service lease rates for various types of ANR-owned freight cars, the mileage rates developed for foreign and private cars, and the spare factor.[151] The parties, however, disagree with regard to the peaking factor. On reply, defendants use 18% as the peaking factor, whereas AEPCO uses a 5.9% peaking factor on rebuttal.[152] As discussed in the body of this decision, we will use AEPCO's peaking factor.

C. Train Crew Personnel

1. Operating Personnel

a. Road Crews

The parties agree on road crew districts for the ANR. Defendants allege that AEPCO failed to account for the directional imbalance of trains on the ANR lines.[153] Defendants provide an example of a directional imbalance: if there are more crews needed for train movements to point B versus point A, then over time there will be an excess of crews at point B and a shortage at point A. To address this issue, defendants propose that the ANR will deadhead, i.e. transport crews back to their home terminal or in the direction of the point where a crew shortage will occur.[154] On rebuttal, AEPCO accepts defendants' rate of increase for deadheading.

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[148] AEPCO's Rebuttal III-D-23 n.4.

[149] AEPCO's Rebuttal III-D-20-21.

[150] See id. III-D-21-22. As AEPCO notes, there is not enough detail in the R-1 numbers to ascertain defendants' lubrication oil cost figures.

[151] Id. III-D-23.

[152] BNSF/UP's Reply III.C-20; AEPCO's Rebuttal III-D-24.

[153] BNSF/UP's Reply III.D-15-16.

[154] Id. III.D-16.

However, the parties disagree on a re-crew rate. On opening, AEPCO applies a 1% re-crew rate, which defendants argue is understated.[155] Defendants argue that AEPCO's reliance on the RTC model to determine a re-crew rate based on the number of train runs that exceed 12 hours is problematic because it fails to properly account for the following: crew time beyond arrival and departure; additional time to interchange with foreign carriers (which takes additional coordination time); and day-to-day vagaries of actual railroad operations. As a result, defendants apply only a 1% re-crew rate between Amarillo and Defiance, but a 4% re-crew rate to the remainder of ANR's lines; these rates are based on (but lower than the rates of) BNSF's lines that the ANR replicates.[156] On rebuttal, AEPCO asserts that its reliance on the RTC model to calculate transit times for trains in each crew district is the correct method on which to base the re-crew rate.[157]

The operating plan is the primary factor in determining the number of personnel that would be needed. Because we accept defendants' operating plan, defendants' re-crew rates will be accepted as well.

b. Helper Crews

Defendants provide for 14 helper crews, while AEPCO provides for 12 helper crews on opening.[158] AEPCO's plan provides 12-hour shifts for helper crews. Defendants' plan provides for 8-hour shifts. Defendants argue that 12-hour shifts for helper crews greatly increase the risk of an accident due to fatigue, particularly because such crews work alone.[159] AEPCO responds that 12-hour shifts for helper crews are common in the railroad industry, because helper crews are not always continuously active; they sometimes sit for hours waiting for a train that needs assistance.[160]

The operating plan is the primary factor in determining the number of employees. We have accepted defendants' operating plan; therefore, we will accept the helper crew positions submitted by defendants.

c. Switch and Work Train Crews

Defendants also cite safety concerns over 12-hour shifts for switch and work train crews as a reason for providing a larger staff than AEPCO and state that the volume of the ANR traffic dictates the number of switch and work train crews.[161] AEPCO provides for 35 switch crew

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[155] Id. III.D-17-18.

[156] Id.

[157] AEPCO's Rebuttal III-D-27.

[158] Id.; BNSF/UP's Reply III.D-18-19.

[159] BNSF/UP's Reply III.D-18-19.

[160] AEPCO's Rebuttal III-D-27.

[161] BNSF/UP's Reply III.D-18-19.

employees, while defendants propose 57, along with 10 additional work train crews.[162] AEPCO contends that defendants provide no explanation for why 10 additional work train crews are necessary.[163]

However, the operating plan guides how many positions are necessary. We have accepted defendants' operating plan; therefore, we will accept the number of switch crew provided by defendants. Defendants do not, however, provide sufficient specific evidence to be persuasive with regard to the truncated shifts. It is not uncommon to find switch crew employees working shifts that are greater than 8-hours. Accordingly, we will adjust the switch and work train crew requirements to assume 12-hour shifts.

D. Non-Train Crew Personnel

1. Transportation Department

a. Managers and Assistant Managers of Train Operations

Parties disagree on the number of managers necessary to provide adequate coverage on the system. Defendants use 11 Managers of Train Operations and 14 Assistant Managers of Train Operations; AEPCO uses only 6 and 8, respectively.[164] Defendants argue AEPCO's staffing plan is inadequate to handle the responsibilities of these management positions.[165]

We have accepted defendants' operating plan; therefore, we will accept defendants' number of Managers of Train Operations and Assistant Managers of Train Operations.

b. Terminal Managers

Defendants add 5 Terminal Managers to AEPCO's calculations, arguing that AEPCO provided for no on-site management at 5 terminals.[166] AEPCO argues that the Managers of Yard Operations perform similar functions to those performed by defendants' Terminal Managers at those 5 terminals.[167] Defendants do not provide sufficient evidence to show that the Terminal Managers would not be performing the same functions as those undertaken by AEPCO's Managers of Yard Operations. We will not accept defendants' additional Terminal Managers.

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[162] AEPCO's Rebuttal III-D-27-28.

[163] Id.

[164] AEPCO's Opening III-D-14; BNSF/UP's Reply III.D-28.

[165] BNSF/UP's Reply III.D-20-21.

[166] Id. III.D-21.

[167] AEPCO's Rebuttal III-D-33.

c. Manager of Locomotive Operations

Defendants propose 15 Managers of Locomotive Operations, as opposed to AEPCO's 6.[168] Defendants justify their proposal by explaining the duties performed by a Manager of Locomotive Operations, contending that 1 Manager of Locomotive Operations would be necessary for every 60 engineers, in order to meet federal safety training standards.[169]

Defendants provide an adequate explanation of the range and complexities of the duties to justify the number of Managers of Locomotive Operations that they propose. Further, the ANR's large geographical footprint would require the staffing numbers that defendants provide here. As a result, we will accept defendants' count for the Manager of Locomotive Operations position.

d. Crew Management

The parties disagree on the number of personnel needed for crew management. AEPCO provides for 1 director and 9 crew managers to handle the crew calling activities of the ANR.[170] Defendants claim that AEPCO underestimates the planning and managerial responsibilities, and add 2 Assistant Directors of Crew Management and 1 Manager of Crew Planning.[171] On rebuttal, AEPCO argues the director can perform the functions of the 2 assistant directors that defendants propose, and that the automated calling system renders the Manager of Crew Planning position unnecessary.[172]

Defendants fail to explain why AEPCO's staffing proposal in this area is not feasible. AEPCO has the best evidence of record; as a result, we will accept AEPCO's crew management personnel numbers.

e. Dispatch

On opening, AEPCO provides for 9 dispatching desks. Each desk is staffed by 1 dispatcher during each of the 3 shifts per day, 7 days per week.[173] AEPCO calculates that the ANR would need 40 dispatchers.[174] Defendants argue that AEPCO's plan does not provide for management of the dispatchers and is insufficient to account for events such as illness, vacation, jury duty, classes, reviews, and work trips.[175] Accordingly, defendants propose additional staff

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[168] BNSF/UP's Reply III.D-21-22; AEPCO's Rebuttal III-D-34.

[169] BNSF/UP's Reply III.D-21-22.

[170] AEPCO's Opening III-D-17-18.

[171] BNSF/UP's Reply III.D-22-23.

[172] AEPCO's Rebuttal III-D-34-35.

[173] AEPCO's Opening III-D-18.

[174] Id.

for management and additional dispatchers, including additional dispatchers to operate a second desk that defendants propose for the Guernsey territory.[176]

AEPCO's staffing plan for dispatchers is insufficient. AEPCO provides a plan for a barebones staff that would not be able to function if several employees were unable to work on a given day. Moreover, AEPCO does not have any direct supervisors for a staff of at least 40 dispatchers; rather, AEPCO places supervisory responsibilities in the hands of 2 Directors of Operations Control. This is unrealistic, as the Directors of Operations Control already have other duties. We accept the number of supervisors and dispatchers submitted by defendants, including the Guernsey territory proposal, as the best evidence of record.

f. Locomotive Distribution

Defendants argue that AEPCO's plan does not provide for management of the ANR locomotive fleet. They claim that the ANR would need personnel to ensure that there are an adequate number of locomotives properly maintained, inspected, and placed throughout its system.[177] Defendants provide for a department to manage those responsibilities, including a Director of Locomotive Distribution and 5 Managers of Locomotive Distribution.[178] On rebuttal, AEPCO agrees that the ANR would need a staff member to deal with scheduling around maintenance and locomotive management, but AEPCO asserts that only 1 additional position is necessary, and that this position could be housed under the Mechanical Department.[179]

Based on the evidence, we conclude that defendants add excessive management for this responsibility. The concerns expressed by defendants over the "strategic aspects of the task" and "the tactical aspects of locomotive planning"[180] are addressed by the single position AEPCO adds on rebuttal. Further support for this responsibility could also be handled by the Vice President of Operations, the 2 Directors of Operations Control (with input from train and locomotive operation managers), and the Directors of Dispatch and Yard Operations.

(. . . continued)

[175] BNSF/UP's Reply III.D-23-24.

[176] Id.

[177] Id. III.D-24-25.

[178] Id.

[179] AEPCO's Rebuttal III-D-37-38.

[180] BNSF/UP's Reply III.D-24-25.

Table A-3

ANR Non-Train Operating Personnel			
Department	**AEPCO**	**BNSF/UP**	**STB**
Operations Management and Support	56	84	65
Mechanical and Engineering	380	416	380
Dispatching and Crew Management	50	86	78
Total - ANR Non-Train Operating Personnel	**486**	**586**	**523**

2. Mechanical Department

On opening, AEPCO proposes a staff of 358 employees for the ANR Mechanical Department.[181] Defendants propose a staff of 414 for this department, and on rebuttal, AEPCO adjusts the ANR's Mechanical Department upward to 376 employees.[182]

Defendants include 2 Directors of Mechanical Services: 1 to manage service requirements of locomotives and 1 to manage the ANR's relationships with lessors, as defendants argue those responsibilities are too burdensome for just 1 employee.[183] In contrast, AEPCO provides for only 1 Director of Mechanical Services, explaining that there is enough oversight from the Vice President – Mechanical to assist with these managerial responsibilities.[184]

Defendants argue that AEPCO provides no supervisors for the car inspectors and suggests the inclusion of 22 Car Foremen for the ANR.[185] Defendants also include 5 higher-level managers for the foremen themselves.[186] Defendants add 20 car inspectors to address cars bad-ordered on the line.[187] AEPCO responds by arguing that the added Car Foremen are unnecessary because 1 member of the 4-person inspection crews will serve as a foreman, and that supervision is provided by the Managers of Yard Operations.[188] AEPCO asserts that the higher-level managers defendants propose are redundant, because the Director of Mechanical Services, the Manager of Car Maintenance, and the Managers of Yard Operations constitute a

[181] AEPCO's Rebuttal III-D-37-38.

[182] See id.

[183] BNSF/UP's Reply III.D-25-26.

[184] AEPCO's Rebuttal III-D-38.

[185] BNSF/UP's Reply III.D-26-29.

[186] Id.

[187] Id. III.D-27.

[188] AEPCO's Rebuttal III-D-38-39.

sufficient number of supervisors for the inspection crews.[189] AEPCO argues that defendants do not explain how they arrived at a figure of 20 car inspectors, and argues that 16 would be sufficient.[190] Also, defendants add 5 parts inventory employees and 2 billing employees, but offer no explanation for these additions in the narrative.[191]

With the additional positions added on rebuttal, AEPCO's proposal for the ANR management and general workforce appears adequate to perform the work of the Mechanical Department. Defendants fail to justify their additional employee numbers. As such, we will accept AEPCO's employee count for the ANR Mechanical Department.

3. Compensation

a. Train and Engine Personnel

The parties disagree on average compensation for train and engine (T&E) personnel. Defendants base their estimates on a study of BNSF and UP payroll records.[192] AEPCO argues defendants' study is flawed because it mistakes "days" worked for "shifts" worked.[193]

Unlike defendants' study, AEPCO's figures have been developed by following methodologies previously accepted by the Board, specifically, wage studies based on shifts worked, and not days worked. See, e.g., Otter Tail Power Co. v. BNSF Ry., NOR 42071, slip op. at C-11 (STB served Jan. 27, 2006) (accepting BNSF's base crew wage estimate derived from evidence of annual "shifts" worked).

Defendants estimate $11 million more than AEPCO for T&E personnel's overnight and taxi expenses: $17.2 million compared to AEPCO's $6.2 million.[194] AEPCO argues the discrepancy is because defendants double-count certain of these expenses. That is, defendants add overnight costs and taxi expenses to straightaway crews even when the termination point is a home terminal. And, defendants add 2 taxis to each crew in each direction.[195]

The operating plan determines the work patterns for T&E personnel. Because we are accepting defendants' operating plan, it follows that their taxi and hotel expenses should be accepted as well. However, AEPCO correctly identifies the problem of double-counting in defendants' calculations and has made a satisfactory adjustment. Our analysis and removal of

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[189] Id.

[190] Id. III-D-39-40.

[191] BNSF/UP's Reply III.D-29.

[192] Id. III.D-29-30.

[193] AEPCO's Rebuttal III-D-40-42.

[194] AEPCO's Rebuttal III-D-44-45.

[195] Id.

the double-count from defendants' estimate yields a result of $8.6 million which is included in our calculation of operating expenses.

b. Executive Compensation

Parties disagree on compensation for the ANR's executives, including the President and vice presidents. AEPCO claims that the Board has historically rejected the inclusion of stock options and option awards.[196] Defendants argue that AEPCO's use of only salary as compensation, based on the compensation of KCS Railway's executives, is inadequate.[197]

As the Board has held in prior cases, such as Western Fuels Ass'n 2007, slip op. at 48-49, stock options and stock awards have not been included as costs for executive positions. In Western Fuels Ass'n 2007, the Board reasoned that stock options would not be included as an expense for the SARR because railroads do not expense that type of compensation. AEPCO states that a review of financial statements from KCS Railway confirms that KCS Railway still does not count stock awards and options as an expense.[198] In contrast, railroads do expense bonuses, and the Board did include those costs in Western Fuels Ass'n 2007, slip op. at 48-49. AEPCO states that it does not know if the data it relied on about KCS Railway's vice president includes bonuses.[199]

AEPCO's evidence is insufficient because it does not include bonuses. However, defendants' proposal includes stock options and stock awards. Defendants do not provide an argument as to why the Board should deviate from its treatment in Western Fuels Ass'n 2007 of compensation that is not expensed. We will accept defendants' calculation of compensation for the ANR executives, but we will modify that calculation by deducting stock options and stock awards.

4. Materials, Supplies, and Equipment

The parties largely agree on the unit costs for materials, supplies, and equipment for the Non-Train Crew staff. However, there is a discrepancy in their estimates, due to factors such as the different staff size proposed by each party; i.e., defendants' larger staff needs more materials, supplies, and equipment.[200] We accept most of AEPCO's Non-Train Crew staffing plan, which is closely related to the amount of materials, supplies, and equipment necessary for the ANR; therefore, we will also accept the majority of AEPCO's costs and calculations of materials, supplies, and equipment. In some instances where we accept defendants' staffing, we have

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[196] Id. III-D-43-44.

[197] BNSF/UP's Reply III.D-30.

[198] AEPCO's Rebuttal III-D-116.

[199] AEPCO's Rebuttal III-D-115-116.

[200] See AEPCO's Rebuttal III-D-45-47.

adjusted the amounts of materials, supplies and equipment related to those positions to reflect those staffing numbers.

5. Information Technology

On opening, AEPCO provides for an Information Technology (IT) Department headed by 1 Director and a staff of 12 (enough to provide 24-hour daily coverage).[201] AEPCO explains that IT requirements for the ANR would not be as labor intensive as a typical Class I carrier, because the ANR IT system would not be in a main-frame environment; most of the software proposed is "off-the-shelf," so little custom development and maintenance would be required.[202] The staff's main function would be to trouble-shoot problems with vendors, coordinate the transportation software applications with outside vendors and business users, monitor the network infrastructure, and enhance crew-scheduling and dispatching systems as needed.[203] Defendants argue that AEPCO's plan for an IT Department is inadequate, given the size of the ANR.[204]

On rebuttal, AEPCO revises the size of the IT staff from 13 to 16.[205] However, AEPCO still proposes to outsource 99% of its IT operating costs for the ANR's computer system.[206] AEPCO maintains that a Vice President is unnecessary to head the ANR's IT Department; AEPCO cites 2 recent rate cases where the Board accepted a Director, reporting to a Vice President, as the manager of the SARR's IT Department. AEP Tex. 2007, slip op. at 57; W. Fuels Ass'n 2007, slip op. at 46. AEPCO accuses defendants of instituting an IT department suited more to the needs of a typical Class I railroad, rather than the ANR with its unique characteristics.[207] AEPCO acknowledges that the ANR may encompass a large geographical territory and take in over $2 billion dollars in annual revenue, but AEPCO argues the ANR's IT needs are much simpler than defendants contemplate.[208] For example, compared to a typical Class I railroad, the ANR has fewer employees, as well as simpler operations (more train-load traffic, fewer commodities transported, and fewer customers), and outsources most of its IT services.[209] Thus, AEPCO concludes, the ANR does not warrant the size and breadth of the IT requirements that defendants presented.

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[201] AEPCO's Opening III-D-40-42.

[202] Id.

[203] Id.

[204] BNSF/UP's Reply III.D-63.

[205] AEPCO's Rebuttal III-D-107.

[206] Id. III-D-111.

[207] AEPCO's Rebuttal III-D-108-109.

[208] Id.

[209] Id. III-D-106-114.

As discussed in the General and Administrative (G&A) section below, we find that AEPCO does not provide adequate justification for its IT department proposal. We find that AEPCO's IT plan cannot reasonably handle the IT requirements of the ANR, and we will accept the IT Department presented by defendants.

6. Travel Expenses

The parties agree on the costs per position for travel expenses, but disagree on the number of positions that require travel expenses. AEPCO argues that defendants provide overstated travel compensation and over count the number of positions eligible for this expense for train crews.[210] We find that defendants provide for a more realistic number of employees that would require travel. However, we will adjust that figure to the employee figures that we have accepted.

E. General and Administrative

1. Staffing

Table A-4

G&A Personnel			
Department	**AEPCO**	**BNSF/UP**	**STB**
Executive	4	4	4
Marketing and Customer Service	21	119	119
Finance and Accounting	32	111	32
Legal and Administration	19	40	29
Information Technology	16	41	41
TOTAL	**92**	**315**	**225**

a. Marketing & Customer Service Department

i. Outsourcing

The parties disagree on whether to outsource the bulk of the ANR Marketing and Customer Service staff. BNSF argues that no railroad the size of the ANR could realistically outsource these functions.[211] AEPCO counters by stating it is proposing the least cost, most

[210] Id. III-D-46-47, III-D-118.

[211] BNSF/UP's Reply III.D-36-37.

efficient operation, and that the ANR would be unique as a $100 million revenue carrier that moves nearly 70% of its traffic as an overhead carrier.[212]

AEPCO's Marketing and Customer Service Department is not sufficiently staffed to manage all of the responsibilities required. As discussed below, we accept defendants' proposal for this department; therefore, we will reject AEPCO's outsourcing proposal, as it is no longer applicable.

ii. Department Head

The parties disagree as to what position should run the ANR Marketing and Customer Service Department. AEPCO argues the department could be run by an assistant vice president because of its unique traffic group of mostly overhead and other cross-over traffic.[213] As a result, AEPCO argues, the ANR will need a smaller bureaucratic structure and will have a smaller and less diverse customer base than the incumbent carriers.[214] In contrast, defendants argue that it should be run by a full vice president, as the ANR would have a greater focus on customer service because of its dependence on significant intermodal traffic.[215]

As discussed below, we are accepting defendants' staffing proposals. Because defendants' proposed staff for this department is larger than AEPCO's proposed staff, we will accept defendants' proposal to have a vice president head the ANR Marketing and Customer Service Department as managing a department this size should be the responsibility of a vice president.

iii. Staff

The parties disagree on several personnel areas:

Defendants calculate the ANR sales and marketing staff using a scale based on revenue collected in their coal and intermodal business units.[216] AEPCO argues this method is flawed, because the ANR's intermodal traffic is almost entirely overhead (98.2%), and thus there are far fewer customer interactions concerning marketing than defendants actually have.[217]

Defendants argue that the ANR must include 1 customer communications employee, because a great amount of the ANR's revenue would be derived from service-sensitive intermodal customers requiring up-to-date information. Basing staffing requirements on railcar

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[212] AEPCO's Rebuttal III-D-61-62.

[213] Id.

[214] Id.

[215] BNSF/UP's Reply III.D-38-39.

[216] Id. III.D-37-38.

[217] AEPCO's Rebuttal III-D-65.

volume, defendants propose 1 Customer Communications Manager.[218] AEPCO argues that the large amount of overhead traffic obviates the need for such customer service, and thus a customer communications employee and a Customer Communications Manager are unnecessary. Also, AEPCO argues that defendants' narrative description of their scaling calculations used to determine a need for a customer communication staff does not match the actual calculation set forth in their workpapers: AEPCO asserts that defendants use a scaling method based on carloads in their narrative and a method based on revenue in their spreadsheets.[219]

AEPCO calculates a need for 14 customer service managers. In contrast, defendants calculate a Customer Service staff of 91 for the ANR. Defendants rely on their respective actual staffing levels, then adjust for several factors.[220] AEPCO argues defendants' method of calculating staff is backwards because it begins with determining the number of employees necessary rather than determining tasks that the employees would perform.[221]

We will accept defendants' staffing levels for the Marketing and Customer Service positions. AEPCO's proposal does not provide enough staff to fulfill the duties of the Marketing and Customer Service Department. We reject the proposition that the ANR will have fewer customer service needs due to its large amount of overhead traffic. Overhead traffic still requires customer service support. Also, the ANR will still be required to charge rates on these movements – a complex task done by the marketing staff. The fact that the ANR would carry a large amount of cross-over traffic does not mean that the complainant should be permitted to shield the SARR from expenses such as billing, rate setting, and customer service. Because we reject the central tenet of AEPCO's argument here, and because we will not permit the outsourcing proposed by AEPCO, we will accept defendants' Marketing and Customer Service Department.

b. Finance and Accounting Department

On opening, AEPCO proposes a Finance and Accounting Department with 21 employees. AEPCO proposes that this department should be headed by a vice president, and would also have a Treasurer, a Controller, a Director of Budgets and Purchasing, and a Director of Internal Auditing.[222]

While defendants agree that AEPCO accurately describes the responsibilities for this department, defendants argue that AEPCO fails to describe accurately the work volumes associated with those responsibilities.[223] The biggest difference between defendants' and

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[218] BNSF/UP's Reply III.D-40.

[219] AEPCO's Rebuttal III-D-71-72.

[220] BNSF/UP's Reply III.D-41-43.

[221] AEPCO's Rebuttal III-D-72-79.

[222] AEPCO's Opening III-D-34-38.

[223] BNSF/UP's Reply III.D-44.

AEPCO's evidence in this area is in the Controller functions. Defendants argue the Controller staff that AEPCO provides would be too small to handle the accounting, financial reporting, taxes, disbursements, and property accounting for a railroad the size of the ANR.[224] Defendants claim that AEPCO underestimates the number of staff required and proposes a department with 111 employees. Defendants state that the 111-employee figure is the result of reviewing work volumes for those job functions and by using a variety of metrics, including railcar volume, assets, miles of track, and number of employees, to create appropriate staff workloads.[225]

On rebuttal, AEPCO increases its proposal to 32 employees. AEPCO claims that the ANR would not need a large Finance and Accounting Department, because the ANR, as a new company, would benefit by having advanced and efficient technology. AEPCO argues that defendants' method of determining the department's staff is backwards, i.e., defendants first develop aggregate staffing numbers and then try to find roles for individuals.[226] AEPCO points to the large amount of overhead traffic to explain why defendants overestimate the department's workload. AEPCO explains that the ANR, despite having large revenues, would have relatively few customers to invoice, requiring a smaller Finance and Accounting staff.[227] Nonetheless, on rebuttal, AEPCO also adds personnel for the disbursement functions, financial reporting, and a Car Accounting Analyst. AEPCO argues, however, that the ANR would not have the complicated accounts and financial reporting of railroads like BNSF and UP, which have many debt instruments incurred over a period of time. Also, AEPCO argues the ANR would benefit from being a newly created company in that it would use the newest technology to become more efficient than BNSF or UP and it would reduce comparable workloads.[228]

We reject AEPCO's reasoning that the ANR would require a smaller Finance and Accounting Department because of its large amount of overhead traffic. Nonetheless, in this case, AEPCO has proposed staffing levels for the ANR's Financing and Accounting Department supported by expert testimony that fall within the range of staffing levels we have accepted in a long line of SAC cases.[229] Defendants claim these levels are "plainly" insufficient, and that AEPCO has produced no benchmark analysis or other comparable data to suggest this level of staffing is sufficient.

Yet, the railroads' evidence is no better, as defendants' give virtually no explanation for the particular staffing levels chosen: cursory explanation for the duties is offered, and then higher levels are stated as needed. The railroads themselves do not present any clear benchmarking approach we could use, or otherwise explain how we could accept staffing levels so dramatically above any levels accepted in the past. We note that our acceptance of certain

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[224] Id. III.D-45-46.

[225] Id. III.D-43-55.

[226] AEPCO's Rebuttal III-D-82.

[227] Id. III-D-85.

[228] See id. III-D-79-96.

[229] See id. III-D-81.

