SLOVER & LOFTUS LLP
ATTORNEYS AT LAW
1224 SEVENTEENTH STREET, N. W.
WASHINGTON, D. C. 20036-3003

WILLIAM L. SLOVER
C. MICHAEL LOFTUS
JOHN H. LE SEUR
KELVIN J. DOWD
ROBERT D. ROSENBERG
CHRISTOPHER A. MILLS
FRANK J. PERGOLIZZI
ANDREW B KOLESAR III
PETER A. PFOHL
DANIEL M. JAFFE
STEPHANIE P. LYONS
JOSHUA M. HOFFMAN

OF COUNSEL
DONALD G. AVERY

TELEPHONE:
(202) 347-7170
FAX:
(202) 347-3619

WRITER'S E-MAIL:

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Cynthia T. Brown, Chief
Section of Administration
Office of Proceedings
Surface Transportation Board
395 E Street, SW
Washington, D.C. 20423-0001

Re: Docket No. 42113, Arizona Electric Power Cooperative, Inc. v. BNSF Railway Company and Union Pacific Railroad Company

Dear Ms. Brown:

Enclosed for filing in the above docket on behalf of Complainant Arizona Electric Power Cooperative, Inc. ("AEPCO"), please find the following:

1. The original and twenty (20) copies of the Highly Confidential Version of AEPCO's Opening Evidence, consisting of one volume of Narrative and one volume of Exhibits.

2. The original and ten (10) copies of the Public Version of AEPCO's Opening Evidence, also consisting of one volume of Narrative and one volume of Exhibits.

3. Three hard drives, each containing electronic copies of the Highly Confidential Version of the Narrative and Exhibits, as well as the workpapers supporting AEPCO's Opening Evidence (all of which are submitted in electronic form). The electronic workpapers are designated as Highly Confidential under the protective order entered by the Board in this proceeding.

Please date stamp the extra copies of this cover letter and the enclosed pleading and return them to our messenger. Thank you for your attention to this matter.

Respectfully submitted,

Robert D. Rosenberg

Robert D. Rosenberg
An Attorney for Complainant Arizona
Electric Power Cooperative, Inc.

RDR:rlh
Enclosures

cc: Counsel for Defendants BNSF Railway Company
and Union Pacific Railroad Company

JAN 25 2010

PUBLIC VERSION

BEFORE THE
SURFACE TRANSPORTATION BOARD

ARIZONA ELECTRIC POWER COOPERATIVE, INC. **Complainant,** **v.** **BNSF RAILWAY COMPANY** **and** **UNION PACIFIC RAILROAD COMPANY** **Defendants.**	226351 **Docket No. 42113**

OPENING EVIDENCE OF COMPLAINTANT ARIZONA ELECTRIC POWER COOPERATIVE, INC.

NARRATIVE

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ARIZONA ELECTRIC POWER
COOPERATIVE, INC.

By: William L. Slover
Robert D. Rosenberg
Christopher A. Mills
Daniel M. Jaffe
Stephanie M. Adams
Slover & Loftus LLP
1224 Seventeenth Street, NW
Washington, DC 20036
(202) 347-7170
(202) 347-3619 (fax)

Attorneys & Practitioners

Of Counsel:
Slover & Loftus LLP
1224 Seventeenth Street, NW
Washington, DC 20036
(202) 347-7170

Dated: January 25, 2010

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ACRONYMS

The following acronyms are used:

AAR	Association of American Railroads
AEI	Automatic Equipment Identifier
AEO	2009 Annual Energy Outlook April Update Forecast
AEPCO	Arizona Electric Power Cooperative, Inc.
AIILF	All-Inclusive Less Fuel Index, published by AAR
ANR	Arizona and Northern Railroad
APACHE	Apache Generating Station
APS	Arizona Public Service
ARRA	American Reinvestment and Recovery Act
ATC	Average Total Cost
ATF	Across-the-Fence
BNSF	BNSF Railway Company and Predecessors
CAPM	Capital Asset Pricing Model
CMP	Constrained Market Pricing
COC	Cost of Capital
COD	Cost of Debt
COE	Cost of Equity
CTC	Centralized Traffic Control
CWR	Continuous Welded Rail
DCF	Discounted Cash Flow
DTL	Direct To Locomotive
EIA	Energy Information Administration
FED	Failed Equipment Detector
FRA	Federal Railroad Administration
FXE	Ferrocarril Mexicano, S.A. de C.V.
GPD-IPD	Gross Domestic Produce Implicit Price Deflator
GWR	Gross Weight on Rail
HDF	On-Highway Diesel Fuel Index
HPTT	Horsepower Per Training Ton
IDC	Interest During Construction
KCS	Kansas City Southern Railway
MACRS	Modified Accelerated Cost Recovery System
MGT	Million Gross Tons
MMM	Maximum Markup Methodology
MOW	Maintenance of Way
MRL	Montana Rail Link
MSDCF	Multi-Stage Discounted Cash Flow
NKCR	Nebraska Kansas Colorado Railway
PPI	Producer Price Index

PRB	Power River Basin
PTC	Positive Train Control
RCAFA	Rail Cost Adjustment Factor, adjusted for productivity
RCAFU	Rail Cost Adjustment Factor, unadjusted for productivity
ROW	Right of Way
RSIA	Rail Safety Improvement Act of 2008
R/VC	Revenue-to-Variable Cost
RTC	Rail Traffic Controller Model
SAC	Stand-Alone Cost
SARR	Stand-Alone Railroad
SPRB	Southern Powder River Basin
STIMULUS ACT	Economic Stimulus Act of 2008
SWRR	Southwestern Railroad Company, Inc.
T&E	Train & Engine
UP	Union Pacific Railroad Co.
URCS	Uniform Railroad Costing System
USDA	United States Department of Agriculture
WTI	West Texas Intermediate Crude Prices

CASE GLOSSARY

The following short form case citations are used:

AEP Texas	*AEP Tex. N. Co. v. BNSF Ry.*, STB Docket No. 41191 (Sub-No. 1) (STB served September 10, 2007).
APS	*Ariz. Pub. Serv. Co. and Pacificorp. v. The Atchison, Topeka and Santa Fe Ry.*, 2 S.T.B. 367 (1997)
Coal Rate Guidelines or *Guidelines*	*Coal Rate Guidelines, Nationwide*, 1 I.C.C.2d 520 (1985), *aff'd sub nom. Consolidated Rail Corp. v. United States*, 812 F.2d 1444 (3rd Cir. 1987)
Coal Trading Corp.	*Coal Trading Corp. v. The Baltimore & Ohio R.R., et al.*, 6 I.C.C.2d 361 (1990)
Carolina P&L	*Carolina Power & Light Co. v. Norfolk S. Ry.*, STB Docket No. 42072 (STB served December 23, 2003)
Duke/CSXT	*Duke Energy Corp. v. CSX Transp. Inc.*, STB Docket No. 42070 (STB served February 4, 2004)
Duke/NS	*Duke Energy Corp. v. Norfolk S. Ry.*, STB Docket No. 42069 (STB served November 6, 2003)
FMC	*FMC Wyo. Corp. v. Union Pac. R.R.*, 4 S.T.B. 699 (2000)
IPS	*Iowa Public Service Co. v. Burlington Northern Railroad Co. and Chicago and North Western Transportation Co.*, ICC Docket No. 37029 (ICC served April 1, 1985)
KCP&L	*Kansas City Power & Light Co. v. Union Pac. R.R.*, STB Docket No. 42095 (STB served May 19, 2008)
Major Issues	*Major Issues in Rail Rate Cases*, STB Ex Parte No. 657 (Sub-No. 1) (STB served Oct. 30, 2006)
Nevada Power II	*Bituminous Coal - Hiawatha, Utah to Moapa, Nevada*, 10 I.C.C. 2d 259 (1994)
OG&E	*Oklahoma Gas & Electric Co. v. Union Pac. R.R.*, STB Docket No. 42111 (STB served July 24, 2009)

Otter Tail	*Otter Tail Power Co. v. BNSF Ry.*, STB Docket No. 42071 (STB served January 27, 2006)
PSCo/Xcel I	*Public Service Co. of Colorado d/b/a Xcel Energy v. Burlington N. and Santa Fe Ry.*, STB Docket No. 42057 (STB Served June 8, 2004)
PSCo/Xcel II	*Public Serv. Co. of Colorado d/b/a Xcel Energy v. Burlington N. and Santa Fe Ry.*, STB Docket No. 42057 (STB served Jan. 19, 2005).
TMPA	*Texas Mun. Power Agency v. Burlington N. and Santa Fe Ry.*, 6 S.T.B. 573 (2003)
Seminole Electric	*Seminiole Electric Coop., Inc. v. CSX Transp., Inc.*, STB Docket No. 42210 (pending)
WFA/Basin I	*Western Fuels Ass'n, Inc. and Basin Electric Power Coop. v. BNSF Ry.*, STB Docket No. 42088 (STB served September 10, 2007)
WFA/Basin II	*Western Fuels Ass'n, Inc. and Basin Electric Power Coop. v. BNSF Ry.*, STB Docket No. 42088 (STB served February 18, 2009)
Wisconsin P&L	*Wisconsin Power and Light Co. v. Union Pac. R.R.*, 5 S.T.B. 955 (2001)
West Texas Utilities	*West Tex. Utils. Co. v. Burlington N. R.R.*, 1 S.T.B. 638 (1996), *aff'd sub nom. Burlington N. R.R. v. STB*, 114 F.3d 206 (D.C. Cir. 1997)

BEFORE THE
SURFACE TRANSPORTATION BOARD

ARIZONA ELECTRIC POWER COOPERATIVE, INC.	)	
Complainant,	)	
v.	)	**Docket No. 42113**
BNSF RAILWAY COMPANY	)	
and	)	
UNION PACIFIC RAILROAD COMPANY	)	
Defendants.	)	

PART I

COUNSEL'S ARGUMENT AND SUMMARY OF EVIDENCE

A. INTRODUCTION

In this proceeding, Complainant Arizona Electric Power Cooperative, Inc. ("AEPCO"), challenges the joint common carrier rates established by Defendants BNSF Railway Company ("BNSF") and Union Pacific Railroad Company ("UP") (collectively, "BNSF/UP" or "Railroads"), for the transportation of coal in unit trains to AEPCO's Apache Generating Station ("Apache" or "Apache Station"), located near Cochise, AZ.

The challenged rates were established in three BNSF common carrier pricing authorities, BNSF 57966, 57988, and 58039. BNSF 57966 established rates to Apache from the Lee Ranch and El Segundo, and North Tipple (McKinley) mine origins in New Mexico.[1] BNSF 57988 established rates to Apache from origins in the Powder River Basin ("PRB") in Wyoming and Montana that are served exclusively by BNSF, *i.e.*, five origins in the Gillette, WY area (Eagle Butte, Buckskin, Rawhide, Clovis Point, and Dry Fork), and two origins in Montana (the Spring Creek Mine at Nerco Jct., and the Decker Mine at Decker). BNSF 58039 established rates to Apache from the Signal Peak Mine at Peaks, MT.

As of January 1, 2009, the applicable rates (without fuel surcharges) were as follows:[2]

---

[1] BNSF 57966 also establishes rates from the McKinley Mine at North Tipple, NM, from which AEPCO took approximately 197,000 tons in 2009. Published reports state that McKinley has ceased mining activity.

Because McKinley has ceased, or will likely shortly cease, production, AEPCO has decided not to include the shipments from McKinley in its rate case analysis. AEPCO notes that there are additional coal reserves in the McKinley area and that a possibility exists that the coal could eventually be mined and sold, especially if BNSF were to establish reasonable rates from the origin.

[2] Only the New Mexico rates were formally published as of January 1, 2009. As discussed *infra*, BNSF published the other rates later, but all the rates are stated as of January 1, 2009 for ease of discussion.

Table I-1 Rates Established in BNSF 57966, 57988, and 58039 for Transportation of Coal to Apache as of January 1, 2009 (Without Fuel Surcharges)		
BNSF Pricing Authority	**Origin**	**Rate**
57966	Lee Ranch	$13.94
	El Segundo	$13.94
57988	Gillette Area Mines	$37.50
	Decker	$39.15
	Spring Creek (Nerco Jct.)	$39.15
58039	Signal Peak (Peaks, MT)	$44.23
Source: BNSF 57966, 57988, and 58039. The Signal Peak rate was not effective until August 25, 2009.		

The above rates are for shipments in high volume (aluminum) railcars provided by AEPCO at no cost to BNSF/UP and do not reflect applicable fuel surcharges. The pricing authorities do not provide for any other periodic rate adjustments.

In this proceeding, AEPCO seeks the following relief: (1) a determination that the BNSF/UP possess market dominance over the transportation of coal to AEPCO within the meaning of 49 U.S.C. § 10707; (2) a determination that the challenged joint rates exceed a maximum reasonable level and are therefore unlawful under 49 U.S.C. § 10707(d)(1); (3) a prescription of lawful maximum rates for coal shipments to Apache pursuant to 49 U.S.C. §§ 10704(a)(1) and 11701(a); and (4) an award of reparations payable by BNSF/UP to AEPCO for overcharges collected by BNSF/UP for common carrier coal transportation to Apache since January 1, 2009, in excess of the rates prescribed by the Board, together with interest.

This filing consists of AEPCO's Opening Evidence in support of the relief requested, as summarized above. AEPCO's Opening Evidence is submitted in a manner consistent with *General Procedures for Presenting Evidence in Stand-Alone Cost Rate Cases*, Ex Parte No. 347 (Sub-No. 3) (STB served March 12, 2001); and *Major Issues in Rail Rate Cases*, Ex Parte No. 657 (Sub-No. 1) (STB served Oct. 30, 2006).

B. BACKGROUND[3]

AEPCO is a consumer-owned, non-profit rural electric generation and transmission cooperative. AEPCO supplies electricity through six Class A member distribution cooperatives to more than 100,000 homes and businesses in portions of Arizona, California, and New Mexico. AEPCO sells additional power to other customers. AEPCO is headquartered in Benson (near Tucson), AZ.

AEPCO's principal source for electric power generation is the Apache Generating Station near Cochise, AZ. This power plant includes two 175-megawatt coal-fired units that normally receive and consume 1.2 to 1.5 million tons of coal annually.

From the start of their operations, the coal-fired units have generally operated on a "baseload" basis, meaning that the stations generally operate at or near their full available capacity on a continuous basis, subject to periodic planned and forced outages for maintenance or repair. Their baseload status is expected to

[3] The facts set forth in this Part I-B are verified by Mr. Garfield (Gary) G. Grim, AEPCO's Senior Vice President and Chief Operating Officer, based on first-hand knowledge and a review of AEPCO's business records.

continue into the future. Moreover, AEPCO's success in providing reliable service to its members depends directly on stable and predictable operational and economic conditions at Apache. AEPCO would experience substantial difficulty obtaining the transmission necessary to import sufficient power into the portion of its system in the Benson/Tucson area if the coal-fired units were unavailable for a substantial period of time, especially during periods of peak demand during the year.

Apache is served exclusively by UP. In 2004, AEPCO finished installation of a coal blending facility at Apache, allowing it to receive, blend, and burn a wider variety and mix of coals. Accordingly, Apache has taken coal from a range of sources in the past five years including New Mexico coal (from the Lee Ranch, El Segundo, and McKinley Mines), Colorado coal (from the Colowyo and Twentymile Mines), and the PRB (both Wyoming and Montana). Apache has also taken coal from other mines in Colorado and Utah over the years.

Regardless of where Apache's coal originates, it must ultimately be delivered by UP as AEPCO has no practicable alternative. Accordingly, AEPCO's choice of coal is often dictated by the transportation cost, rather than the f.o.b. mine price of the coal or even the coal's chemical properties. Railroad operational problems, such as the severe operational problems that UP experienced in the mid-2000s, have also forced AEPCO to be flexible in the sourcing of its coal.

AEPCO's captivity to the Defendants, especially UP and its predecessor (the Southern Pacific Transportation Company), has led to several periods of sustained litigation with the railroads over the rates for coal delivery to AEPCO.[4] The first such period began before the Apache coal-fired units were even operational. However, that litigation was eventually resolved in the late 1980s, and AEPCO's coal transportation arrangements were then governed for over a decade by rail transportation contracts between AEPCO and BNSF/UP (and/or their corporate predecessors). However, the last of those contracts expired at the end of 2000, AEPCO and BNSF/UP were unable to agree on replacement contracts, and rate case litigation ensued in STB Docket No. 42058.

In Docket No. 42058, AEPCO initially challenged only the New Mexico rates, but APECO then amended the complaint to include rates from other origins. AEPCO settled with UP regarding rates from the non-New Mexico origins, particularly rates from UP-served origins in Utah, Colorado, and the PRB, but continued litigation over the New Mexico rates. The Board eventually dismissed AEPCO's New Mexico complaint because AEPCO's stand-alone railroad ("SARR") utilized BNSF's trackage rights over UP's line between Vaughn, NM and El Paso, TX, and that decision was upheld by the D.C. Circuit. *Arizona Electric Power Cooperative, Inc. v. The Burlington N. and S.F. Ry. Co.*

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[4] While there has been persistent litigation between AEPCO and the Railroads over the years, the business dealings have never been acrimonious, and AEPCO considers itself to have a good day-to-day working relationship with the Railroads.

and Union P. R.R. Co., STB Docket No. 42058 (STB served March 15, 2005), *aff'd sub nom. Arizona Electric Power Coop., Inc. v. STB*, 454 F.3d 359 (D.C. Cir. 2006). Accordingly, AEPCO's New Mexico rates have continued to be governed by common carrier arrangements.

AEPCO's contractual arrangements with UP expired at the end of 2008, and AEPCO attempted to negotiate acceptable successor arrangements with both BNSF and UP. However, AEPCO's negotiations were unsuccessful, and AEPCO filed its original complaint in this proceeding on December 30, 2008. As originally filed, AEPCO challenged only the rates from the New Mexico origins established in BNSF 57966.

On January 30, 2009, AEPCO amended its complaint to request that UP be required to establish common carrier rates from UP-served origins in Colorado and the PRB and to challenge rates established by BNSF from transportation from BNSF-served origins in the PRB (the five Gillette area mines, Decker and Spring Creek). UP then claimed that it had entered into a contract for transportation from the UP-served origins and filed a lawsuit to that effect in federal district court in Tucson. The Board agreed with Union Pacific that the litigation was sufficient for the Board to defer consideration of AEPCO's challenge to those rates. *See AEPCO v. BNSF/UP*, STB Docket Nos. 42113 and 42113 (Sub-No. 1) (STB served April 23, 2009).[5]

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[5] As that litigation is pending elsewhere, AEPCO will refrain from extensive discussion of it. Nonetheless, AEPCO notes that AEPCO's so-called

On February 20, 2009, AEPCO amended its complaint a second time to encompass the rates from BNSF-served origins in the PRB established in BNSF 57988, which BNSF had published on February 19, 2009. AEPCO amended its complaint for a third time on August 25, 2009, to include the rates for shipments from the Signal Peak Mine that BNSF established in BNSF 58039. AEPCO also amended its complaint on January 11, 2010, to reflect a future change in the rates in BNSF 57988.

The rates at issue, especially from the non-New Mexico origins, are extraordinarily high, particularly when considered on a mills per ton-mile basis, as shown in the following table:

Table II-2
BNSF/UP Rates as of
1Q09 on a Dollar Per Ton and Mills Per Ton-Mile Bases

Origin	Rate w/o Fuel Surcharge	Rate w/ Fuel Surcharge	Miles	Mills per Ton-Mile
Lee Ranch	$13.94	$14.88	490.4	30.3
El Segundo	$13.94	$14.87	483.5	30.8
Gillette Area Mines	$37.50	$40.32	1520.2	26.5
Decker	$39.15	$42.16	1623.6	26.0
Spring Creek	$39.15	$42.17	1631.5	25.8
Signal Peak	$44.23	$47.33	1841.2	25.7

Source: Exhibits II-A-1 and II-A-3. Note that Signal Peak rate is effective as of August 25, 2009.

"acceptance" of UP's offer was ineffective because that offer had expired before any acceptance by AEPCO. Insofar as UP claims that it treated AEPCO's acceptance as a counteroffer that UP subsequently accepted, there was never any acceptance by UP, and UP in fact rejected AEPCO's counteroffer, thereby terminating the counteroffer. While the Tucson federal district court denied AEPCO's motion to dismiss in part, AEPCO expects to prevail in that litigation.

C. SUMMARY OF EVIDENCE

AEPCO's evidence submitted in this filing demonstrates that:

1. BNSF and UP possess market dominance over the transportation of coal from the New Mexico, PRB, and Signal Peak mine origins to AEPCO's Apache Station within the meaning of 49 U.S.C. § 10707.

2. The rates charged by BNSF/UP for movements of coal to Apache pursuant to BNSF 57966, 57988, and 58039 are unreasonably high in violation of 49 U.S.C. §§ 10701(d)(1), 10702, and 11701(a).

3. The maximum lawful rates for common carrier coal transportation service in unit trains from each of the covered origins should be prescribed by the Board at the greater of the jurisdictional threshold or SAC discussed below in 1Q09 (with similar rates for subsequent quarters):

Table I-3
Maximum Rate Calculations for Issue Traffic as of Rates Established in BNSF 57966 and 57988 for Transportation of Coal to Apache as of January 1, 2009 (With Fuel Surcharges)

BNSF Pricing Authority	Origin	Rate w/ Surcharge	Jurisdictional Threshold per Ton	SAC per Ton
57966	Lee Ranch	$14.88	$10.88	$4.59
	El Segundo	$14.87	$10.73	$4.53
57988	Gillette Area Mines	$40.32	$29.40	$12.41
	Decker	$42.16	$31.35	$13.30
	Spring Creek	$42.17	$31.50	$13.30
58039	Signal Peak	$47.33	$36.68	

Source: Exhibits II-A-1 and II-A-3 and e-workpaper "Cochise MMM Rates.xlsx." The jurisdictional threshold for the Gillette Area Mines is that for Eagle Butte. The Signal Peak rate is effective August 25, 2009. No SAC figure is shown for Signal Peak because that origin does not enter the SAC analysis until January 1, 2012.

4. AEPCO is entitled to an award of reparations, which will accumulate until BNSF and UP adjust the AEPCO rates to prescribed levels. The reparations principal bears interest at the appropriate rate

discussed herein, until the date Defendants make the reparations repayment to AEPCO.

AEPCO presents its evidence concerning quantitative market dominance, variable costs, the jurisdictional threshold rate level, and qualitative market dominance in Part II following this Summary and Argument, as well as in the accompanying exhibits and workpapers. AEPCO presents its evidence on stand-alone costs ("SAC") in Part III. AEPCO presents the statements of qualifications and verifications by the witnesses who sponsor AEPCO's evidence in Part IV.

AEPCO will not present here a detailed summary of its evidence, but will instead highlight certain salient facts and relevant points of law that should be considered in evaluating those facts.

1. MARKET DOMINANCE/VARIABLE COSTS

"If the Board determines, under section 10707 of this title, that a rail carrier has market dominance over the transportation to which a particular rate applies, the rate established by such carrier for such transportation must be reasonable." 49 U.S.C. § 10701(d)(1). The statute defines market dominance as "an absence of effective competition from other rail carriers or modes of transportation for the transportation to which a rate applies." *Id.*, § 10707(a). However, "the Board shall find that the rail carrier ... does not have market dominance ... if such rail carrier proves that the rate charged results in a revenue-

variable cost percentage for such transportation that is less than 180 percent." *Id.*, § 10707(d)(1)(a).

AEPCO demonstrates in Part II of this Opening Evidence that BNSF/UP have both quantitative and qualitative market dominance over their coal movements to Apache and that the Board thus has jurisdiction to grant AEPCO the relief that it seeks.

AEPCO's evidence in Part II-A, sponsored by Thomas D. Crowley of L.E. Peabody & Associates, Inc., confirms that the rates at issue exceed the quantitative jurisdictional threshold of 180% of BNSF/UP's variable costs of service, that quantitative market dominance exists, and that the Board has jurisdiction over the subject rates. In accordance with *Major Issues*, AEPCO has calculated variable costs using the Board's Phase III Uniform Rail Costing System ("URCS")[6] program for 2008, indexed to the applicable quarters of 2009 utilizing the Board's standard indexing procedures, as applied to nine specific traffic and operating inputs for each movement. *See Major Issues* at 60; *Kansas City Power & Light Company v. Union Pacific Railroad Company*, STB Docket No. 42095 (STB served May 19, 2008) at 5-6 ("*KCP&L*").