G&A staffing levels in the past does not mean we will not entertain arguments that higher levels are warranted. But here, we find lacking the evidence submitted by defendants. As AEPCO's evidence is supported and consistent with prior agency findings, we accept it as the best evidence of record.

c. Law and Administration Department

i. Legal Staff

On opening, AEPCO's Law and Administration Department consists of 25 employees, and AEPCO proposes to outsource many of the administrative functions.[230] Defendants dispute the overall number of staff and the number of staff provided for outsourcing legal work.[231] AEPCO provides for 3 attorneys and 2 paralegals;[232] defendants raise the number of attorneys to 6, along with 6 paralegals.[233] Defendants argue that AEPCO underestimates the cost of the ANR's legal work, ranging from property disputes to employment litigation to compliance with government regulatory requirements.[234]

On rebuttal, AEPCO argues that the ANR's Law and Administration Department that defendants developed is excessive and unnecessary. AEPCO criticizes defendants' use of the ANR revenue projections, rather than the actual needs of the department, to determine the size of the legal staff.[235] AEPCO also argues that because it would be a new carrier, the ANR would not have the same legal and/or regulatory burdens of an existing carrier.[236] AEPCO increases its outside counsel expense estimate (from $475,000 to $750,000), but stresses that its unique business model as an overhead carrier with minimal local traffic would result in minimal legal expenses.[237]

We reject AEPCO's assertion that the ANR's reliance on a large proportion of overhead traffic will minimize its legal expenses. AEPCO does not provide a large enough legal staff to handle the variety of legal issues that arise in a railroad company. Even a carrier with a large proportion of overhead traffic would still need to address employment and labor issues, rate complaints, and regulatory compliance requirements. Further, AEPCO's proposal for a small legal department is untenable because the outsourcing legal budget is inadequate. As such, we will accept defendants' legal staff and outsourcing budget. Nonetheless, we find that AEPCO's

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[230] AEPCO's Opening III-D-38-40.

[231] BNSF/UP's Reply III.D-56-58.

[232] AEPCO's Opening III-D-29.

[233] BNSF/UP's Reply III.D-56-58.

[234] Id.

[235] AEPCO's Rebuttal III-D-96-101.

[236] Id.

[237] Id. III-D-100-101.

plan to outsource many of the administrative functions in this department is feasible, and defendants do not undermine this plan; we will accept AEPCO's plan for the administration side of this department.

ii. Information Technology

On opening, AEPCO proposes an IT staff of 13 employees, including a Director.[238] AEPCO explains that information technology requirements for the ANR would not be as labor intensive as a typical Class I carrier because the ANR IT system would not be in a main-frame environment; most of the software proposed is "off-the-shelf," so little custom development and maintenance would be required.[239] The staff's main function would be to troubleshoot problems with vendors, coordinate the transportation software applications with outside vendors and business users, monitor the network infrastructure, and enhance crew-scheduling and dispatching systems as needed.[240]

As discussed above in the section on Non-Train Crew Personnel, defendants create a separate IT Department with a separate Vice President to take on certain of the responsibilities from the Vice President of Law and Administration.[241] Defendants argue that a single Vice President for Law and Administration is inadequate, partly because AEPCO did not separately account for certain functions, such as environmental issues and security personnel, for which this separate vice president would be responsible.[242] Further, defendants argue that AEPCO's staffing plan does not cover a number of functions that the IT Department would need to perform.[243] Also, AEPCO provides minimal resources for development of systems that could link non-integrated systems, i.e., systems that function separately and apart from each other. And, because defendants propose a management team in other areas, the IT staff must be larger to accommodate those management numbers.[244]

On rebuttal, AEPCO argues its IT staff can be smaller than a typical Class I railroad because it will not house a main-frame computer system and its operations consist of only unit train or trainload movements; almost all non-coal movements are overhead (so much less customer billing); no intermediate classification switching other than block-swapping of intermodals at the Texico Yard is involved; and there are limited local/terminated coal and intermodal movements requiring customer billing.[245] AEPCO argues that its size as a large

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[238] AEPCO's Opening III-D-45-47.

[239] Id.

[240] Id.

[241] BNSF/UP's Reply III.D-63-66.

[242] Id

[243] Id.

[244] Id.

[245] AEPCO's Rebuttal III-D-106-115.

SARR does not dictate its IT staff size.[246] In its rebuttal, AEPCO adds a database management employee, along with an additional tester for internal programs and 2 additional help desk technicians.[247] AEPCO has eliminated the Exchange 2007 engineer position and added funding to the operating budget for email service (for the approximately 600 members of its workforce).[248]

AEPCO's IT staff is too small to meet the needs of the ANR, which would be a Class I carrier. The ANR has many external and internal customers and computer programs requiring integration. Therefore, we will accept defendants' IT proposal for the ANR.

iii. Human Resources, Training, and Other Staff

AEPCO chooses a Director of Human Resources and 2 Managers of Training, along with external contractors to manage recruiting, compliance, compensation, benefits, employee relations, and training.[249] AEPCO states that the ANR budget for outsourcing in this area should be $275,000, and on rebuttal, AEPCO adds an Employee Relations Liaison position.[250] AEPCO explains that it is less expensive to establish an outsourcing relationship with outside clinics to handle incidents beyond first aid for injured employees; thus, an in-house doctor is unnecessary.[251]

Defendants claim that AEPCO's staff for the ANR could not handle all the responsibilities for the Human Resources Department (HRD) listed above.[252] Defendants also assert that the HRD budget AEPCO allocates for outsourcing is inadequate.[253] Defendants agree that 2 Managers of Training would be sufficient, but argue that a compensation staff along with an employee-relations employee would be necessary for hearings, mediations, hiring, dismissals, and compliance with Federal laws.[254] To administer the HRD, defendants assert a Human Resource Information Specialist would also be needed to manage vendors and track employee information.[255] Lastly, defendants argue the ANR would also require a Medical Department to

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[246] Id.

[247] Id.

[248] Id. III-D-114.

[249] Id. III-D-103.

[250] Id. III-D-105-106.

[251] AEPCO's Rebuttal III-D-106.

[252] BNSF/UP's Reply III.D-60-62.

[253] Id.

[254] Id.

[255] Id.

manage its industrial hygiene efforts, injuries, drug and alcohol testing, and engineering qualification training.[256]

AEPCO's staffing and outsourcing plan, with the changes made on rebuttal, are reasonable. Defendants fail to provide evidence undermining AEPCO's plans presented in opening. As such, we will accept AEPCO's rebuttal proposal for the ANR concerning the staffing and outsourcing budget here.

iv. Environmental Staff

AEPCO provides for 2 Managers of Testing and Environment within the ANR Mechanical Department.[257] Defendants, however, claim that such a staff would be insufficient to deal with hazardous material spills, general issues such as storage and wastewater, and compliance issues at the state and Federal level.[258] AEPCO argues that the ANR would not be transporting much hazardous materials traffic, and that defendants have not shown that the staff proposed by AEPCO would be insufficient to address the tasks defendants describe.[259]

Defendants do not provide adequate evidence as to why AEPCO's proposed environmental staff could not handle this area of responsibility for the ANR. Given the projected small amount of hazardous materials hauled on the ANR, AEPCO's proposal appears to be reasonable; therefore, we will accept AEPCO's 2 Managers of Testing and Environment as sufficient here.

v. Police Force

AEPCO does not provide for a police force in its opening evidence. Defendants argue that a private security staff would be necessary, especially for intermodal traffic/storage near the Mexican border, and as such, defendants assign 1 officer for every state in which the ANR operates, with 1 chief responsible for oversight.[260] On rebuttal, AEPCO accepts creating a police force, headed by a Chief of Security, with 5 Special Agents (1 of which would be assigned to the Cochise and El Paso. territory).

On rebuttal, although AEPCO accepts a police force, it challenges defendants' specific staffing calculations. AEPCO has accepted that a police force is required and not shown that defendants' reply evidence is unsupported, infeasible, or unrealistic. We will therefore accept defendants' police force proposal. See Duke/NS, 7 S.T.B. at 101.

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[256] Id.

[257] AEPCO's Rebuttal III-D-102.

[258] BNSF/UP's Reply III.D-58-60.

[259] AEPCO's Rebuttal III-D-102-103.

[260] BNSF/UP's Reply III.D-58.

2. Compensation

Defendants disagree with AEPCO's exclusion of bonuses and stock grants in calculating annual compensation.[261] Similar arguments are addressed earlier in Section D.3., Compensation. We will accept defendants' calculation of compensation, but we will modify that calculation by deducting stock options and stock awards.

3. Materials, Supplies, and Equipment

The parties generally agree about unit costs of materials, supplies, and equipment for G&A Staff.[262] However, because materials, supplies, and equipment are directly related to the size of the G&A Staff, there are discrepancies in the parties' estimates, due to the different staff size proposed by each party; i.e., defendants' larger staff necessitates more materials, supplies, and equipment.

We have adjusted the materials, supplies, and equipment based on the G&A Staff personnel we have accepted.

a. Start-up and Training Costs

While the parties generally agree on training costs for different crafts, they disagree on attrition rates in training, ongoing staffing costs, overtime pay during training, and training for maintenance-of-way (MOW) personnel.

The parties disagree on the attrition rate during training for the ANR staff, i.e., the dropout rate, or percentage of trainees who start training but do not finish.[263] The ANR's initial trainee pool is determined by its work needs, but the pool is augmented to compensate for those who will drop out. A greater attrition rate forces the initial trainee group to be larger to achieve the same number of trained workers at the end of training; each trainee adds to the cost of training staff; therefore, if a greater attrition rate is assumed, then training costs are greater. For initial training of conductors and engineers, defendants submit detailed empirical data to justify its use of a 10% attrition rate for T&E training purposes.[264] In contrast, AEPCO maintains that a 3% attrition rate applies to both training and ongoing staffing; however, AEPCO relies on its arguments defending its calculation of ongoing staffing rates to justify its attrition rate for training. We will accept defendants' attrition rate for training the ANR staff because AEPCO does not adequately justify its evidence.

For ongoing staffing costs, defendants developed attrition rates for different crafts based on BNSF data from the past 10 years and on 2 years of UP data.[265] AEPCO claims that the data

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[261] BNSF/UP's Reply III.D-67.

[262] AEPCO's Rebuttal III-D-117.

[263] Id. III-D-120-122; BNSF/UP's Reply III.D-71-72.

[264] BNSF/UP's Reply III.D-71-72.

[265] See id. III.D-72.

is "inappropriate" and cites a 2007 industry article stating that the overall attrition rate for all BNSF and UP employees was at a much lower percentage for a two-year comparison in the aggregate of both railroads' workforces.[266] We will accept defendants' attrition rates for ongoing staffing costs because defendants provide a more detailed level of evidence and explanation than that presented by the complainant.

The parties disagree on whether student dispatchers and student inspectors would earn overtime pay: defendants include overtime pay, while AEPCO does not.[267] In past cases, the Board has not included overtime for training. Defendants have not sufficiently supported their proposal for overtime pay here. The record does not support a change in Board practice.

On reply, defendants accept AEPCO's training costs for MOW personnel.[268] Yet, AEPCO alleges defendants' workpapers add 25% of MOW personnel salary as training costs, and AEPCO argues defendants provide no explanation for this additive.[269] As defendants agree to AEPCO's training costs for MOW personnel, and defendants provide no explanation for the additional expense shown in its workpapers, we will accept AEPCO's MOW personnel training costs.

4. Other

a. Bad Debt

Defendants argue that AEPCO has not accounted for bad debt, i.e., unpaid bills or late money owed to the ANR.[270] AEPCO argues that interest owed on late bills would be offset against the cost associated with late collections and unpaid bills.[271] AEPCO also criticizes defendants' calculation of unpaid bills, because that percentage is based on the system-wide bad debt of UP and BNSF, rather than the bad debt of the ANR's proposed actual customers.[272]

Defendants address a legitimate business expense. AEPCO's argument that interest from late payments would offset unpaid bills and late money owed is unsupported conjecture. Therefore, we will accept defendants' expense for bad debt.

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[266] AEPCO's Rebuttal III-D-122-123.

[267] Id. III-D-120-123.

[268] BNSF/UP's Reply III.D-71.

[269] AEPCO's Rebuttal III-D-122.

[270] BNSF/UP's Reply III.D-72-73.

[271] AEPCO's Rebuttal III-D-124.

[272] Id.

F. Maintenance-Of-Way (MOW)

Table A-5

MOW Costs in Dollars			
	AEPCO	**BNSF/UP**	**STB**
Staffing	41,619,820	70,450,546	55,146,976
Equipment	5,300,685	10,691,194	10,233,354
Materials	9,874,361	15,854,574	13,091,609
Contracted Maintenance Work			
Geometry Testing	358,182	224,722	348,578
Rail Testing	767,986	706,188	767,986
Yard Cleaning	27,000	27,000	27,000
Vegetation Control	259,000	259,000	259,000
Ballast Cleaning	36,000	36,000	36,000
Equipment Maintenance	1,325,171	2,672,799	2,558,339
Joint Bar Testing	64,467	64,467	64,467
Bridge Inspection	7,324	7,324	7,324
Snow Removal	50,000	150,000	150,000
Average Derailment Cost	2,603,224	2,603,224	2,603,224
Storm Debris Removal	50,000	250,000	250,000
Washouts	290,000	750,000	750,000
Environmental Cleanup	114,097	114,000	114,097
Annual Cost of Clearing Wreckage	413,795	413,795	413,795
TOTAL	**63,161,113**	**105,274,833**	**85,837,549**

1. Staffing

Table A-6

ANR MOW Staffing			
Departments	**AEPCO**	**BNSF/UP**	**STB**
Track Department	292	517	410
Communication & Signals Department	84	106	97
Bridge & Building Department	40	45	45
Administrative/Support Employees	7	7	7
TOTAL	**423**	**675**	**559**

a. Track Department

i. Roadmasters and Assistant Roadmasters

Defendants assert that the first-line supervisor responsible for track maintenance is the roadmaster on BNSF and most major railroads.[273] The number of roadmasters and assistant roadmasters is determined primarily by the number of roadmaster districts. AEPCO provides for 16 roadmaster districts, compared to 20 proposed by defendants.[274] As a result, defendants' plan includes 20 roadmasters and 40 assistant roadmasters.[275] To support its plan for 20 roadmaster districts, defendants state that 16 of the 20 roadmaster districts would carry over 70 million gross tons of traffic per track mile per year, and the other 4 would carry more than 60 million gross tons.[276] As a result, substantial welding work would be required from the outset.[277] Defendants assert AEPCO's plan provides for less than half of what is needed to maintain the ANR track.[278]

AEPCO states, on rebuttal, that the ANR would need 16 roadmasters and 26 assistant roadmasters (primarily responsible for conducting twice weekly track inspections), arguing that some of the territory requires only 1 assistant roadmaster rather than 2 because congestion reduces the maximum speed for a hi-rail inspection vehicle, allowing inspectors to clear trains and perform minor repairs as defects are discovered.[279] Additionally, AEPCO argues that defendants' proposal is wasteful by proposing an average of only 165 track miles per roadmaster district.

We will accept defendants' allocation of 20 roadmaster districts.[280] The size of the roadmaster districts is dependent on many factors, the most important of which is anticipated workload. The workload is determined by the territory's gross tonnage, amount of mainline track, curvature/gradient of the mainline, and number of switches along the route. Defendants performed a detailed workload evaluation to determine the size and number of their districts.

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[273] BNSF/UP's Reply III.D-92-94.

[274] Id.

[275] Id.

[276] Id.

[277] Id.

[278] Id. III.D-100.

[279] AEPCO's Rebuttal III-D-135-136.

[280] In a separate argument, defendants argue that more maintenance crews are necessary because no access roads are built for the ANR, thus limiting access and decreasing maintenance crew productivity. Defendants therefore add a distinct incremental cost (separate from the expenses here) for maintenance due to a lack of access roads specifically built for maintenance. BNSF/UP's Reply III.D-92-94. We address those arguments in Section F.4., Incremental Cost Additive Associated with the Absence of Maintenance Roads.

Conversely, AEPCO fails to provide the exact method it used in calculating the size of the districts proposed for the ANR. Indeed, AEPCO simply states that its expert agrees that its initial count of 15 districts was "a little thin, and has increased the number by 1, to 16."[281]

Further, the average district size proposed by defendants does not exceed what has been accepted in past Board decisions. In Western Fuels Ass'n 2007, slip op. at 57, the roadmaster districts averaged 193.1 track miles per district. Here, AEPCO averages 208.11 track miles per district, and defendants' plan averages 166.49 track miles per district. AEPCO does not provide evidentiary support for creating larger districts. AEPCO and defendants agree that the peak year tonnage for the ANR is 290.1. In Western Fuels Ass'n 2007, slip op. at 30, the SARR's peak year tonnage was 219.1. Because ANR's peak year tonnage is much greater than that for the SARR's traffic at issue in Western Fuels Ass'n 2007, it follows that roadmaster districts should be smaller to accommodate the greater level of track maintenance that would be required on the ANR. Therefore, the best district size comes from the plan submitted by defendants. Because we accept defendants' roadmaster district numbers, we will also accept defendants' proposed 20 roadmasters.

However, we will not accept defendants' 40 assistant roadmasters (2 per roadmaster district). AEPCO asserts that 1 assistant roadmaster per district conforms to FRA regulations for territories under 120 miles.[282] But, AEPCO submits 26 assistant roadmasters (more than 1 per district) because some of the ANR districts are larger than 120 miles. We accept that 1 assistant roadmaster per district would provide sufficient coverage for some of the ANR's roadmaster districts of 120 miles or less; and overall we will accept AEPCO's 26 assistant roadmasters.

ii. Track Crews

On opening, AEPCO provided 29 field track crews, each consisting of a foreman and 3 crew members. These crews would be responsible for day-to-day maintenance of the track in a defined territory averaging 76 route miles (although the lengths of individual territories vary depending on the amount of double track involved).[283]

In its reply, defendants argue AEPCO's proposed plan is unfeasible for the ANR – a high-density railroad.[284] Defendants argue that AEPCO's plan produces a ratio of miles to maintain per track employee that is almost double what the Board has accepted previously.[285] Defendants propose to increase the number of crews to 60 (compared to AEPCO's 29).[286]

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[281] AEPCO's Rebuttal III-D-135.

[282] AEPCO's Rebuttal III-D-136 n.65.

[283] AEPCO's Opening III-D-66-67.

[284] BNSF/UP's Reply III.D-89-91.

[285] Id.

[286] Id.

On rebuttal, AEPCO asserts defendants' calculations are excessive, arguing that defendants fail to explain why 3 track crews would be needed for each roadmaster district.[287] Nonetheless, AEPCO increases its estimates for foremen and crew members.[288] AEPCO asserts that its calculations of ANR's track crew personnel conform to crew sizes used in Western Fuels Ass'n 2007 when taking into account track miles and gross tonnage.[289]

The number of track foremen is dependent on many factors, the most important being anticipated workload. Workload is determined by the territory's gross tonnage, amount of mainline track, curvature/gradient of the mainline, and number of switches along the route. The parties appear to calculate the ANR's number of foremen and crew sizes based on a ratio of track miles per personnel. Using peak year tonnage as a guide, when compared to the Board's findings in Western Fuels Ass'n 2007, the ANR should require more foremen and crews per mile because the ANR has greater peak year tonnage (290.1 vs. 219.1 million gross tons).

Defendants' foreman and crew size figures are better suited for the ANR. AEPCO's plan averages 1 foreman for every 97.53 track miles and 1 crew member for every 32.51 track miles. Defendants provide for 1 foreman for every 60.15 track miles and 1 crew member for every 20.05 track miles. In Western Fuels Ass'n 2007, the Board allocated 1 foreman for every 89.35 track miles and 1 crew member for every 22.34 track miles. When considering the greater maintenance needs of the ANR compared to the SARR in Western Fuels Ass'n 2007, defendants' foremen and crew size numbers are a better fit for the ANR.

iii. Roadway Machine Operators

AEPCO provides 22 roadway machine operators; in contrast, defendants allocate 52 roadway machine operators.[290] This disparity is partly due to defendants pairing 2 roadway machine operators to each roadmaster district (defendants create more roadmaster districts).[291] AEPCO argues that defendants add unnecessary personnel: staff to operate both a rubber-tired backhoe and a speedswing, which AEPCO claims are redundant machines. Also, AEPCO claims current operating practice at the division level for Class I railroads does not involve centralized materials yards, which would eliminate the need for 2 machine operators, 2 clerks, and 4 distribution truck drivers that defendants propose.[292]

The number of roadway machine operators must complement the number of roadmaster districts, and, as discussed above in our discussion of Roadmasters and Assistant Roadmasters, we accept defendants' roadmaster district quantity. Further, the rubber-tired backhoe and

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[287] AEPCO's Rebuttal III-D-136-137.

[288] Id. III-D-129.

[289] AEPCO's Rebuttal III-D-136-137.

[290] AEPCO's Rebuttal III-D-131.

[291] BNSF/UP's Reply III.D-99-100.

[292] AEPCO's Rebuttal III-D-137-139.

speedswing operators are not redundant. Primarily, a rubber-tired backhoe is for digging, and a speedswing is for moving rails. While a rubber-tired backhoe and a speedswing can be rigged to perform some similar tasks, their overall design is different enough that it is inefficient for a railroad the size of the ANR to try to use only 1 type of machine. Therefore, we will accept defendants' number of roadway machine operators. However, as 2 of the roadway machine operators are located at the material yards and those material yards are not accepted as part of the ANR configuration, 2 roadway machine operators, 2 clerks, and 4 distribution truck drivers will be removed from the total personnel count.

iv. Welder/Helper/Grinders

Parties disagree on the number of crew needed per roadmaster district. AEPCO uses 32 welder/helper/grinder employees, while defendants use 80.[293] AEPCO argues it would be sufficient to have 1 welding crew (composed of a welder and a helper) per district, whereas defendants assert that ANR's more than 5,200 insulated joints will need to be changed at a rate much higher than that which AEPCO anticipates. The parties' experts provide different estimates of the life span of an insulated joint: defendants' expert estimates a useful life of 100 million gross tons, whereas AEPCO relies on manufacturers' claims of a useful life of 300 million gross tons, and a recent trade publication placing a useful life at as high as 800 million gross tons.[294]

Defendants fail to discredit AEPCO's evidence and do not provide a convincing argument for doubling the number of welding crews per roadmaster district, so we will accept AEPCO's ratio of welder/helper/grinder crews per roadmaster district: 1 welder and 1 welder/helper/grinder crew per roadmaster district. Because we have accepted 20 roadmaster districts, the ANR would need 20 welders and 20 welders/helpers/grinders, totaling 40 employees.

v. Rail Lubrication Repairmen

On opening and on reply, the parties disagree on whether the ANR should use rail lubrication repairmen. AEPCO argues that having 5 employees dedicated to inspecting and repairing the ANR's 220 rail lubricators on a regular basis would be more efficient than defendants' plan to use track crews to do this work because it would allow track crews to perform other more labor intensive work.[295] Defendants claim that AEPCO's plan is not economically justified and that resources would be better used by having track crews do the rail lubrication inspection and repairs.[296]

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[293] Id. III-D-131.

[294] Id. III-D-139-140; BNSF/UP's Reply III.D-95 n.111.

[295] AEPCO's Rebuttal III-D-140-141.

[296] See BNSF/UP's Reply III.D-99.

On rebuttal, AEPCO agrees that defendants' track crews would be capable of performing this duty, and thus it would be redundant to assign additional personnel for this task. Because we accept defendants' track crew and foreman counts, no rail lubrication repairmen will be added.

vi. Ditching Crews

Like the rail lubrication repairman position and for similar reasons, the parties disagree on whether ditching crews would be needed for the ANR. AEPCO provides for 8 ditching crew employees, stating that it would be more efficient to have ditching crews dedicated to ditching work rather than having track crews do such work.[297] Defendants again claim that AEPCO's plan is not economically justified and resources would be better used by having track crews do the ditching.[298]

Because we have accepted almost all of defendants' field employee numbers, it follows that their proposed ANR crews would be robust enough to handle light ditching duties without assigning additional personnel for this task. Therefore, we will not add ditching crew employees.

vii. Roadway Equipment Mechanics

Parties agree on the ratio of roadway mechanics per roadmaster district: 1 mechanic for every 2 districts.[299] Nonetheless, because the parties provide a different number of roadmaster districts, there is a disparity. AEPCO provides 8 roadway equipment mechanics (for 16 roadmaster districts), while defendants provide 10 roadway equipment mechanics (for 20 roadmaster districts).[300] We have accepted defendants' number of 20 roadmaster districts, and will use the ratio of 1 mechanic for every 2 roadmaster districts, resulting in 10 roadway equipment mechanics for the ANR.

viii. Smoothing Crews

The parties disagree on the number of smoothing crews;[301] defendants allocate 1 smoothing gang for each roadmaster district, whereas AEPCO proposes 2 or 3 roadmasters sharing 1 smoothing gang.[302] As a result, defendants allocate 60 smoothing crew employees for

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[297] AEPCO's Rebuttal III-D-141-142.

[298] See BNSF/UP's Reply III.D-99.

[299] AEPCO's Rebuttal III-D-142.

[300] Id.

[301] Smoothing crews are also known as surfacing gangs. They adjust the track elevations to ensure that the grade is on a smooth, continuous alignment. These crews can smooth or surface over extended, contiguous length of track (miles) or over specific small areas (feet) along the track where the grade varies over the short distance due to various causes.

[302] Id. III-D-142-143.

the ANR (20 foremen + 40 crew members), while AEPCO has 18 smoothing crew employees (6 foremen + 12 crew members). Defendants argue AEPCO's smoothing plan is not feasible because under the ANR's traffic conditions, a smoothing gang would only be on track and productive for about 2 hours a day.[303] AEPCO argues defendants' calculations assume a worst-case-scenario in scheduling smoothing work all the time, whereas the ANR could bunch trains to allow for larger work windows, and could work uninterrupted where there is double track.[304]

We accept AEPCO's argument that defendants are using a worst-case scenario to address the ANR's maintenance needs in terms of smoothing operations. It is unlikely that the ANR would require continuous smoothing, let alone continuous smoothing within 165-mile track lengths. Smoothing is typically an operation that occurs at intervals throughout the year, and if the ANR needed additional labor, the robust track crew numbers accepted by us could provide that additional labor. Accordingly, we accept AEPCO's proposal to have 2 or 3 roadmasters share 1 smoothing gang; because we have accepted defendants' plan for 20 roadmasters, the minimum number of smoothing crews is 7 sets of 2-person smoothing crews, which we will accept. Accordingly, the ANR will need 7 smoothing crew foremen, which we will also accept.