The parties were able to reach a stipulation as the nine inputs to be used for the variable costing analysis, but were not able to agree on the appropriate treatment of the 53.3-mile segment between Rincon, NM and Deming, NM, which

[6] *Adoption of the Uniform Railroad Costing System As A General Purpose Costing System For All Regulatory Costing Purposes*, 5 I.C.C.2d 894, 899 (1989).

is part of BNSF's portion of the New Mexico coal movements, but which is operated by the Southwestern Railroad Company, Inc. ("SWRR"). As explained in Part II, BNSF's agreement with SWRR demonstrates that the SWRR does not operate as a line-haul railroad when handling the AEPCO coal trains, but rather as BNSF's agent in a haulage arrangement. Accordingly, AEPCO has costed the movement as if the only interchange occurs at Deming and there is no formal interchange at Rincon. In other words, the SWRR functions as a sub-contractor of BNSF, especially inasmuch as BNSF and UP are the only listed parties to BNSF 57966.

The following table, showing the rates, variable cost, and revenue-to-variable cost ("R/VC") ratio as of mid-first quarter 2009 ("1Q09"), confirms that the quantitative market dominance test is satisfied:

Table I-4
R/VC Ratios for Rates as of 1Q09

Origin	Rate w/ Surcharge	Variable Cost	R/VC Ratio
Lee Ranch	$14.88	$6.04	2.46
El Segundo	$14.87	$5.96	2.50
Gillette Area Mines (Eagle Butte)	$40.32	$16.33	2.47
Spring Creek	$42.17	$17.50	2.41
Decker	$42.16	$17.42	2.42
Signal Peak	$47.33	$20.38	2.32

Source: Exhibits II-A-1 and II-A-3. Variable Cost and R/VC Ratio for Gillette Area Mines is for Eagle Butte. Signal Peak rate is effective August 25, 2009.

AEPCO's evidence in Part II-B, sponsored by Mr. Grim, AEPCO's Senior Vice President and Chief Operating Officer, shows that neither intramodal nor intermodal competition effectively constrains the rates that BNSF/UP charge

for transporting coal to Apache. As applied by the Board, the "qualitative" component of this test inquires whether a complainant such as AEPCO has any intermodal or intramodal transportation alternatives that provide effective competition for the rail service to which the challenged rates apply. *See, e.g., Wisconsin Power & Light Co. v. Union Pacific R.R. Co.,* 5 S.T.B. 955, 962 (2001) ("*Wisconsin P&L*"). In determining market dominance, the Board considers only evidence of direct transportation competition between the origin(s) and destination(s) to which the challenged rates apply. *See, e.g., Market Dominance Determinations – Product and Geographic Competition,* 5 S.T.B. 492 (2001). Moreover, to be "effective," an alternative must be both feasible and practical,[7] and must be shown to represent an actual deterrent against monopoly pricing by the defendant railroad. *Arizona Public Service Co. v. United States,* 742 F.2d 644, 650-51 (D.C. Cir. 1984). Regardless of where its coal originates, AEPCO simply has no practicable means of delivering the coal other than UP. AEPCO has no realistic transportation alternative that would allow it to exercise competitive leverage over the Defendants.

2. STAND-ALONE COSTS

In *Coal Rate Guidelines, Nationwide*, 5 I.C.C.2d 520 (1985) ("*Coal Rate Guidelines*"), the Board's statutory predecessor adopted constrained market pricing ("CMP") as its methodology for determining maximum reasonable rate

[7] *See, e.g., Westinghouse Electric Corp. v. Alton & Southern R.R.,* ICC Docket No. 38188 (ICC served Feb. 9, 1988); *General Electric Co. v. Baltimore & Ohio R.R.*, ICC Docket No. 38125 (ICC served Oct. 22, 1984), at 2.

levels for market dominant traffic, such as the AEPCO coal movements that are in issue in AEPCO's rate case. In accordance with standard practice, AEPCO is proceeding under the SAC prong of CMP.

The Board's most recent explanation of CMP is as follows:

> The objectives of CMP can be simply stated. A captive shipper should not be required to pay no 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."

Western Fuels Ass'n, Inc. and Basin Elec. Power Coop. v. BNSF Ry. Co., STB Docket No. 42088 (STB served Sept. 10, 2007), at 7 ("*WFA/Basin I*"), citing *Coal Rate Guidelines*, 1 I.C.C.2d at 523-24. More specifically, SAC develops the principle that a captive shipper's rates should not exceed the level that would be charged by a least-cost, optimally efficient transporter participating in a "contestable" market, unaffected by barriers to entry or exit. As the Board has explained:

> A SAC analysis seeks to determine the lowest cost at which a hypothetical, optimally efficient carrier could provide the service at issue free from any costs associated with inefficiencies or cross-subsidization.... To begin the analysis, the complainant hypothesizes a stand-alone railroad (SARR) that could serve a selected traffic group if the rail industry were free of barriers to entry or exit.

Texas Municipal Power Agency v. Burlington Northern and Santa Fe Ry. Co., 6 S.T.B. 573, 586 (2003) ("*TMPA*"). Under SAC, the complainant identifies a

traffic group, not limited to the issue traffic, to be served by the SARR and designs the transportation system that will service that group efficiently and at the lowest cost, taking account of all essential facilities and operating assets. *See, e.g., WFA/Basin I* at 8; *FMC Wyoming Corp. and FMC Corp. v. Union Pacific R.R. Co.*, 4 S.T.B. 699, 721 (2000) ("*FMC*"); *Coal Rate Guidelines*, 1 I.C.C. 2d at 543-44.

AEPCO has calculated the SAC for the movement of coal from the various origins to Apache using the Arizona and Northern Railroad ("ANR") as its SARR. The results of AEPCO's analysis are presented in Part III-H, which shows that the rates at issue exceed those that would be charged by a least-cost, optimally efficient alternative transporter by a very substantial margin.

The five basic steps in a SEC analysis are: (1) identify the traffic group to be served by the SARR and the associated revenues; (2) design the configuration, infrastructure and operating plan for the SARR; (3) determine the construction and operating costs for the SARR system; (4) select the appropriate economic forecasting and depreciation methodologies for use in the discounted cash flow ("DCF") model; and (5) compile the DCF analysis. The development is interactive, rather than strictly sequential, as the results of a subsequent step may prompt a need to revise an earlier step.[8] Each of these is explained in detail in Part III.

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[8] The interactive nature of the process was increased by some of the modifications adopted in *Major Issues*, especially the use of ATC for calculating

a. Stand-Alone Traffic Group

AEPCO has determined the ANR's traffic group in a manner consistent with the *Coal Rate Guidelines. See, WFA/Basin I* at 10-11; *TMPA,* 6 S.T.B. at 589.

In particular, the ANR does not attempt to handle all of BNSF's and UP's traffic on its lines, but instead focuses on unit train and through trainload movements, thereby avoiding local switching and the like except for bad-ordered/spare cars. The ANR does engage in some switching associated with breaking down and reassembling intermodal trains at Texico, NM, replicating a function that the real-world BNSF performs at Clovis, NM. The ANR also originates and terminates some intermodal traffic at El Paso, TX.

The ANR also reroutes some traffic, including the issue traffic from New Mexico coal origins, to achieve greater densities. However, all the reroutes are internal. While some of the reroutes result in a longer total length of movement, the ANR's transit times generally are superior or equal to those of the Defendants, and the ANR absorbs all costs associated with the reroutes. AEPCO thus satisfies the Board's standards for rerouting traffic.

The ANR does not utilize any traffic rights of one defendant over another. In particular, the ANR constructs the segment between Vaughn, NM and El Paso, TX, which proved so controversial in AEPCO's prior rate case.

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revenues for cross-over traffic and MMM for allocating SAC relief among the traffic group.

The ANR is designed to operate from 2009 through 2018. However, the ANR starts serving the Signal Peak Mine at Peaks, MT only in 2012. The extension to Peaks, MT is treated as a "mini-construction," and the construction costs accumulate during construction and do not enter the ANR's cost of service until 2012.

The ANR handles a substantial volume of non-coal traffic. In particular, the southern portion of the ANR's system incorporates portions of BNSF's and UP's west-east lines running between California and Texas, which handle primarily non-coal traffic.

Also, a majority of the ANR's traffic consists of cross-over traffic, and ANR has calculated the divisions for such traffic by using the Board's ATC methodology.

AEPCO has been very conservative in determining the ANR's initial volumes. In general, AEPCO has used actual BNSF and UP traffic data through the first three months of 2009 (the most recent data that the Railroads produced on a relatively timely basis), and AEPCO has used BNSF and UP projections, which AEPCO adjusted to reflect the trend in actual traffic. {

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In addition, AEPCO applied the Board's new average total cost ("ATC") procedures for calculating revenue divisions on cross-over traffic adopted in *Major Issues* as modified in *WFA/Basin I* and *AEP Texas North Co. v. BNSF Ry. Co.* (STB served Sept. 10, 2007), at 10-11 ("*AEP Texas*").

b. <u>The ANR Configuration and Operating Plan</u>

The ANR system configuration and operating plan were developed primarily by Paul Smith, AEPCO's principal rail operations expert, with assistance from Walter Schuchmann and, following Mr. Smith's unfortunate stroke in November 2009, Paul Reistrup. They are described in detail in Parts III-A, III-B and III-C.

The ANR system is described in detail in Part III-B and consists of 2,231.5 route miles. As shown in Exhibit III-A-1, once the line segment serving Signal Creek Mine is constructed, the system extends from Walter Jct., MT on the north to Cochise, AZ on the south. The system replicates BNSF lines from Walter Jct., including the BNSF/UP "Joint Line" in the Wyoming Powder River Basin,[9] BNSF's lines between Pueblo and Vaughn, NM via Las Animas Jct., CO, Amarillo, TX and Clovis, NM,[10] and BNSF's line from Vaughn to Defiance, NM

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[9] Like BNSF, the ANR uses trackage rights over Montana Rail Link ("MRL") to operate between Laurel and Jones Jct., MT, and does not construct that segment.

[10] The ANR's route between Stratford, TX and Vaughn differs from the route used by the issue PRB coal traffic. Rather than replicating the UP line between Stratford and Vaughn, AEPCO has chosen to replicate the BNSF lines between Stratford and Amarillo and between Amarillo and Vaughn to maximize

via Belen (that line is used to move the issue New Mexico coal traffic).[11] The ANR system replicates UP lines between Vaughn and El Paso, TX and between El Paso and Cochise, AZ. All of these lines are constructed, except for the trackage rights segment over MRL in Montana. The ANR also constructs and operates five branch lines that serve origin coal mines in Montana, Wyoming, and New Mexico.

The main lines consist of single or double track with passing sidings, depending on the traffic volume, totaling 3,310 track miles. The main lines consist of continuous welded rail similar to that used by BNSF and UP on heavy-haul routes, and are equipped with a Centralized Traffic Control system which enables train operations to be controlled by centralized dispatchers located at the ANR's corporate headquarters at North Amarillo, TX.

As described in Part III-B-3, the ANR has five principal yards used for train staging, 1,000/1,500-mile car inspections, locomotive fueling and (in the case of the yard at Texico, NM) swapping blocks of cars on certain intermodal trains. The ANR also has small interchange yards at 21 interchange points that are not located at the inspection/fueling yards. There are a total of 24 interchange

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the volume of non-issue traffic moving over these segments. This is consistent with the *Coal Rate Guidelines*, 1 I.C.C.2d at 543-544.

[11] AEPCO selected Defiance as the terminus of this portion of its system in part because movements from the McKinley Mine enter BNSF's system at that location. While AEPCO has decided not to include the McKinley shipments in its SAC analysis, Defiance is still a logical terminus, particularly given its proximity to Gallup, NM, the largest city in the area.

locations with BNSF, UP or short lines, as shown in the table on page III-B-5 below.

The ANR's operating plan, described in detail in Part III-C, is designed to enable the railroad to handle its peak-year traffic group (and the trains moving over the various parts of its system during the peak week of its peak traffic year) efficiently and in accordance with all relevant customer service requirements. All coal trains move as unit trains, and, except for a few intermodal trains that originate or terminate at El Paso, TX, all non-coal trains (both intermodal and general freight) move overhead on the ANR as intact trains. Accordingly, the ANR interchanges only complete trains with other railroads and no switching of revenue cars into or out of trains is required at any interchange point. The operating plan provides for modern road locomotives, maximum train speeds consistent with those on the real-world lines being replicated, appropriate operational staffing (including crew districts specifically sized for the ANR's repetitive train operations in defined corridors), and car inspections and locomotive fueling where and as needed consistent with FRA requirements.

The ANR's traffic group includes four internally-rerouted movements, which are described in detail in Part III-C-3-a. One reroute involves coal traffic originating in New Mexico and moving to Apache; two reroutes involve coal trains moving between certain PRB mines in Wyoming and Montana and Northport, NE (for interchange to BNSF or UP) or destinations in Arizona; and

one reroute involves coal trains moved by BNSF from { } to an interchange with Mexican railroad FXE at El Paso, TX.

All of these reroutes are internal reroutes, which means (a) the change in routing is entirely internal to the ANR, and (b) to the extent the change in routing involves cross-over traffic, the traffic is interchanged with BNSF or UP at a location on its real-world route of movement. Under Board precedent, such internal reroutes are justified if AEPCO shows that the reroutes are reasonable and meet the affected shippers' transportation needs. *TMPA*, 6 S.T.B. at 954-55; *AEP Texas* at 10-11; STB Docket No. 42088, *Western Fuels Ass'n, Inc. and Basin Elec. Power Coop. v. BNSF Ry. Co.*, (STB served Feb. 18, 2009), at 11-12 ("*WFA/Basin II*"). The reroutes are reasonable because the ANR operating plan reflects the facilities, equipment, and personnel required to accommodate these movements; all costs incurred to operate the rerouted trains have been included in the ANR's annual operating expenses (described in Part III-D); and the reroutes will not result in inferior service. Although all of the reroutes involve an increase in mileage compared with the real-world route of movement, they meet the affected shippers' needs because they result in similar or shorter transit times compared with the real-world BNSF and/or UP transit times.

To verify the ability of the ANR system and operating plan to accommodate its traffic group efficiently, AEPCO's experts conducted a simulation of the ANR's operations during the peak traffic week of the peak traffic year in the DCF period (2018) using the Board-approved Rail Traffic Controller

("RTC") Model. The modeling exercise, and the operating inputs used, are described in detail in Part III-C-2. The transit times produced by the RTC simulation were compared with the real-world transit times for the corresponding trains and movements in the 2008 base year; the results are that the ANR's transit times are lower than BNSF's and/or UP's real-world transit times for almost all movements, including the rerouted movements. With respect to the latter, consistent with the re-routing principles applied by the Board in, *e.g.*, *TMPA* and STB Docket No. 42069, *Duke Energy Corp. v. Norfolk Southern Ry. Co.* (STB served Nov. 6, 2003) ("*Duke/NS*"), AEPCO's evidentiary presentation demonstrates that "the combined operations of the SARR and the residual carrier would be at least as efficient as the existing operations." *Duke/NS* at 26.

c. **SARR Operating Costs**

The first year (2009) operating costs for the ANR are described in detail in Part III-D. The operating expenses reflect the ANR's system configuration, locomotive, railcar and other equipment needs, operating plan, personnel requirements (both operating and non-operating general and administrative), equipment needs, and maintenance-of-way plan.

In general, the ANR's personnel and equipment needs reflect its facilities and operations in the peak traffic year (2018). Those needs were determined by AEPCO's expert rail operations and engineering/MOW witnesses and reflect the concept of an efficient (least-cost) yet feasible SARR taking into account the ANR's geographic scope, the peak-year traffic volumes and gross

tonnages moving over the various parts of the ANR system, and recent Board decisions in SAC rate case including in particular *WFA/Basin I.* AEPCO's cost witnesses, Thomas Crowley and Philip Burris, developed unit costs for application to the ANR's annual service units using actual cost data produced by BNSF and UP in discovery and actual costs incurred by other railroads (where known) for comparable functions and services, along with information provided by AEPCO's operating and engineering experts.

The ANR's base year (2009) operating costs were adjusted forward over the 10-year DCF period based on Global Insight's forecasts of expected changes in the RCAFA and the RCAFU, which were combined using the phase-in approach approved by the Board in *Major Issues* at 42-46.

d. <u>Road Property Investment Cost</u>

Part III-F describes and documents in detail how the ANR is designed and constructed in accordance with governing standards of the American Railway Engineering and Maintenance-of-Way Association for track, roadbed, bridge, culvert and other requirements,[12] and consistent with determinations made by the Board in recent cases addressing construction parameters and costs for stand-alone rail systems. *See, e.g.*, *WFA/Basin I* at 77-133. Specific grading and other design characteristics have been derived from BNSF and UP data regarding existing lines that was produced in discovery, as well as direct observation and evaluation of the geography, terrain, topography and general conditions of the

[12] *See TMPA*, 6 S.T.B. at 708-15; *Wisconsin P&L*, 5 S.T.B. at 1025-30.

ANR route. Design parameters for elements such as roadbed width, side slope measurements, and other features are based on Board-approved parameters from previous cases. *See, e.g., AEP Texas* at 79-80; *Public Service Co. of Colorado d/b/a Xcel Energy v. Burlington N. and Santa Fe Ry.,* STB Docket No. 42057 (STB Served June 8, 2004) (*"PSCo/Xcel I")* at 90-92; *TMPA,* 6 S.T.B. at 700-708; *Duke Energy Corp. v. CSX Transp. Inc.,* STB Docket No. 42070 (STB served February 3, 2004) (*"Duke/CSXT")* at 76.

The evidence submitted in Part III-F and accompanying Exhibits and workpapers documents AEPCO's calculations of material and construction costs, including design, engineering and contingencies. Total construction costs for the roughly 2,202 constructed route-miles that comprise the SFRR system, including associated land acquisition costs, are $6.357 billion, or approximately $2.89 million per route-mile. *See* Part III-F at III-F-1 for a summary table.

Also consistent with Board precedent, AEPCO projects a 30-month time period for design and construction of the ANR (not including the Signal Peak extension), based upon the time needed to construct Tunnel No. 1 on the Canyon Subdivision (the most time-consuming single component). This estimate reasonably employs the principles of unconstrained resources and simultaneous construction of different segments of the ANR system that spring from the entry-barrier free principle that is among the core components of CMP. *See, e.g.,* STB Docket No. 42072, *Carolina Power & Light Co. v. Norfolk Southern Ry. Co.*, (STB served Dec. 23, 2003), at 11 ("*Carolina P&L*"); *Coal Trading Corp. v. The*

Baltimore & Ohio R.R. Co., 6 I.C.C.2d 361, 413 (1990) ("*Coal Trading Corp.*"); *West Texas Utilities Co. v. Burlington Northern R.R. Co.*, 1 ST.B. 638, 668-69 (1996) ("*West Texas Utilities*"); *Coal Rate Guidelines*, 1 I.C.C.2d at 529-30.

The same principles apply with respect to such items as utility protection, road detours, environmental regulations compliance, and other such features. Where records or data produced in discovery do not show any expenditures by BNSF or UP or their predecessors when these facilities first were installed, the related costs have been excluded from construction costs for the ANR as well. *See AEP Texas* at 83; *PSCo/Xcel I* at 101; *Duke/CSXT* at 84. However, where there is evidence that BNSF, UP, or one of their predecessors incurred the expense – or the age of the facility or line segment indicates that such an expenditure was likely – AEPCO includes the appropriate cost in its analysis. *See* Part III-F-8. In addition, AEPCO has included the cost for land, even if BNSF or UP originally acquired the land by grant, which is true for nearly the ANR's entire route.

As detailed in Part III-F-1, the ANR requires a total of 26,731 acres of land based upon an average right-of-way width of 100 feet in rural areas and 75 feet in cities and large towns, and the real estate requirements for the ANR yards, buildings, service roads and other auxiliary facilities described in Parts III-C and III-F. Real estate costs are based on direct appraisals performed by AEPCO's expert, Stuart A. Smith, using the methodology described in Part III-F-1. Consistent with the principle of barrier-free entry cited *supra*, there are no

assemblage factors incorporated in the ANR real estate costs, except for the more recently constructed Orin, Reno and Campbell Subdivisions, as there is no evidence that BNSF, UP, and/or their predecessors were burdened by assemblage when they acquired the rights-of-way and contiguous land for their own parallel line segments. *See West Texas Utilities*, 1 S.T.B. at 670-71.

e. **Application of the DCF Model**

Part III-G outlines the DCF methodology applied by AEPCO in calculating SAC and the maximum SAC rates that result from the ANR. The DCF methodology is consistent with that adopted in *Coal Rate Guidelines,* as subsequently modified in *Major Issues*, and as most recently applied in *WFA/Basin* and *AEP Texas*.

AEPCO's DCF analysis includes the following elements:

a. Debt and equity cost for the SFRR over its construction period (2006-2008) are based on the Board's annual cost of capital determinations, except that for 2008, AEPCO has utilized only the Board's CAPM COE value, and not its MSDCF value. As explained in Part III-G, even if the MSDCF value is somehow accurate for the railroad industry as a whole (despite is abundant evidence that it is not, including evidence from BNSF's Board of Directors intended to be relied upon by BNSF shareholders with respect to the Berkshire Hathaway tender offer), the MSDCF value is inappropriate for the ANR. The average of available annual costs of capital figures from 2006 forward is used to project future returns for DCF purposes. Also, AEPCO treats the Signal Peak

Mine extension as a "mini-construction" that enters service in 2012. *See* Part III-G-1.

b. The use of inflation indices compiled by the AAR appropriate to various road property components of the ANR (Part III-G-2), and the "hybrid" RCAFU/RCAFA approach adopted by the Board in *Major Issues* to index the ANR's operating expenses. *See* Part III-G-2.

c. A determination of federal and state tax liability consistent with the Board's approach in prior coal rate cases,[13] taking account of recent federal economic stimulus legislation. *See* Part III-G-3; Part III-H-1-f.

d. The use of economic depreciation to determine the value of the ANR's assets at the end of the DCF period. *See* Exhibit III-H-1.

e. The use of a "time-based" capital recovery approach, as applied in *TMPA, Duke/NS*, and *Carolina P&L*. *See* Part III-G-4.

f. The distribution of total excess stand-alone revenues over stand-alone costs in each year of the DCF Model – and thus, the determination of the annual measure of rate relief to which AEPCO is entitled – using the Maximum Mark-Up Methodology ("MMM") adopted by the Board in *Major Issues* and most recently applied in *WFA/Basin II,* with variable costs forecast in accordance with the Board's recent decision in *OG&E*. *See* Part III-H-2.

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[13] *West Texas Utilities*, 1 S.T.B. at 714.

D. RATE RELIEF AND DAMAGES

Based upon the evidence presented herein, the Board should find that BNSF and UP possess market dominance over the transportation of coal to AEPCO from the origins designated in BNSF 57966, 57988, and 58039, in accordance with 49 U.S.C. §10707. The Board further should find that the rates set forth in BNSF 57966, 57988, and as applied to the Apache movements, exceed maximum reasonable levels as determined under the SAC constraint of the *Coal Rate Guidelines*, and therefore are unlawful under 49 U.S.C. §10701(d).

1. Prescription of Maximum Rates

In accordance with the provisions of 49 U.S.C. §10704(a), AEPCO is entitled to a Board order prescribing the maximum rates that lawfully may be charged by BNSF/UP to transport coal to Apache. As detailed in Table III-H-3, the maximum rates that should be prescribed for the four quarters of 2009 are as follows:

Table I-5
Maximum Reasonable Rates for Coal Movements to Apache

Origin	1Q09	2Q09	3Q09	4Q09
Lee Ranch	$10.88	$10.89	$11.25	$1.45
El Segundo	$10.73	$10.74	$11.10	$11.29
Gillette Area Mines (Eagle Butte)	$29.40	$29.43	$30.38	$30.87
Spring Creek	$31.50	$31.54	$32.57	$33.10
Decker	$31.35	$31.39	$32.41	$42.43

Source: Table II-A-2. Note that no rates are shown for Signal Peak because that origin does not enter the SARR system until 2012.

The corresponding maximum reasonable rates (expressed as R/VC ratios) that should be prescribed for the remainder of the DCF period are set out in Exhibit III-H-2.

2. Award of Damages

Since January 1, 2009, AEPCO has paid BNSF/UP freight charges for coal transportation service to Apache at tariff rates significantly higher than the lawful maximums summarized in the previous table. Pursuant to 49 U.S.C. §11704(b), upon conclusion of this proceeding AEPCO's will be entitled to an award of damages sustained as a consequence of BNSF/UP's violation of 49 U.S.C. §10701(d) consisting of a refund of overpayments plus interest.