[303] BNSF/UP's Reply III.D-97-99.

[304] AEPCO's Rebuttal III-D-142-143.

Table A-7

Track Maintenance Employees			
	AEPCO	**BNSF/UP**	**STB**
Position			
Track Engineer	1	1	1
Manager of Welding & Grinding	1	1	1
Supervisor of Work Equipment	1	1	1
Administrative Assistant/Clerk	1	1	1
Asst. Track Engineer (Field Production)	5	5	5
Roadmaster	16	20	20
Assistant Roadmaster	26	40	26
Track Crew Foremen	37	60	60
Track Crew Member	111	180	180
Roadway Machine Operator	22	50	50
Roadway Machine Operator Material Mgt.	0	2	0
Truck Driver	0	4	0
Material Management Clerk	0	2	0
Welders/Helpers/Grinder	32	80	40
Rail Lubricator Repairman	5	0	0
Roadway Equipment Mechanic	8	10	10
Ditching Crew Foreman	4	0	0
Ditching Crew Member	4	0	0
Smoothing Crew Foreman	6	20	7
Smoothing Crew Member	12	40	14
TOTAL	**292**	**517**	**416**

b. Signals & Communication Department

i. Signals System Maintenance

AEPCO provides for a field signals system maintenance staff of 47, along with 6 signal inspectors.[305] AEPCO relies on an industry consultant for those figures.[306] Defendants argue that more signals system maintenance staff would be necessary to reduce the workload to an acceptable level of Association of American Railroad's signal units per maintainer. They further argue that AEPCO fails to account for a skilled set of employees to handle electronic maintenance of signals. Defendants add 5 signal technicians for that task, along with 51 signals

[305] Id. III-D-144-145.

[306] Id.

system maintenance staff and 9 signal inspectors.[307] AEPCO argues, based on its expert consultant's opinion, that signal technician employees would be unnecessary because that is a job title passed down as the result of mergers and the job functions have largely been eliminated. AEPCO argues that signal maintainers are capable of doing a signal technician's job.[308]

On opening, AEPCO allows for 1,600 signal units per 1 signal maintainer.[309] Yet, on rebuttal, AEPCO changes that ratio to 1,375 signal units for every 1 signal maintainer. AEPCO proposes this new ratio based on further consultation with an expert. AEPCO reports on rebuttal that "a good rule of thumb for Signal Maintainer requirements is the mid-range between 1,250 AAR signal units per Maintainer (the number proposed by defendants) and 1,500 AAR signal units per Maintainer."[310] AEPCO, without explanation, uses the average of 1,250 and 1,500 AAR signal units: 1,375 signal units. Defendants provide better evidence based on past case precedent. Included in defendants' analysis are considerations of the time crews will spend on signal maintenance beyond monthly testing.[311] As a result, we will accept defendants' ratio of 1 signal maintainer for every 1,250 signal units. Based on our acceptance of AEPCO's revised signal count of 64,804 signal units, we find the ANR would require 52 signal maintainers. We also accept defendants' signal inspector number of 9. We also accept defendants' signal technicians as that job has been accepted by the Board in prior rate cases as a necessary position.

ii. Communications System Maintenance

On rebuttal, the parties agree this task should be performed by the ANR, and they agree on staffing.[312]

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[307] BNSF/UP's Reply III.D-103-104.

[308] AEPCO's Rebuttal III-D-145-146.

[309] AEPCO's Opening III-D-72-73.

[310] AEPCO's Rebuttal III-D-145.

[311] See BNSF/UP's Reply III.D-103-104.

[312] Id. III.D-105-106; AEPCO's Rebuttal III-D-147.

Table A-8

Signals and Communications Maintenance Employees			
	AEPCO	**BNSF/UP**	**STB**
Signals & Communications Department			
Communications & Signals Engineer	1	1	1
Asst. Engineer - Signals	1	1	1
Asst. Engineer - Communications	1	1	1
Asst. Engineer C&S - PTC	1	1	1
Administrative Assistant/Clerk	1	1	1
C&S Supervisors	5	5	5
Signal Inspectors	6	9	9
Signal Maintainers	47	51	52
Signal Technicians	0	5	5
CTC Dispatch Center Technicians	5	5	5
Communications Technicians	5	10[†]	5
Communications Maintainers	5	10[†]	5
Communications Technicians - Radio & EOTD	6	6	6
TOTAL	**84**	**106**	**97**

[†] We note a discrepancy between the figures in defendants' worksheets and defendants' reply narrative. Generally, the narrative controls in this situation, but here because we have accepted AEPCO's evidence, correcting defendants' worksheets would have no impact on the disposition of the case. Further, this will minimize the adjustments to defendants' calculations.

c. Bridge & Building Department

i. Multi-Skilled Tradesman

On opening, AEPCO does not provide for multi-skilled building tradesmen. Nonetheless, the parties agree that 5 building crews would be necessary. Defendants include 3 crew members plus a foreman, whereas AEPCO, on rebuttal, proposes crews made up of 1 foreman and 2 crew members, resulting in a 5 employee disparity.[313] AEPCO argues that defendants provide no justification for why the ANR would need 1 additional crew member, and AEPCO relies on its expert consultant's opinion about the necessary crew size.[314]

On rebuttal, AEPCO concedes that these types of employees are necessary, yet failed to include them on opening and has therefore failed to make its case. We accept defendants' quantity of multi-skilled laborers.

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[313] AEPCO's Rebuttal III-D-147– III-D-148.

[314] Id.

Table A-9

Bridge and Building Maintenance Employees			
	AEPCO	**BNSF/UP**	**STB**
Bridge & Building Department			
Bridge Engineer	1	1	1
Building Engineer	1	1	1
Administrative Assistant/Clerk	1	1	1
B&B Supervisor	2	2	2
B&B Inspector	2	2	2
Building Maintenance Foreman	5	5	5
Multi-Skilled Building Tradesmen	10	15	15
B&B Machine Operator	2	2	2
B&B Foreman	4	4	4
B&B Carpenter/Welder/Helper	12	12	12
TOTAL	**40**	**45**	**45**

2. Non-Program Maintenance-of-Way Work Performed by Contractors

a. Snow Removal

The parties disagree on the cost of snow removal. Snow removal costs are difficult to estimate because snowfall is unpredictable. Both parties conclude that it is most efficient to use a contractor for snow removal.[315] However, AEPCO provides for 1,000 hours (125 8-hour days) of annual snow removal at a cost of $50,000,[316] while defendants provide for 3,000 hours (375 8-hour days) of annual snow removal at a cost of $150,000.[317] AEPCO's estimate of 1,000 hours is not sufficient, considering that the ANR's system would run through Montana, Wyoming, and Colorado, which receive large amounts of snow. In contrast, defendants' snow removal plan would be sufficient to handle the expected snowfall in these states. As a result, we will accept defendants' snow removal cost of $150,000.

b. Storm Debris Removal and Washouts

The parties disagree on storm debris removal and washout costs. AEPCO estimates it would cost $50,000 annually for storm debris removal, which would allow for 400 hours, i.e., 50 8-hour days, at $125 per hour for a contract machine, such as a rubber-tired backhoe or small excavator and its operator.[318] Alternatively, if a crane were required to remove debris, a $50,000

[315] BNSF/UP's Reply III.D-109-110; AEPCO's Rebuttal III-D-149-150.

[316] AEPCO's Rebuttal III-D-149-150.

[317] BNSF/UP's Reply III.D-109-110; AEPCO's Rebuttal III-D-150.

[318] AEPCO's Rebuttal III-D-151.

allotment would allow for 12.5 8-hour days at $500 per hour for the machine and its operator.[319] AEPCO allocates $290,000 for washouts, which would allow for 2 contract machines plus operators for 60 8-hour days at $200 per hour, working with a supervisor for the same period at $100 per hour, plus an allowance of $50,000 for materials and rock/ballasting.[320]

Defendants argue that AEPCO fails to recognize the extent to which arid territory in New Mexico and Arizona is subject to flood-borne storm debris from flash floods.[321] Defendants state that UP retains a contractor for $250,000 annually to respond to storm debris removal and 1 for $750,000 for washouts around bridges between El Paso and Tucson.[322]

The ANR would traverse heavily forested areas that experience substantial storm activity during the change of seasons. Storm activity has the potential to cause substantial ground erosion and tree damage, both of which could have a catastrophic effect on the ANR track. Due to the ANR's 2,235 track miles, we find that AEPCO's $50,000 annual allotment for storm debris removal and $290,000 for washouts would be insufficient. Further, we find UP's actual maintenance costs to be convincing evidence. Accordingly, we accept defendants' allotment of $250,000 for storm debris removal and $750,000 for washouts.

c. Environmental Cleanup

The parties initially dispute the cost of environmental cleanup, but on rebuttal AEPCO accepts defendants' submission. AEPCO makes a minor mathematical correction, which we accept, resulting in an annual environmental cleanup cost of $114,097.[323]

3. Equipment

The parties largely agree on the MOW equipment.[324] However, to the extent that they disagree on track equipment, track vehicles, communications and signal vehicles, and bridge vehicles, we will accept defendants' equipment and vehicle estimates. As discussed earlier throughout the MOW section of this appendix, we accept defendants' staff assignment corresponding to the equipment at issue. To ensure that the equipment quantities match the appropriate personnel, we will accept defendants' figures here.

4. Incremental Cost Additive Associated with the Absence of Maintenance Roads

Defendants argue that AEPCO's failure to include formal maintenance roads (roads specifically built for maintenance) when building the ANR system will hinder maintenance,

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[319] Id.

[320] Id.

[321] BNSF/UP's Reply III.D-110.

[322] Id.

[323] AEPCO's Rebuttal III-D-151.

[324] Id. III-D-152.

leading to the need for a larger maintenance staff and more equipment. As such, defendants add a premium of $36.7 million annually to the MOW costs to reflect the cost of not having formal maintenance roads.[325]

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 AEP Tex. 2007, slip op. at 80. AEPCO correctly argues that the ANR would build maintenance and access roads over time, and collaterally during rail construction; i.e., roads built for other purposes would be used as maintenance roads.[326] Further, the area that the ANR's lines would be placed in currently has many adjacent public roads with associated crossings, providing access to rail lines. As a result, defendants' assertion that normal access would not be possible without budgeting for formal access roads is without merit.

Moreover, defendants do not support their cost additive here with calculations or any in-depth analysis of the access points made available already through roadbed construction and public roads. In fact, defendants fail to provide a single example of where access will be inadequate. Defendants also do not adequately support the specific premium it has added. Accordingly, we will not add defendants' $36.7 million incremental cost additive associated with the absence of maintenance roads.

5. Contract Maintenance (Capitalized)

AEPCO lists contract maintenance costs for surfacing, rail grinding, crossing repaving, and bridge substructure and superstructure repair as capitalized expenses rather than annual operating expenses.[327] Defendants do not object to this; therefore, the Board will accept AEPCO's accounting here. Nonetheless, this type of accounting is a departure from the Board's precedent. For example, in Western Fuels Ass'n 2007, slip op. at 71, the Board stated that treating grinding as a capital cost is unnecessarily complicated and that it makes more sense to calculate grinding as an annual expense, so that inflation is properly accounted for. Moreover, because the ANR would have to perform these maintenance tasks with regularity throughout the DCF period, it is more appropriate to consider it as an annual expense. See id., AEP Tex. 2007, slip op. at 70 (accepting surfacing costs as an annual operating expense and not a capitalized expense). The Board is accepting AEPCO's evidence here only because defendants have not offered any objection or competing evidence.

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[325] BNSF/UP's Reply III.D-111-121.

[326] The costs associated with building these roads are part of the expenses scattered throughout the construction and maintenance of the ANR. For example, the Board recognizes that things such as roadbed preparation expenses and emergency funds for washouts take into account creating access where there is none.

[327] AEPCO's Opening III-D-93-94.

G. Leased Facilities

On opening, AEPCO states that the ANR would have no leased track facilities.[328] AEPCO also states that it would share a joint facility with the MRL, and the costs for its operations over the MRL trackage are calculated based on annual joint facility payments that BNSF incurs under its agreement with the MRL.[329] On reply, defendants argue that the payment on which AEPCO bases its cost estimate does not represent BNSF's total payment to the MRL, and that AEPCO fails to account for all of the costs associated with the ANR traffic.[330] AEPCO does not account for payments to the MRL for use of the MRL's Laurel Yard.[331] Laurel Yard is outside the scope of ANR's system, and AEPCO argues that the costs associated with that yard do not apply to the ANR.[332]

As discussed in the body of this decision in the System Configuration section, we accept AEPCO's system configuration. The reasonability of a SARR's configuration is determined on a case-by-case basis. We judge, *inter alia*, whether the system is logical and intuitive. If a SARR defies logic in its construction, for example, to avoid major expenses or investments, we would view that submission with disfavor. Here, however, it is logical for AEPCO to exclude the Laurel Yard from its system. The Laurel Yard is west of Mossmain Junction, from which AEPCO constructs a build-out to Signal Peak. Defendants have not challenged the location of this interchange. Issue traffic travels from Signal Peak, south to Mossmain Junction, and then east, never crossing the Laurel Yard. This reasonable configuration obviates the need for the inclusion of costs at Laurel Yard as calculated by defendants. As such, we will accept AEPCO's calculation for leased facilities.

H. Insurance

To calculate insurance premiums, the parties compare premiums of existing railroads. However, the parties disagree about which set of railroads best resembles the ANR. On opening, AEPCO averages BNSF's 2007 and 2008 insurance ratios, resulting in an average of 1.73% of operating expenses.[333] On reply, defendants argue BNSF has an advantage over a smaller carrier of the ANR's size; i.e., BNSF is able to achieve insurance economies of scale (and thus obtain lower rates).[334] Therefore, defendants adjust the ANR's insurance rate to 4.9% of the ANR's operating expenses based on the average of premiums paid by KCS, CP (SOO), Genesee &

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[328] AEPCO's Opening III-D-107.

[329] Id.

[330] BNSF/UP's Reply III.D-142.

[331] Id.

[332] AEPCO's Rebuttal III-D-156-157.

[333] AEPCO's Opening III-D-108.

[334] BNSF/UP's Reply III.D-144.

Wyoming (G&W), and RailAmerica.[335] However, AEPCO argues that G&W and RailAmerica are inapposite because those entities are made up of scores of short line railroads, each with unique insurance considerations and revenues that are much lower than those projected for the ANR.[336] While AEPCO agrees that the ANR is comparable to KCS and CP (SOO), AEPCO argues that the ANR's revenues and operations are also similar to CN (GTW), which – unlike the G&W and RailAmerica – is a Class I Railroad.[337] Those three Class I railroads (KCS, CP (SOO), and CN (GTW)) pay an average premium of 3.66% of operating expenses.[338]

In their closing brief, defendants claim that AEPCO "submits new evidence" on rebuttal regarding costs for a different set of smaller railroads than defendants used in their reply.

On rebuttal, a shipper can provide corrective evidence if it can show that the railroad's reply evidence is unsupported, infeasible, or unrealistic. Duke/NS, 7 S.T.B. at 101. Here, AEPCO's rebuttal evidence responds directly to the method of calculating an insurance premium that defendants use in their reply. Further, AEPCO demonstrates that it is unrealistic to use G&W and RailAmerica as comparable carriers as those entities have extremely different characteristics than the ANR. AEPCO's evidence on rebuttal is not prohibited new evidence; rather, it is corrective evidence that substitutes CN (GTW) to maintain a comparison group. Because CN (GTW) has similar revenues to the ANR and its characteristics are more similar than G&W or RailAmerica to the ANR, CN (GTW) is a fair substitute. Accordingly, we will set the ANR's insurance premiums at 3.66% of operating expenses.

I. Ad Valorem Tax

On opening, AEPCO calculates ad valorem taxes using the amount of tax that BNSF and UP paid per route mile for each carrier's route miles in the states in which the ANR would operate. Those tax amounts were then applied to the ANR's route miles in each of these jurisdictions.[339] On reply, defendants claim that AEPCO fails to account for the ANR's tax liability in western states "where a key driver is capitalized net railway operating income (NROI)."[340] Defendants allege that taxable values are determined predominantly by capitalized NROI. Defendants create a model to establish its proposed ad valorem tax costs.[341]

Defendants have failed to provide evidence beyond their own unsubstantiated testimony showing that taxable values are driven by capitalized NROI. AEPCO, on the other hand,

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[335] Id.

[336] AEPCO's Rebuttal III-D-157-159.

[337] Id.

[338] Id.

[339] AEPCO's Opening III-D-108.

[340] BNSF/UP's Reply III.D-144-145.

[341] Id.

provides evidence, such as copies of tax determinants from each state in which the ANR operates, that demonstrates that operating income is just one factor taken into account during a tax assessment. We will accept AEPCO's calculation of ad valorem taxes for the ANR.

J. Other

a. Texico Train Expense Additive

On opening, AEPCO develops a cost additive based on URCS 2008 costs to account for the additional costs associated with swapping blocks of intermodal cars among certain trains at the ANR's Texico Yard.[342] Defendants do not protest this issue, stating that the "limited dollar amounts do not warrant rigorous scrutiny."[343] Yet, defendants also claim that their reply evidence more appropriately models the operations that would be required at the Texico Yard.[344] On rebuttal, AEPCO defends its costs in this yard and updates its figures to reflect BNSF's 2009 URCS data.[345]

Both parties agree that there is a cost incurred for switching and blocking operations at the ANR's Texico Yard. But defendants offer no substantial challenge to the costs submitted by AEPCO. Accordingly, we will accept AEPCO's costs as the better evidence of record. We will also use AEPCO's calculation, as updated on rebuttal, of the Texico Yard train fuel additive because the Board is using AEPCO's configuration.

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[342] AEPCO's Opening III-D-111.

[343] BNSF/UP's Reply III.D-147.

[344] Id.

[345] AEPCO's Rebuttal III-D-164-165.

APPENDIX B—ANR ROAD PROPERTY INVESTMENT

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

Table B-1

ANR Construction Costs			
	AEPCO	**BNSF/UP**	**STB**
Land	$217,127,324	$217,127,324	$217,127,324
Roadbed Preparation	$1,274,203,409	$2,088,221,496	$1,279,698,628
Track	$2,771,918,869	$2,976,497,975	$2,798,024,510
Tunnels	$54,456,954	$74,178,992	$74,179,521
Bridges	$736,200,000	$736,217,899	$736,217,899
Signals & Communications	$305,786,000	$383,888,175	$372,814,461
Building & Facilities	$175,652,366	$225,372,345	$190,832,590
Public Improvements	$59,753,863	$59,882,262	$59,738,638
Mobilization	$58,329,605	$123,035,566	$65,123,562
Engineering	$537,797,146	$649,816,876	$551,150,625
Contingencies	$619,122,554	$748,814,852	$634,490,776
TOTAL	**$6,810,348,090**	**$8,283,053,762**	**$6,979,398,533**

On reply, defendants argue that AEPCO made an error in its calculation of the location factor,[346] which is used to account for location-related price differences in the costs of construction. AEPCO agrees on rebuttal and recalculates its location factor.[347] We use this agreed-upon location factor, adjusted for the route miles we have accepted.

A. Land

The parties agree on AEPCO's cost of acquiring land.[348] The only dispute between the parties regarding land involves AEPCO's treatment of land values in the DCF model, which will be addressed in the DCF section, Appendix C, Part B, Inflation of Land Values. **Table B-2** summarizes the acreage used by the parties and our findings, and **Table B-3** summarizes the costs similarly.

[346] BNSF/UP's Reply III.F-3.

[347] AEPCO's Rebuttal III-F-4.

[348] Id. III-F-3.

Table B-2

ANR Real Estate Acreage			
	AEPCO	**BNSF/UP**	**STB**
ROW	25,868	25,868	25,868
Easements	0	0	0
Yards	716	716	716
Microwave Tower Sites	147	147	147
TOTAL	**26,731**	**26,731**	**26,731**

Table B-3

ANR Real Estate Costs			
	AEPCO	**BNSF/UP**	**STB**
ROW	$213,278,042	$213,278,042	$213,278,042
Easements	$0	$0	$0
Yards	$2,795,982	$2,795,982	$2,795,982
Microwave Tower Sites	$1,053,300	$1,053,300	$1,053,300
TOTAL	**$217,127,324**	**$217,127,324**	**$217,127,324**

B. Roadbed Preparation

Table B-4

ANR Roadbed Preparation Costs			
	AEPCO	**BNSF/UP**	**STB**
Clearing	$6,085,331	$15,782,315	$6,095,492
Grubbing	$1,808,522	$2,518,605	$1,809,959
Earthwork	$1,118,757,744	$1,705,170,117	$1,123,815,237
Undercutting	$0	$52,803,761	$0
El Paso Trainway	$4,917,650	$14,593,759	$4,917,650
Sand and Drainage Berms	$23,046,716	$45,593,558	$23,046,716
Lateral Drainage	$753,298	$360,074	$755,425
Culverts	$53,107,557	$61,282,405	$53,107,557
Retaining Walls	$10,770,297	$11,156,430	$10,770,297
Rip Rap	$13,508,868	$13,424,453	$13,768,491
Relocation of Utilities	$5,540,004	$5,540,004	$5,574,420
Placing Topsoil/Seeding	$5,742,079	$5,742,079	$5,824,889
Detour Road Surfacing	$7,873,320	$7,872,492	$7,873,320
Environmental Compliance	$2,876,225	$2,876,225	$2,917,710
Land for Waste Quantities	$1,568,424	$1,713,514	$1,574,092

Tunnel Daylighting	$17,847,372	$0	$17,847,372
Over Excavate Rock	$0	$67,438,389	$0
Fine Grading	$0	$74,353,317	$0
Total	**$1,274,203,409**	**$2,088,221,496**	**$1,279,698,628**

Defendants claim that two errors caused AEPCO to understate its overall roadbed preparation costs. First, defendants argue that AEPCO erred in its calculation of the location factor. On rebuttal, AEPCO agrees with defendants and modifies its calculation, but adjusts the location factor to reflect the number of route miles proposed by AEPCO in the ANR configuration.[349] Because we accept AEPCO's configuration of the ANR system, we will accept the location factor as calculated based on its route miles.

Second, defendants claim that AEPCO systemically overstates the availability of goods and services, and understates costs.[350] AEPCO and defendants argue the merits of RSMeans (Means)[351] costs versus costs taken from actual projects.[352] We will address the unit costs for each item in turn, and choose the best-supported costs.

1. Clearing, Grubbing and Stripping

a. Clearing and Grubbing

The parties agree on clearing and grubbing quantities, except for differences resulting from their respective mileage proposals.[353] Because we accept AEPCO's ANR system configuration, we also accept its clearing and grubbing quantities.

AEPCO submits separate unit costs for clearing and grubbing,[354] using Means to determine its unit costs.[355] The parties agree on unit costs for grubbing, but not for brush clearing.[356] Defendants argue that AEPCO understated costs for clearing because the equipment assumed by Means can clear land at a much lower rate than AEPCO claims.[357] Defendants

[349] Id. Rebuttal III-F-4.

[350] BNSF/UP's Reply III.F-4.

[351] Means is a construction cost publishing and consulting company which annually publishes current, comprehensive construction cost data. Among its many uses, the data is used to estimate construction costs.

[352] BNSF/UP's Reply III.F-5-6; AEPCO's Rebuttal III-F-4-6.

[353] BNSF/UP's Reply III.F-8; AEPCO's Rebuttal III-F-9.

[354] AEPCO's Opening III-F-14-15.

[355] AEPCO's Opening III-F-14-15.

[356] BNSF/UP's Reply III.F-8-9; AEPCO's Rebuttal III-F-9.

[357] BNSF/UP's Reply III.F-8.

propose a clearing rate of 4 acres per day.[358] AEPCO replies that its unit cost is based on clearing 8 acres per day.[359] Defendants also argue that AEPCO did not account for the costs of hauling away materials left after clearing.[360] Defendants increase AEPCO's unit cost for clearing to include a cost for disposal of cleared material. However, defendants failed to include the pdf file they reference as supporting their adjustment to clearing unit costs.[361] Without supporting evidence, we cannot review defendants' proposed adjustment. Therefore, we accept AEPCO's unit costs for clearing as the best evidence of record. We use the agreed-upon grubbing unit costs.

b. Stripping

Stripping removes all vegetation, sod, topsoil and unsuitable material, including leaves, branches, and wood chips left over from clearing and grubbing activities. On opening, AEPCO notes that it has not included any stripping costs.[362] Defendants claim that, although the Board has previously rejected stripping costs, stripping is required because the roadbed would be built on an embankment.[363] Defendants therefore include stripping as part of their undercutting costs.[364] AEPCO argues that to the extent stripping would be necessary, costs are already reflected in its earthwork quantities, including any stripping necessary to build the embankment itself.[365] AEPCO cites PSCo/Xcel I, 7 S.T.B. at 671, where the Board found that stripping would duplicate waste costs. AEPCO also cites AEP Texas 2007, slip op. at 79. AEPCO claims that its assumption of 30% waste would cover any waste removal that would be necessary prior to building an embankment.[366]

Stripping costs have not been included in prior SAC cases. PSCo/Xcel I, 7 S.T.B. at 671. It is incumbent upon the proponent of a new cost to demonstrate that such a cost would need to be incurred by a SARR. Id. Defendants have failed to show that stripping would be needed in the areas that the ANR would traverse or that stripping costs were incurred during actual construction of the lines that would be replicated. Also, because the topsoil would be removed

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[358] Id. III.F-9.

[359] AEPCO's Rebuttal III-F-9.

[360] BNSF/UP's Reply III.F-9.

[361] In BNSF/UP's reply WP "Revised ANR GRADING.XLS," tab "IIIF Unit Costs" at C77.G77, defendants reference the missing pdf file. However, we did not find the file among the evidence submitted by defendants.

[362] AEPCO's Opening III-F-16.

[363] BNSF/UP's Reply III.F-9-10.

[364] Id. III.F-11.

[365] AEPCO's Rebuttal III-F-11.