Respectfully submitted,

ARIZONA ELECTRIC POWER
COOPERATIVE, INC.

By: William L. Slover
Robert D. Rosenberg
Christopher A. Mills
Daniel M. Jaffe
Stephanie M. Adams
Slover & Loftus LLP
1224 Seventeenth Street, NW
Washington, DC 20036
(202) 347-7170
(202) 347-3619 (fax)

Attorneys & Practitioners

Of Counsel:
Slover & Loftus LLP
1224 Seventeenth Street, NW
Washington, DC 20036
(202) 347-7170

Dated: January 25, 2010

BEFORE THE
SURFACE TRANSPORTATION BOARD

ARIZONA ELECTRIC POWER COOPERATIVE, INC.	)	
Complainant,	)	
v.	)	**Docket No. 42113**
BNSF RAILWAY COMPANY	)	
and	)	
UNION PACIFIC RAILROAD COMPANY	)	
Defendants.	)	

PART II

MARKET DOMINANCE

II. A. QUANTITATIVE EVIDENCE

The Board considers both quantitative and qualitative market dominance in determining whether there is an absence of effective competition under 49 U.S.C. §§ 10701(d)(1) and 10707.[1]

Under 49 U.S.C. § 10707(d)(1), quantitative market dominance exists where the revenues produced by the issue traffic movements yield a revenue to variable cost ("R/VC") ratio that equals or exceeds the jurisdictional threshold

[1] The evidence in Part II-A is sponsored by AEPCO Witness Thomas Crowley, and the evidence in Part II-B is sponsored by Garfied (Gary) G. Grim, AEPCO's Senior Vice President and Chief Operating Officer.

of 180%. This Part II-A demonstrates that the BNSF/UP rates from each of the origins at issue exceed this jurisdictional threshold.

Under the approach that the Board adopted in Ex Parte No. 657 (Sub-No. 1), *Major Issues in Rail Rate* Cases (STB served Oct. 30, 2006) ("*Major Issues*"), the rates at issue in BNSF Common Carrier Pricing Authorities BNSF 57966, 57988, and 58039 are compared to the variable costs for the corresponding movements. The variable costs are calculated on an unadjusted system average basis using the Board's Uniform Rail Costing System ("URCS") Phase III program and nine specific traffic and operating inputs for each movement. The inputs are: (1) the railroad; (2) loaded miles (including loop track miles); (3) shipment type (originated and terminated or "local," originated and delivered, received and delivered or "bridge," and received and terminated); (4) freight cars per train; (5) tons per car; (6) commodity, (7) type of movement (single car, multiple car or unit train); (8) car ownership (railroad or private); and (9) type of car. *See Major Issues* at 60; STB Docket No. 42095, *Kansas City Power & Light Company v. Union Pacific Railroad Company* (STB served May 19, 2008) at 5-6 ("*KCP&L*"). AEPCO utilized these procedures in calculating the variable cost and R/VC ratios presented in this Part and the associated workpapers.

1. <u>Traffic and Operating Characteristics</u>

As directed by the Board in the initial procedural schedule for this rate case, AEPCO and BNSF/UP conferred and agreed on the traffic and operating

characteristics for the coal movements to which the challenged rates.[2] Those characteristics are as follows:

[2] As discussed *infra*, the parties' agreement did not include how the characteristics should be treated, especially with regard to the portion of the New Mexico coal movements over the Southwestern Railroad Company, Inc. ("SWRR").

Table II-A-1
URCS Phase III Variable Cost Inputs for Issue Movements

	New Mexico Mines		Gillette Area Mines, WY					Montana Mines		
Movement Parameters	Lee Ranch	El Segundo	Eagle Butte	Buckskin	Rawhide	Clovis Point	Dry Fork	Spring Creek	Decker	Signal Peak
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1. Railroads	BNSF-SWRR-UP	BNSF-SWRR-UP	BNSF-UP	BNSF-UP	BNSF-UP	BNSF-UP	BNSF-UP	BNSF-UP	BNSF-UP	BNSF-UP
2. Loaded Miles										
a) BNSF	287.4	280.5	591.6	593.7	588.8	585.2	587.8	702.9	695.0	912.6
b) SWRR	53.3	53.3								
c) UP	149.7	149.7	928.6	928.6	928.6	928.6	928.6	928.6	928.6	928.6
d) Total	490.4	483.5	1520.2	1522.3	1517.4	1513.8	1516.4	1631.5	1623.6	1841.2
3. Shipment Type										
a) BNSF	OD	OD	OD	OD	OD	OD	OD	OD	OD	OD
b) SWRR	RD	RD								
c) UP	RT	RT	RT	RT	RT	RT	RT	RT	RT	RT
4. Cars per Train	114.6	116.6	120	120	120	120	120	120	120	120
5. Car Type	OTH	OTH	OTH	OTH	OTH	OTH	OTH	OTH	OTH	OTH
6. Car Ownership	Private	Private	Private	Private	Private	Private	Private	Private	Private	Private
7. Tons per Car	117	117	118	118	118	118	118	118	118	118
8. Commodity	Coal	Coal	Coal	Coal	Coal	Coal	Coal	Coal	Coal	Coal
9. Movement Type	Unit Train	Unit Train	Unit Train	Unit Train	Unit Train	Unit Train	Unit Train	Unit Train	Unit Train	Unit Train

Source: "Joint Submission of Operating Statics.pdf."

By way of further explanation, there were only two shipments from Wyoming or Montana mines to Apache in 2009, so the parameters for the Wyoming and Montana movements reflect the minimum parameters in the applicable pricing authority. For New Mexico shipments, the route is BNSF from origin mine to Deming, NM, with SWRR acting as BNSF's agent from Rincon, NM to Deming, and UP from Deming to Cochise, AZ. For Wyoming and Montana shipments, the route is BNSF from origin mine to Pueblo, CO, and UP from Pueblo to Cochise. In terms of abbreviations, OD means originated and delivered in interchange, RD means received and delivered in interchange, RT means received in interchange and delivered, and OTH means open top hopper.

2. Variable Costs

Exhibits through II-A-1 through II-A-4 show the calculation of variable costs for movements from each of the issue origins to Apache based upon BNSF's and UP's 2008 URCS unit costs as calculated by the STB and sponsored by AEPCO's witness Crowley. The 2008 URCS costs were indexed to the wage and price levels for the four quarters of 2009 using the Board's established procedure for updating variable costs.[3] All variable costs are calculated on a system average basis, with no adjustments other than those set forth in *Review of*

[3] The methodology employed is the Interstate Commerce Commission's IE3-80 procedure, supplemented in accordance with *Complaints Filed Under Section 229 of the Staggers Rail Act of 1980*, ICC Ex Parte No. 411.

the General Purpose Costing System, 2 S.T.B. 659 (1997), and endorsed in *Major Issues*. *See KCP&L* at 7-8.[4] The figures are as follows:

[4] AEPCO notes that legislation is presently pending that would permit the use of movement-specific adjustments to the variable costs in its rate case. Accordingly, AEPCO has prepared an alternate variable cost calculation that makes movement-specific adjustments in those items for which AEPCO possesses adequate data. Those calculations are shown in e-workpaper "Alternative variable costs.zip." As shown in that workpaper, the reduction in variable costs and the jurisdictional threshold is substantial, roughly 21% for the New Mexico coal movements.

Table II-A-2
Variable Cost and R/VC Ratios

	New Mexico Mines		Gillette Area Mines, WY					Montana Mines		
Movement Parameters	Lee Ranch	El Segundo	Eagle Butte	Buckskin	Rawhide	Clovis Point	Dry Fork	Spring Creek	Decker	Signal Peak
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
2008 Base Year Cost	$6.96	$6.86	$18.69	$18.72	$18.66	$18.61	$18.64	$20.05	$19.95	$22.62
1Q09										
Indexed VC	6.04	5.96	16.33	16.35	16.30	16.26	16.29	17.50	17.42	
Juris. Thresh. 1/	10.88	10.73	29.40	29.44	29.34	29.27	29.32	31.50	31.35	
Tariff Rate	14.88	14.87	40.32	40.32	40.32	40.30	40.31	42.17	42.16	
R/VC 2/	2.463	2.496	2.469	2.466	2.473	2.478	2.474	2.410	2.420	
2Q09										
Indexed VC	6.05	5.97	16.35	16.37	16.32	16.28	16.31	17.52	17.44	
Juris. Thresh. 1/	10.89	10.74	29.43	29.47	29.38	29.31	29.36	31.54	31.39	
Tariff Rate	14.63	14.62	39.55	39.55	39.55	39.54	39.54	41.35	41.34	
R/VC 2/	2.418	2.450	2.419	2.416	2.423	2.428	2.425	2.360	2.370	
3Q09										
Indexed VC	6.25	6.17	16.88	16.90	16.85	16.81	16.84	18.09	18.01	20.38
Juris. Thresh. 1/	11.25	11.10	30.38	30.43	30.33	30.26	30.31	32.57	32.41	36.68
Tariff Rate	14.80	14.79	40.06	40.07	40.06	40.05	40.06	41.90	41.88	47.33
R/VC 2/	2.368	2.398	2.373	2.370	2.377	2.382	2.379	2.315	2.326	2.322
4Q09										
Indexed VC	6.36	6.27	17.15	17.17	17.12	17.08	17.11	18.39	18.30	20.72
Juris. Thresh. 1/	11.45	11.29	30.87	30.91	30.82	30.74	30.80	33.10	32.94	37.29
Tariff Rate	14.97	14.96	40.58	40.58	40.57	40.56	40.57	42.45	42.43	47.95
R/VC 2/	2.354	2.386	2.366	2.363	2.370	2.375	2.371	2.308	2.319	2.314

Source: "Opening Variable Cost_AEPCO position.xls."
1/ Indexed VC x 1.80.
2/ Tariff Rate divided by Indexed VC.

The R/VC ratios for all the movements at issue substantially exceed the jurisdictional threshold.

As noted, the parties entered into a stipulation regarding the operating characteristics to be utilized in determining the variable costs and the jurisdictional threshold for the issue movements, but that stipulation does not extend to how the operating characteristics should be treated. A main area of disagreement involves the treatment of the 53.3 miles between Rincon and Deming, NM for the movements to Apache from the New Mexico coal origins, meaning the Lee Ranch and El Segundo Mines.

In its initial (March 23, 2009) response to AEPCO's Interrogatory No. 4, BNSF described its train movements for AEPCO as follows:

> BNSF generally receives an empty AEPCO train in interchange from UP at Deming, NM. BNSF moves the empty train from Deming, NM, via Rincon, NM and Belen, NM for loading at the designated mine, and then moves the loaded train via the reverse route back to Deming, NM for interchange with UP.

However, when the railroads replied to AEPCO's proposed stipulation on the operating characteristics on September 10, 2009 (the day before it was due to be filed at the Board), BNSF insisted that the Rincon-Deming segment is actually handled by the SWRR. BNSF represented that it would be amending its response to AEPCO Interrogatory No. 4 to reflect the SWRR's involvement, and on that basis AEPCO entered into the stipulation that the SWRR operated the 53.3 miles between Rincon and Deming. On September 30, 2009,

BNSF provided an amended response that noted a SWRR crew moves the New Mexico coal trains between Rincon and Deming.[5]

BNSF's amended discovery response indicates that SWRR's involvement at Rincon consists simply of a crew change and that no additional activities are performed at that location. BNSF's agreement with SWRR[6] demonstrates that the SWRR does not operate as a line-haul railroad when handling the AEPCO coal trains but rather as BNSF's agent in a haulage agreement. The specific sections of the BNSF/SWRR Agreement that support this arrangement include:{

[5] BNSF's original and amended responses are included in AEPCO's electronic workpapers at "BNSF NO 4 ORIGINAL.pdf" and "BNSF AMENDED NO 4.pdf," respectively.

[6] {

}

[7] {

}

4.

}

While Section 19(b) of the BNSF/SWRR Agreement refers to the { }[10] this payment is not a function of the rate established by BNSF and UP which is the subject of this proceeding. Stated differently, the SWRR payment is not altered in any way by the calculation of the maximum reasonable rate challenged in this proceeding. BNSF and UP can establish any rate that those railroads deem appropriate and SWRR's compensation remains fixed at { }

Accordingly, AEPCO has costed the movement as if the only interchange occurs at Deming and there is no formal interchange at Rincon. In other words, the SWRR functions as a sub-contractor of BNSF, especially inasmuch as BNSF and UP are the only listed parties to BNSF Common Carrier Pricing Authority 57966.

---

[8] {

}

[9] {

}

[10] { }

II. B. QUALITATIVE MARKET DOMINANCE

Qualitative considerations constitute the second aspect of market dominance and encompass both intramodal and intermodal competition.

While AEPCO can take, and has taken, coal from a range of origins, including New Mexico, the Powder River Basin, and Colorado, AEPCO's Apache plant is ultimately totally captive to the Defendants, and specifically UP, for the delivery of coal, regardless of where the coal may originate. AEPCO cannot receive this coal by using another rail carrier's line (either existing or potential) or by using motor carrier service for some or all of the distance between the mines and the plant. As such, the Defendants enjoy unquestionable market dominance over the subject movements.

1. Intramodal Competition

The Apache plant is located approximately three miles south of Cochise, Arizona, and is situated along the UP's east-west main line through southern Arizona. No other rail carrier whose line could provide a legitimate competitive threat is within even remote proximity to Apache.

The subject coal origins are located in northern New Mexico, along BNSF's principal east-west main line through the southwestern United States, and origins served exclusively by BNSF in the Power River Basin in Wyoming and Montana, No other rail carrier's line is within even remote proximity to the Lee Ranch and El Segundo Mines in New Mexico. Likewise, no other carrier besides BNSF serves the subject Gillette area mines in Wyoming (Eagle Butte, Buckskin,

Rawhide, Clovis Point, and Dry Fork) or the mines in Montana (Spring Creek, Decker, and Signal Peak).

Moreover, no competitively effective build-out option exists at Apache or the origins.

2. Intermodal Competition

There is no intermodal competitive alternative that would effectively constrain the rates charged by the Defendants to perform the subject service. Motor carrier service is simply not a realistic option for the large distances (hundreds of miles) and volumes (in excess of one million tons per year) involved in this case. Likewise, there is no possibility of developing a rail-motor or motor-rail movement of coal to AEPCO because, among other reasons, there is no independent rail carrier located in the vicinity of Apache (or the mines) that could be used to divert traffic away from the Defendants even for a portion of the total movement.

Finally, there is no prospect of a water movement of coal in the New Mexico/Arizona desert.

BEFORE THE
SURFACE TRANSPORTATION BOARD

ARIZONA ELECTRIC POWER COOPERATIVE, INC.	)	
Complainant,	)	
v.	)	**Docket No. 42113**
BNSF RAILWAY COMPANY	)	
and	)	
UNION PACIFIC RAILROAD COMPANY	)	
Defendants.	)	

PART III

STAND-ALONE COST

III. A. STAND-ALONE TRAFFIC GROUP

AEPCO has determined the maximum lawful rates for BNSF/UP transportation of coal to AEPCO's Apache Generating Station ("Apache") utilizing the stand-alone cost ("SAC") constraint of the *Coal Rate Guidelines*.[1] AEPCO has created the Arizona & Northern Railroad ("ANR") as its hypothetical least-cost, most-efficient stand-alone railroad ("SARR") for SAC purposes.

[1] The evidence in Part III-G is sponsored by AEPCO Witnesses Thomas Crowley and Daniel Fapp.

Exhibit III-A-1 is a schematic of the ANR's layout. The route begins at Mossmain, MT,[2] runs more or less south through the Powder River Basin, to Pueblo, CO, Amarillo, TX, Vaughn, NM, and El Paso, TX. One leg runs west at Vaughn to Defiance, NM, and another leg runs west at El Paso, TX, to Cochise, AZ, near Apache. The ANR system includes trackage in eight (8) states: Montana, Wyoming, Nebraska, Oklahoma, Colorado, Texas, New Mexico, and Arizona.

As described in detail in Part III-B, the ANR is designed to replicate or replace 2,279 route-miles of the existing BNSF and UP rail systems, almost all of which will be constructed and operated by the ANR. The ANR utilizes trackage rights, as does BNSF, over Montana Rail Link ("MRL") between Mossmain (Laurel), MT and Moran Jct./Jones Jct, MT. The ANR also operates over private trackage to reach various coal mine origins and power plant destinations. The ANR's route does not utilize any trackage rights over the lines of BNSF or UP.

The ANR has a number of interchange points with BNSF and UP and also interchanges traffic with the Nebraska Kansas Colorado Railway ("NKCR") and the Ferrocarril Mexicano, S.A. de C.V. ("FXE") as follows:

---

[2] In 2012, the ANR's route is expanded to include a segment from Mossmain Jct. to Walter Junction, MT, from where the ANR operates over 35.0 miles of private trackage to serve the Signal Peak Mine in Montana.

TABLE III-A-1 ANR INTERCHANGE LOCATIONS	
Location	**Carrier**
Laurel, MT	BNSF
Jones Jct., MT	BNSF
Donkey Creek, WY	BNSF
Orin, WY	BNSF
Wendover, WY	BNSF
Northport, NE	UP, BNSF
Sterling, CO	NKCR
Brush, CO	BNSF
Denver, CO (2 locations)	BNSF
Las Animas Jct., CO	BNSF
Amarillo, TX (2 locations)	BNSF
Texico, NM (2 locations)	BNSF
Belen, NM	BNSF
Dalies, NM	BNSF
Defiance, NM	BNSF
El Paso, TX (2 locations)	UP, FXE
Cochise, AZ	UP
Source: Exhibit III-A-1.	

Exhibit III-A-2 shows the volumes and on and off locations for all ANR traffic over the 2009-2018 time period.

1. Stand-Alone Railroad Traffic

The ANR traffic group logically divides into coal and non-coal traffic.

All of the coal traffic moves in unit trains or trainload service for the entire length of its haul on the ANR lines. The ANR originates and/or delivers some of its coal traffic, and the ANR provides overhead service for other coal movements.

ANR's non-coal traffic consists almost entirely of overhead movements, with one exception discussed below. The ANR thus serves exclusively as a bridge carrier for these movements and generally does not originate or terminate this traffic. With one exception, the ANR also generally does not engage in switching, except that normally associated with bad-ordered cars and the like.

The only non-overhead, non-coal traffic on the system is a modest volume of intermodal traffic that the ANR either originates or terminates at El Paso, TX, as does the real-world BNSF. As explained in Part III-B-3, this traffic enters and leaves the ANR system at its West El Paso Yard.

In addition, as described in Part III-C-2 below, the ANR does provide some block switching associated with breaking up and assembling certain intermodal trains at Texico, NM, where the ANR replicates a function that BNSF performs at Clovis, NM. These operations are discussed in Part III-C-3-c.

The ANR traffic group thus represents a subset of the traffic that BNSF and UP currently handle over the segments of their real-world systems that the ANR replaces. The exclusion of some portions of that traffic, such as local traffic that requires switching and passenger (including Amtrak) movements, is entirely consistent with SAC principles, including the elimination of cross-subsidies and inefficiencies that detract from the least-cost, most-efficient mission of the ANR. That said, AEPCO's decision not to include non-coal local traffic and to handle non-coal traffic almost entirely in overhead service should not be

construed as an indication that such activities are inherently unprofitable either for the incumbents or the SARR. Instead, the decision reflects a desire to simplify the SAC operation and presentation to the extent possible.

AEPCO developed the ANR traffic group utilizing a combination of data sources, most of which were provided by BNSF and UP in discovery: (a) BNSF's and UP's historic revenue, car movement, and train event records; (b) BNSF's and UP's internal traffic projections; (c) rail transportation contracts and other pricing information; (d) AEPCO's own internal coal volume forecasts; (e) information developed by the Department of Energy's Energy Information Administration ("EIA"); (f) information developed by the U.S. Department of Agriculture ("USDA"); (g) analyses conducted by AEPCO witnesses Thomas Crowley, Daniel Fapp, and Robert Mulholland; (h) information in BNSF's and UP's shareholder reports and SEC filings; and (i) other public data, including financial data of ANR shippers. In general, AEPCO selected individual shipments (by origin and final destination points) from BNSF and UP based on revenue data, car event data, and train movement data for the one-year period beginning April 1, 2008 and ending March 31, 2009 ("Base Year") that would move over the ANR. A detailed summary of the Base Year traffic group for the ANR is included in Exhibit III-A-2.[3]

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[3] AEPCO's processes (and the data and programs) for drawing traffic and revenue information from BNSF and UP records are described in e-workpapers "BNSF_AEPCO Traffic Analysis.docx" and "UP_AEPCO Traffic Analysis.ppt."

The ANR differs from some other SARRs in that the ANR includes a contemplated 35-mile expansion of the ANR before the start of its fourth year of operations (2012) to enable it to serve the new Signal Peak Mine in Montana. As of January 1, 2009, the Signal Peak Mine had not commenced full-scale commercial operations, and AEPCO does not anticipate taking a significant volume of coal from the mine before January 1, 2012. Including the origin in ANR's operations before that time is thus not logical, and AEPCO's analysis contemplates that the ANR will expand its system after it starts operation to encompass service to Signal Peak. Published reports indicate that much of Signal Peak's production will go to plants operated by First Energy. AEPCO anticipates beginning to move this traffic in 2012 when it commences operations to the Signal Peak mine.

a. Coal Traffic

Coal traffic, consisting of unit train and/or trainload movements, comprises approximately 58% of the ANR's 2009 tons. The ANR serves 20 coal mines directly (including Signal Peak starting in 2012).[4] In addition, the ANR serves five power plants directly: Pawnee, Arapahoe, Comanche, Harrington, and Apache.[5]

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[4] The ANR also serves the Black Thunder West and South Black Thunder loadouts, which are adjacent to the Black Thunder Mine.

[5] The ANR will also originate coal for the PPL Montana LLC Corette Generating station at Billings, MT, {

Exhibit III-A-4 shows detailed movement information for all coal handled by the ANR, along with the base year volumes attributable to each.

b. Non-Coal Traffic

The ANR also handles a substantial volume of non-coal traffic, especially over certain segments. This traffic comprises approximately 42% of the ANR's 2009 tons. As noted, the ANR receives and delivers this traffic in intact trainloads, and handles this traffic as a bridge carrier for either the residual BNSF or the residual UP, although the ANR originates and terminates some intermodal trains at El Paso and also breaks up some arriving intermodal trains for assembly into different departing trains at Texico, NM, as BNSF currently does at Clovis, NM. Exhibit III-A-2 shows all on-system and off-system locations for all the non-coal movements handled by the ANR for the 2009-2018 time period.

The non-coal traffic may be broken down into several categories[6] as follows:

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[6] The listed categories of non-coal traffic reflect BNSF's traffic designations. UP categorizes its non-coal traffic differently, and its designations were converted to reflect BNSF's designations, as the UP groups are subsets of the BNSF groups.

Table III-A-2 Summary of 2009 ANR Non-Coal Traffic			
STCC or Type	**Description**	**Cars/Containers (thousands)**	**Tons (millions)**
Mixed	Industrial/Chemical	286	23.8
Mixed	Consumer (Includes Automotive and Intermodal	4,648	64.4
01	Agricultural (Grain, etc.)	130	13.2
Source: Exhibit III-A-2 (tons) and e-workpapers "BNSF_WAYBILL_ 200804_ 200903_MASTER_SUMMARY_EXTENDED_SELECTION-2Q4Q USDA2.xlsx" and "UP Selected Traffic Forecast.xlsx" (units).			

c. Rerouted Traffic

The ANR reroutes some traffic, but all of the reroutes are internal to the ANR. Moreover, ANR achieves superior or equivalent performance to the incumbents,[7] notwithstanding the rerouting, as explained more fully in Part III-C-3-a, which addresses the operational aspects of the rerouting. The rerouting thus meets the Board's standards for reasonableness and must be accepted. *See, e.g.*, *AEP Texas* at 10, and *WFA/Basin II* at 11.

The reroutes arise from several factors. First, SAC analysis generally favors movements with higher densities consistent with its least-cost, most-efficient foundation. For that reason, the *Coal Rate Guidelines*, 1 I.C.C.2d at

[7] The loaded issue movement from Lee Ranch to Cochise takes slightly longer over the ANR than the real-world BNSF-UP movement, which AEPCO is very willing to accept in exchange for the lower rate, but all non-issue rerouted traffic achieves shorter transit times over ANR relative to real-world BNSF/UP performance.

543-44, specifically contemplate rerouting, even over longer distances, to achieve such densities and associated efficiencies.