[366] AEPCO's Rebuttal III-F-11.

during clearing and grubbing, there would be no need for a separate charge for stripping. To the contrary, including such an additional cost would result in a double count. The additional work of stripping that defendants claim is needed for building an embankment would be included in clearing and grubbing activities, and would be done regardless of the type of grading, embankment or otherwise. Therefore, we accept AEPCO's stripping costs.

2. Earthwork

a. Specifications

AEPCO states on opening that it has not included a separate cost for undercutting and claims that the Board has consistently determined that an undercutting cost is not necessary.[367] Defendants add costs for undercutting based on the Interstate Commerce Commission (ICC) Engineering Reports (Engrg Rpts),[368] because they claim undercutting would be necessary when constructing an embankment such as that proposed for the ANR.[369] AEPCO maintains on rebuttal that Board precedent rejects additional costs for this aspect of construction.[370] AEPCO claims that any undercutting needed is already accounted for as part of its excavation quantities.[371]

We agree with AEPCO that if undercutting were performed for construction of the lines to be replicated today, the undercutting would likely be considered part of excavation. To warrant a separate line item, the necessary undercutting would have to be more extensive than what defendants have shown is necessary. Undercutting that would require a separate line item would, for example, require extra equipment or involve rock removal. Although defendants have shown that some undercutting was done on portions of the lines that the ANR would replicate, defendants have not submitted sufficient proof to establish a need for undercutting across the entire ANR system. Just as we concluded in Western Fuels Ass'n 2007, slip op. at 83, the lack of information presented here concerning the nature of the undercutting makes it impossible to establish how much should be assigned to the lines that would be replicated. Because AEPCO has adequately supported its position and defendants have failed to discredit it, we do not accept defendants' proposed undercutting costs.

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[367] AEPCO's Opening III-F-16 (citing W. Fuels Ass'n 2007, slip op. at 83; AEP Tex. 2007, slip op. at 79; Duke/NS, 7 S.T.B. at 176; Carolina Power & Light Co., 7 S.T.B. at 313; Duke/CSXT, 7 S.T.B. at 479-80).

[368] 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.

[369] BNSF/UP's Reply III.F-11.

[370] AEPCO's Rebuttal III-F-11-12.

[371] Id. III-F-12-13.

The parties agree on specifications for side slopes and ditches,[372] and we use the agreed-upon costs.

AEPCO states that the ANR would use the track subgrade for construction site access roads.[373] Neither side included costs for construction site access roads, and defendants did not address construction site access roads in their narrative. We interpret this as an agreement not to include construction site access roads and will not include a cost for this item. This is consistent with past SAC cases, in which the cost of access roads was not included where such roads did not exist when the line that the SARR would replicate was originally built or where the incumbent carrier did not itself incur the costs of building such roads. See AEP Tex. 2007, slip op. at 80.

b. Common Earthwork Unit Costs

AEPCO's common earthwork excavation unit cost is based on an average of five BNSF railroad expansion projects on the Orin and Hereford Subdivisions.[374] Defendants make three arguments as to why the expansion projects – which all involved the construction of additional track alongside existing track – cannot be used to develop unit costs for construction of a new roadbed.[375]

First, defendants argue that the preparatory steps of stripping and building an embankment have already been done prior to an expansion project.[376] AEPCO argues that such preparatory steps would have been done only to the extent necessary to construct the initial line, and the expansion project costs would therefore reflect the same costs as would be incurred building the ANR.[377] We agree with AEPCO's analysis.

Second, defendants claim that expansion projects use infrastructure from the original construction, which reduces the costs for mobilization.[378] AEPCO argues that because expansion projects were constructed concurrent with train operations on existing tracks, those operations limited the extent to which the projects could use existing infrastructure.[379] We agree with AEPCO that because the expansion projects took place during live operations, it is unlikely that existing infrastructure reduced costs.

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[372] BNSF/UP's Reply III.F-40; AEPCO's Rebuttal III-F-46.

[373] AEPCO's Opening III-F-48.

[374] AEPCO's Opening III-F-33.

[375] BNSF/UP's Reply III.F-20-21.

[376] Id. III.F-20-21.

[377] AEPCO's Rebuttal III-F-24.

[378] BNSF/UP's Reply III.F-21.

[379] APECO's Rebuttal III-F-25.

Third, defendants argue that expansion projects would incur lower planning costs, such as lower costs for locating staging areas.[380] However, as AEPCO argues,[381] these savings would factor into mobilization or engineering costs, not common earthwork costs.

Defendants claim that AEPCO's unit costs fail to account for regional price differences.[382] While AEPCO could have applied Means location factors to adjust the costs, doing so would have benefited AEPCO because it would have resulted in lower unit costs. AEPCO points out that defendants do not apply the location factors, despite their argument that AEPCO failed to account for regional price differences. We accept AEPCO's choice not to apply the location factors, because neither party applies the location factors to these unit costs.

AEPCO claims that there are seven errors in the alternative common earthwork costs proposed by defendants.[383] First, AEPCO notes that defendants did not use the Walker-to-Shawnee embankment costs in their calculations, stating only that the Walker-to-Shawnee costs were an anomaly.[384] We agree that this unexplained adjustment is unwarranted.

Second, AEPCO claims that defendants' adjustment to the costs of water for compaction shows that they misunderstand AEPCO's position on this issue.[385] We will not make this adjustment, as explained in Section B.9., Water for Compaction.

Third, AEPCO objects to defendants' addition of costs for over-excavation and disposal.[386] We conclude that AEPCO has accounted for all necessary over-excavation costs in Section B.2.i., Over-excavation, and adding costs here would be a double count.

Fourth, AEPCO claims that defendants have rejected AEPCO's 70% adjustment to embankment quantities, an adjustment that AEPCO uses to account for the use of 70% of excavated material as fill, while 30% of excavated material would be waste.[387] Defendants account for the difference by adjusting the unit cost everywhere except the Orin line. While AEPCO accounted for the difference by adjusting quantities and defendants accounted for the difference by adjusting unit costs, either method is acceptable because both lead to the same result. However, defendants did not make any adjustment at all to either their costs or quantities on the Orin line. Because defendants did not make the adjustment for the Orin Line, we accept AEPCO's calculations.

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[380] BNSF/UP's Reply III.F-21.

[381] AEPCO's Rebuttal III-F-26.

[382] BNSF/UP's Reply III.F-21-22.

[383] AEPCO's Rebuttal III-F-27-29.

[384] Id. III-F-28.

[385] Id.

[386] Id.

[387] Id. III-F-28-29.

Fifth, AEPCO takes issue with defendants' addition of a bulldozer for earthwork.[388] AEPCO has accounted for a bulldozer in its specified work crew, and the addition here would be unnecessary.

Sixth, AEPCO disputes defendants' change to the ratio of sheepsfoot rollers to steel wheel rollers, which are used for compaction.[389] Compaction equipment is included in common earthwork (and other earthworks unit costs as noted in following sections) because some excavated material would be used for the roadbed. We will accept defendants' modification of the ratio between sheepsfoot rollers and steel wheel rollers because defendants argue correctly that sheepsfoot rollers would be the primary equipment needed and steel wheel rollers would be used only to finish compaction work.[390]

Finally, AEPCO argues that defendants' shrinkage and swell additive is unsupported.[391] As discussed in Section B.2.h., Shrinkage and Swell, we will not accept this additive. In sum, we accept AEPCO's unit costs for common earthwork unit costs, with an adjustment of the ratio of compaction equipment.

c. Embankment and Borrow Unit Costs

We accept AEPCO's unit costs for embankment and borrow, which are based on a combination of actual construction costs and Means,[392] with an adjustment of the compaction equipment ratio. The issues the parties raise here are discussed elsewhere. The compaction equipment ratio is discussed in Section B.2.b., Common Earthwork Unit Costs. Shrink and swell adjustments are discussed in Section B.2.h., Shrinkage and Swell. AEPCO's use of BNSF expansion project unit costs is discussed in Section B.2.b., Common Earthwork Unit Costs.

d. Fine Grading Unit Costs

The parties acknowledge that AEPCO's common earthwork unit costs, which we accept, include fine grading costs.[393] No additional cost for fine grading would be necessary.

e. Loose Rock Excavation Unit Costs

AEPCO's opening loose rock excavation unit costs are from Means.[394] We do not accept defendants' shrinkage and swell adjustment to AEPCO's loose rock excavation unit cost, as discussed in Section B.2.h., Shrinkage and Swell.

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388 Id. III-F-29.

389 AEPCO's Rebuttal III-F-29.

390 BNSF/UP's Reply III.F-22-23.

391 AEPCO's Rebuttal III-F-29.

392 AEPCO's Opening III-F-37.

393 BNSF/UP's Reply III.F-26; AEPCO's Rebuttal III-F-37.

We accept AEPCO's specification of 42 CY haulers for loose rock excavation. Defendants argue that the load of these haulers would crush standard culverts that the haulers would travel over during their use in loose rock excavation work,[395] but they do not consider the load capacity of the culvert pipe, which, as argued by AEPCO,[396] is the determining characteristic of whether a culvert will fail.

We accept AEPCO's specification of a combination of 300- and 410-HP dozers. As defendants point out, AEPCO's narrative on dozer specifications conflicts with its workpapers.[397] AEPCO's narrative specifies only 300-HP dozers, which, due to their slower work rate, would result in a higher unit cost than the combination of 300- and 410-HP dozers specified in AEPCO's workpapers. Defendants specify 300-HP dozers only.[398] AEPCO states on rebuttal[399] that it intended the specification shown in its workpapers. Defendants were aware of the conflict and had the opportunity to address the less expensive specification in AEPCO's workpapers. We accept the combination 300- and 410-HP dozer specification because it is the least-costly alternative sufficient to meet the needs of the ANR and is capable of accomplishing the loose rock excavation that would be needed to construct the ANR.

Finally, we will apply the defendants' compaction equipment ratio adjustment discussed in Section B.2.b., Common Earthwork Unit Costs. We therefore accept AEPCO's unit cost for loose rock excavation with an adjustment for the compaction equipment ratio.

f. Solid Rock Excavation Unit Costs

AEPCO developed its opening solid rock excavation unit costs by using an average of the Means cost for blasting solid rock over 1,500 cubic yards and the cost for bulk drilling and blasting, then added costs to excavate the blasted rock, load it into trucks, haul it away, and dump it.[400] It also included the cost to spread the solid rock material and the average compaction cost for embankment that was used for the other earthwork categories.[401]

Defendants argue for adjustments to AEPCO's solid rock excavation unit costs. We will not accept defendants' shrinkage and swell adjustment to AEPCO's solid rock excavation unit

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(. . . continued)

[394] AEPCO's Opening III-F-36.

[395] BNSF/UP's Reply III.F-23-24.

[396] AEPCO's Rebuttal III-F-32.

[397] BNSF/UP's Reply III.F-24.

[398] Id.

[399] AEPCO's Rebuttal III-F-33.

[400] AEPCO's Opening III-F-36-37.

[401] Id. III-F-37.

cost, as discussed in Section B.2.h., Shrinkage and Swell**.** We accept AEPCO's specification of 42 CY haulers, as discussed above under loose rock excavation unit costs.

We will not apply defendants' adjustment to the production rate for handling boulders.[402] The Board has previously rejected such costs. W. Fuels Ass'n 2007, slip op. at 87; Otter Tail Power Co., slip op. at D-13; PSCo/Xcel I, 7 S.T.B. at 678. Defendants do not persuade us to do otherwise here. As AEPCO argues,[403] properly performed blasting reduces rocks to a size that could be removed under the production rate it specifies. We accept AEPCO's unit cost for solid rock excavation with an adjustment for the compaction equipment ratio, as discussed in Section B.2.b., Common Earthwork Unit Costs.

g. Earthwork Quantities

The parties agree on the methodology for establishing per-mile quantities for earthwork. The parties differ on route miles and side track miles. We accept the agreed-upon per-mile quantities and use AEPCO's total quantities because we use the ANR system configuration.[404]

On opening, AEPCO proposes 15-foot track centers throughout the ANR.[405] The parties differ on whether tracks with 25-foot centers would be necessary in certain locations.[406] Defendants did not show that the 15-foot track centers submitted by AEPCO would not be feasible, and AEPCO's evidence is well-supported. We accept AEPCO's track spacing.

The parties agree to a grading quantity of 1-foot fill over the yards.[407] On rebuttal, AEPCO made changes based on defendants' proposed modification to yards.[408] We accept AEPCO's revised yard earthwork quantities.

On opening, AEPCO included the costs to expose Tunnel No. 2 near Guernsey to daylight. Instead of adding those quantities and costs to specific excavation categories, AEPCO submitted a total cost for tunnel daylighting, which was based on documents produced by BNSF and indexed to 2009.[409] However, AEPCO's opening costs did not include the cost for the initial excavation of the tunnel. On rebuttal, AEPCO added the cost of the initial excavation to its tunnel daylighting costs in response to defendants' reply argument that it had excluded that

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[402] BNSF/UP's Reply III.F-24-25.

[403] AEPCO's Rebuttal III-F-34-35.

[404] BNSF/UP's Reply III.F-14; AEPCO's Rebuttal III-F-16.

[405] AEPCO's Opening III-F-19.

[406] BNSF/UP's Reply III.F-14-16; AEPCO's Rebuttal III-F-16.

[407] BNSF/UP state that they disagree with the assumption but accept it for the purposes of this proceeding. BNSF/UP's Reply III.F-16.

[408] AEPCO's Rebuttal III-F-17.

[409] AEPCO's Opening III-F-28.

excavation.[410] AEPCO added the costs for these excavation quantities to the total daylighting costs, although defendants included the costs with solid rock earthwork costs.[411] AEPCO notes that, despite defendants' acceptance of AEPCO's opening daylighting costs, defendants failed to include this cost on reply.[412] AEPCO continues to include the opening daylighting costs on rebuttal. We accept AEPCO's costs for the daylighting and excavation of Tunnel No. 2 because it best reflects the agreement the parties reached in their narratives. We note that there is no duplication of the excavation costs because we have not included the excavation costs added by defendants.

We address the El Paso Trainway – which is a partially submerged, half-mile long stretch of UP's main line that runs under a portion of downtown El Paso – under the Earthwork Quantities heading because that is where the parties discuss it, but there is no earthwork quantity issue here. The issue is the total costs to build the trainway. While AEPCO and defendants agree on the total costs to build the El Paso Trainway,[413] AEPCO argues that only one-third of those costs should be applied here because the trainway was built through a public-private partnership, and UP's predecessor bore only one-third of the costs of building the trainway.[414] Because the incumbent railroad did not incur the full costs of building the trainway, we accept AEPCO's costs allocation.[415]

AEPCO argues that defendants failed to produce evidence relating to quantities for sand and drainage berms.[416] However, AEPCO did not file a motion to compel discovery, and we therefore cannot evaluate its claim. AEPCO uses the total costs from Arizona Electric Power Cooperative 2002 and indexes it to the correct year, rather than using a quantity and unit cost to calculate the total costs. Defendants object to this method and submit a quantity and a unit cost.[417] We generally prefer that parties submit quantities and unit costs rather than total costs. However, as AEPCO argues, defendants' quantities should be classified as common excavation[418] rather than as borrow. It would not be necessary to bring in borrow for sand and drainage berms when 30% of the excavation would be waste. Excess excavated materials would be used to build the ANR's berms. While AEPCO's evidence is not ideal, we accept it because defendants misclassify these quantities as borrow rather than waste, and this misclassification

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[410] AEPCO's Rebuttal III-F-17-18.

[411] Id. III-F-17.

[412] Id. III-F-17-18.

[413] BNSF/UP's Reply III.F-17; AEPCO's Rebuttal III-F-18

[414] AEPCO's Opening III-F-28-29; AEPCO's Opening WP "ANR Grading.xls", tab "El Paso Trainway" & Ex. III-F-11.

[415] AEPCO's Opening WP "El Paso Trainway and Berms.pdf."

[416] AEPCO's Rebuttal III-F-19.

[417] BNSF/UP's Reply III.F-18.

[418] AEPCO's Rebuttal III-F-20.

results in excess costs because using borrow is more expensive than waste. AEPCO's evidence is therefore the best available evidence.

h. Shrinkage and Swell

Defendants argue that AEPCO failed to account for shrinkage and swell,[419] which are changes in the volume and density of earth during earthwork. Defendants therefore make adjustments to AEPCO's earthwork unit costs to account for these changes.[420] However, defendants' adjustments are unnecessary because Means costs are based on the specific type of earthwork, thereby accounting for shrinkage and swell associated with that use. Moreover, defendants failed to provide workpapers with the source of the percentages used to adjust the unit cost. We therefore cannot evaluate their proposed adjustments and will not accept them.

i. Over-excavation

AEPCO does not address over-excavation on opening. Defendants claim that modern roadbed construction requires over-excavation when solid rock is found at subgrade levels in cuts, and thus defendants add costs for over-excavation, which AEPCO did not include on opening.[421] AEPCO responds that it included quantities for "backfill in rock cuts" in its earthwork calculations and that these quantities represent over-excavation.[422] AEPCO's evidence confirms that it included all of the over-excavation found in the Engrg Rpts for the replicated line segments.[423] We accept AEPCO's position that its earthwork quantities and costs reflect all needed over-excavation and no cost additions are necessary.

3. Drainage

a. Lateral Drainage

AEPCO obtained its opening quantities from the Engrg Rpts, except for quantities for the Campbell Branch, for which quantities were extracted from track charts.[424] While defendants object to AEPCO's quantities,[425] they do not provide the workpaper[426] they reference in their

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[419] BNSF/UP's Reply III.F-19.

[420] Id. III.F-19-20.

[421] BNSF/UP's Reply III.F-13-14.

[422] AEPCO's Rebuttal III-F-14.

[423] AEPCO's Rebuttal WP "ANR GRADING REBUTTTAL.xlsx," tab "IIIF_2 ER INPUT" at column H, heading "common excavation" and carrying through to the tab "IIIF_11 EW Cost" in the same file.

[424] AEPCO's Opening III-F-39.

[425] BNSF/UP's Reply III.F-29.

narrative for the quantities they claim. The total drainage quantities they state in their narrative are not sufficient; we would also need to review the workpaper to determine calculations of how they reached those quantities. AEPCO reviewed defendants' narrative and the track charts and made some, but not all, of the adjustments for which defendants argue.[427] We accept AEPCO's revised quantities as the best evidence of record.

AEPCO's opening lateral drainage unit costs are from Means.[428] The parties agree on unit costs of lateral drainage for the Campbell and Orin segments, but disagree on unit costs for other line segments. Defendants claim that AEPCO failed to include the cost of trenching for drainage pipes.[429] AEPCO replies that trenching could be done at the same time as excavation, with no need for additional work or cost.[430] AEPCO establishes that, in this case, trenching could be done as it proposes, and defendants failed to successfully impeach AEPCO's evidence. We thus accept AEPCO's method of construction and will not add any costs for trenching.

Defendants claim that AEPCO failed to include the cost of disposing of trench excavation spoils.[431] As AEPCO demonstrates,[432] however, excess trench material that would not be used for backfill would be a part of the 30% waste ratio discussed in Section B.12., Land for Waste Excavation.

Defendants argue that AEPCO's 2-mile distance assumption for haul of backfill from a material source is not reasonable, and propose 10 miles as an appropriate distance.[433] AEPCO claims that 2 miles is reasonable because the backfill material would be stockpiled within 2 miles of where crews work.[434] However, AEPCO does not explain how the material would move from the original source to the stockpiles along the rail line. It also fails to provide any costs for transportation, despite its narrative's indication that the material would be handled twice – by delivery and unloading to a point along the line (establishing stockpiles) and then reloading and hauling to the points of installation, which are assumed to be 2 miles from the stockpiles. Because of this omission, defendants' evidence is the best of record.

(. . . continued)

[426] Defendants refer to UP's Reply WP "Lateral Drainage," III.F-29, n.67, n.71, as showing their calculation of the feet of lateral drainage on the Orin Line and Campbell Branch, but that workpaper is missing from the evidence we received.

[427] AEPCO's Rebuttal III-F-38-39.

[428] AEPCO's Opening III-F-39.

[429] BNSF/UP's Reply III.F-29-30.

[430] AEPCO's Rebuttal III-F-40.

[431] BNSF/UP's Reply III.F-30.

[432] AEPCO's Rebuttal III-F-40.

[433] BNSF/UP's Reply III.F-30.

[434] AEPCO's Rebuttal III-F-39.

We accept defendants' unit costs for segments other than the Orin and Campbell branches (as noted above, the parties agree on unit costs for the Orin and Campbell segments, and we use their agreed-upon cost). But we will adjust the unit cost with the applicable location factor and exclude defendants' trench excavation component.

b. Yard Drainage

AEPCO states that its opening yard drainage design is typical of railroad yards, including defendants' yards.[435] Defendants object to AEPCO's design for yard drainage and refer to a spreadsheet with quantities and costs for their own yard drainage plan.[436] Defendants did not include such a spreadsheet in the evidence we received. Instead, they submitted a spreadsheet that duplicates AEPCO's opening evidence. Without the design details of defendants' drainage plan, we cannot evaluate their plan and therefore accept AEPCO's quantities and costs as the best evidence of record.

4. Culverts

The parties' narratives indicate that they are largely in agreement regarding culvert quantities. However, their supporting evidence shows inconsistencies with their narratives.

On opening, AEPCO uses BNSF's culvert inventory, which shows culvert length and diameter, to determine its culvert quantities.[437] Because UP did not provide a separate culvert inventory list, AEPCO determined culvert quantities for UP from track charts.[438] AEPCO replaced any bridge on the replicated lines that is less than 20 feet in length with a culvert.[439]

First, defendants argue that AEPCO incorrectly specified culvert lengths.[440] AEPCO agrees on rebuttal and submits revised lengths.[441] Defendants did not submit any revised culvert lengths, but instead use AEPCO's opening submission. Defendants' narrative explanation of its proposed culvert quantities is not sufficient for us to confirm its calculations.[442] We therefore accept AEPCO's revised culvert lengths and the effect of those lengths on quantities. This best reflects the agreement the parties reached through their narratives.

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[435] AEPCO's Opening III-F-40.

[436] BNSF/UP's Reply III.F-31-34. BNSF/UP refer to the spreadsheet "Yard Drainage.xls" III.F-34.

[437] AEPCO's Opening III-F-43.

[438] Id.

[439] Id.

[440] BNSF/UP's Reply III.F-37-38.

[441] AEPCO's Rebuttal III-F-44-45.

[442] BNSF/UP's Reply III.F-37-38.

Second, defendants claim that AEPCO's conversion of larger culverts into bridges is problematic.[443] This may explain defendants' inclusion of a spreadsheet titled "Added Culvert List," which appears to consist of bridges that would be replaced by culverts[444] – but this is unclear, and defendants do not explain the list. AEPCO agrees to change the bridges back to culverts without agreeing to the merits of the argument.[445] On rebuttal, AEPCO's supporting evidence includes culverts to replace the converted bridges it proposed in its opening. Because there is no explanation or support for defendants' list and AEPCO's rebuttal submission includes the culverts to replace the converted bridges to which defendants objected, we will use AEPCO's rebuttal culvert quantities and will not accept defendants' added culvert locations.

Third, on rebuttal, AEPCO revised its spreadsheets to reflect the existence of only 1 culvert at locations where it erroneously showed multiple culverts in opening.[446] AEPCO's opening submission was based on its misinterpretation of the track charts. AEPCO incorrectly believed that in certain places the track charts indicate 2 culverts, each constructed of different types of material. The track charts actually indicate single culverts constructed of multiple types of material. On rebuttal, AEPCO corrects its error and provides for 1 culvert made of a single type of material, where it misread the track charts. AEPCO's revision is necessary to reflect actual culverts that would be replicated. We thus accept AEPCO's culvert quantities shown in its rebuttal spreadsheets.

Differences in unit costs result from differences in location factors. Because we have accepted AEPCO's location factor, we accept AEPCO's culvert unit cost.

5. Retaining Walls

AEPCO bases its opening retaining wall quantities on the Engrg Rpts, but AEPCO substitutes gabion walls (wire mesh filled with stone) for the wall types listed in the Engrg Rpts.[447] Defendants do not object to the substitution, and we accept it. Defendants reject AEPCO's quantity calculations.[448] However, defendants did not include all of the supporting materials necessary for us to evaluate their quantity calculations. Specifically, a footnote from defendants refers to drawings of the wall that we would need to evaluate to determine how defendants arrived at the lengths for its walls.[449] However, the file defendants refer to in that

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[443] Id. III.F-38-39.

[444] BNSF/UP's Reply WP "ANR Culverts-revised.xlsx."

[445] AEPCO's Rebuttal III-F-45.

[446] AEPCO's Rebuttal WP "ANR Culverts working.REBUTTAL.xls" tab "ANR Culvert List."

[447] AEPCO's Opening III-F-44.

[448] BNSF/UP's Reply III.F-40-42.

[449] Id. III.F-44 n.119.

footnote does not contain the drawing "RET WALL-5." We accept AEPCO's quantities as the best evidence of record.

AEPCO's opening retaining wall unit costs are from Means. Defendants take issue with AEPCO's unit costs.[450] We will not accept the increased distance for haul of materials that defendants propose.[451] Defendants propose 10 miles instead of the 2 miles that AEPCO proposes. While we are persuaded that a longer haul would be more appropriate, defendants' calculation[452] of the hauling cost is not usable because the calculations do not result in a value expressed as dollars per cubic yard, which are the units in which retaining wall unit costs are expressed.

Defendants also claim that AEPCO should have included the excavation of footings (bases) for the walls.[453] But, as AEPCO argues, the Engrg Rpts that AEPCO used includes all excavation quantities, and adding excavation for footings would result in a double count.[454] We will not accept defendants' cost addition for footings.

Defendants advocate adding costs for temporary shoring structures.[455] AEPCO points out that shoring would only be necessary under limited circumstances, and that defendants have not provided evidence that those circumstances would exist on the ANR.[456] We agree and therefore do not accept defendants' shoring cost addition. We accept AEPCO's retaining wall unit cost, which is supported by Means.