Second, an additional need for the reroutes arises because AEPCO is challenging joint through rates established by BNSF and UP from separate BNSF origins in New Mexico and the PRB (including Signal Peak starting in 2012). In the real world, movements from the two sets of origins utilize the same route only from Deming, NM to Cochise, NM. Having all the issue traffic utilize the same route to the extent possible (*i.e.*, between Vaughn and Cochise, as explained *infra*) serves to reduce the complexity and increase the efficiency of the SAC presentation. Consolidating the route of the issue traffic also contributes to the greater densities noted above.

In particular, BNSF currently routes the issue New Mexico coal from Belen to Rincon, NM, and then from Rincon to Deming, NM, an interchange point with UP.[8] This BNSF segment has a relatively low density, and AEPCO has chosen to reroute this traffic through Vaughn, NM and El Paso, TX, which is the same route that BNSF and UP have chosen for routing AEPCO's PRB coal movements (interchanging the traffic at Pueblo, as addressed *infra*).

[8] As discussed in Part II, BNSF has indicated that movements between Rincon and Deming are handled by the Southwestern Railroad Company, Inc. ("SWRR").

The reroute through Vaughn and El Paso contributes to a longer total movement length,[9] but over higher density lines, and AEPCO's analysis accounts for all of the costs associated with the longer route. In addition, the results of AEPCO's Rail Traffic Control Model ("RTC") analysis demonstrates that the ANR's service, even with the reroutes, will be superior or at least equivalent to that provided under the current real-world routing, thereby satisfying the Board's standards for internal reroutes. *See, e.g., TMPA*, 6 S.T.B. at 594-95, *AEP Texas* at 10-11, and *WFA/Basin II* at 11-12.

Another reroute, which is actually quite minor, involves BNSF's lines in the PRB. BNSF presently routes PRB traffic to/beyond Northport, NE via both (a) Orin Jct., Wendover, and Guernsey, WY, and (b) Edgemont, SD and Alliance, NE. The ANR uses only the first routing. The ANR's route from Donkey Creek (and the PRB mines north and west thereof) to Northport is 6.1 miles longer via the Guernsey route than via the Alliance route, but the Guernsey routing is shorter from every PRB mine south of Donkey Creek. These reroutes do not cause the ANR's cycle times to exceed those of the real-world BNSF, and the reroutes were accepted in other recent rate cases, as discussed in Part III-C-3-a.

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[9] For movements of New Mexico coal that presently move through Belen-Deming, the reroute is 232 miles longer. For movements of Utah coal that also presently move through Belen-Rincon-El Paso, the route is 186.6 miles longer. The latter two reroutes involve traffic that is interchanged with the FXE at El Paso.

A third factor contributing to the need to reroute the ANR's traffic is STB precedent, from AEPCO's prior rate case, which discourages a SARR from utilizing trackage rights that one co-defendant has over another.[10] In fact, BNSF and UP's real-world handling of the issue PRB and other traffic involves considerable use of trackage rights. In the real world, BNSF and UP interchange the issue traffic and other traffic at Pueblo for movement to El Paso. For movements from Pueblo, UP typically utilizes trackage rights over BNSF to Stratford, TX, via La Junta and Las Animas Jct. CO. At Stratford, UP handles the traffic over its Tucumcari line that runs to El Paso (and BNSF has trackage rights over that line).

Because the ANR cannot utilize UP's Pueblo-Stratford trackage rights over BNSF, the ANR must instead build that line itself. Once the ANR constructs BNSF's Pueblo-Stratford segment, it becomes more logical and efficient for the ANR to handle the issue and non-issue traffic by following and constructing BNSF's lines from Stratford to Vaughn via Amarillo, TX, and Clovis, NM. Once the ANR reaches Vaughn, the ANR replicates the UP line from Vaughn to El Paso and Cochise, as described above. In this manner, the ANR avoids utilizing trackage rights for this part of its route.[11] While the route over the

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[10] *See* STB Docket No. 42058, *Arizona Elec. Power Coop., Inc. v. The Bur. N. Santa Fe Ry. Co. and Union Pacific R.R. Co.* (STB served Nov. 19, 2003), at 5.

[11] Real world empty trains use a different route (utilizing other UP trackage rights over BNSF via Trinidad, CO), but the ANR simply uses the reverse of the loaded route.

heavier-density lines through Amarillo and Clovis is 91.4 miles longer than the route actually used in the real world, the ANR still operates loaded and empty trains faster than UP did in the base year, as explained in Part III-C-3-a.

In addition, BNSF and UP both have separate and largely duplicative mainline tracks between Denver and Pueblo, except between Palmer Lake and Kelker, where there is only a single mainline track that is owned by UP. BNSF and UP have trackage rights over each other's lines between Denver and Pueblo. The general arrangement is that each carrier may use the other carrier's trackage and the compensation arrangement consists of proportionate sharing of maintenance costs and incremental capital costs, *i.e.*, there is no direct return to one carrier for allowing the other carrier to use its trackage. As a practical matter, the carriers closely coordinate their operations between Denver and Pueblo, and the parallel lines are generally used for directional running. BNSF thus regularly operates over UP segments, and UP regularly operates over BNSF segments to achieve greater efficiencies. While each carrier typically retains dispatching responsibility over its own segments, as a practical matter the two carriers' ownership and operations over the segments are indistinguishable.

As noted above, the ANR cannot utilize BNSF's trackage rights over UP (or UP's trackage rights over BNSF). Accordingly, the ANR has constructed the Denver-Pueblo segment. The ANR follows the Main #2 line, which is the easternmost portion of the parallel lines (except for the Palmer Lake-Kelker segment, where there is only one line). BNSF and UP both own portions of Main

#2 line in non-contiguous ownership. The ANR achieves equivalent or superior service despite not replicating all of BNSF's and UP's facilities between Denver and Pueblo, *i.e.*, the ANR replicates sufficient facilities to handle its traffic.

It may be useful to identify the non-issue traffic that is affected by the various reroutes between Denver and El Paso/Deming. First, there is interline coal traffic that BNSF originates in New Mexico that moves to Cochise.

Second, there is Utah coal traffic that the Utah Railway originates and then interchanges with BNSF at Grand Junction, CO, which BNSF then moves to El Paso for interchange with the FXE. In the real world, BNSF routes this traffic via Denver, Pueblo, Trinidad, Raton, Albuquerque, Belen, and Rincon. This traffic thus uses the same low-density Belen-Rincon segment as the issue traffic and the Lee Ranch traffic that BNSF also interchanges with the FXE at El Paso. For the same reasons that it is appropriate to reroute the issue PRB traffic to travel via Vaughn and El Paso, rather than Belen, Rincon, and Deming, it is also appropriate to reroute this non-issue traffic. While the reroute results in a longer total distance, the ANR still provides superior or equivalent service.

The last category of rerouted traffic consists of UP-originated Colorado coal that UP delivers to destinations in Arizona (the Sundt power plant near Tucson) and Texas (east of El Paso). This traffic actually travels in the real-world along the ANR's route from Denver through Pueblo to Stratford, and the reroute pertains only to the ANR's substitution of the routing through Amarillo, Texico, Clovis, to Vaughn instead of UP's more direct routing from Stratford to

Vaughn along the Tucumcari line. However, the ANR achieves superior or equivalent service despite the longer routing, and the rerouting thus meets the Board's operational standards.

The rerouted UP traffic does utilize trackage rights in the real world between Pueblo and Stratford and to some extent as well between Denver and Pueblo. The ANR handles this traffic between Denver and El Paso for several reasons. First, AEPCO is utilizing the actual route of movement of the traffic, at least as far as Stratford (and also from Vaughn, where the ANR replicates UP's line). Second, the joint facility trackage rights arrangement between Denver and Pueblo does not reflect the true economic cost of the facilities and the actual trackage rights fee (proportionate maintenance and future capital costs) is not sustainable. In this sense, AEPCO's treatment reflects the true SAC of serving the traffic and eliminates a cross-subsidy that other customers are providing for this traffic. The same is also true for the SAC cost of movement beyond Pueblo. For the same reasons that AEPCO was not allowed to utilize BNSF's trackage rights arrangements between Vaughn and El Paso for the issue traffic in its prior rate case, AEPCO is reflecting the full SAC for handling this traffic, which largely traverses the same route as the issue traffic. AEPCO's treatment is thus permissible as a matter of SAC theory.

The operational aspects of the reroutes are discussed further in Part III-C-3.

2. Volumes (Historical and Projected)

a. Historical Volumes

There has been an unusually long delay of over a year between the time that AEPCO filed its complaint and the submission of its opening evidence. That delay has coincided with a very significant decline in the national economy in general and declines in the volumes of BNSF and UP in particular. Moreover, while BNSF's and UP's initial production of discovery data, including revenue, car, and train data, was rather slow, as well as incomplete in a number of instances, the carriers have been very quick to update that discovery with materials depicting their traffic levels through the first six months of 2009 and, in BNSF's case, even the third quarter of 2009, although such data arrived far too late to be incorporated into AEPCO's analysis.[12]

An additional complication is that BNSF claims to have modified its

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[12] AEPCO can only presume that the carriers belatedly produced the information so that they could utilize it in their reply evidence as they see fit. AEPCO expects that the Board will be cognizant of such efforts in evaluating the parties' evidence.

} Significantly, BNSF did not deny that such projections were still prepared. Indeed, it would appear impossible to run a large railroad such as BNSF effectively without such projections, as one would not have a specific or documented basis for committing resources for planning, investment, and operating purposes.

In response to the data, and its limitations, AEPCO has taken a very conservative approach to determining its base year traffic. In particular, AEPCO has based the ANR's traffic levels on BNSF's and UP's actual traffic volumes for the last nine months of 2008 and the first three months of 2009 as reflected in the railroads' data indexed down to reflect actual volume changes for ANR shippers.[13] As explained *infra*, AEPCO has made further adjustments in projecting volumes for the remainder of 2009 and beyond. The ANR's volumes thus reflect the full brunt of the recession on the volumes of its shippers.

That said, AEPCO notes that BNSF and UP have, along with other Class I railroads, made a number of public statements during the recession to the effect that they have avoided a strategy of reducing their rates in order to attract what would be presumably be otherwise desirable business during the recession. Such a strategy, and public statements regarding such a strategy, of avoiding discounts in order to attract additional volumes may, or may not, be in the carriers' best short-term and long-term interests.

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[13] *See* e-workpapers "BNSF Fcst based on 2 BNSF Productions 2Q4Q w USDA.xlsx" and "UP forecast w 9m trueup.xlsx."

AEPCO's use of actual BNSF and UP 2009 volumes to determine its traffic group is thus extremely conservative. Moreover, the foregone volumes would logically have yielded lower R/VC ratios because the additional traffic would likely have been captured only through discounting, meaning lower rates. The additional traffic would thus be less likely to share in the MMM relief itself, all other things being equal, and would thus logically result in further relief for the issue and other traffic moving at relatively high R/VC ratios.[14]

b. Projected Volumes

AEPCO has projected the ANR's future volumes for the period after the first three months of 2009 through 2018, the end of the ten-year DCF period, using the methods described below, which are briefly summarized as follows:

1. AEPCO has utilized its own projections for coal deliveries at Apache through 2011, the last year of its internal forecast. After 2011, volumes and origins are assumed to remain constant, except for the addition of Signal Peak coal in 2012.

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[14] BNSF and UP might counter that discounting their rates now would prevent them from charging higher rates in the future. However, a SARR has no inherent reason to charge higher rates than necessary since any revenue collections in excess of its revenue requirements will be returned to customers through the MMM process. Furthermore, the implication of such an approach on the part of BNSF and UP is that their objective is to maximize their profits rather than their volume of profitable business. The second objective is closer to that of the SARR. Any *de facto* requirement that the SARR begin with the incumbent(s)' rate base is thus in tension with the basic function of the SARR and SAC theory in general.

2. AEPCO calculated non-AEPCO coal volumes for the last three quarters of 2009 using the EIA's Annual Energy Outlook ("AEO") April Update coal production forecast.[15] Specifically, AEPCO applied the forecasted rate of change in regional coal production (Western Montana, Wyoming PRB, Rocky Mountains, and Southwest U.S.) between 2008 and 2009 to the final three quarters of UP and BNSF coal traffic volumes to forecast 2Q to 4Q 2009 coal traffic levels. In prior SAC cases, shippers have used railroad-provided plant-specific forecasts to develop traffic forecasts in the early years of the SAC analysis. Since BNSF and UP failed to produce such forecasts in the instant case, AEPCO was required to rely upon the EIA's coal production forecasts to forecast 2009 traffic volumes. The Board has found that the use of the EIA's regional coal production forecasts provides a better basis of future coal volumes than a railroad's system-wide macro-traffic forecast because of the area specific nature of the EIA forecasts. *See WFA/Basin I* at 27 and *PSCo/Xcel* at 53.

3. For non-AEPCO coal volumes for the period after 2009 through 2018 (the end of the DCF period), AEPCO continued to utilize the EIA's

[15] In April 2009, the EIA updated its AEO projections to reflect the provisions of the American Recovery and Reinvestment Act (ARRA) that were enacted in mid-February 2009. The reference case in AEO 2009 as originally published reflected laws and regulations in effect as of November 2008, and thus did not include ARRA. The need to develop an updated reference case following the passage of ARRA also provided the EIA an opportunity to update the macroeconomic outlook for the United States and global economies, which had seen rapid changes between October 2008 and April 2009. The April Update therefore incorporated many of the economic impacts brought about by the recession.

April 2009 regional coal production forecast applied to the preceding year's total coal traffic level. However, the annual coal consumption for each individual plant was capped at the greater of 85% of the plant's rated capacity or the volume at the end of the Base Year. Additionally, coal destined to the Midwest Energy Resources Company's Superior Terminal and Westshore Terminals' Roberts Bank Terminal was capped at each terminal's respective effective capacities.

4. For non-coal traffic, AEPCO was required to use different methodologies to forecast the ANR volumes for traffic interchanged with BNSF and UP, based on varying levels of data provided by the Railroads. These matters are discussed further below.

AEPCO's own volumes for Apache reflect AEPCO's own internal projections, as adjusted to reflect the anticipated outcome of AEPCO's rate case. While AEPCO expects to ship approximately 1.4 million tons of coal to Apache on an ongoing basis throughout the 2009-2018 ten-year DCF period, where that coal comes from may be affected in substantial part by such matters as relative mine prices, relative transportation costs, relative coal quality parameters, environmental-related restrictions, and other factors prevailing at the time. AEPCO further notes that its volumes are a relatively small portion of the total volume along the ANR route and any of its individual segments. While AEPCO's volumes are a relatively larger proportion of the total volumes along the Vaughn-El Paso segment, all coal shipped to Apache, regardless of origin, would utilize that segment (as well as the El Paso-Cochise segment) for SAC purposes.

The resulting volume projections for AEPCO (including all of 2009) are as follows:

Table III-A-3 Expected AEPCO Coal Shipments (in thousands of tons)						
	Origin					
Year	Lee Ranch	El Segundo	Colorado	NPRB MT	Signal Peak MT	Total
2009	935	218	0	56	0	1,209
2010	{ }	{ }	{ }	{ }	{ }	{ }
2011	{ }	{ }	{ }	{ }	{ }	{ }
2012	{ }	{ }	{ }	{ }	{ }	{ }
2013	{ }	{ }	{ }	{ }	{ }	{ }
2014	{ }	{ }	{ }	{ }	{ }	{ }
2015	{ }	{ }	{ }	{ }	{ }	{ }
2016	{ }	{ }	{ }	{ }	{ }	{ }
2017	{ }	{ }	{ }	{ }	{ }	{ }
2018	{ }	{ }	{ }	{ }	{ }	{ }
Source: AEPCO e-workpaper "Coal Traffic Forecast.xls." Note that the Table does not reflect 197,000 tons that AEPCO received from the McKinley Mine in 2009 because AEPCO has elected not to include those shipments in its SAC analysis.						

AEPCO has not included any projected shipments from Southern Powder River Basin ("SPRB") mines in Wyoming. Such movements would constitute non-issue traffic. In addition, AEPCO doubts that it would move any such coal in lieu of coal from BNSF-served origins under present circumstances.

a. <u>Projected Non-Issue Coal Traffic</u>

As noted, AEPCO projected non-issue coal traffic forecast relies on the EIA forecast as applied to the historic volume. Consistent with the Board's past practice in rate cases, the traffic at individual plants is capped at the higher of

that resulting from an 85% capacity factor or the terminal value under the internal forecast.

For 2009 through 2018, coal traffic levels (other than for Apache shipments) are adjusted forward in accordance with the EIA forecast.[16] The following table predicts the volume of non-issue coal traffic projected to be handled by the ANR in various years (including all of 2009):

Table III-A-4
Expected ANR Non-AEPCO Coal Shipments
(in thousands of tons)

Year	Origin					Total
	New Mexico	SPRB	NPRB	Other MT	Rocky Mountain	
2009	4,957	107,792	22,532	0	1,534	136,815
2010	8,154	111,170	21,978	0	1,650	142,952
2011	8,308	112,994	24,825	0	1,684	147,810
2012	8,415	113,477	26,318	8,000	1,711	157,920
2013	8,450	113,892	26,649	8,000	1,648	158,639
2014	8,448	114,030	26,756	8,000	1,618	158,851
2015	8,342	112,987	26,827	8,000	1,601	157,756
2016	8,349	114,044	26,571	8,000	1,606	158,570
2017	8,375	114,188	26,884	8,000	1,597	159,044
2018	8,375	114,319	26,878	8,000	1,617	159,189

Source: AEPCO e-workpaper "Coal Traffic Forecast.xls."

[16] *See* e-workpaper "Coal Traffic Forecast.xlsx." In addition, AEPCO adjusted its forecast to reflect the closing of the McKinley Mine in 2009. Based on public announcements, coal previously purchased by Arizona Public Service ("APS") at the McKinley mine and destined to the Cholla Generating Station will now originate from the El Segundo Mine. APECO's coal traffic forecast includes this adjustment.

c. **Projected Non-Coal Traffic**

AEPCO's projected non-coal traffic volumes for the ANR reflect selected movements from BNSF's and UP's actual volumes for the 2Q08-1Q09 time period, BNSF's and UP's internal business forecasts through 2014 and 2010, respectively, and thereafter by applying indices that AEPCO developed from the provided traffic and revenue forecast data and from public sources. AEPCO has assumed that the average tons per car or container will remain constant over the study period for both coal and non-coal traffic.[17] {

} The ANR volume forecast methodologies for traffic interchanged with BNSF and UP are discussed separately below.

BNSF:

- The BNSF non-coal traffic forecast is based on 2Q-4Q 2008 and 1Q 2009 traffic data ("Base Year Traffic") provided in discovery.
- Year 2009 tons were developed using 1) actual 1Q 2009 traffic data as reported in BNSF traffic data, and 2) forecasted 2Q to 4Q 2009 traffic volumes. Second quarter to fourth quarter 2009 traffic volumes were estimated by adjusting 2Q to 4Q 2008 actual traffic volumes as follows:

[17] Except where forecasted volume (tonnage) increases/decreases resulted in less-than-full-unit denominations. For example, if a shipper moved 100 tons of grain in one car in the base year (2Q08-1Q09), but AEPCO forecasted that shipper would receive 90 tons of grain in 2009, that shipper's 2009 volume would be 1 car and 90 tons. If in 2010 AEPCO forecasted that same shipper's volume would be 96 tons, the shipper's 2010 volume would be 1 car and 96 tons. And if in 2011 AEPCO forecasted that same shipper's volume would be 103 tons, the shipper's 2011 volume would be 2 cars and 103 tons. In this way the shipper's tons per unit may fluctuate somewhat throughout the study period, but the tons per car will never exceed the base year (2Q08-1Q09) average tons per car.

- Consumer traffic (Intermodal and Auto): ANR consumer traffic was identified for 1Q08 and 1Q09 from the BNSF traffic data. The data show a { } reduction in ANR consumer traffic volume from 1Q08 to 1Q09. BNSF's 1Q09 10Q report shows a { } overall reduction in consumer traffic volume from 1Q08 to 1Q09. Thus we established that the ANR consumer traffic reduction was { } of the overall BNSF consumer traffic reduction from 2008 to 2009. Data from the BNSF 2008 10K report and the { } provided by BNSF on October 7, 2009 show a projected system-wide reduction of { } for BNSF consumer traffic from 2008 to 2009. Applying the { } ANR reduction factor to the BNSF system-wide reduction of { } results in a year-over-year reduction of { } for ANR consumer volumes.[18] On a movement-by-movement basis,[19] 2Q-4Q08 consumer volumes (tonnages) were reduced by { } to arrive at 2Q-4Q09 levels.

- Industrial traffic: ANR industrial traffic was identified for 1Q08 and 1Q09 from the BNSF traffic data. The data show an { } reduction in ANR industrial traffic volume from 1Q08 to 1Q09. BNSF's 1Q09 10Q report shows a { } overall reduction in industrial traffic volume from 1Q08 to 1Q09. Thus we established that the ANR industrial traffic reduction was { } of the overall BNSF industrial traffic reduction from 2008 to 2009. Data from the BNSF 2008 10K report and the { } provided by BNSF on October 7, 2009 show a projected system-wide reduction of { } for BNSF industrial traffic from 2008 to 2009. Applying the { } ANR reduction factor to the BNSF system-wide reduction of { } results in a year-over-year reduction of { } for ANR industrial

[18] This adjustment was applied to all consumer volume except JB Hunt intermodal traffic. JB Hunt reports its intermodal traffic as a separate line of business (JBI) in its SEC filings. The 2Q-3Q 2009 JB Hunt 10-Q reports show an 8.5% increase in JBI volumes from 2008 to 2009. This growth factor was applied to 2Q-4Q08 intermodal moves identified as moving under JB Hunt contracts in the BNSF waybill data to arrive at 2Q-4Q09 volumes.

[19] Movements are defined by unique movement parameters including year of movement, STCC, origin, destination, BNSF origin, BNSF destination, ANR on-junction, ANR off-junction, equipment type and owner, contract, and intermodal plan code, where applicable.

volumes. On a movement-by-movement basis, 2Q-4Q08 industrial volumes (tonnages) were reduced by { } to arrive at 2Q-4Q09 levels.

- Agricultural traffic was adjusted based on Table 7[20] of the 2009 "USDA Agricultural Projections to 2018" report.[21] The USDA report shows a 4.5% reduction in aggregate crop production from 2008 to 2009. On a movement-by-movement basis, 2Q-4Q08 agricultural volumes (tonnages) were reduced by 4.5% to arrive at 2Q-4Q09 levels.

- Consumer and Industrial traffic for the years 2010 through 2014 was developed by adjusting prior year traffic volumes for each movement by the forecasted percentage change in consumer and industrial volumes as calculated by BNSF and reported in the BNSF's { }.

- Consumer and Industrial traffic for the years 2015 through 2018 was developed by adjusting prior year traffic volumes for each movement by the 2013-2014 growth rate as calculated by BNSF and included in the BNSF's{ }.

- Agricultural traffic for the years 2010 through 2018 was developed by adjusting prior year traffic volumes for each movement by the forecasted percentage change in aggregate crop production as reported in the 2009 "USDA Agricultural Projections to 2018" report.

UP:

- The UP non-coal traffic forecast is based on 2Q-4Q 2008 and 1Q 2009 traffic data ("Base Year Traffic") provided in discovery.

- Year 2009 tons were developed using 1) actual 1Q 2009 traffic data as reported in UP traffic data, and 2) forecasted 2Q-4Q09 traffic volumes. Second quarter to fourth quarter 2009 traffic volumes were estimated by adjusting 2Q-4Q08 actual traffic volumes as follows: For all non-Coal traffic groups, a baseline was developed for UP traffic from the UP 2008

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[20] Selected supply, use, and price variables for major field crops, long-term projections.

[21] USDA Office of the Chief Economist, World Agricultural Outlook Board, Long-term Projections Report OCE-2009-1, February 2009.

10-K report, the UP 3Q09 10-Q report, and the 4Q09 UP { }. Then these system-wide volume changes were adjusted based on an evaluation of lane-specific volumes and volume projections reflected in the UP traffic data and { } data. Specifically, a comparison of 2Q-4Q08 Waybill data and 2Q-4Q09 { } data provided in discovery showed that for ANR lanes, UP anticipated a { } increase in traffic. This factor was then compared to system-wide projected volume changes between 2Q-4Q08 10Q data and 2Q-4Q09 { } data to determine the relative growth of UP traffic in ANR lanes to overall growth of UP traffic. Detailed discussions of the treatment of all individual traffic groups (as defined in UP's { } data and quarterly reports) are included below.