6. Rip Rap

Rip rap are large stones placed at the ends of drains and culverts to slow and deflect drainage. The parties agree to the quantity of rip rap, except for slight differences due to their respective ANR configurations.[457] We accept the agreed-upon quantities and use AEPCO's total quantities because we use its ANR system configuration.

AEPCO's opening unit cost for rip rap includes a Means cost for machine installation of the materials and a materials cost for the rock.[458] The parties disagree on the unit cost because

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[450] BNSF/UP's Reply III.F-42-46.

[451] Id. III.F-42-43.

[452] BNSF/UP's Reply WP "Revised ANR GRADING.XLS" tab "IIIF Unit Costs."

[453] BNSF/UP's Reply III.F-43-44.

[454] AEPCO's Rebuttal III-F-51.

[455] BNSF/UP's Reply III.F-45-46.

[456] AEPCO's Rebuttal III-F-51.

[457] BNSF/UP's Reply III.F-46; AEPCO's Rebuttal III-F-52.

[458] AEPCO's Opening III-F-45.

defendants claim the unit cost should provide for a 10-mile haul of materials.[459] AEPCO and defendants believe that AEPCO's unit cost includes a 2-mile haul.[460] However, the Means cost submitted by AEPCO does not provide for any distance haul. The cost addition submitted by defendants was apparently intended to add 8 miles to the assumed 2-mile haul. As the parties agree that there should be some provision for hauling materials in the unit cost, and the 8-mile cost addition is the only hauling cost available, we accept defendants' addition.

7. Utility Relocation Costs

The parties agree on costs for utility relocation,[461] and we accept the parties' agreement. However, the total final costs we accept are higher than the parties' submissions because of changes to the route mileages associated with this item.

8. Seeding/Topsoil Placement

The parties agree on costs and quantities for seeding and topsoil placement,[462] and we accept the parties' agreement. However, the total final costs we accept are higher than the parties' submissions because of changes to the route mileages associated with this item.

9. Water for Compaction

AEPCO claims on opening that a separate cost for water for compaction would not be necessary.[463] AEPCO explains that, according to defendants' documents, the costs for water for compaction would be incidental to embankment costs, except for the Walker-to-Shawnee segment.[464] For the Walker-to-Shawnee segment, AEPCO states that it incorporated water for compaction costs from defendants' documents into its embankment costs.[465] Defendants argue that AEPCO applied the Means unit cost for water incorrectly.[466] They also argue that AEPCO omitted water for compaction used in embankment construction, except Walker-to-Shawnee, and therefore advocate additional costs for this item.[467] However, AEPCO did not apply the Means unit cost at all. As AEPCO claims, defendants' discovery documents indicate that water for compaction was included in earthwork costs for all projects, except the Walker-to-Shawnee

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[459] AEPCO's Rebuttal III-F-52.

[460] BNSF/UP's Reply III.F-46; AEPCO's Rebuttal III-F-52.

[461] BNSF/UP's Reply III.F-47; AEPCO's Rebuttal III-F-52.

[462] BNSF/UP's Reply III.F-47; AEPCO's Rebuttal III-F-53.

[463] AEPCO's Opening III-F-47-48.

[464] Id.III-F-47.

[465] Id. III-F-47-48.

[466] BNSF/UP's Reply III.F-47-48.

[467] Id. III.F-48-49.

expansion.[468] Further, because on opening AEPCO took the water for compaction costs[469] for the Walker-to-Shawnee project from defendants' documents, AEPCO did not use, and therefore did not misapply, any Means costs. We will not add the costs advocated by defendants. AEPCO's position is well-supported, and defendants have failed to refute it.

10. Road Surfacing: Detour Roads

The parties agree on costs for surfacing detour roads, except for differences resulting from their respective ANR configurations.[470] Thus, we use the agreed-upon costs and apply them to AEPCO's ANR system configuration.

11. Environmental Compliance

The parties agree on environmental compliance costs,[471] and we accept the parties' agreement. However, the total final costs we accept are higher than the parties' submissions because of changes to the route mileages associated with this item.

12. Land for Waste Excavation

AEPCO assumes that 30% of excavated materials would be waste rather than re-used as fill, and includes costs for acreage for placement of waste.[472] Defendants claim that the acreage for placement of waste excavation must be increased: the swell of excavated soil and the additional track miles of defendants' configuration would increase the total waste quantities.[473] However, as discussed above in Section B.2.h., Shrinkage and Swell, we will not make any adjustments for the shrinkage and swell additive advocated by defendants. Because we have accepted AEPCO's ANR configuration, we accept its quantity and costs of land for waste excavation.

[468] AEPCO's Opening WP "BNSF_AEPCO_0082783.tif"; AEPCO's Rebuttal WP "BNSF Exp Proj water specs.pdf."

[469] AEPCO's Opening WP "Roadbed prep costs from AFEs.xls" tab "common exc and emb."

[470] BNSF/UP's Reply III.F-49; AEPCO's Rebuttal III-F-56.

[471] BNSF/UP's Reply III.F-49; AEPCO's Rebuttal III-F-57.

[472] AEPCO's Opening III-F-38.

[473] BNSF/UP's Reply III.F-28.

C. Track Construction

Table B-5

Track Construction			
	AEPCO	**BNSF/UP**	**STB**
Sub-ballast & Ballast	$400,187,818	$581,080,052	$413,865,402
Ties	$477,180,013	$472,358,651	$475,495,709
Rail	$659,913,332	$657,611,613	$672,180,428
Other Track Materials	$223,932,178	$222,743,652	$225,779,422
Turnouts (includes Geotextile Fabric)	$133,848,294	$131,473,021	$136,012,545
Track Installation/Labor	$876,857,234	$911,230,987	$874,691,004
TOTAL	**$2,771,918,869**	**$2,976,497,975**	**$2,798,024,510**

1. Ballast

a. Specifications and Quantities

The parties agree on ballast specifications of AREMA No. 4 ballast, with 8 inches for main line track and 6 inches for all other tracks, which we accept.[474] The parties also agree on the quantities of ballast that would be needed for the various track cross-sections, but differ on total quantities based on their differing track miles and system configurations.[475] We accept the agreed-upon quantities for each track cross-section and use AEPCO's total quantities, because we use its ANR system configuration.

b. Unit Costs

The parties do not agree on the unit costs for ballast. On opening, AEPCO proposes a hardcoded unit price for ballast, an on-line (ANR system) shipping cost of $0.035 per ton mile, and a hardcoded unit price for the off-line transportation costs.[476] It uses an average on-line delivery distance, and multiplies that by the hardcoded unit price to arrive at a cost of ballast per ton.[477] It then adjusts this cost by an estimated average carload weight to arrive at an adjusted

[474] AEPCO's Opening III-F-52 & WP "ANR Track Construction working.xls," Ballast!A10.E10; BNSF/UP's Reply III.F-51 & WP "Ballast and subballast worksheet modified for rebuttal.xlsx," Sheet1!A10.E10.

[475] BNSF/UP's Reply III.F-51; AEPCO's Rebuttal III-F-58.

[476] AEPCO's Opening III-F-53 & WPs. "ANR Track Construction working.xls," Total Track Quant.!C77.C80 & "ANR Unit Costs.xls," Aggregate!G26 & M26.

[477] Id.

cost of ballast per ton.[478] But AEPCO's calculations are erroneous because the cost of transportation based on a ton-mile charge ($0.035) is not affected by the quantity of ballast in a car. In addition to its hardcoded numbers (which are unsupported because they are entered into the spreadsheet without further explanation of how they were reached or what their source is), AEPCO has provided no supporting documentation, notwithstanding its reference to workpapers.[479]

Defendants argue that AEPCO erroneously assumes that transportation costs can be lowered by shipping more ballast in fewer cars, when the cost of shipping is actually on a ton-mile, not car-mile, basis.[480] They also question AEPCO's proposed single ballast quarry source, claiming that without a second quarry, shipping of ballast would require circuitous routes that are not cost-effective.[481] And, they note that while AEPCO's proposed quarry is more than 130 miles from the railheads it proposes, AEPCO uses just 1 mile in its cost calculations.[482] Defendants argue that although $0.035 per ton mile is a conservative cost (the cost a railroad would charge itself for shipping on its own lines, when the ANR would need to ship ballast over other carriers' lines), they use this cost in their calculations.[483] Defendants add a second quarry source for ballast to supply the southern third of the ANR system.[484] They then use a weighted average of materials and transportation costs for the northern two-thirds of the ANR system and the southern one-third.[485] However, defendants' weighted average is hardcoded, and defendants provide no details on the calculation of this weighted average.[486] While the narrative may appear to sufficiently explain how defendants reached their costs, we need parties to supply calculations with supporting documentation to confirm the accuracy of such calculations. Here, we lack the routings defendants use to reach the mileages they claim in their narrative. While one of defendants' workpapers[487] appears to show these routings, much of the routing information in the workpaper is either lacking or conflicting. The workpaper gives multiple routings for single origin/destination point pairings, but none of the routings result in the mileages given in

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[478] Id.

[479] AEPCO's Opening III-F-53.

[480] BNSF/UP's Reply III.F-53.

[481] Id. III.F-53-55.

[482] Id. III.F-54.

[483] Id. III.F-54 n.150.

[484] Id. III.F-55.

[485] Id. III.F-55.

[486] BNSF/UP's Reply WP "AEPCO Track Construction Schedule.xls," 'Track Construction Cost'!F8 and F10. BNSF/UP reference a file "ANR Track Construction Working.xls" in their narrative (BNSF/UP's Reply III.F-53, n.148), but did not include that file in their submission to the Board.

[487] BNSF/UP's Reply WP "Distances for Hauling Ballast.xlsx" tab "sheet 1."

defendants' narrative. Even if the information were clear, we would not then take it and perform defendants' calculations for them. Defendants also provide no evidence on shipment of ballast to the railheads.[488]

On rebuttal, AEPCO corrects its errors in calculating unit costs for ballast: it agrees that it failed to use actual shipment mileages from quarry to railheads, and agrees with the addition of a second source quarry at Torrance, N.M.,[489] along with defendants' proposed unit cost of ballast from this second quarry. AEPCO also proposes 2 additional quarry sources (at Guernsey[490] and Pipe) for portions of the ANR system, with actual transportation mileages from all quarries, except Guernsey.[491] And, it proposes delivery and distribution of the ballast by both truck and rail.

We use AEPCO's unit costs for ballast because, overall, they are the best evidence of record, and defendants failed to submit evidence supporting their unit costs, as described above. However, we do not accept the use of the Guernsey and Pipe quarries as ballast sources because AEPCO proposed them on rebuttal, with no chance for defendants to respond to that proposal. We use rail as the shipment mode from quarry to railheads, as that is what AEPCO proposes for the majority of the ANR system. We also use transportation mileages based on distances from quarries to railheads, as AEPCO proposes.[492]

2. Subballast

The parties agree on specifications for subballast, which are 12 inches for main line tracks and 6 inches for all other tracks, and they use a roadbed width of 24 feet for single tracks.[493] They disagree on quantities and unit costs for subballast.

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[488] While BNSF/UP provide a workpaper showing the distances between the quarries and the various railheads, this information is not linked to or used by any of their other files.

[489] AEPCO's Rebuttal III-F-60.

[490] However, AEPCO neglected to include mileage for distribution of ballast from Guernsey quarry, making its proposed costs from this quarry incomplete.

[491] AEPCO's Rebuttal WP "Ballast Haul Miles.REBUTTAL.xls," ANR Material Routings.

[492] Id.; AEPCO's Opening III-B-7 & Table III-B-2 (Montana Rail Link route mileage of 29.57).

[493] AEPCO's Opening III-F-53; BNSF/UP's Reply III.F-51. While AEPCO's opening workpapers for track cross-sections show a roadbed width of 22 feet, it supplies corrected drawings on rebuttal, and it is clear from its other workpapers as well as from defendants' workpapers that both parties have used roadbed widths of 24 feet for purposes of roadbed preparation in general. See AEPCO's Opening WP "ANR Track Section Single.pdf"; AEPCO's Rebuttal WPs. "ANR Track Section Single.revA.pdf," "ANR Track Section Double.revA.pdf,"

(continued . . .)

Both sides erred in their initial calculation of the quantities of subballast that would be needed. AEPCO errs on opening by using a 22-foot roadbed width, instead of a 24-foot roadbed width, and by using an incorrect bottom width for the subballast.[494] It corrects this on rebuttal, using an accepted computer-aided design tool to measure the correct subballast quantity for each track cross-section and recalculating the total amount of subballast.[495] Defendants err on reply by using 22-foot roadbed widths in their calculations, when their narrative indicates use of 24-foot roadbed width.[496] As the parties have agreed, and AEPCO's rebuttal quantities correct previous errors, we use AEPCO's rebuttal quantities per unit length. We use AEPCO's total quantities because we use its ANR system configuration.

For subballast unit costs, AEPCO relies on evidence it received from defendants on discovery, shipping distances from one source to railheads, and a shipping cost of $0.035 per mile for a cost per net ton delivered of subballast.[497] Defendants reject AEPCO's use of a single source on the basis that one quarry could not supply all of the ANR's needs, and transportation to all railheads from one source would be cost-prohibitive. They also attempt to discredit AEPCO's pricing document, claiming it shows fine aggregates unsuitable for use as subballast.[498] And, they claim that AEPCO's transportation proposal involving multi-modal movement with loading, unloading and reloading would degrade the subballast material, such that it would be unsuitable for the ANR's use.[499] Instead, defendants propose a unit cost by averaging materials and delivery quotations from seven quarries spanning the regions the ANR would traverse, with truck movement of subballast from source to construction point, on the grounds that subballast is needed along the ROW long before installation of the rail.[500] Defendants' narrative lacks information necessary to confirm the accuracy of the unit cost that defendants claim. Defendants do not explain how their unit cost average was weighted or calculated, nor do they show quantities of subballast obtained from their proposed sources or distributed to specific railheads or construction points.[501] They also fail to provide referenced

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(. . . continued)
"ANR Track Section Triple.pdf," & "ANR Track Section Quad.pdf;" BNSF/UP's Reply III.F-27, 37, 38 n.98, 39 n.103 (using 24-foot roadbed widths).

[494] AEPCO's Opening WP "ANR Track Construction working.xls" at Ballast!$A$23:$E$24.

[495] AEPCO's Rebuttal WP "ANR Track Construction working.REBUTTAL.xls."

[496] BNSF/UP's Reply WP "Ballast and subballast worksheet modified for rebuttal.xlsx," at Sheet1!$A$23.$E$24.

[497] AEPCO's Opening WP "ANR Unit Costs.xls," UP Cost Items.

[498] BNSF/UP's Reply III.F-56.

[499] Id. III.F-58.

[500] Id. III.F-59 & n.159.

[501] BNSF/UP's Reply WP "AEPCO Track Construction Schedule.xls," Track Construction Cost!E4.F5.

workpapers, and they use hardcoded numbers without explanation.[502] On rebuttal, AEPCO agrees to include additional quarry sources. AEPCO claims, however, that evidence received from defendants in discovery contradicts rather than supports defendants' criticisms.[503]

We accept AEPCO's subballast unit costs because they are logically calculated, reasonable, and fully supported. AEPCO is correct that the parties are entitled to reasonably rely on evidence the other side supplied in discovery, and that defendants cannot impeach AEPCO's evidence with information defendants failed to produce in discovery. See, e.g., AEP Tex. 2007, slip op. at 81, 83. While defendants can use Means to impeach a document, here defendants' argument is not supported by the workpapers supplied.

3. Geotextiles

Defendants argue that AEPCO proposes an insufficient quantity of geotextile fabric at turnouts (geotextiles for grade crossings are included within grade crossing costs), and recalculates these quantities.[504] AEPCO accepts these recalculations on rebuttal,[505] and we use these quantities. Defendants do not dispute AEPCO's unit costs for geotextiles on opening, thus we use these costs.

4. Cross-Ties

The parties agree on unit costs and spacing for Grade 5 wood ties (20.5-inch spacing for main, siding, and branch line tracks, and 24-inch spacing for yard, set-out, and interchange tracks). The unit costs were based on information provided by BNSF during discovery.[506] The

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[502] BNSF/UP's Reply WP "AEPCO Track Construction Schedule.xls," Track Construction Cost'!F9 shows a link to a non-existing file, "ANR Unit Costs.xls." Further, while the narrative, III.F-59, refers us to WP "Scanned Subballast Cost Backup_050110GTZ_ 2514616_2514618.pdf", we did not find that workpaper among the evidence defendants provided. We found a file with a similar name, "Distances for hauling Ballast and Subballast_04160FDB_2514616_2514618," but that file contains no explanation of why some sources were used to calculate the average and others were not. Further, the file gives multiple prices for the same quarry, and the prices shown in the narrative table III.F.7 do not agree with the prices listed in the workpaper.

[503] AEPCO's Rebuttal III-F-61-62.

[504] BNSF/UP's Reply WP "Turnout Geotextiles Restated.xlsx," Geotextile Quantities; BNSF/UP's Reply III.F-50.

[505] AEPCO's Rebuttal III-F-58 & Rebuttal WP "ANR Track Construction working.REBUTTAL.xls," tab Geotextile Quantities!B29..B33, feeding into tab Total Track Quant.!B58..B63.

[506] AEPCO's Opening III-F-54.

parties agree that transition ties would not be needed, as bridges have ballast decks.[507] The parties also agree to include transition ties at road crossings, with their cost included in road crossing unit prices.[508] Thus, we use the agreed-upon costs, and apply them to AEPCO's ANR system configuration.

5. Rail

The parties agree on the specifications for, and unit costs of, rail, but disagree on the rail transportation costs because of differing rail quantities. The disparity in rail quantities stems from the differences in the parties' proposed ANR configurations.[509]

The parties agree that the ANR would use: premium 136-pound rail on main tracks and sidings where there are curves of 3 degrees or greater and wherever traffic would exceed 50 million gross tons annually; standard 136-pound rail on all other main tracks and sidings; and relay 136-pound rail on the lightest density lines, including Mossmain-Walter Junction, Lee Ranch Branch, yard tracks, interchange tracks, spurs, helper pocket tracks, and set-out tracks.[510] We note that AEPCO incorrectly calculated the quantities of each type of rail, and we restate those quantities. We accept these agreed-upon specifications and unit costs, and apply them to AEPCO's ANR system configuration.

Neither party's evidence on rail transportation costs is particularly clear. We accept defendants' transportation costs, as restated below, because AEPCO has failed to satisfy its burden of proof on this cost item. AEPCO's opening evidence contains incorrect transportation costs calculations, hardcodes for its shipping distances from its two rail sources, omits other support for delivery routes and railhead distribution points, and erroneously calculates rail quantities. On rebuttal, AEPCO revises its transportation costs, attempting to correct its errors and buttress its proposals by supplying evidence omitted on opening.[511]

Defendants, in turn, criticize AEPCO's approach of shipping rail along the ANR as it is constructed, rather than shipping over other carriers' lines to avoid delay to the construction schedule.[512] They propose a delivery route over other railroads and a specific sourcing plan, as

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[507] Id. III-F-54; BNSF/UP's Reply III.F-60.

[508] AEPCO's Opening III-F-54; BNSF/UP's Reply III.F-60.

[509] AEPCO's Rebuttal III-B-28 & Table III-B-1.

[510] AEPCO's Opening III-F-54-55; BNSF/UP's Reply III.F-60-61.

[511] AEPCO's Rebuttal WP "Ballast Haul Miles.REBUTTAL.xls," ANR Material Routings; AEPCO's Rebuttal WP "ANR Track Construction working.REBUTTAL.xls."

[512] BNSF/UP's Reply III.F-60.

AEPCO omitted these descriptions on opening.[513] They apply a $0.035 per ton-mile shipping rate.[514]

AEPCO's opening on rail transportation costs contains numerous errors and omissions, and its attempted rehabilitation on rebuttal fails because it presents new evidence to which defendants had no chance to respond. While defendants' evidence contains errors and deficiencies as well, we find it to be the best evidence of record, and we will use it to calculate rail transportation costs. We also restate quantity calculations to accord with AEPCO's ANR configuration and to correct AEPCO's errors in calculating quantities of types of rail. As neither side proposes a transportation cost for relay rail, we omit a cost for this item. Our quantity corrections result in an STB total rail costs figure that is higher than either of the parties' submissions.

6. Other

We discuss the components of this category in the subsections below. We note that our final total costs figure is higher than the parties' submissions because of the combinations of unit costs and quantities we accept for the subcategories of Other Track Materials and because of changes to relevant inputs, such as the associated route mileages.

a. Field Welds

The parties agree on unit costs for materials and labor for field welds; the slight variance between their labor totals is due to rounding in their calculations. They do not agree on quantities, however. Defendants argue that AEPCO's field weld quantities include only welds to join rail strings but not for assembling turnouts or joining turnouts to rail strings, and they adjust field weld quantities to account for AEPCO's omissions.[515] AEPCO, on rebuttal, disagrees, claiming that turnouts and cross-overs arrive at the railheads in one piece with all internal insulated joints and corresponding welds factory-installed.[516]

AEPCO's argument and evidence supporting its proposed field weld quantities is not persuasive. Turnouts and cross-overs do not arrive at the railheads fully assembled; their size alone would make shipping them fully assembled impossible, especially as AEPCO specifies Nos. 20 and 24 power turnouts. Instead, turnouts and cross-overs are shipped in at least two pieces, and joined together during installation, which requires field welds.[517] We thus use defendants' field weld quantities because their evidence is the best evidence of record.[518]

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[513] BNSF/UP's Reply WP "AEPCO Track Construction Schedule.xls."

[514] BNSF/UP's Reply III.F-60.

[515] Id. III.F-62.

[516] AEPCO's Rebuttal WP "Turnouts.pdf."

[517] Id. AEPCO claims that the supplier furnishes fully panelized turnouts completely assembled, and that they are shipped in custom panel cars for easy unloading and quick

(continued . . .)

b. Other Materials

The parties agree to the unit costs and specifications for other materials, which include plates, spikes and anchors.[519] We will use these agreed-upon costs.

c. Rail Lubricators

The parties agree to the unit costs and quantities of rail lubricators.[520] We will use these agreed-upon costs.

d. Derails and Wheel Stops

The parties agree that no wheel stops would be needed on the ANR and also agree to the unit costs for derails.[521] They do not agree on derail quantities, however. On opening, AEPCO proposes double point derails (non-powered) at all failed equipment detector (FED) set-out tracks, and at yard tracks in 5 yards where cars are set out from trains and stored, for a total of 454 derails.[522] Defendants claim that AEPCO omitted several locations where railcars are stored that would require derails: servicing, repair, intermodal, and interchange locations within yard limits, and private industry track connecting to mainline track.[523] Defendants propose a total of 516 derails.[524] While AEPCO increases its derail count by 2 on rebuttal to correct an error on

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(. . . continued)
installation, directing the Board to the workpaper cited above. In the workpaper, there is no indication from the supplier that turnouts are shipped in one piece. To the contrary, the file shows a portion of a turnout hoisted in preparation for loading onto a rail car. The individual portions of the turnout would have to be welded together at the time of installation.

[518] BNSF/UP's Reply WP "AEPCO Track Construction Schedule.xls," Track Construction Cost at !A33.F48.

[519] AEPCO's Opening III-F-57-58; BNSF/UP's Reply III.F-64.

[520] AEPCO's Opening III-F-57; BNSF/UP's Reply III.F-63.

[521] AEPCO's Opening III-F-58; BNSF/UP's Reply III.F-64 & WP "AEPCO Track Construction Schedule.xls," Track Construction Cost!F31; AEPCO's Rebuttal WP "ANR Track Construction working.REBUTTAL.xls," Table III-F-5!F26.

[522] AEPCO's Opening III-F-58; AEPCO's Opening WP "ANR Track Construction working.xls," Table III-F-5 at !E26.

[523] BNSF/UP's Reply III.F-64.

[524] BNSF/UP's Reply WP "Derail Counts for Setouts, Helper, MOW Equip & Yard.xlsx," Summary of Derails. Defendants erroneously use AEPCO's 454 derails in their cost calculations. BNSF/UP's Reply WP "AEPCO Track Construction Schedule.xls," Track Construction Cost, at !E31.

opening,[525] it disagrees with defendants that the number of derails required would be higher than its initial proposal.[526] AEPCO argues that defendants have included derails on yard trackage such as tracks used for storing MOW equipment, but that such tracks need not be protected by derails because they can be protected instead by portable blue flag devices meeting FRA safety requirements.[527]

We accept defendants' quantity of derails. AEPCO appears to misunderstand the purpose of blue flag protection or the FRA regulations on the use of blue flags. Blue flags are used for controlling track access, over-riding authority granted by any other control method or personnel. 49 C.F.R. pt. 218. Blue flag use is not associated with train operations or rolling equipment movements. They cannot perform the physical function that a derail performs, which is to derail rolling equipment. Derails would be required, as defendants propose, on yard tracks that would store equipment and would be used for servicing and repair of equipment. AEPCO's derail count is too low to adequately furnish the ANR with devices it would need to operate safely. Defendants provide the best evidence of record here, and thus we use their derail quantity.

7. Turnouts

The parties generally agree to the sizes and unit costs for turnouts, but do not agree on transportation costs for these items.[528] Differences in their quantities are due to differences in their respective ANR configurations. AEPCO omits transportation costs for turnouts on opening. On reply, defendants propose turnout suppliers at Sherman, Tex. and Newton, Kan., and include a shipping cost of $0.035 per ton mile to "access points" (assumed to be railheads) via the most direct routes available, in accordance with the ANR's proposed construction schedule.[529] On rebuttal, AEPCO agrees that transportation costs should be included. But it criticizes defendants' allegedly illogical routings and adjusts these routings to use railheads at more accessible locations.[530]

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[525] AEPCO's Rebuttal III-F-67.

[526] Id.

[527] Id.

[528] AEPCO's Opening Ex. III-B-1 (ANR track diagrams) & WP "ANR Track Construction working.xls"; BNSF/UP's Reply III.F-63. Defendants argue that AEPCO has omitted costs for switch machines for power turnouts, but AEPCO clarifies that it included those costs in signals costs. BNSF/UP's Reply III.F-62; AEPCO's Rebuttal III-F-72; AEPCO's Opening WP "ANR Signal Est working.xls."

[529] BNSF/UP's Reply WP "AEPCO Track Construction Schedule.xls," at tabs Turnout Weights Calculations, Turnout Shipping Routes, and Turnout Shipping Cost.

[530] AEPCO's Rebuttal WP "Ballast Haul Miles.REBUTTAL.xls," ANR Turnout Routings.

AEPCO's transportation costs proposal contains hardcoded mileage routings and a link to a file not submitted to us.[531] While defendants' transportation costs also contain hardcoded routing mileages, its evidence is the best of record, and we accept it here.[532] We also use the agreed-upon sizes and unit costs for turnouts. We use AEPCO's total quantities, because we use its ANR system configuration. The total costs we accept are higher than either of the parties' submissions because of the added transportation costs in addition to AEPCO's total costs, which were already higher than defendants' total costs.

8. Labor

The parties agree to use AEPCO's labor costs for track construction, and their different total labor costs are due to differences in their track configurations.[533] The Board will accept the agreed-upon costs, and apply them to AEPCO's ANR system configuration. The final total costs for labor that we accept are lower than either of the parties' totals because of various changes to inputs resulting from our decisions on other issues.

9. Materials Transportation and Construction Schedule

AEPCO includes transportation and distribution costs for track construction materials in all of the various components discussed in this subsection.[534] However, defendants claim that AEPCO has omitted costs for work trains to distribute rail, turnouts, and ballast.[535] On rebuttal, AEPCO does not agree to add costs for work trains.[536] It claims that its construction costs were obtained from Western Fuels Ass'n 2009.[537] In Western Fuels Ass'n 2009, track construction costs included distribution of materials from railheads to construction sites, and the parties there agreed that no additional work train costs would be required. See W. Fuels Ass'n 2009, slip op. at 49-50 (showing blanket agreement of parties on track construction costs).

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[531] AEPCO's Rebuttal WP "Ballast Haul Miles.REBUTTAL.xls," ANR Turnout Routings contains links to "LTK Response.Working\Turnout Transportation Costs\[Copy of Ballast Haul Miles REBUTTAL_bds.wrw.xls," which AEPCO did not submit to the Board, and that file apparently is used to calculate the turnout transportation costs for each routing.

[532] BNSF/UP's Reply WP "AEPCO Track Construction Schedule.xls," Track Construction Cost!A33.F48.

[533] AEPCO's Opening WP "Track construction working.xls"; BNSF/UP's Reply III.F-65.

[534] AEPCO's Opening III-F-59.

[535] BNSF/UP's Reply III.F-64.

[536] AEPCO's Rebuttal III-F-67.

[537] W. Fuels Ass'n v. BNSF Ry., NOR 42088 (STB served Feb. 18, 2009); AEPCO's Rebuttal III-F-67.

We will not add costs for work trains to distribute rail, turnouts, and ballast. Defendants failed to support their claim that distribution costs for these components are not already included in track construction costs.

While defendants argue that AEPCO's track construction schedule understates the amount of time required to construct the line segments,[538] defendants also state that they accept AEPCO's proposed construction schedule.[539] We therefore accept AEPCO's construction schedule.

D. Tunnels

Table B-6

Tunnel Total Costs			
	AEPCO	**BNSF/UP**	**STB**
Tunnel #1	$18,703,827	-	$33,773,289
Tunnel #2	$24,767,523	-	$22,668,102
Tunnel #3	$10,708,071	-	$17,460,597
Superspan Under Irrigation Ditch	$277,533	-	$277,533
TOTAL	**$54,456,954**	**$74,178,992**[540]	**$74,179,521**

The parties agree on the placement, construction type, and length of the tunnels along the ANR as shown in the table below.[541]

[538] BNSF/UP's Reply III.F-104-106.

[539] Id. III.H-1.

[540] Defendants do not supply individual costs for each of the tunnels, they only give a total number.

[541] Id. III.F-65.

Table B-7

Tunnel Type and Length					
	Location	**Type**	**AEPCO (linear feet)**	**BNSF/UP (linear feet)**	**STB (linear feet)**
Tunnel #1	Guernsey	Steel/Concrete Lined	3,333	3,333	3,333
Tunnel #2	Montana	Steel/Concrete Lined	2,517	2,517	2,517
Tunnel #3	Guernsey	Steel/Concrete Lined	1,441	1,441	1,441
Super Span Structure	Spanish Peaks	Culvert acting as a tunnel	130	130	130

The parties disagree on the unit cost for tunnel construction.[542] AEPCO bases its unit cost on costs derived from Coal Trading Corp. v. Baltimore & Ohio Railroad, 6 I.C.C. 2d 361, 422 (1990). Defendants argue that in Western Fuels Ass'n 2007, slip op. at 75, 107, the Board rejected previous claims that the Coal Trading Corp. costs apply to concrete- and steel-lined tunnels and instead found that the costs from that case only cover timber-lined tunnels.[543] Defendants therefore propose higher unit costs, which were developed by expert witnesses.[544] AEPCO argues that the costs from Coal Trading Corp. must have been for steel and concrete lined tunnels because timber-lined tunnels have not been constructed since the early 1900s.[545] Defendants are correct that we have previously concluded that the Coal Trading Corp. unit costs apply only to timber-lined tunnels. W. Fuels Ass'n 2007, slip op. at 75, 107. AEPCO also claims that two tunneling projects that were at least as difficult, if not more, were undertaken at lower costs than those derived from Coal Trading Corp., and those projects included concrete and steel-lined tunnels.[546] However, AEPCO does not provide sufficient evidence on those projects for us to evaluate its claims. AEPCO cites sources of evidence on the project, but does not provide copies of that evidence, and we have no means of checking them.[547] Because

[542] Id. III.F-65-70.

[543] BNSF/UP's Reply III.F-66.

[544] Id. III.F-67-70; BNSF/UP's Reply WP "Single Track Lined Tunnel – ANR – Montana Tunnel.pdf"; BNSF/UP's Reply WP "Single Track Lined Tunnel – ANR – Guernsey Tunnel 1.pdf"; BNSF/UP's Reply WP "Single Track Lined Tunnel – ANR – Guernsey Tunnel 3.pdf."

[545] AEPCO's Rebuttal III-F-68-69.

[546] AEPCO's Rebuttal III-F-69-70.

[547] AEPCO cites 2009 Means Heavy Construction Cost Data, page 507 and Engineering News Record First Quarter 2009 Cost Report, March 23, 2009, page 32.

defendants' unit costs are the best evidence of record, we accept their costs for tunnel construction.

Table B-8

Tunnel Unit Cost			
	Unit Cost per Linear Foot		
	AEPCO	**BNSF/UP**	**STB**
Tunnel #1	$7,431	$10,133	$10,133
Tunnel #2	$7,431	$9,006	$9,006
Tunnel #3	$7,431	$12,117	$12,117
Super Span	$2,135	$2,135	$2,135

In addition, the parties agree on the construction costs of the super span structure located on the portion of the Spanish Peaks Subdivision that leads to the Comanche Power Plant.[548] The super span is a large culvert that acts as a tunnel.[549] We use the agreed-upon costs.

E. Bridges

On rebuttal, AEPCO states that it accepts defendants' bridge costs, without agreeing to the merits of defendants' arguments,[550] but the total costs it reports are different from that calculated by defendants.[551] AEPCO does not support the total bridge costs it submits on rebuttal, and we conclude that AEPCO rounded the number it reported for convenience. Further, defendants report two different total bridge costs:[552] the higher of the two totals includes the costs for grade-separated crossings.[553] AEPCO also submits its grade-separated crossings costs under the Bridges category. Both parties' narrative discussions of grade-separated crossings are in their Bridges narratives.[554] AEPCO does not address defendants' increase of AEPCO's opening grade-separated crossings costs,[555] and we assume that AEPCO's acceptance of

[548] BNSF/UP's Reply III.F-70; AEPCO's Rebuttal III-F-70.

[549] BNSF/UP's Reply III.F-70.

[550] AEPCO's Rebuttal III-F-70-71.

[551] See AEPCO's Rebuttal WP "ANR III-F Total.Rebuttal.xls" (bridge total costs of $736,200,000); BNSF/UP's Reply WP "III-F Tables Err.xlsx" (reports bridge total costs of $736,217,899); BNSF/UP's Reply WP "ANR Bridge_RR Final.xlsx/RR Bridge Summary" (reports bridge total costs of $724,036,905).

[552] BNSF/UP's Reply WP "III-F Tables Err.xlsx" (reports bridge total costs of $736,217,899); BNSF/UP's Reply WP "ANR Bridge_RR Final.xlsx/RR Bridge Summary" (reports bridge total costs of $724,036,905).

[553] We reach this conclusion because the lower of BNSF/UP's two bridge costs added to the grade separated crossing costs equal BNSF/UP's higher bridge costs.

[554] BNSF/UP's Reply III.F-88-91; AEPCO's Opening III-F-66.

[555] See AEPCO's Rebuttal III-F-70-71, 86.

defendants' bridges costs include acceptance of their grade-separated crossings costs. Because the parties agree on bridge costs and because defendants' total costs are better documented, we accept defendants' total of $736,217,899 for bridges, which includes the costs of grade-separated crossings.[556]

F. Signals and Communications

As shown in **Table B-9**, the costs for providing a signaling and communications system for the ANR are in dispute. We discuss each element below.

Table B-9

Signals and Communications System			
	AEPCO	**BNSF/UP**	**STB**
Centralized Traffic Control	$284,642,000	$303,484,714	$292,411,000
Communication	$21,144,000	$27,851,901	$27,851,901
PTC[557]	$0	$52,551,560	$52,551,560
TOTAL	**$305,786,000**	**$383,888,175**	**$372,814,461**

1. Centralized Traffic Control

a. Highway Grade Crossing Warning Signals

On opening, AEPCO submitted 373 locations where highway grade crossing warning signals should be placed. On reply, defendants claim that although Duke/CSXT, 7 S.T.B. at 504, requires the SARR to assume 10% of the costs of protection at grade crossings, AEPCO only does so at 27 of the 373 crossings it submitted.[558] AEPCO agrees on rebuttal and states its intention to include 10% of the costs of all the signals.[559] While the parties agree in principle, there are problems with the supporting data submitted by the parties.

On rebuttal, AEPCO did not update its spreadsheets to include 10% of costs for all grade crossings. Although AEPCO made changes to its opening spreadsheet by adding 6 signal locations, it continued to include costs for only 27 signals. Defendants also do not provide full supporting data because they lack support for the costs submitted for two of the five types of signals proposed.[560] Given the parties' agreement in their narratives that the ANR should

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[556] BNSF/UP's Reply WP "ANR Bridge_RR Final.xlsx/RR Bridge Summary."

[557] PTC is addressed in the body of the decision at Part E, Road Property Investment.

[558] BNSF/UP's Reply III.F-92, citing AEPCO's Opening WP "Summary Signals costs.xls."

[559] AEPCO's Rebuttal III-F-71.

[560] BNSF/UP's Reply WP "Summary Signal Costs/Grade Crossing.xls" (the unsupported signal types are track 2 crossing flasher and cantilevers).

assume 10% of the costs of all of the grade crossing signals, defendants' final costs are the best available evidence,[561] and we accept it.

We also accept the 373 highway grade crossing warning signal locations submitted on opening and agreed to by defendants on reply. We will not include the 6 locations AEPCO added on rebuttal, as AEPCO may not make changes on rebuttal when defendants have accepted the opening submission and did not have an opportunity to reply to those changes. See Duke/NS, 7 S.T.B. at 100-01.

b. Control Point Interlocking (Turnout Insulated Joints)

Defendants argue that AEPCO did not include the cost of insulated joints in the closure rail and stock rail of track turnouts at control points.[562] AEPCO replies that the powered, panelized turnouts it specified include all necessary insulated joints.[563] AEPCO refers to photographs of the turnouts, which it claims show the insulated joints,[564] and argues that it would have been inefficient not to include insulated joints as a preinstalled item, because installing such items in the field is time-consuming.[565] However, we did not find that the presence of the preinstalled joints was apparent in the photographs. AEPCO did not include a quantity or unit cost for the joints. We therefore accept defendants' insulated joint material cost and quantity. Although defendants do not explain where they obtained their cost, it is the only evidence of record, because AEPCO omitted any quantity or cost for this item.

c. Control Point Interlocking (Switch and Helper Switch Machines)

Defendants claim that AEPCO omitted from the costs of turnouts the switch machines and layout material to connect the turnouts to the track structure.[566] AEPCO responds that, while on opening it indicated that all necessary switch machines were included in its unit cost for turnouts, its description was incorrect. AEPCO claims that switch machine costs were included

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[561] Defendants report their crossing protection summary costs in a table located in "Summary Signal Costs/RR Response Misc." The crossing protection location totals are supported in spreadsheet "ANR Grade Crossing Final.xls" within Public Improvements. Defendants do not use the crossing protection totals listed in their "Summary Signal Costs/Grade Crossing.xls" spreadsheet. These two spreadsheets report different totals and defendants do not explain this discrepancy. We accept the totals shown in "Summary Signal Costs/RR Response Misc."

[562] BNSF/UP's Reply III.F-92.

[563] AEPCO's Rebuttal III-F-72.

[564] AEPCO's Rebuttal WP "Turnouts.pdf."

[565] AEPCO's Rebuttal III-F-72.

[566] BNSF/UP's Reply III.F-93.

in its opening signals costs, not its costs for turnouts.[567] AEPCO did include the switch machine costs in the signals costs,[568] but did not include the cost for layout material in signals costs. We accept defendants' total layout material cost because it is the only evidence of record. We accept AEPCO's switch machine costs as reported in its opening signals costs because defendants did not disprove them.

Defendants also claim that AEPCO omitted the cost of second "helper" switch machines on Nos. 20 and 24 turnouts, and the standard rods for connecting these "helper" switch machines to the rail.[569] AEPCO replies that these items would not be necessary.[570] AEPCO argues that defendants presented no evidence indicating that they have installed such "helper" switch machines on any of the lines that would be replicated by the ANR. AEPCO also contends that, while "helper" switch machines are used with moveable point frogs in turnouts,[571] defendants provide no evidence that the replicated lines would use any moveable point frog turnouts. As AEPCO has shown that the second "helper" switch machines on Nos. 20 and 24 turnouts, and thus the standard rods for connecting those "helper" switch machines to the rail, would be unnecessary, we will not include their costs.[572]

d. Dispatching Center (CTC Office Equipment)

The parties agree that CTC office equipment would cost a total of $2.5 million.[573] We use their agreed-upon cost.

e. Intermediate Signals

The parties do not discuss intermediate signals in their road property investment narratives,[574] and our conclusions are therefore based entirely on our review of their supporting evidence and spreadsheets. The parties present different labor and materials unit costs. However, the parties use essentially the same methodology to develop their labor and materials

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[567] AEPCO's Rebuttal III-F-72.

[568] AEPCO's Opening WP "Summary Signal Costs.xls."

[569] BNSF/UP's Reply III.F-93.

[570] AEPCO's Rebuttal III-F-73.

[571] Id., citing Rebuttal e-WP "UP No. 24 turnout.pdf" (AEPCO claims the workpaper shows that UP's No. 24 turnout has 1 switch machine for the turnout and 1 for the moveable point frog).

[572] See AEPCO's Rebuttal WP "UP No. 24 turnout.pdf."

[573] AEPCO's Rebuttal III-F-73.

[574] The parties address intermediate signaling in the context of the RTC model. BNSF/UP's Reply III.C-50-51; AEPCO's Rebuttal III-C-39-40, 46-47. AEPCO briefly mentions intermediate signaling in its opening RPI narrative. AEPCO's Opening III-F-69.

costs. Defendants use AEPCO's signal spreadsheet, which includes a section in which the labor and materials costs are generated, but each party uses slightly different inputs for these costs. Because AEPCO has failed to satisfy its burden of proof by not supporting or explaining its input choices, we accept defendants' costs.

f. Association of American Railroads (AAR) Units

AAR units are used by the parties to estimate how many personnel are needed for a particular task. Defendants agree to the AAR units that AEPCO presented on opening for installation of signals and communications systems. On rebuttal, AEPCO attempts to modify its AAR units for intermediate signals, control points, highway grade crossing warnings, and FEDs and setouts.[575] We accept the units AEPCO presented on opening, with which defendants agreed. We will not accept evidence that defendants have not had the opportunity to review and challenge. See Duke/NS, 7 S.T.B. at 100-01.

Table B-10

AAR Units			
Signal and Detector Types	**AEPCO**	**BNSF/UP**	**STB**
Intermediate Signals	15,463	15,495	15,495
Control Points	29,378	27,910	27,910
Helper Switch Machines	-	3,224	-
Turnout Insulated Joints	-	-	-
Highway Grade Crossings Warning	14,292	14,098	14,098
FEDs and setouts	5296	5312	5312
AEI	375	375	375
High Water and Slide Detectors	143	143	143

2. Detectors

a. Failed Equipment Detectors (FEDs) and Setouts

As shown in the table below, the parties differ by 1 FED in the setout 2, 2 track FEDs category. AEPCO does not respond to defendants' argument[576] that not enough detectors are located on the Orin Line. We interpret this as acceptance. Thus, we accept defendants' FED total costs.

[575] AEPCO's Rebuttal III-D-145.

[576] BNSF/UP's Reply III.B-11.

Table B-11

FED Quantity			
	AEPCO	**BNSF/UP**	**STB**
Setout 1 – No. of Tracks			
2 track FEDs	34	34	34
1 track FEDs	47	47	47
Setout 2 – No. of Tracks			
2 track FEDs	68	69	69
1 track FEDs	90	90	90

Table B-12

FED Costs			
	AEPCO	**BNSF/UP**	**STB**
Material Cost	$10,657,956	$12,167,251	$12,167,251
Labor Cost	$12,161,464	$12,225,128	$12,225,128
Total Cost	**$22,819,420**	**$24,392,379**	**$24,392,379**

b. Automatic Equipment Identification (AEI) Detectors

Defendants accept AEPCO's specifications for AEI detectors.[577] The parties differ slightly on total cost,[578] but we accept AEPCO's total cost, because defendants have accepted AEPCO's specifications.

c. High Water and Slide Detectors

The parties agree to a total costs for high water and slide detectors.[579] We use the agreed-upon costs.

3. Communication System

The ANR's communication system would use a combination of fiber optic and radio technology.[580] Fiber optic cable would be used where it has been installed on the lines that the ANR would replicate.[581]

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[577] Id. III.B-36.

[578] AEPCO's Rebuttal WP "Summary Signal Costs.Rebuttal.xls"; BNSF/UP's Reply WP "Summary Signal Costs.xls."

[579] AEPCO's Rebuttal WP "Summary Signal Costs.Rebuttal.xls"; BNSF/UP's Reply WP "Summary Signal Costs.xls."

[580] AEPCO's Opening III-F-72.

[581] Id. III-F-73.

a. Fiber Nodes (Fiber Optic Interface Equipment)

Defendants argue that AEPCO did not adequately support its cost for fiber optic interface equipment (fiber nodes), and that AEPCO's total cost of $500,000 is grossly understated.[582] Defendants claim that a single node site would cost $250,000.[583] AEPCO concedes that its opening evidence did not include its detailed cost for the equipment.[584]

On rebuttal, AEPCO's estimated cost of $20,298 per fiber node includes equipment and installation.[585] The fiber node would be housed in a signal hut.[586] AEPCO does not explain the basis for its costs. In contrast, defendants' estimated cost of $250,000 per fiber node includes equipment, installation, wiring, site preparation, and security fencing. The fiber node instrumentation rack would be housed in a stand-alone building. This cost estimate is based on an electronic-mail quote from Canadian National Railway's Telecom Manager.[587] The quote includes photographs of the instrumentation rack and the outside of the building.[588]

We accept defendants' costs for fiber nodes, because defendants' evidence provides much greater detail, while AEPCO concedes that its opening evidence was deficient.

We did not find AEPCO's opening fiber node quantity, although AEPCO claims on rebuttal that it submitted 29 fiber nodes on opening.[589] Defendants submitted a quantity of 30 fiber nodes on reply.[590] AEPCO submitted 39 fiber nodes on rebuttal.[591] Neither side fully explains how it calculated its fiber node quantities, but once again we will not accept a submission from AEPCO on rebuttal that defendants have not had the opportunity to address. In addition, AEPCO has the burden of proof and did not support its quantity, which would increase the ANR's costs in any event. We accept 30 fiber nodes.

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[582] BNSF/UP's Reply III.F-94.

[583] Id. III.F-94.

[584] AEPCO's Rebuttal III-F-74.

[585] AEPCO's Rebuttal WP "comms summary.REBUTTAL.xls," tab "fiber nodes."

[586] AEPCO's Rebuttal WP "Fiber Node Equipment.doc."

[587] BNSF/UP's Reply WP "Fiber Sites Estimate 4-28-10.pdf."

[588] Id.

[589] AEPCO's Rebuttal III-F-74.

[590] BNSF/UP's Reply WP "Comms summary.xls" tab "summary."

[591] AEPCO's Rebuttal III-F-74.

b. Microwave Towers

The parties agree on microwave tower total costs, which include quantity, locations, microwave equipment and communication sheds.[592] We use the agreed-upon costs.

c. Mobile Radios

The parties agree on a total cost for mobile radios.[593] We use the agreed-upon cost.

d. Fencing

The parties agree to a total cost of fencing for microwave towers.[594] We use their agreed-upon cost.

G. Buildings and Facilities

Table B-13

Buildings & Facilities			
	AEPCO	**BNSF/UP**	**STB**
Headquarters Building	$3,452,021	$3,449,283	$3,450,002
Fueling Facilities	$74,305,891	$132,910,161	$87,215,407
Locomotive Shops	$31,847,087	$57,026,150	$31,847,087
Car Repair Shop	$0	$0	$0
Crew, MOW/Roadway Bldgs, MOW Security Fencing and Microwave Fencing	$16,980,251	$19,218,241	$17,264,879
Yard Site Costs (includes Package Sewage)	$49,067,116	$8,618,261	$50,777,116
Intermodal	$0	$4,148,325	$278,100
TOTAL	**$175,652,366**	**$225,372,345**	**$190,832,590**

1. Headquarters Building

The parties agree to a 21,500 square-foot-building.[595] On opening, AEPCO located the headquarters building at the North Amarillo Yard.[596] Defendants relocated it to Deming.[597] AEPCO does not address the location on rebuttal, and we therefore accept the Deming location.

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[592] AEPCO's Opening WP "Comms Summary.xls"; BNSF/UP's Reply WP "Comms Summary.xls."

[593] AEPCO's Opening WP "Comms Summary.xls"; BNSF/UP's Reply WP "Comms Summary.xls."

[594] BNSF/UP's Reply WP "ANR RR Site and Facilities Costs.xls."

[595] BNSF/UP's Reply III.F-97; AEPCO's Rebuttal III-F-76.

[596] AEPCO's Opening III-F-76.

Defendants accept AEPCO's methodology and pricing for site grading, drainage, and lighting for the headquarters building.[598] Defendants argue that AEPCO excluded window treatments, an emergency generator, utility connections, a paging system, smoke detectors, and a security system for the building.[599] A review of AEPCO's opening spreadsheet reveals that it did include the items specified as missing by defendants, with the exception of window treatments.[600] Items that are classified as equipment and furnishings, such as blinds and office furniture, are items that are typical dressings for a headquarters building and therefore should be included. Because we cannot break out each item needed for the headquarters building individually, and as AEPCO has not met its burden of proof given its omissions, we accept defendants' specifications for the headquarters building.

Defendants state on reply that they accept AEPCO's use of Means pricing,[601] but, although both parties use Means to determine unit costs for the headquarters building, there are slight differences in their building specifications, which results in a difference in their cost per square foot.[602] Neither party supports its costs with specific references to Means; the parties should have provided copies of the pages containing their unit costs. As AEPCO has not met its burden of proof because it did not provide that supporting evidence, we accept defendants' costs.

(. . . continued)

[597] BNSF/UP's Reply III.F-97.

[598] Id. III.F-98.

[599] Id.

[600] AEPCO's Opening WP "ANR Buildings and Facilities.xls."

[601] BNSF/UP's Reply III.F-97.

[602] AEPCO's Rebuttal WP "ANR Buildings and Facilities final.xls"; BNSF/UP's Reply WP "ANR RR Building and Facility.xls."

Table B-14

Headquarters Building Cost per Square Foot			
	Cost per Square Foot		
	AEPCO	BNSF/UP	STB
Substructure	6.19	6.70	6.70
Shell	31.21	35.71	35.71
Interiors	27.81	21.08	21.08
Services	52.47	93.95	93.95
Equipment and Furnishings	0	3.00	3.00
Contractor's Overhead & Profit[603]	21.19	-	-
Total Cost per Square Foot	**$138.86**	**$160.43**	**$160.43**

2. Fueling Facilities

For the fueling facilities at the Guernsey Yard and the West El Paso Yard, the parties agree on the unit costs of fueling platforms but disagree on the number of platforms.[604] Neither side supports its proposed number of platforms. Because AEPCO has the burden of proof and did not meet it, we will accept defendants' number of fueling platforms for these two yards.

The parties agree that the Texico yard would not have fueling facilities.[605] The parties agree on the unit costs and number of fueling platforms at the West Vaughn Yard and the North Amarillo Yard, and we use the agreed-upon costs.[606]

3. Locomotive Inspection Pit and Locomotive Shops

a. Locomotive Inspection Pit

Defendants argue that a facility for FRA-mandated 92-day inspections would be necessary at the West El Paso Yard. Defendants describe the facilities both as a locomotive

[603] Defendants apparently do not include a separate cost for contractor overhead and profit. Given that we have accepted defendants' headquarter building cost per square foot, we will not include this item.

[604] AEPCO's Rebuttal WP "ANR Building and Facility Final.Rebuttal.xls"; BNSF/UP's Reply WP "ANR RR Yards and Facility Costs.xls."

[605] AEPCO's Rebuttal WP "ANR Building and Facility Final.Rebuttal.xls;" BNSF/UP's Reply WP "ANR RR Yards and Facility Costs.xls."