- Automotive traffic: System-wide actual volume change for UP auto traffic based on a comparison of 2008 10K data to 3Q09 10Q data plus 4Q09 { } data was calculated as { }. System-wide forecasted volume change for UP auto traffic based on a comparison of 2Q-4Q08 10Q data and 2Q-4Q09 { } data was calculated as { }. However, change from 2Q-4Q08 waybill data to 2Q-4Q09 { } data for ANR lanes and commodities was { }. Comparing the lane-specific { } forecast factor of { } to the system-wide { } for auto traffic of { } yields an adjustment factor of { }. Adjusting the actual system-wide change in Auto traffic { } by the auto traffic adjustment factor calculated above { } results in a restated change in auto traffic over ANR lanes of { }. On a movement-by-movement basis,[22] 2Q-4Q08 auto volumes (tonnages) were reduced by { } to arrive at 2Q-4Q09 levels.

- Chemical traffic: System-wide actual volume change for UP chemical traffic based on a comparison of 2008 10K data to 3Q09 10Q data plus 4Q09{ } data was calculated as { }. System-wide forecasted volume change for UP chemical traffic based on a comparison of 2Q-4Q08 10Q data and 2Q-4Q09 { } data was calculated as { }. However, change

[22] Movements are defined by unique movement parameters including year of movement, STCC, origin, destination, UP origin, UP destination, ANR on-junction, ANR off-junction, equipment type and owner, contract, and intermodal plan code (where applicable).

from 2Q-4Q08 waybill data to 2Q-4Q09 { } data for ANR lanes and commodities was { }. Comparing the { } of { } to the { } for chemical traffic of { } yields an adjustment factor of { }. Adjusting the actual system-wide change in chemical traffic { } by the chemical traffic adjustment factor calculated above { } results in a restated change in chemical traffic over ANR lanes of { }. On a movement-by-movement basis, 2Q-4Q08 chemical volumes (tonnages) were reduced by { } to arrive at 2Q-4Q09 levels.

- Industrial traffic: System-wide actual volume change for UP industrial traffic based on a comparison of 2008 10K data to 3Q09 10Q data plus 4Q09 { } data was calculated as { }. System-wide forecasted volume change for UP industrial traffic based on a comparison of 2Q-4Q08 10Q data and 2Q-4Q09 { } data was calculated as { }. However, change from 2Q-4Q08 waybill data to 2Q-4Q09 { } data for ANR lanes and commodities was { }. Comparing { } of { } to the { } for industrial traffic of { } yields an adjustment factor of { }. Adjusting the actual system-wide change in industrial traffic { } by the industrial traffic adjustment factor calculated above { } results in a restated change in industrial traffic over ANR lanes of { }. On a movement-by-movement basis, 2Q-4Q08 industrial volumes (tonnages) were reduced by { } to arrive at 2Q-4Q09 levels.

- Intermodal traffic: System-wide actual volume change for UP intermodal traffic based on a comparison of 2008 10K data to 3Q09 10Q data plus 4Q09 { } data was calculated as { }. System-wide forecasted volume change for UP intermodal traffic based on a comparison of 2Q-4Q08 10Q data and 2Q-4Q09 { } data was calculated as { }. However, change from 2Q-4Q08 waybill data to 2Q-4Q09 { } data for ANR lanes and commodities was { }. Comparing { } of { } to the { } for intermodal traffic of { } yields an adjustment factor of { }. Adjusting the actual system-wide change in intermodal traffic { } by the intermodal traffic adjustment factor

calculated above { } results in a restated change in intermodal traffic over ANR lanes of { }. On a movement-by-movement basis, 2Q-4Q08 intermodal volumes (tonnages) were increased by { } to arrive at 2Q-4Q09 levels.

- As with BNSF traffic, UP agricultural traffic was adjusted based on Table 7 of the 2009 "USDA Agricultural Projections to 2018" report. The USDA report shows a 4.5% reduction in aggregate crop production from 2008 to 2009. On a movement-by-movement basis, 2Q-4Q08 Agricultural volumes (tonnages) were reduced by 4.5% to arrive at 2Q-4Q09 levels.

- Auto, Chemical, Industrial, and Intermodal traffic for 2010 was developed by adjusting 2009 traffic volumes for each movement by the forecasted percentage change in auto, chemical, industrial, and intermodal volumes as calculated by comparing system-wide UP 2010 { } data to system-wide UP 3Q09 10Q data plus UP 4Q09 { } data.

- Because UP provided no forecast data beyond 2010, UP Auto, Chemical, Industrial, and Intermodal traffic for the years 2011 through 2014 was developed by {

{

}.

- UP Auto, Chemical, Industrial, and Intermodal traffic for the years 2015 through 2018 was developed by adjusting prior year traffic volumes for each movement by {

}.

- Agricultural traffic for the years 2010 through 2018 was developed by adjusting prior year traffic volumes for each movement by the forecasted percentage change in aggregate crop production as reported in the 2009 "USDA Agricultural Projections to 2018" report.

AEPCO's forecasts are reasonable, if not unduly conservative. For example, the director of community relations for the Port of Los Angeles, a key U.S. intermodal intake and distribution center, recently stated: "this downturn is

temporary . . . . Not only are we predicting [intermodal container business] to double by 2020, but triple by 2030." (Calabrese, Dan, "Stack Slump Renders Rails Helpless," *Trains,* May 2009, p. 8).

The following table summarizes the ANR's expected non-coal shipments (including actual shipments for the first quarter of 2009):

Table III-A-5
Expected ANR Non-Coal Shipments
(in thousands of tons)

Year	Category			Total
	Consumer (Intermodal/Auto)	Industrial/ Chemical	Agricultural	
2009	64,388	23,774	13,176	101,337
2010	65,238	24,354	13,544	103,136
2011	67,847	26,985	14,185	109,017
2012	70,031	29,604	14,628	114,263
2013	72,051	31,322	14,851	118,225
2014	74,072	32,326	15,096	121,494
2015	76,149	33,363	15,340	124,851
2016	78,284	34,432	15,585	128,302
2017	80,479	35,536	15,833	131,848
2018	82,735	36,675	16,085	135,496

Source: AEPCO e-workpaper "Combined tonnage forecast BN-UP Non-coal.xls."

e. <u>Peak Year Traffic</u>

The projected increases in all categories of the ANR's traffic cause the peak year for the ANR to be 2018, the final year of the DCF model. Reflecting all the traffic projections noted above, the ANR's peak year traffic is as follows:

TABLE III-A-6 Summary of ANR Peak Year (2018) Traffic (in thousands)					
Item	Coal	Consumer	Industrial	Agricultural	Total
Units	0	5,988	450	162	6,600
Carloads	1,362	See Note	450	162	See Note
Tons	160,589	82,735	36,675	16,085	296,084

Source: Exhibit III-A-2 (tons) and e-workpapers "BNSF_WAYBILL_200804_200903_MASTER_SUMMARY_EXTENDED_SELECTION-2Q4Q USDA2.xlsx" and "UP Selected Traffic Forecast.xlsx" (units).

Note: BNSF and UP-provided car, train, and traffic data do not facilitate a simple or straight-forward calculation of railcars used in intermodal service. Specifically, both BNSF and UP car event data are inconsistent with respect to identifying certain multi-well articulated intermodal cars as single units or as multiple units. In some cases the entire car is identified as a railcar, and in some cases each individual well is identified as a railcar.

3. Revenues (Historical and Projected)

In Ex Parte No. 347 (Sub-No. 3), *General Procedures for Presenting Evidence in Stand-Alone Coal Rate* Cases (STB served March 12, 2001), the Board directed that discussion of revenues, both historical and projected, be grouped under four headings: (a) single-line, (b) divisions -- existing interchanges, (c) divisions -- cross-over traffic (meaning new interchanges with the residual defendants), and (d) other.[23] AEPCO has organized its discussion accordingly.

[23] ANR's movements may involve an existing interchange on one portion of a movement and a new interchange on a different portion of the same traffic. Thus, the existing interchange and cross-over traffic categories are not necessarily mutually exclusive.

a. **Single-Line**

Single-line traffic refers to traffic that the ANR handles exclusively from origin to destination. In its first year of operation (2009), the ANR would handle 11.5 million tons/trains of coal in single-line service. In addition to coal delivered to Apache from the New Mexico and Northern PRB origins served exclusively by BNSF, the ANR would also handle coal moving from the PRB to five (5) other power plants served by the ANR. The single-line traffic consists of 8% of the ANR's total base year coal traffic.

Stand-alone revenues for AEPCO's issue coal traffic are calculated based on the rates established by BNSF/UP in BNSF Common Carrier Pricing Authority BNSF 57966 and 57988 (included at Exhibit III-A-3). The ANR revenues attributable to other single-line traffic were derived from BNSF/UP revenue data files produced in discovery and/or contracts or other pricing authority documents of the two carriers.[24]

The 2009 revenues attributable to all single-line ANR traffic are included in Exhibit III-A-3.[25]

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[24] *See* e-workpapers "Coal Traffic Forecast.xlsx," "Coal Revenue Forecast.xlsx," and "Coal Fuel Surcharge Forecast.xlsx."

[25] Projected BNSF/UP revenues for ANR single-line moves are shown in Exhibit III-A-3 on a total movement basis. The ANR's divisions of revenues from foreign railroad interline and BNSF/UP cross-over traffic are also shown on Exhibit III-A-3.

b. **Divisions -- Existing Interchanges**

Divisions -- Existing Interchanges refer to traffic that BNSF and UP presently interchange with other carriers (including UP and BNSF, respectively) that the ANR will interchange at the same location. The ANR's base year traffic includes approximately 9.2 million tons of coal traffic that ANR will interchange with the non-residual BNSF, non-residual UP, or other carriers, including traffic that the ANR reroutes internally. Such traffic comprises 7% of the ANR's total base year coal traffic.

Consistent with SAC theory and Board precedent, *e.g.*, *FMC*, 4 S.T.B. at 725, the ANR's revenue or division on traffic that it interchanges, as BNSF and UP do currently, with the non-residual UP, non-residual BNSF, and other carriers, equals the revenues earned by BNSF and UP on such traffic. These revenues are derived from the data, contracts, and other pricing documents produced by BNSF/UP in discovery, and are summarized in Exhibit III-A-3.[26]

c. **Cross-Over Traffic**

Cross-over traffic refers to traffic that the ANR exchanges with the residual BNSF or residual UP at a new, hypothetical interchange because the ANR handles a shorter portion of the movement than the real-world BNSF or UP. This category constitutes the largest category of the ANR's traffic because the ANR originates or terminates only coal and a few intermodal shipments at El Paso, and

[26] *See also* e-workpapers "Coal Traffic Forecast.xlxs," "Coal Revenue Forecast.xlsx," and "Coal Fuel Surcharge Forecast.xlsx."

the ANR serves only six (6) power plants that receive coal. The cross-over traffic in the 2009 base year consists of 117.4 million tons of coal, 4.6 million consumer units, and 415,706 cars of other freight. These volumes consist of 85% of the ANR's total tons of coal and nearly all of ANR's non-coal traffic.

Because cross-over traffic does not entail a real-world interchange, an allocation or division of revenues between the SARR and the residual incumbents must be imputed or inferred. This task has been very controversial in past rate cases. However, the Board settled on a rather complicated Average Total Cost ("ATC") method in *Major Issues* as the only permissible approach, although the Board then slightly modified ATC in applying it in *WFA/Basin I* at 11-14 and in *AEP Texas*. In this proceeding, therefore, AEPCO employs the ATC methodology to determine the cross-over revenues assignable to the ANR, as explained below.

The ATC method of allocating revenues is rather complicated in that it involves comparing the variable and fixed costs (with the fixed costs being allocated based on density) on the SARR's segment and those of the residual incumbent on the cross-over traffic.

The first step in applying ATC is to determine the variable costs per net ton for the ANR portion of each cross-over movement in the ANR traffic group. AEPCO did so utilizing the nine (9) URCS inputs identified in *Major Issues* for each movement, as derived from data retained by AEPCO in the ordinary course of business (for non-issue movements to Apache) and data

produced by BNSF and UP in discovery. AEPCO utilized 2008 URCS unit costs for BNSF and UP developed by the Board. The URCS Phase III cost program was run using those inputs and unit costs to calculate the variable cost for the ANR portion of each unique movement.[27] The next step involves determining the weighted average density for each movement's ANR routing.[28] AEPCO did so utilizing density data produced by BNSF and UP in discovery. BNSF provided density data on a net-tonnage basis, whereas UP provided density data on a gross-ton basis. AEPCO therefore converted UP's data to a net-ton basis based on the system-wide ratio of gross to net tons as reported in UP's 2008 R-1 report. AEPCO's ATC calculations are stated on a net ton basis.[29] The ANR density for each density segment of uniform density was determined using the traffic that traversed the ANR multiplied by the ANR route miles for that segment. The sum of these products was divided by each movement's total ANR route miles to arrive at a weighted average density for each movement's route.

The next step is to calculate the fixed costs for the ANR portion of each cross-over movement. To do so, AEPCO first determined 2008 base year

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[27] The results are shown in e-workpapers "UP ATC Summary.xlsx," "BNSF Intermodal ATC Summary.xlsx," "BNSF General Freight ATC Summary.xlsx," "BNSF Coal ATC Summary.xlsx," "UP Coal ATC Summary.xlsx," and "Joint UP-BNSF ATC.xlsx."

[28] In developing the route miles, variable costs and weighted average density for rerouted movements, AEPCO complied with STB precedent and developed the inputs based on each movement's actual routing.

[29] *See* e-workpapers "BNSF 08 URCS Var-Fixed cost split.xlsx" and "UP 08 URCS Var-Fixed cost split.xlsx."

fixed costs per route mile by subtracting BNSF and UP's separate total variable costs from their total system costs as identified under 2008 URCS, and then dividing BNSF's and UP's resulting total fixed costs by BNSF and UP's total system route miles.[30] BNSF's and UP's aggregate annual fixed costs for the "on-SARR" route was determined by multiplying the 2008 system fixed cost per route mile by each movement's ANR route miles. Fixed costs per ton then equal BNSF's and UP's aggregate fixed cost divided by the weighted average annual density (in net tons) for each movement's on-SARR route.[31]

Similar calculations are then made to determine the variable and fixed costs and densities over the residual BNSF and UP for the ANR cross-over traffic group. Utilizing the off-ANR routings identified in data produced by BNSF and UP in discovery, AEPCO calculated the variable and average fixed costs for the BNSF/UP portion of each cross-over movement in the same manner as those associated with the ANR portion. The segment densities were determined using BNSF's and UP's 2008 system densities. The densities were then multiplied by the off-ANR route miles for that segment, and the sum of these products were divided by each movement's total off-ANR route miles to yield a weighted

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[30] Total route miles are taken from BNSF and UP's 2008 Annual Report Form R-1, Schedule 700, Line 57, Column (c).

[31] The results are shown in e-workpapers "UP ATC Summary.xlsx," "BNSF Intermodal ATC Summary.xlsx,""BNSF General Freight ATC Summary.xlsx," "BNSF Coal ATC Summary.xlsx," "UP Coal ATC Summary.xlsx," and "Joint UP-BNSF ATC.xlsx."

average density for each movement's route. The ANR's share of each cross-over movement's total revenue under ATC is then determined as follows:

(i) Determine if contribution was positive or negative, *i.e.*, whether the total movement revenues exceeded the sum of the variable costs for the on-ANR and off-ANR portions of the movement;

(ii) For movements with negative contribution (variable costs exceeding revenues), ATC allocates the revenues between the ANR and the residual incumbent based on their ratio of variable costs;

(iii) For movements with positive contribution (revenues exceeding variable costs):

a. Calculate the movement's total contribution by subtracting the total variable costs from the total movement revenues.

b. First allocate revenues to the ANR and the residual incumbent to cover each railroad's variable costs.

c. Allocate the remaining contribution by:

(1) calculating the total on-ANR and off-ANR cost per net ton for each movement by adding the respective variable and fixed cost per ton;

(2) calculating the ratio of on-ANR total costs to total movement costs by dividing on-ANR total costs by on-ANR plus off-ANR total costs; and

(3) applying the ratio in item (2) to the total contribution for the evaluated movement to arrive at the ANR share of the total contribution for each cross-over movement; and

d. Develop the ATC division percentage by adding the ANR variable cost to the ANR share of contribution and dividing that sum by the total movement revenue.

Once calculated for the base year, the ANR revenue division ratio for the base revenues (exclusive of fuel surcharges) for each cross-over movement is held

constant during each year of the DCF model life, regardless of when during the model life the movement over the ANR starts or terminates. *See AEP Texas* (STB served Nov. 8, 2006), at 3. A complete summary of AEPCO's cross-over revenues allocated using the ATC methodology is shown in Exhibit III-A-3.

For much of their traffic, BNSF and UP impose a car-mile based fuel surcharge on each carload based on the price of On-Highway Diesel Fuel ("HDF").[32] Fuel surcharges on intermodal and some contract carload traffic are in the form of a percentage-based rate increase that varies with the HDF level. The ANR's cross-over revenues will reflect the same fuel surcharge program and formula that BNSF and UP use, and the ANR will thus collect an appropriate (per mile or percentage-based) fuel surcharge rate on each carload based on the traffic type and the ANR movement miles used in the ATC revenue division calculation (the BNSF and/or UP route on internally re-routed traffic). It is thus assumed that BNSF and UP will continue to collect surcharges based on their current formulae on their portion of the movement.

Based on contracts provided by BNSF in discovery and on information posted on BNSF's website, AEPCO determined that all non-consumer BNSF traffic should receive mileage-based fuel surcharges and all consumer traffic should receive percentage-based fuel surcharges. Based on contracts provided by UP in discovery and on information posted on UP's website, AEPCO

[32] In some instances, UP uses a surcharge based on the West Texas Intermediate ("WTI") Crude Oil price.

determined that while all consumer UP traffic should receive percentage-based fuel surcharges, not all non-consumer UP traffic moving under contract should receive mileage-based fuel surcharges.

In some instances, the ANR will interchange traffic with a short line or regional carrier. The revenue division treatment depends upon the data produced by BNSF and UP in discovery. Where data produced by BNSF and UP shows that BNSF and/or UP collect the full movement revenue from the shipper and pays a junction settlement to the short line out of that revenue, the junction settlement is excluded and the ATC analysis is applied solely to the BNSF or UP portion of the revenue. Where the data only reports BNSF or UP revenue, meaning the short line portion is accounted for as a standard interline or Rule 11 movement, the ATC analysis is applied to the reported BNSF or UP revenue. Finally, where the data shows only the full movement revenue and no junction settlement, the ATC analysis is used to allocate the full movement revenue among the short line, BNSF or UP, and the ANR.[33]

d. <u>Projected Revenues</u>

The procedures used to project ANR revenues from coal, consumer, and other carload traffic over the 2009-2018 period are tailored to each particular traffic category, and rely on the most specific and accurate data made available by BNSF and UP during discovery.

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[33] *See* e-workpaper "ATC Summary.xlsx."

i. Revenues from Issue Coal Traffic

The revenue forecast for the issue traffic moving on the ANR from New Mexico and Northern PRB origins to Apache is based on Common Carrier Pricing Authorities BNSF 57966, 57988, and 58039. Specifically, AEPCO assumed that the rates would be adjusted based on the annual change in the RCAFU, reflecting the historical relationship between railroad prices and railroad costs (without adjustment for productivity). In addition, a mileage-based fuel surcharge was applied pursuant to the tariffs. The projected increase in rates was applied to the AEPCO volume forecast for Apache to determine the total revenues associated with the issue traffic.

ii. Revenues From Non-Issue Coal Traffic

The revenue forecasts for ANR coal traffic other than that moving to Apache[34] are based on 2Q09 through 1Q09 traffic data provided by BNSF and UP in discovery, the terms of the individual contracts or other pricing documents under which the traffic currently moves, and recognized, publicly available forecasts of various published indices. For each movement, classified by origin, destination and governing pricing authority (*i.e.*, contract or common carriage), the starting point is the calculation of BNSF and UP's 2008 or 2009 net revenue per

[34] As noted *supra*, AEPCO presently does not plan on moving any coal from non-issue (meaning UP-served) PRB origins, but is forecasted to move coal from UP-served Colorado origins.

ton before fuel surcharges.[35] "Net revenue" refers to BNSF and UP's line-haul revenues and other transportation revenues less absorbed switching charges, contract refunds, other revenue claims and junction settlements.

With UP revenue data, an additional step was required due to UP's failure to specifically identify fuel surcharge data in its revenue waybill data. Instead, and despite AEPCO's specific requests for such data in discovery, UP provided only a single revenue value for each movement which it identified as "Derived UP Net Revenue." AEPCO was thus forced to develop a methodology to allocate "Derived UP Net Revenue" into two revenue pools: (1) base revenue, and (2) fuel surcharge revenue. AEPCO developed estimated fuel surcharges for each waybill movement by applying the fuel surcharge in effect for the waybill date to the movement's estimated fuel surcharge miles and number of carloads. This fuel surcharge revenue per waybill was then subtracted from UP's Derived UP Net Revenue to develop an estimated base revenue. AEPCO used this base revenue to develop its base revenues per ton for UP traffic.

After developing 2008 and 2009 net base coal revenues per ton for each carrier, coal revenues then are projected for each year of the 2009-2018 DCF period. For coal movements under contracts, rates are adjusted pursuant to the terms of the pricing instrument. At the end of the contract term, the last year's estimated contractual rates are projected forward based on the EIA's

[35] Fuel surcharge revenues are calculated separately, as described *infra*.

Transportation Rates Escalator-West for the April 2009 AEO update, consistent with STB precedent.[36]

For contract movements with contracts that expired prior to 2009, and movements where BNSF or UP did not provide a contract, forecasted revenues for the 2009-2018 period were determined by application of the annual percentage change in the 2009 AEO Transportation Rate Escalator for Western United States. *See, e.g.*, *WFA/Basin I* at 30; *PSCo/Xcel* at 55.[37] The ANR non-issue coal traffic revenues are summarized in Exhibit III-A-3.

iii. Fuel Surcharges on Non-Issue Coal Traffic

For contract movements subject to BNSF and UP fuel surcharges, including the issue traffic, the surcharges are calculated based on the relevant contract terms. Where the contract specifies use of HDF prices, AEPCO has applied the EIA forecast of HDF prices included in the December 2009 Short Term Energy Outlook through 2010, and the forecast in the April 2009 AEO for 2011 through 2018. After contract expiration and through 2018, fuel surcharge

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[36] EIA uses its Transportation Rate Escalators to forecast future coal transportation prices. The EIA applies the escalators based on the origin point of the coal and not the coal's final destination. AEPCO therefore uses the Western Escalator for coal moving over the ANR system.

[37] The BNSF's traffic data does not contain revenue information for coal transported directly from the new Signal Peak mine. To estimate rates for this new captive movement, AEPCO used common carrier rates charged by BNSF to other captive shippers of Wyoming and Montana coal, and developed an average rate per ton-mile based on these movements. It then applied this average rate to the forecasted non-issue movements from the new mine. *See* AEPCO e-workpaper "Coal Revenue Forecast.xlsx."

rates are assumed to follow BNSF and UP's HDF surcharge program. The HDF program also is applied to all non-contract coal movements unless specified. For purposes of calculating mileage-based fuel surcharges, actual miles on the ANR are used.

iv. Revenues From Consumer Traffic

Intermodal revenues for 2Q08 through 1Q09 were developed from traffic and revenue data produced by BNSF and UP. As with coal traffic, net revenues exclusive of fuel surcharges were separated from fuel surcharge revenue for all movements. Net revenues were summed for each unique movement (defined by unique movement parameters including year of movement, STCC, origin, destination, ANR on-junction, ANR off-junction, equipment type and owner, contract, and intermodal plan code), and divided by total intermodal units to arrive at 2008 rates per unit.

As indicated above, UP failed to provide fuel surcharge data in its revenue waybill data. For non-coal traffic, AEPCO developed ratios for 2Q09 through 1Q09 based on data UP filed in its Quarterly Reports of Fuel Cost, Consumption, and Surcharge Revenue to the STB, as required under Ex Parte Number 661 (Sub-No. 1) and UP's 10-Q and 10-K reports. Specifically, AEPCO developed overall ratios of fuel surcharge revenues to total revenues and applied that ratio to the "Derived UP Net Revenue" values for the appropriate quarter.

For intermodal movements covered by contracts that were provided by BNSF and UP in discovery,[38] rates from 2009 forward are determined based on the relevant rate adjustment mechanisms set forth in the contracts, for the duration of the contract term. Following expiration of the contract, rates through 2018 are adjusted based on the change in forecasted revenue per unit (exclusive of fuel surcharge revenue) for consumer traffic as reported in the {

} (UP did not provide any rate forecast information.). The 2015-2018 annual rate changes conservatively were assumed to be equal to the forecasted increase from 2013 to 2014, calculated as a change in revenue (less fuel surcharges) per unit.