[606] AEPCO's Rebuttal WP "ANR Building and Facility Final.Rebuttal.xls"; BNSF/UP's Reply WP "ANR RR Yards and Facility Costs.xls."

inspection pit[607] and as a locomotive shop similar to the Guernsey shop.[608] AEPCO agrees to the necessity of an inspection pit but disagrees with defendants' proposed costs of $14,018,771, arguing that it is excessive and not called for by defendants' own operating plan for the ANR.[609] AEPCO proposes alternative costs of $108,273 for the locomotive pit on rebuttal.[610] Defendants provide no itemized details on the specifications for the shop/pit that they propose that distinguish their proposal from AEPCO's proposal.[611] As defendants propose costs without any supporting documentation and those costs appear to establish a facility greatly in excess of what would be necessary, we accept AEPCO's costs, which are documented in detail.

b. Locomotive Shops

The parties agree on the source of the unit costs, size, and locations of the Guernsey and North Amarillo locomotive shops. There would be two shops, one in Guernsey designed to perform FRA-required 92-day inspections, and one in the North Amarillo Yard, which would be the primary shop where heavier repairs would be performed.[612] The parties agree that the shops would be the same size, but the North Amarillo shop would have additional equipment.[613]

However, the parties disagree on certain specifications for the Guernsey and North Amarillo shops. Defendants claim that modifications to the shop configurations and equipment that AEPCO proposes would be necessary. On rebuttal, AEPCO responds that its opening evidence included certain items that defendants claim are missing and that certain items advocated by defendants would be excessive. A review of the parties' spreadsheets reveals that AEPCO did include some of the items defendants claim are missing from AEPCO's opening locomotive shop costs.[614] As for the others, we agree with AEPCO that outside track and walkways would not be required because adequate staging and load testing areas were initially provided in AEPCO's opening shop configurations.[615] We agree with AEPCO that various items included by defendants would be excessive.[616] Given our conclusions that AEPCO's

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[607] BNSF/UP's Reply III.B-23.

[608] Id. III.F-99.

[609] AEPCO's Rebuttal III-F-78.

[610] AEPCO's Rebuttal WP "ANR Buildings and Facilities Final.xls," tab "ANR Yard Summary Cost."

[611] BNSF/UP's Reply III.F-99.

[612] AEPCO's Opening III-F-80; BNSF/UP's Reply III.F-98-99.

[613] BNSF/UP's Reply III.F-98-99; AEPCO's Rebuttal III-F-78.

[614] AEPCO's Opening WP "ANR Building and Facilities Final.xls" tab "ANR Locomotive Shops with Yards."

[615] AEPCO's Rebuttal III-F-80.

[616] Id. III-F-81-82.

specifications are adequate and defendants' additions would be unnecessary, we accept AEPCO's specifications for the Guernsey and North Amarillo shops.

Lastly, AEPCO points out that defendants more than doubled the unit cost of Guernsey and North Amarillo shell buildings without explanation, while stating in their narrative that they agree with the sources of AEPCO's unit costs.[617] Because defendants have not supported any deviation from their general agreement with the source of AEPCO's unit cost, and because we use AEPCO's specifications and unit costs, we accept AEPCO's final costs for both the North Amarillo and Guernsey locations.

4. Car Repair Shop

The parties agree that the ANR's car maintenance contractor would be responsible for providing the car maintenance shop, and that the ANR would therefore incur no construction costs for such a facility.[618] The car maintenance contractor is accounted for as an operating expense.

5. Crew Change Facilities and Yard Offices

a. Locations and Square Footage

The parties agree that crew change facilities would be required at Laurel, Mont.; Campbell, Wyo.; Guernsey, Wyo.; Sterling, Colo.; Denver, Colo.; North Amarillo, N.M.; Vaughn; Defiance; and West El Paso. The parties agree that yard offices would be required at North Amarillo; Guernsey; Texico, N.M.; Vaughn; and West El Paso. AEPCO proposes 2,700-square-foot crew change facilities and 2,700-square-foot yard offices at the respective locations.[619] The parties agree to 2,700-square-foot buildings that would function solely as crew change facilities at 5 locations: Laurel, Campbell, Sterling, Denver, and Defiance. The parties agree to a 2,700-square-foot building that would function solely as a yard office at Texico.

In its narrative, defendants appear to propose 5,000-square-foot combined yard offices[620] and crew change facilities at the locations that would require both yard offices and crew change facilities.[621] There are 4 such locations: North Amarillo, Guernsey, Vaughn, and West El Paso. But defendants' spreadsheets contradict their narrative because they not only add square footage

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[617] Id. III-F-81.

[618] AEPCO's Opening III-F-81; BNSF/UP's Reply III.F-100.

[619] AEPCO's Rebuttal III-F-82.

[620] BNSF/UP's Reply WP "ANR RR Yards and Facilities Cost.xls" tab "ANR Yards Summary Cost."

[621] BNSF/UP's Reply III.F-100 ("Where crew change and yard office functions could be combined in a single building, defendants have specified a *single*, somewhat larger building." (emphasis added)).

for crew change facilities to 4 of the yard offices, but also leave the freestanding crew change facilities in place where crew change facilities and yard offices could be combined.[622] This results in duplicate crew change facilities at 4 locations. We assume that defendants' duplication of crew change facilities in their spreadsheets was in error and that they intended to present the more reasonable proposal from their narrative.

AEPCO objects to the square footage of the combined facilities, arguing that defendants have not provided any evidence that a 2,700-square-foot building would be inadequate for a combined yard office/crew change facility.[623] AEPCO, however, does not support its claim that a 2,700-square-foot building would be sufficient for the combined functions, and indeed proposes separate 2,700-square-foot buildings for each location. We accept defendants' proposal for 5,000-square-foot combined facilities at the 4 locations where the parties agree that both crew change facilities and yard offices would be required, because it is the least-cost proposal sufficient to meet the needs of the ANR.

b. Unit Costs

The parties disagree on the unit cost for the combined crew change/yard office facilities. Both sides base their proposed unit cost on Means, but neither side details the Means specifications for the type of building used.[624] AEPCO claims that defendants "gold-plated" the buildings for a higher unit cost,[625] but AEPCO does not support that claim with evidence such as current building designs, photographs, or railroad specifications documents. Because AEPCO has failed to detail its Means specifications and therefore has failed to satisfy its burden of proof or to adequately refute defendants' proposals, we accept defendants' proposed unit cost for the combined facilities.

For crew change facilities that are not combined with yard offices, we accept defendants' unit cost. Both sides base their unit costs on Means,[626] but again, neither side details its Means specifications. AEPCO, which has the burden of proof, has not justified its unit cost or supported its claims of defendants' gold-plating.

We accept AEPCO's proposed unit cost for the Texico yard office, which does not include a crew change facility. Defendants did not submit a unit cost for a yard office building at the Texico yard, and thus AEPCO's evidence is the only evidence of record.

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[622] BNSF/UP's Reply WP "ANR RR Yards and Facility Costs/III-F-7 Summary.xls;" BNSF/UP's Reply WP "ANR Buildings and Facilities/Crew Change Facilities.xls." The square footage for the combined facilities is given in BNSF/UP's Reply WP "ANR RR Yards and Facilities Cost/ANR Yards Summary Cost.xls."

[623] AEPCO's Rebuttal III-F-83.

[624] AEPCO's Opening III-F-82; BNSF/UP's Reply III.F-100.

[625] AEPCO's Rebuttal III-F-83.

[626] AEPCO's Opening III-F-82; BNSF/UP's Reply III.F-100.

6. MOW Buildings (Roadway Buildings)

On opening, AEPCO contradicts itself by proposing 29 MOW buildings in its narrative[627] and 15 MOW buildings in its supporting evidence.[628] AEPCO increases its MOW count on rebuttal to 37, stating in its narrative that its opening count was understated because the buildings were only included at locations where roadmasters would be headquartered, rather than at all MOW crew locations.[629] AEPCO has the burden of proof, and it does not adequately explain how it reached its building count until rebuttal. Moreover, it changed that count on rebuttal when defendants would not have an opportunity to reply. Therefore, we accept defendants' count of 20 MOW buildings.[630] See Duke/NS, 7 S.T.B. at 100-01.[631]

The parties agree to 2,700-square-foot buildings. AEPCO failed to support its unit cost other than to state it was taken from Means. Because AEPCO did not adequately support its unit cost, we accept defendants' MOW building unit cost.

Defendants argue that each of their 20 MOW facilities would require an 8,000-square-foot outdoor fenced storage yard for enclosed security, and that the areas should be gravel-paved to provide a stable surface for storage of track materials and other items.[632] AEPCO agrees that fenced storage would be useful at locations where roadmasters are headquartered.[633] We accept fenced storage at the 20 MOW buildings. However, although defendants discuss the placement of gravel-paved surfaces within the MOW yard storage areas, their spreadsheets do not contain a cost for this item. AEPCO agrees with defendants' narrative by using their quantity and pricing of fencing and also provides detailed cost and quantity data for paving material.[634] We thus accept AEPCO's paving unit cost and quantity, because it is the only evidence of record. The parties agree on fencing unit cost and quantity.

In their narrative, defendants state that they accept AEPCO's building design,[635] but in their spreadsheets, they add a 1,350-square-foot garage to the building design.[636] We accept AEPCO's building design, because defendants agree to it in their narrative.

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[627] AEPCO's Opening III-F-82.

[628] AEPCO's Opening WP "ANR Buildings and Facilities Final.xls."

[629] AEPCO's Rebuttal III-F-83.

[630] BNSF/UP's Reply WP "ANR RR Building and Facility.xls."

[631] See supra Appendix A, Part F, Maintenance-of-Way.

[632] BNSF/UP's Reply III.F-100-101; BNSF/UP's Reply WP "ANR RR Yards and Facilities Costs/III-F-7 Summary."

[633] AEPCO's Rebuttal III-F-84.

[634] AEPCO's Rebuttal WP "ANR Buildings and Facilities Final Rebuttal.xls."

[635] BNSF/UP's Reply III.F-100.

[636] BNSF/UP's Reply WP "ANR RR Site and Facilities Costs.xls."

7. Wastewater Treatment

AEPCO proposes to treat wastewater through a combination of local sewer connections and package sewage treatment plants.[637] A package sewage treatment plant would be preassembled with all the necessary equipment, would process 2,000 gallons of waste per day, would arrive at the appropriate site on a flat bed truck, and would be set up on a concrete slab.[638] Defendants accept AEPCO's proposal for wastewater treatment and AEPCO's unit costs.[639] But the parties differ on the number of package sewage treatment plants. AEPCO proposes 40 package sewage treatment plants: plants at 6 of its proposed crew change buildings and at 34 of its MOW buildings. Defendants propose a total of 34 package plants at locations corresponding to crew change facilities, MOW buildings, and combination crew change/yard office facilities. However, as discussed above under Section G.5., Crew Change Facilities and Yard Offices, defendants' spreadsheets double the crew change facilities at certain locations where defendants add a combined crew change/yard office without removing the freestanding crew change facilities. This error carries over to package sewage treatment plants, as defendants include plants for all crew change facilities, including the duplicates in their spreadsheets. We accept defendants' proposal to associate 1 plant with each of its crew change, MOW, yard office, and crew change/yard office buildings, which results in 30 package sewage treatment plants as shown in the table below. This is the least-cost option sufficient to meet the needs of the ANR. Accepting AEPCO's proposal would result in extra package treatment plants because we have accepted fewer MOW buildings and crew change buildings than AEPCO planned to associate with package treatment plants.

Table B-15

Buildings with Package Sewage Treatment Plants			
	AEPCO	**BNSF/UP**	**STB**
Crew Change Building	6	9	5
MOW Buildings	34	20	20
Crew Change /Yard Office	-	5	5
Total No. of Treatment Plants	**40**	**34**	**30**

8. Yard Site Costs

On opening, AEPCO proposes yard site costs of $42.4 million in its narrative.[640] The parties provide only a limited discussion of their yard site costs in their narratives, except for statements by the parties where they acknowledge that defendants accept a number of AEPCO's

[637] AEPCO's Opening III-F-83-84.

[638] Id. III-F-84.

[639] BNSF/UP's Reply III.F-101.

[640] AEPCO's Opening III-F-76.

yard site costs.[641] Based on our examination of the workpapers, while there is very little support, we conclude that defendants propose yard site costs of $8,618,261.[642] AEPCO increases its yard site costs on rebuttal.[643]

The parties do address and agree to AEPCO's yard lighting costs at the ANR's 3 fueling yards (Texico, West Vaughn, and West El Paso) and 2 inspection yards (Guernsey and North Amarillo).[644] The parties also agree to AEPCO's yard air costs[645] at the Texico yard.[646] Yard air would be included at only the Texico yard because the process of cutting and reassembling blocks of intermodal cars, which will take place only at Texico, would require yard air.[647]

We accept AEPCO's opening yard site costs,[648] and we adjust those costs with the correct location factor. We accept AEPCO's opening costs, rather than its rebuttal costs, because those are the costs to which defendants agreed in part. We note that while the parties are not in agreement on certain inputs, we still accept AEPCO's costs because they are the best evidence of record. AEPCO submitted a workpaper itemizing the components of its yard site costs,[649] while we have no further information on the costs submitted by defendants.

9. Intermodal Facilities

We note that while AEPCO's opening narrative does not address intermodal facilities separately from yard costs, AEPCO does provide that the ANR would have a track for intermodal service and a parking lot for tractors and chassis at the West El Paso Yard.[650] On reply, defendants claim that the ANR would require an intermodal facility at the West El Paso Yard and that AEPCO did not propose or cost such a facility.[651] Defendants add security fencing, 2 sliding truck gates, 2 sliding rail gates, high mast light towers, and guard booths.[652]

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[641] BNSF/UP's Reply III.F-101; AEPCO's Rebuttal III-F-84.

[642] This total is the sum of "Facility Site Costs" and "Package Sewage Treatment Plant." BNSF/UP's Reply WP "ANR RR Yards & Facilities Costs.xls" at III-F-7 Summary.

[643] AEPCO's Rebuttal WP "ANR Buildings and Facilities Final.REBUTTAL.xls."

[644] AEPCO's Opening III-F-84; BNSF/UP's Reply III.F-101.

[645] Yard air is used for cutting and reassembling blocks of intermodal cars. AEPCO's Opening III-F-84.

[646] Id.; BNSF/UP's Reply III.F-101.

[647] AEPCO's Opening III-F-84.

[648] Id. III-F-76.

[649] AEPCO's Opening WP "ANR Buildings and Facilities Final.xls."

[650] AEPCO's Opening III-F-16.

[651] BNSF/UP's Reply III.F-101.

[652] Id. III.F-101.

On rebuttal, AEPCO argues that it did include an intermodal facility at the West El Paso Yard and that defendants' additions to the yard are duplicative of AEPCO's opening submission.[653]

On opening, AEPCO included the costs for security fencing and lighting at the West El Paso Yard,[654] and therefore we do not accept defendants' additions for these items. The West El Paso Yard would require slide truck gates, sliding rail gates, and a guard booth because these are typical elements of an intermodal facility. AEPCO did not include these items and did not provide other means for these functions to be carried out. We accept defendants' total costs for the addition of slide truck gates, sliding rail gates, and a guard booth, because they are the only evidence of record for these items.

H. Public Improvements

Table B-16

Public Improvements Total Costs			
	AEPCO	**BNSF/UP**	**STB**
Fencing	$54,665,910	$54,639,555	$54,639,677
Roadway Signs	$98,350	$93,462	$93,462
Crossing Protection	$1,750,776	$1,859,205	$1,766,672
At-Grade Crossing	$3,238,827	$3,290,040	$3,238,827
TOTAL	**$59,753,863**	**$59,882,262**	**$59,738,638**

1. Fencing

a. Right-of-Way Fencing

Following precedent for the lines being replicated, AEPCO includes fencing for 100% of the ANR lines except the Campbell Branch, for which it proposes to fence 90%.[655] It proposes a unit cost for the ROW fencing based on documents provided by BNSF in discovery.[656] Defendants agree to these quantities (23,252,803 linear feet) and unit cost ($2.34 per linear foot).[657] We accept the agreed-upon quantity and unit cost, for a total cost of $54,411,559.

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[653] AEPCO's Rebuttal III-F-84-85.

[654] AEPCO's Opening WP "Building and Facilities Final.xls" tab "ANR Yard Summary Cost." Because the West El Paso Yard is not solely an intermodal facility, the costs associated with the security fencing and lighting are accounted for elsewhere.

[655] AEPCO's Opening III-F-84 (AEPCO refers to prior SAC cases in the narrative but does not cite a particular decision); AEPCO's Opening WP "ANR Public Improvements.xls," cell E13.

[656] AEPCO's Opening WP "ANR Unit Costs.xls."

[657] BNSF/UP's Reply III.F-101; BNSF/UP's Reply WP "ANR RR Public Improvement.xlsx," cell E13.

b. Snow and Slide Detector Fencing

AEPCO does not provide a narrative for the items listed in the table below, either on opening, or for its change on rebuttal.[658] Defendants agree to AEPCO's opening costs, without explanation.[659] Because the parties agreed to AEPCO's openings costs and AEPCO has provided no support for its increase in snow fence unit cost on rebuttal, we accept the agreed-upon costs.

Table B-17

Slide Detector Fencing and Snow Fencing Quantities and Costs			
	AEPCO	**BNSF/UP**	**STB**
Slide Detector Fencing			
Quantity	3,858	3,858	3,858
Unit Cost	$15.00	$15.00	$15.00
Total Cost	$57,870	$57,870	$57,870
Snow Fencing			
Quantity	40,925	40,925	40,925
Unit Cost	$4.80	$4.16	$4.16
Total Cost	**$196,481**	**$170,125**	**$170,125**

2. Roadway Signs

AEPCO does not provide a narrative for the items listed in the table below, either on opening, or for its changes on rebuttal.[660] Defendants agree to AEPCO's opening costs, without explanation.[661] Because the parties agreed to AEPCO's openings costs and AEPCO has provided no support for its changes on rebuttal, we accept the agreed-upon costs.

[658] AEPCO's Opening WP "ANR Public Improvements.xls," Summary; AEPCO's Rebuttal WP "ANR Public Improvements.Rebuttal.xlsx," Summary.

[659] BNSF/UP's Reply WP "ANR RR Public Improvements.xlsx," Original ANR Summary.

[660] AEPCO's Opening WP "ANR Public Improvements.xls," Summary; AEPCO's Rebuttal WP "ANR Public Improvements.Rebuttal.xlsx," Summary.

[661] BNSF/UP's Reply WP "ANR RR Public Improvements.xlsx," Original ANR Summary.

Table B-18

Derail, Milepost, Yard Limit, and Flanger Sign Quantities and Costs			
	AEPCO	**BNSF/UP**	**STB**
Derail Sign			
Quantity	4	454	454
Unit Cost	$39.33	$39.33	$39.33
Total Cost	**$157**	**$17,856**	**$17,856**
Milepost Sign			
Quantity	6,676	6,612	6,612
Unit Cost	$9.88	$9.88	$9.88
Total Cost	**$65,959**	**$65,328**	**$65,328**
Yard Limit Sign			
Quantity	116	116	116
Unit Cost	$50.93	$44.10	$44.10
Total Cost	**$5,907.76**	**$5,115.30**	**$5,115.30**
Flanger Sign			
Quantity	520	522	522
Unit Cost	$50.93	$44.10	$44.10
Total Cost	**$26,483.08**	**$23,018.87**	**$23,018.87**

3. Crossing Protection Signs

The parties generally agree on the types of signs and their unit costs.[662] Consistent with precedent, AEPCO includes 10% of the costs for signalized crossing protection, where needed on the ANR, plus 10% of the cost of installation of this equipment.[663] Defendants agree to this.[664]

Defendants accept AEPCO's costs for railroad sign posts and a standard package of railroad signs (including mileposts, whistle posts, yard limit, and crossbuck signs). While AEPCO attempts to increase the private crossing sign quantity, reduce the crossbuck sign quantity, and reduce the whistle sign quantity on rebuttal without explanation,[665] defendants already accepted its opening quantities for these signs, and AEPCO fails to support any deviation from these agreed-upon quantities. We thus use the agreed-upon costs and quantities for these signs.

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[662] AEPCO's Opening III-F-71; BNSF/UP's Reply III.F-102.

[663] AEPCO's Opening III-F-71 (citing Duke/CSXT, 7 S.T.B. at 504).

[664] BNSF/UP's Reply III.F-102.

[665] AEPCO's Rebuttal III-F-71.

However, AEPCO failed to include any costs for mandatory emergency notification system (ENS) signs on opening. Defendants point out this error and include ENS signs on reply.[666] AEPCO agrees that these signs should be included, but disagrees with the costs and quantities that defendants propose.[667] Because AEPCO did not submit its ENS sign proposal until rebuttal, defendants had no chance to respond to it, and AEPCO failed to provide any argument in support of its cost and quantity differences, we accept defendants' unit cost and quantity for ENS signs.

We accept the crossing protection sign counts in accordance with the table below:

Table B-19

Crossing Protection Sign Quantities			
	AEPCO	**BNSF/UP**	**STB**
Multiple Track Sign	1,092	1,092	1,092
Stop Sign, Highway Crossing	44	44	44
Private Crossing Sign	962	782	782
Crossbuck	14	187	187
Whistle Sign w/post	1,366	1,368	1,368
ENS (Emergency Notification System)	1,366 ($65.06 ea.)	1,171 ($135.52 ea.)[668]	1,171 ($135.52 ea.)

4. Crossing Protection

AEPCO does not provide a narrative for the items listed in the table below, either on opening, or for its change on rebuttal.[669] Defendants agree to AEPCO's opening costs, without explanation.[670] Because the parties agreed to AEPCO's openings costs and AEPCO has provided no support for its change on rebuttal, we accept the agreed-upon costs.

[666] BNSF/UP's Reply III.F-92 (citing 49 U.S.C. § 20152).

[667] AEPCO's Rebuttal III-F-71.

[668] The cost listed here is the cost for 2 signs per location as submitted by BNSF/UP.

[669] AEPCO's Opening WP "ANR Public Improvements.xls," Grade Crossing Items Costs; AEPCO's Rebuttal WP "ANR Public Improvements.Rebuttal.xlsx," Grade Crossing Items Costs.

[670] BNSF/UP's Reply WP "ANR RR Public Improvements.xlsx," Original ANR Summary.

Table B-20

Flood Gate and Cattle Guard Quantities and Costs			
	AEPCO	**BNSF/UP**	**STB**
Flood Gate			
Quantity	2	2	2
Unit Cost	$25,000	$25,000	$25,000
Total Cost	$50,000	$50,000	$50,000
Cattle Guard			
Quantity	787	784	784
Unit Cost	$2,000	$2,000	$2,000
Total Cost	**$1,574,000**	**$1,568,000**	**$1,568,000**

5. At-Grade Crossings

Consistent with precedent, AEPCO proposes that the ANR would assume 100% of the costs of constructing all at-grade crossings.[671] It includes cattle guards at crossings other than in cities and towns. AEPCO proposes total at-grade crossing costs of $3,290,040. Defendants accept AEPCO's proposals for the Orin, Campbell, Reno, and Boise City Subdivisions and AEPCO's total costs.[672] AEPCO acknowledges on rebuttal that the parties have agreed, although a review of its spreadsheets reveals that it decreases the at-grade crossing costs by $51,213. Because the parties agreed to AEPCO's opening proposals, and AEPCO fails to provide a reason for its attempted decrease in costs, we accept[673] the agreed-upon total costs of $3,290,040.

6. Grade-Separated Crossings

Both parties' narrative discussions of grade-separated crossings are in the Bridges section.[674] AEPCO agrees to defendants' total bridges costs on rebuttal, and therefore to defendants' costs for grade separated crossings.[675] We have accepted the agreed-upon grade-

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[671] AEPCO's Opening III-F-86 (citing AEP Tex. 2007, slip op. at 102; PSCo/Xcel I, 7 S.T.B. at 695-96); AEPCO's Opening e-WPs. "ANR Grade Crossing final.xls," "ANR Public Improvements.xls," & "ANR Unit Costs.xls."

[672] BNSF/UP's Reply III.F-103.

[673] We note that defendants state that "[a]s described in Section III.F-6, defendants do not accept the assumption that ANR would incur no costs for crossing protection on other areas of its network. Costs for these items are discussed in that section." Id. III.F-103. However, it is unclear to us where that discussion takes place, and therefore defendants' statement does not affect our acceptance of the at-grade crossings costs presented here.

[674] Id. III.F-88-91.

[675] AEPCO's Rebuttal III-F-70-71.

separated crossings costs of $12,180,994 as a component of the Bridges costs we have accepted.[676]

I. Mobilization

Mobilization involves the marshaling and movement of people, equipment, and supplies to the various construction sites and other pre-construction coordination and activities. AEPCO submits a 2.4% mobilization factor[677] and argues that 2.4% is consistent with AEP Texas 2007, slip op. at 103, which involved many of the same lines that are at issue here.[678] Defendants reply that AEPCO has not supported its proposed 2.4% mobilization factor and that the Board should therefore use the 3.5% factor from Simplified Standards, slip op. at 48.[679]

We accept AEPCO's 2.4% mobilization factor, because it is the best evidence of record. The 2.4% factor from AEP Texas 2007 is more specific to this case than the 3.5% factor from Simplified Standards, because many of the same lines that were replicated in AEP Texas 2007 would be replicated here. Further, the Board intended the 3.5% rate from Simplified Standards for general use in simplified cases, not in full SAC cases. There have been four full SAC cases that used a 3.5% mobilization factor, but the parties litigated the mobilization factor in only one of those cases. PPL Mont., 6 S.T.B. at 318-19 (mobilization factor litigated). In the other three cases, the parties agreed to the 3.5% factor. W. Fuels Ass'n 2007, slip op. at 132; Otter Tail Power Co., slip op. at D-41; PSCo/Xcel I, 7 S.T.B. at 696. As stated in AEP Texas 2007, 2.4% is in line with the mobilization factors used in other cases in which parties litigated this factor.[680] However, although AEPCO did not do so, we will apply the mobilization factor to the buildings and facilities cost as well, because the mobilization factor has typically been applied to buildings and facilities costs, including in AEP Texas 2007.