Fuel surcharges for movements covered by provided contracts were calculated based on the relevant contract provisions and the HDF prices forecasted in the EIA December 2009 Short Term Energy Outlook (through 2011) and the early release (December 2009) 2010 AEO (for 2012 through 2018), for the duration of the contract term. Following expiration of the term, the surcharge rates were set at the base BNSF/UP fuel surcharge program levels, adjusted forward through 2018 by the EIA HDF forecast.

For intermodal movements that are not covered by the contracts produced by BNSF and UP, the base year rates are adjusted forward by the

[38] Under the parties' agreement, BNSF and UP produced a representative sample of all intermodal contracts for traffic moving through the ANR states. AEPCO utilized that data source to project ANR intermodal revenues over the DCF period.

weighted average change in forecasted rate per intermodal unit (exclusive of fuel surcharges, which are addressed separately) for movements governed by provided contracts through the weighted average remaining contract term. Following that, rates through 2018 are adjusted based on the change in forecasted revenue per unit (exclusive of fuel surcharge revenue) for consumer traffic as reported in the { }. The 2015-2018 annual rate changes conservatively were assumed to be equal to the forecasted increase from 2013 to 2014, calculated as a change in revenue (less fuel surcharges) per unit. Fuel surcharges for movements not covered by provided contracts were calculated based on the weighted average contract fuel surcharge for movements governed by provided contracts and the HDF prices forecasted in the EIA December 2009 Short Term Energy Outlook (through 2011) and the early release (December 09) 2010 AEO (for 2012 through 2018) through the weighted average remaining contract term. Following that, the surcharge rates were set at the base BNSF/UP fuel surcharge program levels, adjusted forward through 2018 by the EIA HDF forecast.

v. Revenues From Carload Traffic

Base year (2Q08-1Q09) general freight revenues were determined from the traffic and revenue data produced by BNSF and UP in discovery. As with coal and consumer traffic, general freight revenues are calculated net of fuel

surcharges[39] and junction settlement payments. Net revenues were summed for each unique movement (defined by unique movement parameters including year of movement, STCC, origin, destination, ANR on-junction, ANR off-junction, equipment type and owner, and contract) and divided by total units (carloads) to arrive at the 2008 and 2009 rates per carload.

For carload movements covered by contracts that were provided by BNSF and UP in discovery,[40] rates from 2009 forward are determined based on the relevant rate adjustment mechanisms set forth in the contracts, for the duration of the contract term. Following expiration of the contract, rates through 2018 are adjusted based on the change in forecasted revenue per unit (exclusive of fuel surcharge revenue) for industrial and agricultural traffic as reported in the {

} (UP did not provide any rate forecast information.). The 2015-2018 annual rate changes were conservatively assumed to equal the forecasted increase from 2013 to 2014, calculated as a change in revenue (less fuel surcharges) per unit.

Fuel surcharges for movements covered by provided contracts were calculated based on the relevant contract provisions and the HDF or WTI prices forecasted in the EIA December 2009 Short Term Energy Outlook (through 2011)

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[39] Estimated for UP as described in the preceding consumer traffic section.

[40] Under the parties' agreement, BNSF and UP produced a representative sample of all intermodal contracts for traffic moving through the ANR states. AEPCO utilized that data source to project ANR intermodal revenues over the DCF period.

and the early release (December 2009) 2010 AEO (for 2012 through 2018), for the duration of the contract term. Following expiration of the term, the surcharge rates were set at the base BNSF/UP fuel surcharge program levels, adjusted forward through 2018 by the EIA HDF forecast.

For carload movements that are not covered by the contracts produced by BNSF and UP, the base year rates are adjusted forward by the weighted average change in forecasted rate per car (exclusive of fuel surcharges, which are addressed separately) for movements governed by provided contracts through the weighted average remaining contract term. Following that, rates through 2018 are adjusted based on the change in forecasted revenue per unit (exclusive of fuel surcharge revenue) for industrial and agricultural traffic as reported in { } The 2015-2018 annual rate changes conservatively were assumed to be equal to the forecasted increase from 2013 to 2014, calculated as a change in revenue (less fuel surcharges) per unit.

Fuel surcharges for BNSF movements not covered by provided contracts were calculated based on the weighted average contract fuel surcharge for movements governed by provided contracts and the HDF or WTI prices forecasted in the EIA December 2009 Short Term Energy Outlook (through 2011) and the early release (December 2009) 2010 AEO (for 2012 through 2018) through the weighted average remaining contract term. Following that, the surcharge rates were set at the base BNSF fuel surcharge program level, adjusted forward through 2018 by the EIA HDF forecast.

As noted above, not all carload UP traffic moving under contract receives mileage-based fuel surcharges. AEPCO thus developed a weighted average per-unit fuel surcharge increase based on the various UP carload fuel surcharge programs cited in the provided contracts. Fuel surcharges for UP movements not covered by provided contracts were calculated based on the weighted average change in contract fuel surcharge per unit for movements governed by provided contracts through the weighted average remaining contract term. Following that, the surcharge rates were set at the base UP car-mile based fuel surcharge program level, adjusted forward through 2018 by the EIA HDF forecast.

A summary of the projected general freight revenue for the ANR over the DCF period is included on Exhibit III-A-3.

vi. <u>Contract Adjustment Forecasts</u>

The rate adjustment mechanisms that govern contract movements included in the ANR traffic group are generally based on a single index or basket of indices. Consistent with Board precedent and in keeping with the principle of reliance on the most recent and historically accurate methodology available, AEPCO uses the following sources to forecast changes in contract rates and common carrier rates that are tied to identical indices:

1. The Global Insight December 2009 Forecast for the RCAFU, the RCAFA, the AII-LF, and the AII-LF with forecasts adjustment.

2. The 2009 AEO April Update for the Gross Domestic Product—Implicit Price Deflator ("GPD-IPD").

3. The Congressional Budget Office Year-by-Year Forecast and Projections for Calendar Years 2009 to 2019, March 2009 Release, for the Index of Personal Consumption Expenditures (Chained Price Index).

III. B. STAND-ALONE RAILROAD SYSTEM

1. Route and Mileage

The ANR route extends from Walter Jct., MT on the north to Cochise, AZ on the south. It serves coal mines in Montana, Wyoming and New Mexico, and power plants in Colorado, Texas and Arizona. It also handles non-coal traffic in overhead service, which it interlines with BNSF and UP.

Exhibit III-A-1 contains a schematic map showing the ANR's route, including its local mine origins, local power plant destinations, and interchange points with other railroads. It should be noted that construction of the 33-mile line segment from Mossmain to Walter Jct., MT will be deferred until 2010-11 and that operations on this segment will not begin until January 1, 2012. Thus, the lines depicted in Exhibit III-A-1 (and discussed below) are the lines that will be in place from and after January 1, 2012.

a. Main Line

From north to south, the ANR's main line starts at Walter Jct., MT, where it will connect with a 35-mile private line extending to the Signal Peak Mine (formerly known as the Bull Mountain Mine) near Roundup, MT. It proceeds south to Mossmain (near Laurel), MT, and uses trackage rights over the Montana Rail Link ("MRL") between Laurel and Jones Jct., MT. The ANR's main line then extends south/southeast from Jones Jct. and Huntley, MT to Donkey Creek, WY via Sheridan, Dutch, Gillette and Campbell, WY.

From Donkey Creek the main line replicates BNSF's Orin Subdivision (a/k/a the PRB Joint Line) to Bridger Jct., WY, and then proceeds south to Guernsey, WY, east to Northport, NE, and south to Denver, CO via Sterling and Brush, CO. From Denver the main line proceeds south to Amarillo, TX via Pueblo, La Junta and Las Animas Jct., CO and Stratford, TX. From Amarillo, one main line extends west to Defiance, NM via Clovis, Vaughn, Belen and Gallup, NM. Another main line extends southwest from Vaughn to El Paso, TX and thence west via Deming and Lordsburg, NM to Cochise, AZ and AEPCO's Apache Generating Station.

AEPCO notes that BNSF routes the issue coal traffic originating at mines in New Mexico between Belen and Deming via Rincon, NM, as shown on Exhibit III-A-1. As in the prior rate case involving AEPCO and BNSF (Docket No. 42058), the ANR routes this traffic via Vaughn and El Paso and then through Deming. However, in this case the ANR is constructing the line between Vaughn and El Paso, rather than attempting to use BNSF's trackage rights over UP between these points as was the case in Docket No. 42058.

The ANR's main lines include one joint facility: the MRL line between Laurel and Jones Jct., MT (shown schematically in e-workpaper "MRL/BNSF.pdf"). BNSF has trackage rights over this line, and the ANR will also use these trackage rights by replacing BNSF as the tenant carrier under BNSF's joint facility agreement with MRL. The ANR is constructing all of its other main lines, as well as the branch lines and other segments described below,

although it operates over private trackage to reach several origin coal mines and destination power plants.

b. Branch Lines

The ANR has four branch lines, the Dutch, Campbell, Reno and Lee Ranch Branches, that serve coal mines in Montana, Wyoming and New Mexico. The Dutch Branch extends from Dutch, WY to Spring Creek and East Decker, MT, and serves the Spring Creek and Decker Mines. The Campbell Branch extends from Campbell, WY to Eagle Butte Jct., WY, and serves the Eagle Butte, Rawhide, Buckskin, Dry Fork and Clovis Point Mines. The Reno Branch extends from Reno, WY to Jacobs Jct., WY and serves the Black Thunder and Jacobs Ranch Mines.[1] The Lee Ranch Branch extends from Baca, NM to the Lee Ranch and El Segundo Mines in New Mexico.[2]

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[1] The ANR's Orin Subdivision main line, which connects with the Reno Branch at Reno, serves eight additional Southern Powder River Basin mines in Wyoming. These include the Caballo, Belle Ayr, Caballo Rojo, Cordero, Coal Creek, Black Thunder South (formerly North Rochelle), North Antelope/Rochelle, and Antelope Mines. Black Thunder Mine is now served by an additional coal loadout, Black Thunder West, whose trackage connects directly to the Orin Subdivision just northwest of Reno, WY. Effective October 1, 2009, Jacobs Ranch Mine was acquired by Arch Coal and has been renamed East Thunder Mine. In addition, BNSF's Coal Mine Guide now lists Caballo Rojo and Cordero Mines as one mine complex, Cordero Rojo, with north and south loading sites.

[2] This branch includes 51.87 miles of track from West and East Baca, NM to the Lee Ranch and El Segundo Mines. The ANR (like BNSF) owns 0.82 miles of this branch: the west leg of the wye at Baca and the connection with the main line at West Baca. The remaining 51.05 miles, including the east wye leg at East Baca, are owned by third parties (affiliates of Peabody Energy Company). The ANR will operate over these 51.05 miles using the existing BNSF operating rights, and needs to construct only 0.82 miles.

The ANR also owns and/or operates over spurs (or parts of spurs) that serve various coal mines and five destination power plants.[3] The longest mine spur is the 35-mile private spur serving the Signal Peak Mine in Montana. The destination spurs serve Xcel Energy's Pawnee, Arapahoe and Comanche power plants at Pawnee, Denver and Minnequa (Pueblo), CO; Xcel Energy's Harrington power plant near Amarillo, TX; and AEPCO's Apache power plant near Cochise, AZ. All of the ANR's branch lines and destination spurs are shown in Exhibit III-A-1.

c. Interchange Points

The ANR interchanges coal and other traffic at 24 locations. The interchanges are with BNSF, UP, and two other railroads with which BNSF or UP interchanges coal traffic in the real world (NKCR and Mexican carrier FXE). The interchange locations, from north to south, and the carriers involved, are shown in Table III-B-1 below.

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[3] The ANR delivers coal trains destined for PPL Montana's Corrette power plant near Billings, MT to MRL at Billings. MRL switches these trains to and from the Corrette plant. The spur serving Corrette is owned by MRL and/or PPL Montana and is not included in the ANR's route or track miles.

TABLE III-B-1 ANR INTERCHANGE LOCATIONS	
Location	**Carrier**
Laurel, MT	BNSF
Jones Jct., MT	BNSF
Donkey Creek, WY	BNSF
Orin, WY	BNSF
Wendover, WY	BNSF
Northport, NE (2 locations)	UP, BNSF
Sterling, CO	NKCR
Brush, CO	BNSF
Denver, CO (2 locations)	BNSF
Pueblo, CO	UP
Las Animas Jct., CO	BNSF
Amarillo, TX (2 locations)	BNSF
Texico, NM (2 locations)	BNSF
Vaughn, NM	UP
Belen, NM	BNSF
Dalies, NM	BNSF
Defiance, NM	BNSF
El Paso, TX (2 locations)	UP, FXE
Cochise, AZ	UP

The traffic interchanged at each location is shown in Exhibit III-A-2, and the track configuration at each interchange point is shown in Exhibit III-B-1.

All traffic is interchanged by the ANR with other carriers in intact trainloads. The coal traffic moves in unit trains with run-through locomotive power. The non-coal traffic is overhead traffic that the ANR receives and delivers from the connecting carrier in complete trains, including run-through locomotives. There is no need for any switching of these trains at either the interchange points or any intermediate points except in connection with 1,000/1,500-mile car

inspections, and block-swapping for certain intermodal trains at Texico, NM as described in part III-C-2-c below.

d. <u>Route Mileage</u>

The route mileages for the ANR's principal line segments are shown in Table III-B-2 below. Details are provided in e-workpaper "ANR Route Miles.xls." The BNSF and UP operating timetables and track charts that were used to develop the lines being replicated, which were produced by the railroads in discovery, as well as other materials supporting the development of the ANR's route miles, are included in AEPCO's electronic workpapers as folder "III-B-1/ Route Miles."

TABLE III-B-2 ANR LINE SEGMENTS AND ROUTE MILEAGE		
Segment	**BNSF/UP Subdivision**	**Miles**
Main Lines		
Walter Jct. to Mossmain[1/]	BNSF Laurel	32.95
Laurel to Jones Jct.	MRL (trackage rights)	29.57
Jones Jct. to Dutch[2/]	BNSF Big Horn	142.13
Dutch to Donkey Creek	BNSF Big Horn, Black Hills	104.98
W. Donkey Creek to Bridger Jct.	BNSF Orin	127.28
Bridger Jct. to Northport	BNSF Canyon, Valley	135.42
Northport to Denver	BNSF Angora, Brush	203.01
Denver to Pueblo	BNSF Pikes Peak, UP Colo. Spgs.	118.51
Pueblo to Las Animas Jct.	BNSF Pueblo, Boise City	83.90
Las Animas Jct. to Amarillo	BNSF Boise City	234.59
Amarillo to Vaughn	BNSF Hereford, Clovis	237.60
Vaughn to Defiance	BNSF Clovis, Gallup	259.60
Vaughn to El Paso[3/]	UP Carrizozo	230.62
El Paso to Cochise	UP Lordsburg	239.53
Total Main Line Miles		**2,179.69**
Branch Lines[4/]		
Dutch Branch	BNSF Dutch	16.53
Campbell Branch	BNSF Campbell	10.03
Reno Branch	BNSF Reno	6.46
Lee Ranch Branch	BNSF Lee Ranch	0.82
Total Branch Line Miles		**33.84**
Other		
ANR portion of PRB mine spurs		1.90
ANR portion of destination spurs		16.11
Total route miles (incl. MRL)		**2,231.54**

[1/] Construction of this segment will be deferred for an in-service date of January 1, 2012. After that date the ANR will operate over this segment and 35.0 miles of private trackage from Walter Jct., MT to the Signal Peak Mine.

[2/] Includes the 4.16-mile segment from Huntley to Moran Jct., MT.

[3/] Includes the southwest connecting track at Vaughn.

[4/] Mileages shown are for the ANR-owned portion of each branch. The ANR operates over an additional 51.05 miles of private trackage on the Lee Ranch Branch to serve Lee Ranch and El Segundo Mines.

All but 29.57 of the 2,231.54 route-miles shown in Table III-B-2 represent lines that are being constructed by the ANR. The 29.57-mile segment between Laurel and Jones Jct., MT (which includes 0.27 miles between Mossmain and East Mossmain Jct.) is owned by the MRL. The ANR operates over this segment by means of trackage rights, just as BNSF does.[4] Thus, the ANR's constructed route miles equal 2,201.97.

e. Track Miles and Weight of Track

The ANR's track and yard configuration was developed by AEPCO's expert operating and engineering witnesses, principally Paul Smith, Walter Schuchmann and Willard Whitbred. Several tools were used to develop the configuration, including (i) information provided by AEPCO Witness Thomas Crowley (based on data produced by BNSF and UP) concerning the ANR's peak-year traffic volumes and flows, and the trains that will move over the ANR system in the peak week of the peak traffic year; (ii) the ANR operating plan developed by Messrs. Smith and Schuchmann; (iii) BNSF's and UP's operating timetables and track charts for the divisions and subdivisions involved; and (iv) a simulation of the ANR's peak-period operations executed by Mr. Schuchmann using the Rail Traffic Controller ("RTC") model, which has been accepted by the Board as an appropriate operational modeling tool in several previous rail rate cases.[5]

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[4] The ANR also operates over the privately-owned portions of the various origin mine and destination power plant spurs.

[5] *See, e.g.*, *Psco/Xcel I* at 27; *WFA/Basin I* at 15.

Exhibit III-B-1 contains detailed schematic track and yard diagrams for the entire ANR system. The ANR's constructed track miles are shown in Table III-B-3 below. Details (including a breakdown of the track miles by type of track) are provided in e-workpaper "ANR Track Miles.xls." The constructed track miles exclude MRL track miles over which the ANR operates via trackage rights.

TABLE III-B-3 ANR CONSTRUCTED TRACK MILES	
Main line track – Single first main track[1/]	2,201.97
– Other main track[2/]	1,108.07
Total main line track	3,310.04
Helper pocket, setout and MOW equip. tracks	29.02
Yard tracks[3/]	242.93
Total track miles	**3,581.99**

[1/] Single first main track miles equal total constructed route miles including branch lines, and exclude the 29.57 route miles of MRL trackage in Montana which are operating miles that the ANR is not constructing.

[2/] Equals total miles for constructed second main tracks and passing sidings.

[3/] Includes all tracks in yards, such as relay tracks, leads, locomotive inspection tracks and MOW equipment storage tracks where located in yards, and tracks used to interchange trains with other railroads.

i. Main Lines

As shown in Exhibit III-B-1, the ANR's main lines consist of both double track, where traffic volume is heaviest, and a single main track with sections of second main track (including signaled passing sidings) at appropriate intervals to enable the ANR to move its peak period trains efficiently and without

delay. The ANR has a total of 1,108.07 track miles of second main track/passing sidings.

All constructed main track (including passing sidings) consists of new 136-pound continuous welded rail ("CWR"), except that relay (second-hand) 136-pound CWR is used between Walter Jct. and Mossmain, MT. Premium (head-hardened) rail is used for mainline track carrying 50 million gross tons per year and on curves of 3 degrees of more, where rail wear is heaviest. Standard rail is used on other main tracks. The ANR-owned track on the Lee Ranch Branch, which has significantly lower traffic density than the ANR's other lines, consists of relay 136-pound CWR.

All of the ANR's track and structures are designed to accommodate a gross weight on rail ("GWR") of 286,000 pounds per car and maximum train speeds of 70 mph for intermodal and other premium-service trains operating west and south of Amarillo, TX, and 60 mph for all other trains, conditions and operating rules permitting. However, as explained in Part III-C-3 below, some trains are limited to a maximum speed below 60 mph on the main lines and all trains are limited to a maximum speed of 35 mph on all branch lines except the Lee Ranch Branch, where coal trains can operate at up to 49 mph.

ii. <u>Branch Lines</u>.

As described above, the ANR will construct and operate all or parts of four branch lines: the Dutch, Campbell, Reno and Lee Ranch Branches. These branch lines are used to serve origin coal mines. The track configurations for

these branches are shown in Exhibit III-B-1. Each branch consists of a single main track except for the Campbell and Reno Branches, which have passing sidings due to traffic volume.

iii. Sidings

The ANR's passing sidings are considered part of its main tracks in both main lines and branch lines, and are discussed above.

iv. Other Tracks

Other tracks include pocket tracks for helper locomotives, set-out tracks for bad order cars, and maintenance-of-way ("MOW") equipment storage tracks.[6] Yard tracks are discussed in the next section. E-workpaper "ANR Track Miles.xls" details the track miles by type and quantity.

The ANR has two helper districts, the Campbell/Orin, WY and Big Lift/Palmer Lake, CO helper districts. Helper pocket tracks are located at Campbell, WY; Mileposts 6.94 and 15.4 on the Orin Subdivision; and near the beginning and end of the Big Lift/Palmer Lake helper district at Mileposts 19.45 and 52.95 on the Pikes Peak Subdivision.

The ANR's setout tracks are used primarily in conjunction with its Failed-Equipment Detectors ("FEDs"). One setout track is placed on each side of each of the FEDs, as described in Parts III-C and III-F below, with one FED on each track where FEDs cover two main tracks. All of these setout tracks are

[6] The ANR's main lines include the owned portions of the spurs serving origin mines and destination power plants, as well as some interchange trackage.

double-ended tracks, 860 feet in length between switches. This provides 600 feet in the clear to accommodate both the occasional bad-order car and the temporary storage of MOW equipment. One double-ended setout track also is located at each of the ANR's interchange yards.

The ANR also has 1,000-foot MOW equipment storage tracks located at seven points, including each of the ANR's five inspection/fueling yards (described below) as well as Donkey Creek and Denver. These tracks are included in the yard track quantity to the extent they are located in the ANR's yards.

The locations of the helper pocket, setout and MOW equipment storage tracks are shown in Exhibit III-B-1. Details are provided in e-workpaper "ANR Track Miles.xls." These tracks consist of relay 136-pound CWR. The ANR has a total of 29.02 track miles for these tracks.

3. Yards

a. Locations and Purpose

The ANR has two kinds of yards: inspection/fueling yards, and interchange yards.

b. Inspection/Fueling Yards

The ANR's primary yards are its inspection and fueling yards. The ANR has five such yards, located at Guernsey, WY, North Amarillo, TX, Texico, NM; West Vaughn, NM and West El Paso, NM. These yards are used for train staging (in the case of Guernsey Yard), 1000/1500-mile car inspections, train blocking (in the case of Texico Yard) and locomotive fueling. Locomotive

inspections and repairs are performed at two of these yards, and three yards are also used to interchange traffic with BNSF or UP.

i. Guernsey Yard

The ANR has a staging, inspection and fueling yard at Guernsey, WY. This yard is used to stage empty coal trains destined for loading at the mines in Wyoming and Montana, and for 1,500-mile "extended haul" inspections of these trains. Locomotives on all empty coal trains are removed and replaced with freshly fueled and serviced locomotives at Guernsey (which is the same procedure used by BNSF today). All locomotives on trains moving through Guernsey are fueled in both directions, and FRA-mandated 92-day locomotive inspections are also performed at Guernsey as needed.

Guernsey Yard has eight relay tracks used for car inspections, as well as a separate locomotive fueling/servicing facility and fueling platforms for eastbound (loaded) coal trains. It also has tracks for repairing bad-order cars and restoring repaired cars, tracks with pits for performing 92-day locomotive inspections, and a MOW equipment storage track. The location and configuration of Guernsey Yard is shown on pages 9A and 9B of Exhibit III-B-1.

ii. North Amarillo Yard

The ANR's North Amarillo Yard, located on the Boise City Subdivision just north of Amarillo, TX, is used for 1,500-mile inspections of coal

trains and for locomotive fueling, servicing and repairs.[7] All empty coal trains moving through North Amarillo Yard en route to the Wyoming/Montana mines are inspected there, and the locomotives on these trains are fueled there. Northbound non-coal trains are also inspected and fueled at North Amarillo Yard, as are loaded coal trains arriving from the north and destined to points in Arizona west of Defiance or El Paso.

The location and configuration of North Amarillo Yard is shown on page 16A of Exhibit III-B-1. This yard has four relay tracks where car inspections are performed, and tracks for repairing bad-order cars and storing repaired cars. It also has a locomotive shop where locomotives undergo 92-day inspections as needed, and where locomotive maintenance and repairs are performed. Room and access tracks are also provided for a contract car repair shop, and the yard has a MOW equipment storage track. The ANR's corporate headquarters building is located adjacent to North Amarillo Yard, and the yard is also a maintenance-of-way base.

iii. <u>Texico Yard</u>

Texico Yard is located on BNSF's Hereford Subdivision just west of Lone Star. Jct. (and east of Clovis), NM. As described in Part III-C-2-c below, this yard is used for swapping blocks of cars among certain intermodal trains that

[7] It should be noted that the ANR has a second yard at Amarillo, the West Amarillo Yard, which is located on the Hereford Subdivision and is used to interchange non-coal trains with BNSF for movement to/from the east on BNSF's Transcon. Some coal trains are interchanged with BNSF at North Amarillo Yard.

originate and terminate at Texico, and for inspecting the outbound trains prior to departure. In addition, trains moving between points west of Texico and Houston via Lone Star Jct. are interchanged with BNSF at Texico Yard. Other trains that the ANR moves to/from the east via the Hereford Subdivision are interchanged with BNSF on an interchange track just east of Lone Star Jct.

Texico Yard is shown on page 17A of Exhibit III-B-1. It has five relay tracks used for train assembly and inspection and for interchanging trains with BNSF, five 60-car "drill" tracks for storing/retrieving blocks of intermodal cars, run-around tracks, and a MOW equipment storage track.

iv. <u>West Vaughn Yard</u>

West Vaughn Yard is used for performing 1,500-mile and 1,000-mile car inspections as well as locomotive fueling. The trains that are inspected at West Vaughn Yard include westbound empty coal trains destined to the ANR-served New Mexico mines, and all non-coal trains moving through Vaughn in both directions on the replicated BNSF "Transcon" line (other than intermodal trains that originate/terminate at Texico). The westbound empty coal trains and the non-coal trains also have their locomotives fueled at Vaughn.

West Vaughn Yard is located several miles west of the connection between BNSF's Clovis Subdivision and UP's Carrizozo Subdivision. Its location and layout are shown on page 18A of Exhibit III-B-1. It has 17 relay tracks for performing car inspections, tracks for repairing bad-order cars and storing repaired

cars, a MOW equipment storage track, and fueling platforms at both ends of the yard.

v. West El Paso Yard

The final ANR inspection and fueling yard is the West El Paso Yard, located in southeastern New Mexico just west of El Paso, TX. It is shown on page 22A of Exhibit III-B-1.

All westbound non-coal trains are inspected and fueled at West El Paso Yard, and eastbound non-coal trains that move to the Vaughn interchange with UP are also inspected and fueled at this yard.[8] The yard has eight relay tracks where trains are inspected, one track (and associated equipment) for loading and unloading intermodal trains that originate/terminate at El Paso, tracks for repairing bad-order cars and storing repaired cars, a MOW equipment storage track, and fueling platforms at the west end of the yard. In addition, a track is provided for ramping/deramping containers and trailers to/from s on/from intermodal trains, as well as a parking lot for tractors and chassis.

c. Interchange Yards

Interchange yards are located at each of the ANR's 21 points of interchange with other railroads that are not located at inspection/fueling yards. The interchange yard locations and configurations are shown in Exhibit III-B-1.

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[8] Eastbound non-coal trains that are interchanged with UP at El Paso are delivered to UP's Dallas Street Yard and do not require inspection or fueling at El Paso. Some eastbound (empty) coal trains are re-fueled at El Paso Yard.

The ANR has separate interchange yards at Amarillo and Vaughn, in addition to the inspection/fueling yards at those locations. The West Amarillo interchange yard (shown on page 17 of Exhibit III-B-1) is located adjacent to the replicated BNSF Hereford Subdivision and is used to interchange non-coal trains with the residual BNSF for movement to/from the east via BNSF's "Transcon" line. The East Vaughn interchange yard (shown on page 21 of Exhibit III-B-1) is adjacent to UP's Carrizozo Subdivision just southwest of the grade-separated crossing of the BNSF and UP main lines, and is used to interchange non-coal trains with the residual UP. The ANR also has interchange tracks at El Paso for interchanging coal trains destined to/from points in Mexico with the FXE. These interchange tracks are reached via a spur from the ANR's Lordsburg Subdivision main line in El Paso (shown on page 22 of Exhibit III-B-1).

The NR has two small interchange yards at Denver to accommodate Denver/BNSF interchange traffic flows, which are shown on pages 12 and 13 of Exhibit III-B-1. Finally, the ANR has a small interchange yard at Texico, NM, located on the Hereford Subdivision just east of the east wye leg connecting the Hereford Sub with the residual BNSF's Slayton Subdivision at Lone Star Jct.. This yard, shown on page 17 of Exhibit III-B-1, is used to interchange trains with BNSF that move between points on the ANR east of Texico and points served via BNSF's Slayton Subdivision.

d. Miles and Weight of Yard Track

The ANR's five inspection/fueling yards contain a total of 124.90 miles of track. The ANR's other (interchange) yards contain a total of 118.03 miles of track. Thus the total yard track miles equal 242.93. Details are shown in e-workpaper "Yards.xls." As shown in Exhibit III-B-1, the yard tracks have 136-pound relay CWR. The main running tracks through the yards and the initial yard leads have the same weight and type of rail as the adjacent mainline tracks.

4. Other

a. Joint Facilities

The ANR route has one joint facility: the MRL line between Laurel (just west of Mossmain) and Jones Jct., MT, including the segment between East Mossmain and Mossmain. The ANR replicates BNSF's operation of trains over this line via trackage rights, and pays MRL for the use of these rights on the same basis that BNSF does under its trackage rights agreement with MRL. The BNSF/MRL trackage rights agreement is reproduced in e-workpaper "MRL Agreement.pdf."

The ANR constructs all of its other lines, including a few line segments where BNSF currently has trackage rights over UP or vice versa. Examples include BNSF's lines between Pueblo, CO and Stratford, TX, over which UP operates via trackage rights, and UP's line between Sterling and Union, CO, over which BNSF operates via trackage rights.

b. Signal/Communications System

All of the ANR's main lines south of Huntley/Jones Jct., MT are equipped with a CTC traffic control system, with powered switches that are controlled by centralized dispatchers located at the railroad's headquarters at Amarillo. The volume of traffic on the Laurel Subdivision between Mossmain and Walter Jct., MT (beginning in 2012) does not warrant CTC so this segment will be dark territory. The portions of the Dutch, Campbell and Reno Branches that presently have CTC in the real world are also equipped with CTC on the ANR.[9] Power switches also are used for the connections between the main line and the Lee Ranch Branch, the helper pocket tracks, the yard lead and relay tracks, and the spurs at local origins and destinations. Interior yard switches and set-out/MOW equipment storage track switches are hand-thrown switches.

Communications are conducted using a combined fiber optics and microwave system. Fiber optics are used where they are currently in place on the BNSF and UP lines being replicated; microwave is used on the ANR's other lines. The microwave system, where used, includes towers located at appropriately-spaced intervals. All locomotives, train and yard crewmen, dispatchers and field supervisory personnel as well as hi-vehicles are equipped with radios connected to the fiber optics/microwave system. Certain employees also will be equipped with cellular telephones for emergency railroad use, as a back-up to the radios. Further

[9] The Lee Ranch Branch is "dark" except for the mainline/wye switch connections.

details on the ANR's signal and communications system are provided in Part III-F-6-e below.

c. **Turnouts, FEDs and AEI Scanners**

All turnouts between the ANR's main tracks in CTC territory are No. 20 turnouts, except that No. 24 turnouts are used on the replicated portion of the BNSF Transcon between Defiance and Amarillo. Trains can operate through No. 20 turnouts at speeds of up to 40 mph and through No. 24 turnouts at speeds up to 50 mph, conditions permitting. No. 20 turnouts also are used for the wye connections to the ANR's branch lines and for the yard leads and the main running tracks at both ends of each of the ANR's four inspection/fueling yards. No. 15 turnouts are used between main tracks and all other tracks, including the connections with the interchange yards, origin and destination spurs, and helper pocket tracks, where trains move at slower speeds. Trains can operate through these turnouts at a speed of up to 25 mph. No. 11 turnouts are used for the turnouts in the dark territory north of Mossmain, within yards, and for setout and MOW equipment storage tracks.

FEDs, which include hot-bearing, dragging-equipment, cracked-wheel and wide/shifted load detection systems, have been spaced approximately every 25 miles along the ANR's route. The FED locations are shown in Exhibit III-B-1. Two FEDs are provided at each location that has two main tracks, one for each track. Each FED is accompanied by two setout tracks, each located within three train lengths on either side of the FED. As noted earlier, each such track is

an 860-foot double-ended track (with 600 feet in the clear) to facilitate the setout of bad-order cars from trains operating in either direction. These tracks are used primarily for temporary storage of bad-order cars detected by the FEDs, as well as for temporary storage of work equipment.

Automatic Equipment Identification ("AEI") scanners are located at or near each of the locations where the ANR interchanges trains with other railroads, as shown in Table III-B-1 above. A total of 25 AEI scanners have been provided, as shown in Exhibit III-B-1. The AEI scanners have been placed so as to enable them to capture all train movements that occur on the ANR, including both local and interline movements.

III. C. STAND-ALONE RAILROAD OPERATING PLAN

The operating plan for the ANR was designed primarily by Paul Smith, who has substantial railroad operating experience with Union Pacific and its predecessors both as a manager and as a locomotive engineer. Mr. Smith was assisted by Walter Schuchmann, who performed a simulation of the ANR's peak-period operations using the Rail Traffic Controller ("RTC") Model. Paul Reistrup reviewed and completed the operating plan following Mr. Smith's stroke.[1]

The operating plan is designed to enable the ANR to transport its peak-year traffic volume, including the trains moving on the system during the peak week of the peak year, in a manner that meets the transportation needs of its traffic group, and in full compliance with all applicable BNSF and/or UP transportation and service commitments to its customers. The operating plan is also utilized in developing the ANR's system track and yard configuration, as described in Part III-B above, and it provides the basis for many of the ANR's annual operating expenses shown in Part III-D below.

The ANR's operating plan reflects the rail system needed to move its peak-year traffic efficiently. As indicated in Part III-B-1, the ANR has a total of

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[1] On November 19, 2009, after he had completed most of the work on the ANR's operating plan and associated personnel, Mr. Smith suffered a severe stroke. Although his condition is improving, Mr. Smith has been unable to continue working on this case, and in mid-December 2009 AEPCO engaged Paul Reistrup to complete the operating plan and the operating inputs to the RTC Model, with assistance from Mr. Schuchmann. Messrs Reistrup and Schuchmann are co-sponsoring the operating plan along with Mr. Smith.

2,179.69 miles of main lines (of which 29.57 miles represent trackage rights over MRL in Montana) and 33.84 miles of branch lines. The total route-miles, including the ANR-owned portions of origin mine and destination power plant spurs, equal 2,231.54. As indicated in Part III-A-1, the ANR's peak traffic year is 2018, which is also the final year in the 10-year DCF period. The ANR's traffic group consists of coal, intermodal and general freight traffic that moves entirely in unit train or trainload service, in various flows over different parts of the system. In 2018, the ANR will transport the following total traffic volumes:

TABLE III-C-1
ANR 2018 TRAFFIC VOLUME

	Cars/Containers	**Millions of Tons**
Coal		
Local	106,787	12.470
Interline Forwarded	1,239,453	146.451
Interline Received	2,374	0.284
Overhead	13,277	1.383
Subtotal[1]	1,361,890	160.589
Intermodal		
Interline Forwarded	50.046	0.287
Interline Received	49,617	0.528
Overhead	5,763,207	79.377
Subtotal	5,862,870	80.192
General Freight - overhead	737,507	55.303
Total[1]	**7,962,267**	**296.084**

[1] Total may differ slightly from the sum of the individual items due to rounding.

The ANR will serve the new Signal Peak Mine in Montana starting in 2012, and thus will not originate coal traffic from that mine (or move it over its line between Walter Jct. and Mossmain, MT) until January 1, 2012. The ANR operating plan discussed below is for the railroad's peak-year (2018) traffic group and facilities, and thus assumes construction of the Walter Jct.-Mossmain line has occurred and that full operations are being conducted on that line. Modifications to the operating plan to reflect operations in 2009-2011 are discussed below in Part III-C-3-f.

1. General Parameters

The ANR's operating plan reflects the service the ANR needs to provide to the customers in its traffic group. The ANR handles essentially two kinds of traffic: coal traffic that it originates and terminates or interlines with other destination carriers, and non-coal traffic (intermodal and other freight traffic) that is originated and terminated by other carriers and that the ANR handles in overhead service (except for intermodal traffic originated and terminated at El Paso, TX). With one exception, all trains interchanged with other railroads are run-through trains, which means the locomotive power stays with the train at the interchange points.[2] Trains moving overhead on the ANR system are transported

[2]The exception involves certain intermodal trains that originate or terminate at Texico, NM. The road locomotives on arriving trains at Texico are moved to pre-blocked departing trains. The switch locomotive based at Texico Yard unblocks the arriving trains and assembles blocks for future departing trains. *See* Part III-C-2-c-vii below for further details on the operations at Texico.

intact, with no classification or switching activities performed at the interchange points except for the occasional switching of bad-order/repaired cars.

a. Traffic Flow and Interchange Points

The ANR's peak-year (2018) traffic volume consists of 160.6 million tons of coal traffic, 80.2 million tons of intermodal traffic, and 55.3 million tons of other freight traffic. The traffic density varies over different line segments. The busiest segment for coal traffic is between Donkey Creek and Orin Jct., WY, and the busiest segment for non-coal traffic is between Defiance and Vaughn, NM. The peak-year (2018) traffic densities for the ANR's principal line segments are shown in Table III-C-2 below.

TABLE III-C-2
ANR 2018 TRAFFIC DENSITY BY LINE SEGMENT

Line Segment[1/]	Density (millions of Gross tons per mile)
Walter Jct. to Mossmain	12.0
Laurel to Jones Jct. (tr. rights over MRL)	55.5
Jones Jct. to Dutch	83.5
Dutch to Campbell	56.9
Campbell to Donkey Creek	94.2
Donkey Creek to Orin Jct.	131.3
Orin Jct. to Northport	125.2
Northport to Denver	77.4
Denver to Pueblo	73.9
Pueblo to Amarillo	69.2
Amarillo to Texico	165.7
Texico to Vaughn	177.7
Vaughn to Baca	178.9
Baca to Defiance	189.0
Vaughn to El Paso	40.3
El Paso to Cochise	112.6

[1/] Tonnages shown are the maximum tonnages moving over any part of each line segment and may not be uniform for the entire segment.

The ANR directly serves 20 coal mine origins in Montana, Wyoming and New Mexico, and five destination power plants in Colorado, Texas and Arizona to which it will deliver 11.2 million tons of coal in 2018. The ANR also originates coal traffic that is terminated by other railroads, primarily BNSF and UP. In addition, the ANR handles intermodal and general freight traffic in overhead service. This traffic is originated and terminated by BNSF or UP at various locations.

The ANR moves trains to and from 24 interchanges with other railroads including BNSF, UP, Mexican carrier FXE, and one short line (NKCR). The interchange locations are described in Part III-B, Table III-B-1.

The ANR's operating plan accommodates the coal, intermodal and general freight trains moving over the various parts of the ANR system during the peak one-week period in the peak traffic year (October 15 through 21, 2018).[3] The trains that the ANR will transport during the peak week and corresponding study period for the RTC simulation are shown in Exhibit III-C-1.

The operating plan also reflects the ANR's relationship with BNSF, UP and regional railroads with respect to traffic interchanged with those rail carriers. This relationship is based on BNSF's or UP's joint use and interchange agreements with such carriers; the ANR steps into the incumbent railroad's shoes under these agreements. This includes BNSF's trackage rights agreement with

[3] The peak-week train frequencies were developed using the procedures described in Part III-C-2-b below.

MRL that covers BNSF's (and thus the ANR's) use of MRL's line between Laurel and Jones Jct., MT. This is the ANR's only joint facility arrangement.

b. Track and Yard Facilities

The ANR's track and yard facilities are described in Part III-B-2 above, and shown schematically in Exhibit III-B-1. The main lines consist of both double track (principally a portion of the Orin Subdivision in the Wyoming PRB, and most of the line segments between Amarillo, TX and Defiance, NM and between El Paso, TX and Cochise, AZ) and single track with appropriately-spaced sections of second main track which are essentially signaled passing sidings with power switches. The branch lines consist of a single main track, except that there are passing sidings on the Campbell and Reno Branches. The passing siding configuration and spacing were developed by AEPCO Witnesses Smith and Reistrup, with assistance from Witness Schuchmann's RTC Model simulation of the ANR's peak-period operations.

Most of the ANR's main tracks are constructed to a standard that allows for maximum train speeds of 60 mph, conditions (including gradient and curvature) permitting. The replicated BNSF Transcon west of Amarillo and the UP lines between Vaughn-El Paso and El Paso-Cochise are constructed for maximum speeds of 70 mph for intermodal and other premium-service trains, operating conditions permitting. Some train types are limited to a maximum speed lower than 60 mph on the main lines, and all trains are limited to a maximum speed of 35 mph on the branch lines (except for the Lee Ranch Branch, where

trains can operate at speeds of up to 49 mph). All tracks are being constructed to permit a maximum GWR of 286,000 pounds per car.

All of the ANR's main lines south of Huntley/Jones Jct., MT and parts of the Dutch, Campbell and Reno Branches are equipped with CTC and main-track power switches. Power switches are also installed at the connections between origin mine spurs and the main lines and between all branch lines and the main lines, as well as at a few other locations described in Part III-B-4-b and shown in Exhibit III-B-1.

Wood crossties are being used on all ANR tracks. The tie and other track and subgrade specifications (including rail section, turnouts, other track material, ballast and side slopes) are described in Parts III-F-2 and III-F-3 below. The track and subgrade specifications enable the ANR to handle its expected peak-period traffic volume efficiently, consistent with lowest feasible cost, while enabling all customer service requirements to be met.

The ANR has five inspection/fueling yards and 21 additional interchange yards or locations, as described in Parts III-B-1-c and III-B-3. The activities at these yards are described below in Part III-C-3-2-c.

c. Trains and Equipment

i. Train Sizes

The ANR operates complete trains, including coal trains, intermodal trains, and general freight trains, in local and interline (including overhead) service. The ANR's train sizes are the same as those for the comparable BNSF

and UP trains operated in the most recent twelve-month period (2Q08 through 1Q09, also referred to as the "Base Year") for which the defendants produced usable train and car movement data. Non-coal trains move exclusively in overhead service so they have the same cars (or mix of cars) as the comparable BNSF and UP trains that moved between the same points in the base year

All trains have sufficient locomotives to provide a horsepower-to-trailing ton ratio that assures they are adequately powered to meet present contractual transit-time commitments and service requirements. This was confirmed by the RTC simulation.

The ANR operating plan assumes that the maximum train sizes for each train type and locomotive consists will remain the same throughout the 10-year DCF period. Increased volumes are accounted for by adding "growth" trains that are equivalent in size to the comparable trains BNSF and/or UP operated in the base year, as shown in the train and car data produced in discovery.

ii. <u>Locomotives</u>

The ANR requires a total of 351 locomotives to handle its peak-period traffic volume. The railroad has two types of locomotives: GE ES44-AC locomotives for road and helper service, and EMD SW1500 locomotives for yard switching and work-train service. The numbers of locomotives required for each kind of service are shown in Table III-C-3 below. The ANR's road locomotive requirements take into account the need to equalize the locomotive power used in

run-through service for the interline (including overhead) trains and a spare margin and peaking factor as described below.

TABLE III-C-3 ANR PEAK LOCOMOTIVE REQUIREMENTS	
Type of Service	**Number**
Road/Helper – ES44-AC	336
Switch/Work Train – SW1500	15
Total	**351**

(a) Road Locomotives

All of the ANR's road locomotives are General Electric ES44-AC locomotives. This is a modern 4400-horsepower, AC locomotive that is well-suited to heavy-haul service, and data produced in discovery indicate that both BNSF and UP use this locomotive type extensively for coal and other service.

The "standard" road locomotive consist for the ANR's trains is three locomotives in a 2/1 distributed power ("DP") configuration. However, certain heavy coal and general freight trains require four or more road locomotives for all or part of their runs on the ANR system (not including helpers at certain locations).[4] Short (65/70-car) coal trains moving to the Corrette Power plant in Montana do not require a rear DP locomotive.

The DP configuration for most ANR trains involves positioning two locomotives on the front of the train and one locomotive on the rear of the train

[4] For example, an extra rear (DP) unit is used on certain westbound loaded coal trains that operate west of El Paso and west of West Vaughn.

(hence the "2/1" designation). The rear (DP) locomotive has no engineer and is remotely controlled by radio signals from the lead locomotive. The use of a DP locomotive configuration reduces the drawbar tension between cars and enables the same number of locomotives to haul heavier trains or the same size trains at higher speeds. DP locomotive configurations are now standard practice on BNSF and UP for coal and many non-coal trains.

The count of road locomotives for the peak year includes a spare margin and a peaking factor, consistent with prior STB decisions (*e.g.*, *WFA/Basin I* at 33-34). The spare margin and peaking factor were calculated as follows:

Spare Margin. The locomotive hours spent on the ANR (as well as the number of locomotives required for the ANR's local movements) were developed from the analysis of the ANR's peak-period operations using the RTC Model, as described in Part III-C-2 below. The total number of road locomotives required includes a spare margin of 5.0 percent. This spare margin is based on information provided by the defendants in response to AEPCO's discovery requests.

Specifically, the 5.0 percent locomotive spare margin is based on two different sources of information provided by {

}

Second, in response to AEPCO discovery requests, {

}[5]

Peaking Factor. In addition to using a 5.0 percent spare margin, AEPCO's experts determined the ANR's peak locomotive requirements by applying the methodology approved by the Board in *PSCo/Xcel II*. In *PSCo/Xcel II* at 13, the Board determined that the peaking factor is to be determined by dividing the trains in the peak week by the average number of trains per week in the peak year. Applying this procedure, the ANR locomotive peaking factor equals 1.057. *See* e-workpaper "ANR peaking factor.xls."

(b) Helper Locomotives

Based on information provided by BNSF and UP in discovery and the results of AEPCO's RTC Model simulation of the ANR's operations, the ANR has two helper districts, with the first district involving two overlapping areas where helpers are needed. The first helper district is located in the Wyoming

[5] The calculation of the { } percent is shown in e-workpaper "BNSF Loco Spare Margin 2006-2009.xls." The locomotive utilization information provided by BNSF in discovery is included in BNSF discovery spreadsheet "BNSF Loco Utilization 2006-2009.xls."

PRB, and the second helper district is located in Colorado. The ANR uses ES44-AC road locomotives for helper service to minimize the number of road locomotive types on its roster. The ANR uses two-unit helper consists, with the locomotives coupled back-to-back. This enables the helper consist to operate in either direction with the cab end forward on the lead locomotive.

Campbell/Orin Helper District. The PRB helper district encompasses the Campbell Branch and the northerly 15.4 miles of the Orin Subdivision. Some large loaded coal trains originating on the Campbell Branch and moving geographically south via the Orin Subdivision require helper assistance on the northerly 10.45 miles of the Orin Subdivision. Loaded coal trains that move geographically north on the Orin Subdivision require helper assistance on the portion of the Orin Subdivision between Milepost 15.4 (near Belle Ayr Jct.) and Milepost 6.95, a distance of 8.45 miles.[6]

Big Lift/Palmer Lake Helper District. All southbound loaded coal trains and some southbound non-coal trains require helper assistance on the 33.5-mile portion of the Pikes Peak Subdivision between Milepost 19.45 at Big Lift, CO and Milepost 52.95 near Palmer Lake, CO.

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[6] BNSF and UP also have a helper district at Logan, located just south of Converse Jct. on the Orin Subdivision. However, information provided in discovery indicates that { }, and AEPCO's RTC Model simulation indicates that the ANR coal trains do not need helpers at this location. *See also Psco/Xcel I* at 59, where the Board agreed that a SARR does not need helpers for loaded coal trains at Logan.

Two-unit helper consists assist loaded trains as needed in both of the helper districts described above. The RTC Model simulation indicates that a total of 133 trains moving during the peak week require helper assistance. The breakdown of these trains for the peak week in the simulation period and for the peak day for each district, used to determine the SARR's helper locomotive needs, is shown in Table III-C-4 below.

TABLE III-C-4
ANR PEAK TRAINS REQUIRING HELPER ASSISTANCE

Helper District	Peak Week	Peak Day
Campbell/Orin – southbound	41	8
Orin – northbound	29	7
Big Lift/Palmer Lake – southbound	61	13
Total	**133**	--

A total of two 2-unit helper consists are needed for the Campbell/ Orin helper district and two 2-unit helper consists are needed for the Big Lift/ Palmer Lake helper district to cover the trains needing helper assistance on the busiest days during the simulation period. These locomotives are included in the road locomotive count shown in Table III-C-3 above.