J. Engineering

The parties agree on an engineering factor of 10% of the total construction costs, excluding land acquisition.[681] We use this agreed-upon factor.

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[676] BNSF/UP's Reply WP "ANR OH Bridges_RR Final.xlsx."

[677] AEPCO's Opening III-F-87.

[678] AEPCO's Opening III-F-87; AEPCO's Rebuttal III-F-86-87.

[679] BNSF/UP's Reply III.F-103-104.

[680] AEP Tex. 2007, slip op. at 103-04 (noting the mobilization factors used in past cases to be Duke/CSXT (2.7% mobilization factor); Carolina Power & Light Co. (2.6%); Duke/NS (2.5%); Tex. Mun. Power Agency v. Burlington N. & Santa Fe Ry., 6 S.T.B. 573 (2003) (2.0%); Wis. Power & Light Co. v. Union Pac. R.R., 5 S.T.B. 955 (2001) (2.6%); FMC Wyo. Corp. (2.4%). Cf. PSCo/Xcel I (parties agreed to 3.5% factor); W. Tex. Utils. (3.2%)).

[681] BNSF/UP's Reply III.F-104; AEPCO's Rebuttal III-F-88.

K. Contingencies

The parties agree on a contingency factor of 10%.[682] We use this agreed-upon factor.

[682] BNSF/UP's Reply III.F-104; AEPCO's Rebuttal III-F-88.

APPENDIX C—DISCOUNTED CASH FLOW ANALYSIS

The DCF analysis first estimates the revenue stream that a SARR would need to cover its operating costs and to provide a reasonable return on capital. It then compares these revenue requirements 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 Bituminous Coal—Hiawatha, Utah, to Moapa, Nev., 10 I.C.C.2d 259, 274-77 (1994). This procedure is discussed in more detail below.

The estimated revenue requirements of the SARR would need to cover expected operating expenses and provide a reasonable return on the capital investment the SARR 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 SARR's construction period. 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 SARR's revenue requirements because taxes are a function of the flow of revenue over the analysis period, and not just the present value of the revenue. This means that we must determine the flow of capital equal to the present value of the initial road-property investment, plus interest during construction, together with the present value of scheduled, program 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, 10 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 than the 10-year DCF period, the SARR would not need to recover the full investment in rail assets in the first 10 years. We must therefore estimate the economic value of the assets as of the end of the 10-year analysis period. This "terminal value" of the SARR equals the capital recovery in the tenth year divided by the estimated real cost of capital. This calculation yields the value (at year 10) of a perpetual income stream held constant (in real terms) at the capital return projected for the tenth year. (Thus, in effect, the DCF model is an in-perpetuity analysis, although it is referred to here as a 10-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 10-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 program 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.

A. Cost of Capital

1. Cost of Equity

Capital expenses are estimated by calculating the cost of capital, which includes both the cost of debt and the cost of equity. Although the cost of debt is readily available and observable, the cost of equity (the expected return that equity investors require) can only be estimated using financial models.

The parties dispute the financial model for estimating the cost of equity for 2008. To estimate what it would cost the ANR (or any SARR) to raise equity capital, the longstanding practice in SAC cases is to use the cost of equity for the rail industry, as published annually by the Board. Prior to 2006, the Board employed a single-stage DCF model to estimate the cost of equity for the industry, but interested parties challenged that model as inaccurate. In view of challenges to using that model, the Board initiated in September 2006 a broad rulemaking to obtain public comment from all interested parties on whether a single-stage DCF model continued to be the most appropriate method for calculating the cost of equity, or whether another method would be better. As a result of that rulemaking, the Board next adopted the Capital Asset Pricing Model (CAPM), while noting it was likely an interim step, as it would consider using a blended approach to reduce variability with the individual models. Methodology to Be Employed in Determining the R.R. Industry's Cost of Capital, EP 664, slip op. at 13-14 (STB served Jan. 17, 2008). After receiving further comment on suitable methodologies, the Board changed its method of calculating the railroads' annual cost of equity to an average of the results of using the single-stage CAPM and the Multi-Stage DCF model (MSDCF). Use of a Multi-Stage Discounted Cash Flow Model in Determining the R.R. Industry's Cost of Capital (Multi-Stage DCF), EP 664 (Sub-No. 1) (STB served Jan. 28, 2009).

In Multi-Stage DCF, the Board recognized that all financial models have a certain amount of variability. As the United States Department of Transportation had commented, academic research favors combining different models of estimating the cost of equity, and that

"the use of the average of [MSDCF] and CAPM will improve the reliability and stability of [the Board's] cost-of-equity calculation." Id. at 14. The Board agreed, explaining that averaging the results from using the two models "establishes the best estimate of the railroad industry's cost of equity for [the Board's] regulatory purposes." Id. at 5. The goal in averaging results from two models was to reduce the variability and therefore achieve a more reliable estimation of the cost of equity. The Board first used the new, averaging method to calculate the railroad industry's cost of equity for the year 2008. See R.R. Cost of Capital—2008, EP 558 (Sub-No. 12) (STB served Sept. 25, 2009).

Notwithstanding the Board's determination to use the averaging method for 2008 and the years beyond, AEPCO used only CAPM for its calculation of the ANR's 2008 cost of equity. AEPCO contends that the MSDCF model is not appropriate for 2008 because that year's MSDCF figure represents growth rates that the ANR would not realize during the 10-year DCF period. In this regard, AEPCO claims that the ANR's projected traffic growth would be modest, it would not experience the rate increases presumed in MSDCF, and it would achieve only a fraction of that model's projected productivity growth for Class I railroads, because it would be a new, highly efficient railroad at its startup in late 2008.

AEPCO's argument ignores a fundamental objective of the DCF analysis: comparing the SARR's projected costs to its projected revenues. An element of the SARR's costs is the cost of capital; a SARR that does not meet the cost of raising capital in the market place will fail. Whether or not a firm expects to realize a high growth rate, it nevertheless must cover the cost of capital if it hopes to succeed.

In the rulemaking that culminated in Multi-Stage DCF, in which AEPCO could have participated, the Board decided that it would use, for part of its analysis, the MSDCF model used in the marketplace by Morningstar/Ibbotson, because it could be easily adjusted to satisfy the four requirements identified by the Board.[683] As various parties advocated, the Board decided to use the simple average of the Morningstar/Ibbotson MSDCF and CAPM, because, as explained, doing so would improve the reliability of the resulting cost-of-capital calculation. Multi-Stage DCF, slip op. at 15. We recognize that, for some years, there can be a difference between the figures derived under CAPM and MSDCF, but that is in part why we decided to average the two figures, to smooth out fluctuations. By demanding for the year 2008, the use of only one of the two figures (the one that is far more favorable to its case), AEPCO is in essence collaterally attacking Multi-Stage DCF.

AEPCO also argues that using MSDCF results in a high cost of equity for the ANR – higher than a BNSF consultant recently used for BNSF's cost of equity – and the ANR largely replicates BNSF lines. Defendants counter that the Board rejected similar arguments in the

[683] The four requirements are that the DCF model: (1) should be a multi-stage model; (2) should not focus on dividend payments only, but also incorporate broader measures of cash flow or shareholder returns; (3) should be limited to those firms that pass the screening criteria set forth in a 1985 ICC cost-of-capital decision; and (4) when combined with CAPM, should enhance the precision of the resulting cost-of-capital estimate. Multi-Stage DCF, slip op. at 3.

underlying rulemaking leading to the Multi-Stage DCF decision. Whereas AEPCO contends that the MSDCF results in a cost of equity that is too high when compared to CAPM, it is just as likely that CAPM results in a cost of equity that is too low. We use an averaging method to diminish the chances that one model's result for a cost of equity is either too high or too low.

In addition, AEPCO contends that MSDCF is inapposite here because, as a hypothetical construct, the ANR does not have a stock price. No adjustment is necessary here, however, because AEPCO bore the burden of establishing why the Board's published cost-of-equity figure, which represents the industry's average, should not apply here.

Despite making various arguments against using MSDCF and the averaging method for 2008, AEPCO accepts the averaging method for 2009 because that year's MSDCF figure reflects more moderate growth rates, and the disparity in results between CAPM and MSDCF are substantially less in 2009 than in 2008. Because the Board's averaging method itself serves to smooth out fluctuations in the cost of equity, we will not reject its use here simply because the 2008 result under the MSDCF model differs from the result using the CAPM model. It is not appropriate for a party in an individual rate case to challenge the Board's methodology for determining the industry cost of capital, as established in Multi-Stage DCF. Parties are free, however, to argue that a different level of capital costs tailored to the SARR at issue should be used because that SARR's underlying characteristics are unique to the industry at large. See FMC Wyo. Corp., 4 S.T.B. at 846; Coal Rate Guidelines, Nationwide, 1 I.C.C. 2d at 544 n. 3. However, AEPCO's arguments here do not persuade us. Accordingly, we will calculate the 2008 cost of capital according to the averaging method adopted in Multi-Stage DCF.

2. Equity Flotation Costs

The parties also differ on whether to include a separate cost for "floating" (marketing) the shares that ANR would sell to raise capital. Citing AEP Texas 2007, slip op. at 23, defendants include a separate equity-flotation cost, arguing that it would be a direct cost to the ANR to raise equity financing. Notwithstanding their reliance on AEP Texas 2007, defendants criticize the method used in that decision to calculate equity-flotation costs, contending that it essentially eliminated those costs by spreading them across the entire railroad industry. Instead, defendants use an equity-flotation "additive" of 3.9%.

AEPCO objects to defendants' assertions, arguing that railroads generally do not incur equity-flotation costs, and if they do, any equity-flotation costs are already included in the Board's cost-of-capital calculation. AEPCO also points out that BNSF (whose lines would be replicated substantially by the ANR) no longer is publicly traded. Finally, AEPCO states that the 3.9% equity-flotation-cost additive used by defendants is 30 times greater than the cost accepted by the Board in AEP Texas 2007.

Prior to AEP Texas 2007, the Board did not accept the inclusion of a separate equity-flotation cost. See, e.g., Duke/CSXT, 7 S.T.B. at 433; PSCo/Xcel I, 7 S.T.B. at 659; Tex. Mun. Power Agency, 6 S.T.B. at 751; Wis. Power & Light Co., 5 S.T.B. at 1040; Otter Tail Power Co., slip op. at E-2. In AEP Texas 2007 – the only case to date in which the Board accepted equity-flotation costs – both parties had agreed that an equity-flotation fee should be included, but differed on the method of calculating that cost. See AEP Tex. N. Co. v. BNSF Ry. (AEP Tex.

2009), NOR 41191 (Sub-No. 1), slip op. at 23 (STB served May 15, 2009). In AEP Tex. 2007, the Board ultimately accepted the complainant's method and explicitly rejected the defendant's (BNSF's) claim of an equity-flotation cost of 4%. AEP Tex. 2007, slip op. at 108.

Here, unlike AEP Texas 2007, AEPCO does not agree with the inclusion of a separate equity-flotation cost. The Board previously has explained that flotation fees already are included in the Board's cost-of-capital computation. Duke/ CSXT, 7 S.T.B. at 433. Moreover, the Board has opined that, to include such a fee separately, there would have to be evidence of the existence and size of equity-flotation fees for stock issuances of a similar size as that needed by the SARR. PSCo/Xcel I, 7 S.T.B. at 659.

Defendants have not provided such evidence of a similar-sized issuance of stock and the related equity-flotation fee. Instead, they contend that a 1991 stock issuance of unspecified size by Burlington Northern (a predecessor of BNSF), is the best available evidence of a railroad's stock-flotation cost.[684] The 1991 figure, 3.9%, rounds to the equity-flotation figure that the Board rejected in AEP Texas 2007: 4%. Thus, even if the Board were to allow a separate equity-flotation cost, the Board already has indicated that a 3.9% figure would be too high.

In view of AEPCO's vigorous objection to the use of any stock-flotation fee and in the absence of more abundant and recent evidence of stock issuances of the size that the ANR would need and of any associated stock-flotation fee, defendants have not established that a 3.9% fee is warranted. Rather, we will continue to rely on our longstanding precedent and will not allow a separate equity-flotation cost here.

B. Inflation of Land Values

The parties account for changes in both the values of capital assets and the prices of operating expenses because these values and prices would change during the 10 years covered by the DCF analysis. To do so, the parties employ forecasts of rates of inflation.

The land necessary to construct and operate a SARR is one component of the capital assets. To calculate the rate of inflation in land values, AEPCO uses a combination of indexes reflecting rural and urban land prices, weighted by the percentages of rural and urban land in the ANR's rail system. AEPCO selected 2005 as the base year and measured the change in land prices from 2005 to the years 2006, 2007, 2008, and 2009, resulting in a 4-year average. On rebuttal, AEPCO agrees with two of defendants' objections to AEPCO's methodology, and corrects its inflation rate accordingly.

In their objections, defendants argue that it was improper for AEPCO to use 2005 as the base year for this calculation and to calculate a 4-year average, contending that this approach was designed to circumvent the effect of the drastic reduction in the value of land prices/real estate between 2008 and 2009. According to defendants, AEPCO's approach contradicts the view of AEPCO's own witness and yields an average rate of inflation (more than 3%) corresponding to a total increase in land value of over 60% at the end of the 10-year SAC analysis (2018).

[684] BNSF/UP's Reply III.G-6.

Defendants contend that AEPCO instead should have used a two-year period, with 2007 as the base for measuring the average rate of inflation in 2008 and 2009.

Defendants err in stating that the four-year average circumvents the decline in real estate values between 2008 and 2009, because those years are included in the four-year average. Moreover, in arguing in favor of a two-year-average inflation index with 2007 as the base, defendants would use, for a 10-year period, an inflation rate of -3.92% (or deflation of 3.92%), representing a total loss in land value of 33% over the period. This approach appears outcome-determinative.

Two years is a very short time to measure an average rate of inflation that will be projected, in our DCF calculation, over a 10-year period. For example, in Multi-Stage DCF, we decided that the railroads' cost of capital should be measured by the average of CAPM and a MSDCF model (Morningstar/Ibbotson). In measuring the terminal growth rate (from year 11 out) in the cost of equity, the Morningstar/Ibbotson model uses, in part, "the average annual percentage change in real GDP from 1930 to the year being analyzed." Multi-Stage DCF, slip op. at 10. That percentage change would today reflect more than 80 years of experience. In adopting that model, the Board understood "that long-terms trends are informative of future prospects." Id. at 11.

Similarly, in Western Fuels Ass'n 2009, slip op. at 26, we forecasted the cost of equity for the years 2008 through 2024 by taking the average of the Board's historic findings of the cost of equity for the preceding six years: 2002 through 2007. In so doing, the Board rejected the complainant's argument that only two years' historical data should be used for the forecast. Id. As the Board explained in that decision, taking an average of the cost of equity in the six years that had already occurred in the DCF period "will similarly reduce the risk that any one year's aberrant estimate would have on the overall forecast for the DCF period."[685]

We reiterate that it is preferable to use a longer rather than a shorter period of historic data when forecasting future economic trends, such as an inflation rate for land values or the cost of equity. Here, AEPCO's average of four years of historic inflation rates is better than defendants' average of two years, because it contains more observations, is likely to be more accurate, and also includes a period of steep decline in land values, 2008-2009. For that reason, we accept the use of AEPCO's four-year average here.

The remaining issue on which the parties disagree is AEPCO's using index values weighted by the percentage of acres that are rural and urban. Defendants contend that the values should be weighted by relative land values because the land inflation forecast is applied to land investment values in the DCF model. We agree with defendants that weighting by relative value when adjusting investment values is appropriate and accept their weighting.

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[685] W. Fuels Ass'n 2009, slip op. at 26. See also AEP Tex. 2009, slip op. at 11 (under similar reasoning, forecasting cost of equity using eight years' historic data rather than two years' data); AEP Tex. 2007, slip op. at 107-08 (same).

C. Capital Cost Recovery in a 10-year DCF Analysis

In the past, the Board used a 20-year DCF analysis in rate cases prior to deciding, after notice and comment in Major Issues in Rail Rate Cases, to instead use a 10-year analysis. The Board explained in Major Issues in Rail Rate Cases, slip op. at 62, that parties had sometimes asked the Board to shorten the period from 20 years, and rate prescriptions had tended to last no longer than 10 years because of inevitable, substantial changes in circumstances. The Board also reasoned that a 10-year analysis would capture a full business cycle and would fully account for taxes, because a hypothetical SARR would have begun paying full taxes within 10 years of the base year. Id.

Defendants assert, however, that AEPCO's DCF model contains a flaw that becomes more pronounced as the analysis period is shortened. Defendants argue that AEPCO's method allows the ANR to realize all of the remaining depreciation-related tax benefits in the last year of the DCF model, whereas the depreciation benefits actually extend out 50 years – the longest projected lifespan of the SARR's assets. Thus, when the DCF model is ended at year 10, defendants argue the correct approach for realizing the tax benefits generated by the depreciation deduction would be to compute the present value of the remaining depreciation benefit as of year 10 and deduct that amount from the capitalized revenue stream. Defendants claim that calculating the present value of these unused tax benefits is consistent with the treatment of interest and depreciation in the section of the Board's DCF model that computes the present value of the replacement costs of assets into perpetuity.[686]

AEPCO's position is that, to the extent defendants have any claim, it should have been presented in the Major Issues in Rail Rate Cases proceeding. AEPCO claims its DCF model complies with the directive in Major Issues in Rail Rate Cases to use a 10-year DCF model and otherwise follows Board-accepted methodology from prior 20-year-model cases. AEPCO further asserts that even if the adjustment is theoretically correct, defendants have calculated it using an incorrect rate to discount tax benefits.[687] Defendants discount the unused depreciation expenses at the ANR's composite weighted-average cost of capital, which contains a risk premium. However, a depreciation tax-shield is a risk-free cash flow where the benefits are set by known tax rates and historic costs. AEPCO therefore maintains that the appropriate discount rate to use to discount the tax benefits is the nominal risk-free rate.

In addition, AEPCO argues that if issues associated with the truncation of the DCF period were reconsidered, then it would be appropriate to address other aspects of the 10-year model that disadvantage shippers, noting in particular the productivity adjustment to SARR operating expenses adopted in Major Issues in Rail Rate Cases that reflects a phase-in of 5% per year.

We agree with defendants that there is flaw in the DCF model submitted by AEPCO. In short, the railroads have demonstrated that the model submitted by AEPCO has overstated the terminal value of the SARR by understating the taxes the SARR would pay in perpetuity as of

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[686] BNSF/UP's Reply III.G-13-19.

[687] AEPCO's Rebuttal III-G-23.

year 10 and beyond. While we often refer to our DCF model as a 20-year or 10-year model, the part of the DCF model at issue here is really an in-perpetuity model. It calculates the terminal value of the SARR in year 10 by examining the after-tax capital carrying charges and assumes those cash flows would continue in perpetuity. However, as the railroads have shown, that calculation in effect freezes in place the predicted tax rates as of year 10, which are a function of the depreciation of the assets. That assumption was reasonably accurate in year 20, but the railroads have shown it understates taxes when performed in year 10, because the calculation no longer fairly captures the tax implications of depreciation (i.e., overstating depreciation in perpetuity).

As we said in Major Issues in Rail Rate Cases, slip op. at 8, the DCF simulates how the SARR would likely recover its capital investments, taking into account inflation, as well as Federal and state tax liabilities. Defendants' proposal aligns with this principle and is a more accurate calculation of the capital investment required to build a railroad than is the model submitted by AEPCO. That it differs from previous models in previous cases before the Board is not a reason to reopen Major Issues in Rail Rate Cases. Nowhere in Major Issues in Rail Rate Cases did we adopt or otherwise codify the way we would calculate the terminal value in the 10-year DCF. As such, we reject AEPCO's arguments that Major Issues in Rail Rate Cases should be reopened to examine this issue, and we accept defendants' proposed adjustment to AEPCO's DCF model.

Furthermore, we disagree with AEPCO that, as the benefits into the future are known and therefore risk-free, the appropriate discount rate is a risk-free rate. We believe it is unwise to differentiate income streams of the railroad based on their relative risks. The Board's process aggregates the income streams and discounts them using the railroad industry cost of capital. The risk of these different income streams varies, and assigning a different discount to one identified stream is arbitrary.

Finally, there is no merit to AEPCO's claim that we cannot or should not correct the deficiency in its calculation of the terminal value, unless we also address future productivity growth in years 11-20. Truncating the DCF model at year 10 and ignoring all future forecasts of productivity does not disadvantage the complainant. First, there is no assumption in the calculation of the terminal value about the productivity of the SARR in year 10 or any future year. As such, productivity gains the SARR might realize in years beyond year 10 are irrelevant to the way the terminal value is calculated in SAC cases. Second, operating expenses from one year to the next are independently calculated. While annual investments to cover capital costs from year 1 to year 10 are tied to year 11 and beyond, changes to year 11's operating costs have no effect on those in year 10, or any other year. As such, the maximum lawful rate in years 1-10 is not tied to the operating expenses of the SARR in any other year (except in rare cases where we perform a "netting" procedure, which is not the case here). We therefore deny AEPCO's suggestion that the Board should also reconsider the effects of the truncated model on the SARR's operating expenses.

Another issue concerning tax depreciation causes us some concern. AEPCO and defendants initially disagreed on the applicability of "bonus" depreciation provisions enacted as part of the recent federal economic-stimulus efforts. On opening, AEPCO assumes that the investments that the ANR would have made in 2006 and 2007 (for a 2008 startup) would qualify

for the preferential tax treatment (accelerated depreciation tax credits) provided in the Economic Stimulus Act of 2008 and the American Reinvestment and Recovery Act of 2009. On reply, defendants point out that investments made in those years would not quality for the bonus depreciation; the investments had to be made in the years 2008 and 2009.[688] AEPCO accepts this correction on rebuttal.[689] As a result, the bulk of the investments in the ANR do not qualify for this bonus depreciation, and application of these tax benefits has very little effect on the DCF analysis in this case. Accordingly, we will accept the parties' agreement on this issue.

Other complainants should not assume, however, that we will necessarily accept the application of these now-expired 2008 and 2009 tax benefits in calculating the DCF in their cases. We look forward to exploring the proper use of temporary tax provisions in future rate cases, as appropriate.

1. DCF Results

The first step of the DCF analysis is to calculate the ANR's total revenue requirements over the 10-year analysis period. We find that the initial road property investment of the ANR in the first quarter of 2009 would be $6,326.5M; interest during construction would be $421.1M; the present value of roadway property replacement would be $326.9M; and the resulting total road property investment would be $7,074.5M. **Table C-1** shows that the flow of capital recovery would provide the ANR a reasonable return on its capital investment and would therefore be sufficient to attract entry to serve the selected traffic group.

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[688] AEPCO's Rebuttal III.H-2-3.

[689] Id. III-H-5.

Table C-1

ANR Capital Recovery				
Year	**RPI Capital Recovery**	**Taxes**	**Cash Flow**	**Present Value**
2009	$585,544,442	$0	$585,544,442	$557,831,267
2010	$597,983,556	$0	$597,983,556	$516,939,244
2011	$617,903,373	$0	$617,903,373	$484,845,055
2012	$650,701,825	$0	$650,701,825	$466,108,752
2013	$673,846,954	$0	$673,846,954	$438,144,227
2014	$698,552,423	$0	$698,552,423	$411,056,052
2015	$727,703,896	$1,128,583	$726,575,313	$384,486,816
2016	$751,591,365	$1,930,989	$749,660,376	$359,950,331
2017	$776,080,244	$171,978,960	$604,101,284	$263,617,526
2018	$800,635,181	$251,509,368	$549,125,812	$218,636,271
Terminal Value			***	$3,100,399,619
			Total	$7,202,015,160

As shown in **Table C-2**, the total revenue requirements of the ANR over the 10-year analysis period are the sums of the capital return and the projected operating expenses.

Table C-2

ANR Total Revenue Requirements			
Year	**RPI Capital Recovery**	**Operating Expenses**	**ANR Revenue Requirements**
2009	$585,544,442	$867,944,112	$1,453,488,554
2010	$597,983,556	$1,000,243,598	$1,598,227,154
2011	$617,903,373	$1,085,309,655	$1,703,213,028
2012	$650,701,825	$1,184,459,674	$1,835,161,499
2013	$673,846,954	$1,259,251,920	$1,933,098,874
2014	$698,552,423	$1,328,822,838	$2,027,375,261
2015	$727,703,896	$1,377,601,046	$2,105,304,942
2016	$751,591,365	$1,437,722,401	$2,189,313,766
2017	$776,080,244	$1,484,570,879	$2,260,651,123
2018	$800,635,181	$1,531,299,891	$2,331,935,072

The second part of the DCF analysis compares the revenues a defendant is expected to earn from the traffic group against the revenues 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 decide what relief to provide to the complainant by allocating the revenue requirements of the SARR among the traffic group and over time. Here,

Table C-3 reveals that defendants are earning more from the traffic group than the ANR would require to serve the same traffic.

Table C-3
Discounted Cash Flow Analysis

Year	ANR Revenue Requirements	BNSF/UP Forecast Revenues	Difference	Present Value	Cumulative Difference
2009	$1,453,488,554	$2,069,093,634	$615,605,080	$584,980,129	$584,980,129
2010	$1,598,227,154	$2,309,268,635	$711,041,481	$614,955,088	$1,199,935,216
2011	$1,703,213,028	$2,515,364,459	$812,151,431	$637,604,122	$1,837,539,338
2012	$1,835,161,499	$2,741,209,007	$906,047,508	$645,699,891	$2,483,239,230
2013	$1,933,098,874	$2,947,856,603	$1,014,757,729	$656,459,219	$3,139,632,443
2014	$2,027,375,261	$3,124,221,903	$1,096,846,642	$644,105,392	$3,783,803,841
2015	$2,105,304,942	$3,263,142,225	$1,157,837,283	$617,197,553	$4,401,001,394
2016	$2,189,313,766	$3,482,090,962	$1,292,777,196	$625,555,705	$5,026,557,099
2017	$2,260,651,123	$3,710,849,260	$1,450,198,137	$636,993,925	$5,663,551,024
2018	$2,331,935,072	$3,914,131,179	$1,582,196,107	$630,861,319	$6,294,412,344