(c) Switch/Work Train Locomotives

The ANR uses EMD SW1500 locomotives for switching service at its inspection/fueling yards. This type of locomotive is commonly used by Class I and other railroads for such service.

The ANR requires a total of 15 SW1500 locomotives for use in switch service at its five inspection/fueling yards, where switching of bad-order

and spare cars is needed (as well as switching of blocks of intermodal cars at Texico Yard). The ANR uses one-person switch crews with two 24/7 crew assignments (12-hour shifts) at Guernsey, one at North Amarillo, one at Texico, four at West Vaughn, and three at West El Paso. One switch locomotive is used by each switch crew assignment, and a spare switch locomotive is kept at each location except Texico (the spare locomotive at North Amarillo can be moved to Texico if needed and a road locomotive can also be used temporarily for switching at Texico). The spare switch locomotives can also be used for local work-train service as needed.

Some bad order switching is also performed at the ANR/FXE interchange yard in El Paso. However, the switching activity at this yard is light and the road locomotives on the subject trains are used for this work.

iii. Railcars

Car ownership for the ANR traffic group was determined from the shipment data produced by BNSF and UP in discovery. This data shows that most of the ANR's coal and general freight traffic moves in shipper-provided equipment and that nearly all of its intermodal traffic moves in shipper-provided containers and trailers. Table III-C-5 below summarizes the ownership of railcars and intermodal units for each traffic type.

TABLE III-C-5 PERCENTAGE OF CAR OWNERSHIP BY TRAFFIC TYPE			
Traffic Type	**System**	**Foreign**	**Private**
Coal	23.3%	0.5%	76.2%
General Freight	39.6%	14.7%	45.7%
Containers & Trailers	1.9%	--	98.1%
Intermodal Flats	32.7%	8.1%	59.2%
Multi-level Flats (Auto)	19.7%	14.1%	66.2%

The ANR system car requirements for all of the movements in its traffic group were developed based on the peak-year traffic and the simulated transit-time output from the RTC Model. The resulting ANR car requirements were increased by a 5.0 percent spare margin[7] and the 1.057 peaking factor described earlier. A complete description of the development of car ownership costs for system, foreign and private cars is set forth in Part III-D-2.

2. <u>Cycle Times and Capacity</u>

A SARR's operating plan must enable it "to meet the transportation needs of the traffic the SARR proposes to serve" (*WFA/Basin I* at 15) and "must be capable of providing, at a minimum, the level of service to which the shippers in the traffic group are accustomed" (*PSCO/Xcel I* at 11). However, a SARR

[7] The 5.0 percent spare margin is based on a review of transportation contracts provided by BNSF and UP in discovery, {

} The 5.0 percent spare margin for shipper-provided cars was also accepted by the Board in *WFA/Basin I* at 39 and *Otter Tail* at C-5.

> need not match existing operating practices of the defendant railroad, as the objective of the SAC test is to determine what it would cost to provide the service with optimal efficiency. However, the assumptions used in the SAC analysis, including the operating plan, must be realistic, i.e., consistent with the underlying realities of real-world railroading.

WFA/Basin I at 15.

In recent SAC rate cases, the complainant has demonstrated that its SARR can provide service to its traffic group members that meets its customers' requirements by showing that the SARR's train transit or cycle times during the peak week of the peak year are no higher than the defendant's actual cycle and transit times during the comparable week of the most recent year for which data is available.

a. Procedure Used to Determine the ANR's Configuration and Capacity

The starting point for the capacity analysis in this case is the ANR's peak-year traffic volume and its peak train counts during the 10-year DCF period. These were developed by AEPCO Witness Thomas Crowley from BNSF and UP train movement data produced in discovery for the traffic included in the ANR's traffic group for the Base Year (2Q08 through 1Q09), which is the most recent 12-month period for which usable train data is available. In developing the peak traffic volume and train movements, Mr. Crowley also used the traffic forecast procedures described in Part III-A-2.

The ANR's system (track configuration and other facilities including yards and interchange facilities), and its operating plan, were developed primarily by AEPCO Witness Smith with assistance from Witnesses Schuchmann and Reistrup to accommodate its peak seven-day traffic volume and train frequencies. In the summer of 2009, Mr. Smith conducted field trips to observe most of the BNSF and UP lines and facilities being replicated by the ANR, as well as BNSF/UP train operations over these lines and the track layouts and train loading/unloading procedures at the origin mines to be served by the ANR and at the Apache plant.[8] Mr. Smith also reviewed the BNSF and UP operating timetables and track charts for the lines being replicated,[9] as well as maps of various facilities, the joint facility agreement between BNSF and MRL, and the defendants' interrogatory responses describing the operation of AEPCO coal trains. He then developed a preliminary track configuration for the ANR, starting with BNSF's and UP's present main-track/passing siding configuration for most of the lines being replicated, and began developing the operating plan.

The essential elements of the operating plan (described below), the main-track configuration, and the yard and interchange locations were developed by Mr. Smith, in collaboration with Mr. Schuchmann (and later Mr. Reistrup), for input into the RTC Model. Mr. Schuchmann also input various physical

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[8] Mr. Smith's reports on his field trips are reproduced in Part III-C e-workpaper "Smith field trips.pdf."

[9] The BNSF and UP operating timetables and track charts for all of the lines involved are reproduced in Part III-B e-workpaper folder "III-B-1/Track Miles."

characteristics for the lines in issue, which were obtained from BNSF and UP track charts, operating timetables and other documents produced in discovery. These included train speed restrictions at various locations, grades, curves, topography and turnouts (switches). The final steps were to populate the RTC Model with the ANR's trains during the simulation period, which includes the peak train volume week in the ANR's 10-year DCF existence, and input random "outage" events.

b. <u>Development of Peak-Period Trains</u>

AEPCO Witness Thomas Crowley provided AEPCO's operating and RTC Model experts with the ANR's trains moving during the peak-seven day period in the ANR's 10-year DCF life, based on the BNSF and UP trains carrying traffic in the ANR's traffic group that moved during the peak week of the Base Year.

The peak week was developed based on the peak volume of loaded trains selected for inclusion in the ANR's traffic group. The peak week train list was developed from BNSF and UP train and car movement data provided in discovery for the Base Year.

Mr. Crowley determined the number of ANR trains that would transport the coal, intermodal and general freight traffic included in the ANR traffic group in 2018, which is the peak volume year during the DCF period. He did this by applying the percentage increase in the ANR's traffic from the Base Year to 2018 for each movement to the Base Year waybill data provided by BNSF

and UP in discovery to determine the number of additional cars/containers required to move the additional traffic. Average Base Year train consists were developed for each train type and on- and off-SARR location. Mr. Crowley then added sufficient average Base Year trains to accommodate the growth in cars/ containers in each ANR corridor. The "growth" trains thus developed were added to the trains that moved during the Base Year.

The results of this procedure indicated that the combined BNSF and UP peak traffic week in the peak year was October 15-October 21, 2018.

Based on the probable transit and train cycle times for a railroad the size of the ANR, Messrs. Smith and Schuchmann requested that Mr. Crowley provide them with the ANR's peak-period trains operating over its lines during a seven-day warm-up period (used to populate the RTC Model with trains) and a one-day cool-down period, in addition to the peak week.[10] The study period used in the RTC simulation thus covers a total of 15 days, from October 8 to October 22, 2018. A total of 3,192 trains were dispatched during this period, of which 1,516 were dispatched in the peak week and completed their runs by the end of the simulation period. The study period trains are shown in Exhibit III-C-2.

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[10] The seven-day warm-up period was selected because, on the basis of BNSF/UP train movement records and preliminary modeling of AEPCO's coal trains moving to and from the Montana mines to Cochise, it was apparent that the maximum time any train would normally spend on the ANR would be less than seven days.

Mr. Schuchmann then populated the RTC Model with the study period trains. Finally, he ran the trains through the Model using the track/yard configuration and operating inputs developed in collaboration with Messrs. Smith and Reistrup, as described in the next section.

c. Operating Inputs to the RTC Model

The following elements of the ANR's operating plan were input into the RTC Model for purposes of simulating the ANR's peak-period operations and developing train transit times:

i. Road locomotives – Most trains have three ES44-AC locomotives in a 2/1 DP configuration. A fourth locomotive is added to some coal trains where needed, and additional locomotives are added to certain long/heavy non-coal trains where needed.

ii. Train sizes and weight – The actual size and trailing weight for each BNSF and UP train carrying traffic in the ANR traffic group in the base year is used. Growth trains replicate trains that moved in the base year. The maximum train size is 220 cars and the maximum number of locomotives per train is seven.

iii. Helpers – Helpers are required for certain trains at two locations, as noted in Part III-C-1-a-ii above. The times allotted to add and detach helper locomotives are 20 and 15 minutes, respectively.

iv. Maximum train speeds – 70 mph for intermodal and other premium-service trains west/south of Amarillo, TX; 60 mph for other trains west/south of Amarillo and for trains other than loaded coal trains, baretable intermodal trains, loaded grain trains and other unit trains on all other main lines; 50 mph for loaded coal trains on the main lines (conditions permitting); 55 mph for baretable intermodal trains, loaded grain trains and other unit trains; and 35 mph on the branch lines except 49 mph on the Lee Ranch Branch.

v. Dwell times for coal trains at ANR-served destination power plants – based on maximum unloading free times under applicable BNSF and UP pricing authorities, as described below.

vi. Dwell times at ANR-served origin mines – 4 hours at Signal Peak, Spring Creek, Decker, Lee Ranch and El Segundo Mines; 6 hours at mines on Campbell Branch; 5.5 hours at mines on the Orin Sub and Reno Branch.

vii. Dwell time at yards – 6 hours for westbound (empty) coal trains at Guernsey; 1 hour for eastbound loaded trains at Guernsey except 3 hours for trains from Signal Peak Mine moving to destinations south of Denver; 3 hours at other yards for trains requiring inspection/ fueling; 30 minutes for interchange for trains that do not require inspection/fueling.

viii. Crew-change time at crew-change points other than yards and interchange points – 15 minutes.

ix. Time required for trains to reverse direction at El Paso – 30 minutes.

x. Time for track inspections and maintenance windows – none.

xi. Time for random track, signal and equipment outages – Time for 52 random outages (with accompanying train movement instructions) was input into the Model, as described in Subsection ix below.

These operating functions/inputs, and the times allotted for them, are explained in the following subsections.

i. Road Locomotive Consists

The locomotive consists and requirements for the ANR's trains are described in Part III-C-1-c-ii above. The RTC simulation shows that most trains can operate over the ANR system (other than the helper districts) with three ES44-AC locomotives in a 2/1 DP configuration, except some heavy trains need one or more additional locomotives at certain locations. If one additional locomotive is needed on a coal train it is placed on the rear of the train. Non-coal overhead trains will generally be operated as received from BNSF or UP, with the same

locomotive consist. If additional power is required on non-coal trains it is added in compliance with special instructions regarding DP unit placement. Additional power on intermodal trains is added as necessary to bring the horsepower per trailing ton ("HPTT") ratio in line with service requirements and according to the special instructions.

ii. Train Size and Weight

The forecast (2018) trains in the RTC simulation are based on the corresponding "actual" base year trains described in Part III-C-1-c above. The maximum train size is 220 cars and the maximum number of locomotives on any train is seven (excluding helpers).[11] All growth trains (trains carrying additional tonnage that did not move in the base year) are limited to the size and weight for the corresponding base year trains, except that the locomotive consists are sized to provide the appropriate total horsepower based on the use of ES44-AC locomotives.

It should be noted that UP's train and car movement data produced in discovery generally did not include data on train lengths for intermodal trains using the ANR route. Since there is no reason to believe UP's intermodal trains are markedly different in length than BNSF's intermodal trains (they generally

[11] For purposes of the RTC simulation, trains are assumed to have the same number of locomotives as the corresponding base year trains as indicated by BNSF's and UP's train movement data, except that any train having six or more locomotives is assumed to have the number of ES44-AC road locomotives needed to provide the same total horsepower the base year train had since the train movement data does not reveal which locomotive type(s) were on the train.

move between the same origin and destination regions), AEPCO's experts used the average lengths of BNSF's intermodal trains to develop intermodal train lengths for the intermodal trains moving over the replicated portions of the UP route.

iii Helpers

As described in Part III-C-1-c-ii above, loaded ANR coal and some non-coal trains require helper assistance at two locations: the Campbell/Orin helper district in Wyoming, and the Big Lift/Palmer Lake helper district in Colorado. Helpers are needed on loaded coal trains operating in both directions on the northern part of the Orin Subdivision; otherwise trains are helped only in the southbound (timetable eastbound) direction. ES44-AC locomotives are used for helper service at both locations, and the RTC simulation confirms that all trains requiring helper assistance can negotiate the respective grades with a two-unit helper consist. The helpers are placed on the rear of all trains unless special instructions and train makeup rules for non-coal trains dictate otherwise. The specific helper locations are as follows:

> Campbell/Donkey Creek – Southbound helper district extends from the Campbell Subdivision mines to Milepost 10.45 on the Orin Subdivision if the train operates south onto the Orin Sub. Northbound helper district extends 8.45 miles from Orin Sub MP 15.4 to MP 6.95.
>
> Big Lift/Palmer Lake – Southbound helper district extends 33.5 miles from BNSF Pikes Peak Sub MP 19.45 to MP 52.95.

For each train requiring helper assistance, 20 minutes are allotted for each train requiring helper assistance to add helper locomotives at the beginning of the helper district and 15 minutes are allotted to detach helper locomotives at the end of the helper district.[12] The coupling and uncoupling of helper locomotives is a simple process that takes only a few minutes in terms of the physical operations required. Twenty minutes have been allotted for adding helper locomotives to provide sufficient time to perform a brake test after the lead helper has been coupled to the train. Modern technology permits helpers to be removed without stopping the train, but AEPCO's operating experts have conservatively assumed the train will stop for the removal of helpers and have allotted 15 minutes for this process. This includes time for the helper crew to verify that the brakes on the DP road locomotive on the rear of the train have been released.

After being detached from a train, the 2-unit helper consist normally returns light back to its point of origin, although helpers on some southbound Orin Sub coal trains stay with the train to Milepost 15.0 if a northbound loaded coal trains is available to be helped. Light helper movements can follow trains moving in the same direction, on the same track (and block), with dispatcher authority (unless there is a long interval between trains, in which case they move on dispatcher instruction and signal indication). This is consistent with real-world

[12] These times are consistent with the time to add and remove helpers allotted in the RTC simulations approved by the Board for the SARR in the *WFA/Basin* case, in which Mr. Smith also served as an operating expert for the complainant.

railroad practice. Thus, light helper movements are not treated as separate trains for purposes of the RTC simulation.

iv. Maximum Train Speeds

The maximum permissible train speeds input into the RTC Model are 60 mph north of Amarillo and 70 mph west and south of Amarillo (i.e., between Amarillo and Defiance and between Vaughn-El Paso-Cochise) for intermodal trains. With certain exceptions, all other trains are limited to a maximum speed of 60 mph on all main lines. The exceptions are: (1) loaded coal trains are limited to a maximum speed of 50 mph, and (2) baretable (empty) intermodal trains, loaded grain trains, and other unit trains are limited to a maximum speed of 55 mph. All trains are limited to a maximum speed of 35 mph on the ANR's branch lines other than the Lee Ranch Branch; the maximum train speed on that branch is 49 mph. These maximum speeds are consistent with BNSF's and UP's real-world practice on the lines being replicated by the ANR.

Maximum train speeds are reduced below those specified above where a speed restriction is required by BNSF's or UP's operating timetables for the divisions and subdivisions in question. These restrictions exist for safety reasons (such as to maintain a safe braking distance), to reduce track wear in curves, to comply with FRA restrictions regarding the movement of hazardous materials, and to avoid high-speed gauge separation on curves exceeding 3 degrees. In addition, trains do not reach maximum authorized speed in some areas due to grades and curves. All of these restrictions and limitations have been

incorporated into the RTC Model for application to the ANR's peak-period operations.

v. Dwell Times at Power Plants and Other Destinations

The ANR directly serves and delivers coal trains to five power plants. The power plants to which the ANR delivers coal trains in the RTC simulation period, and the dwell time allotted at each, are as follows:[13]

Xcel/Pawnee, Brush, CO – 6.5 hours
Xcel/Arapahoe, Denver, CO – { } hours
Xcel/Comanche, Minnequa (Pueblo), CO – { } hours
Xcel/Harrington, Amarillo, TX – { } hours
AEPCO/Apache, Cochise, AZ – 10.0 hours

Messrs. Smith and Schuchmann allotted train dwell time at these destinations equal to the maximum unloading free time allowed under the applicable rail transportation contracts or pricing authorities. In this regard, Apache plant personnel advised Mr. Smith during his field trip visit to the plant in July 2009 that the time required to unload a train is normally 4.0 to 4.5 hours. However, to be consistent with the allotment of dwell times at other power plants served by the ANR, Messrs. Smith and Schuchmann allotted the full unloading free time of 10 hours per BNSF Pricing Authority 57966.

It should be noted that according to BNSF's train movement records for the Base Year, the average times between arrival of loaded trains at the ANR's

[13] Like BNSF, the ANR also handles coal trains moving to PPL Montana's Corrette power plant near Billings, MT. The ANR delivers loaded trains to MRL at MRL's Billings Yard; MRL delivers them to the Corrette plant and picks up the empty trains for delivery back to the ANR at Billings Yard.

destination power plants and departure of the empty trains {

}. However, the train event data had obvious errors and inconsistencies,[14] and based on Mr. Smith's (and Mr. Reistrup's) experience there is often a delay several hours (or more) between the time an empty train is released by the shipper and the time BNSF calls a crew and the train actually departs the power plant.[15] The ANR does not delay calling crews for outbound trains, as BNSF apparently does. For these reasons AEPCO's operating experts concluded that it is more realistic to assign dwell times based on maximum unloading free time.

vi. Dwell Time at Mines and Other Origins

The ANR directly serves and originates coal trains at 20 coal mines, of which three are located in Montana, 15 are located in Wyoming, and two are located in New Mexico. These mine/loadouts are:

> Montana – Signal Peak, Spring Creek and Decker Mines.
>
> Wyoming – Eagle Butte, Rawhide, Buckskin, Dry Fork, Clovis Point, Caballo, Belle Ayr, Caballo Rojo, Cordero, Coal Creek, Black Thunder, Jacobs Ranch, Black Thunder South, North Antelope/ Rochelle and Antelope Mines.[16]

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[14] For example, in the base year the actual BNSF train dwell time reported at the mines ranged from { }, and the actual train dwell time reported at ANR-served destination power plants ranged from { }.

[15] This is also true of mine dwell times.

[16] As noted in Part III-B-1-b above, Black Thunder Mine is now served by two coal loadouts, and the Caballo Rojo and Cordero Mines have recently been combined into a single mining complex, Cordero Rojo, with two coal loadouts.

New Mexico – Lee Ranch and El Segundo Mines.

Messrs. Smith and Schuchmann allotted four hours of train dwell time at each of these mines, which is the maximum free time allotted under BNSF Tariff 6041-B, except for the mines on the Campbell and Orin Subdivisions and the Reno Branch. Six hours of train dwell time were allotted at the mines on the Campbell Subdivision (Eagle Butte, Rawhide, Buckskin, Dry Fork and Clovis Point), and 5.5 hours of dwell time were allotted at the other Wyoming mines which are located on the Orin Subdivision or the Reno Branch. These average dwell times for the Wyoming mines, which exceed the loading free time allotted under the applicable BNSF contracts and pricing authorities to allow for the presence of non-ANR trains at these mines, were accepted by the Board in *Psco/Xcel I*, *AEP Texas* and *WFA/Basin I*.[17]

vii. Dwell Time at Yards

Dwell times have been allotted for trains at the ANR's yards based on the kinds of activities performed there. These activities include 1000/1500-mile car inspections and associated bad-order car switching, block-swapping (at Texico, NM), locomotive fueling and 92-day inspections, interchanges with other railroads, and crew changes.

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[17] These dwell times reflect delay attributable to the possible presence of UP or other BNSF trains at the jointly served Orin Subdivision and Reno Branch mines and residual BNSF trains at the Campbell Subdivision Mines. *See AEP Texas* at 17-18; *WFA/Basin I* at 15-17.

Thirty minutes of dwell time have been allotted at the ANR's separate interchange yards, where no other activities are performed.[18] The same 30 minutes are allotted for interchange of trains that do not require inspection/ fueling at the North Amarillo and West El Paso Yards. All that is required for the interchange of run-through trains is a change of crews, a brake set/release and a roll-by inspection, which can easily be accomplished within 30 minutes. Thirty minutes of SARR interchange time were accepted by the Board in the *WFA/Basin* and *AEP Texas* cases.

The dwell times allotted at the ANR's inspection/fueling yards are described below.

Guernsey Yard. Six hours of dwell time have been allotted for empty coal trains at Guernsey Yard. This is consistent with the dwell time accepted by BNSF and the Board in the *WFA/Basin* case. *See WFA/Basin I* at 17. The ANR performs the same functions on empty coal trains at Guernsey Yard that the SARR in the *WFA/Basin* case did at its Guernsey (and later Orin) yard. These functions include 1,500-mile car inspections and associated switching of bad-order cars out of trains and spare cars into trains; the removal of all locomotives and the

[18] This includes interchange dwell time on the ANR/BNSF interchange track just east of Lone Star Jct. (Texico), NM and interchange dwell time for loaded coal trains at the ANR/FXE interchange yard at El Paso. The interchange dwell time includes time to change crews.

placement of fresh locomotives on the trains,[19] and the staging of empty trains for movement to the mines for loading. The dwell time for most loaded trains at Guernsey Yard is one hour, to permit the topping off of locomotive fuel tanks in addition to a change of crews. Loaded trains originating at Signal Peak Mine in Montana that are destined to points south of Denver (*i.e.,* the Apache power plant) also receive a Class A 1,500-mile inspection at Guernsey. Three hours of dwell time have been allotted for these inspections, which includes two hours for the inspection and an hour to switch out any bad-order cars. The locomotive fuel tanks on these trains are topped off during the inspection process.

North Amarillo Yard. All northbound empty coal trains moving through Amarillo receive a 1,500-mile inspection and locomotive re-fueling at North Amarillo Yard, as do southbound loaded coal trains destined to power plants in Arizona. Northbound non-coal trains receive a 1,000-mile inspection at North Amarillo Yard. Southbound loaded coal trains (and non-coal trains) interchanged to BNSF at Amarillo do not need a 1,000-mile inspection or locomotive re-fueling at North Amarillo Yard; these functions are performed on the residual BNSF at, *e.g.*, Amarillo or Fort Worth. Three hours of dwell time have been allotted for inspection/fueling of the trains that require these services at North Amarillo Yard. This also includes time for removing locomotives requiring 92-day inspections or other maintenance and replacing them with fresh

[19] The locomotive power is fueled and serviced after removal from the trains, and 92-day locomotive inspections are performed as needed.

locomotives (when this occurs the locomotives are fueled while at the locomotive inspection/maintenance facility). The southbound trains interchanged to BNSF dwell at North Amarillo Yard for 30 minutes which is the normal interchange time allotment.

Texico Yard. Texico Yard is used for block-swapping and inspection of certain intermodal trains, and to interchange trains with BNSF that leave or enter the ANR system at Lone Star Jct. (Texico), NM. Blocks of cars from some eastbound intermodal trains, which the ANR receives from BNSF at Defiance, NM, are placed on other trains at Texico Yard for continued movement eastward either via the ANR (in the case of trains destined to/beyond Amarillo) or via BNSF (in the case of trains interchanged to BNSF at Texico for movement toward Houston via Lone Star Jct.).[20] Similar block-swapping occurs at Texico Yard for some westbound intermodal trains, which the ANR receives from BNSF at either Amarillo or Texico and moves west to the interchange with BNSF at Defiance. The road locomotives from the inbound trains are transferred to waiting outbound trains for movement out of Texico, and the switch locomotive stationed at Texico Yard assembles blocks from inbound trains into outbound trains.

BNSF's car and train movement data indicate that in the real world blocks of cars from various intermodal trains are swapped at Clovis, and that

[20] BNSF performs this activity at Clovis, NM. The ANR's Texico Yard is located just east of Clovis and for this purpose is the functional equivalent of BNSF's Clovis Yard.

{ }. The ANR's Texico Yard has been sized to accommodate this, as well as 1,500-mile inspections and fueling of the outbound trains prior to departure.[21] In developing the peak period train list, some BNSF intermodal trains that terminated or originated at Clovis were not linked to the corresponding inbound and outbound ANR intermodal trains because the prior or subsequent train(s) moved outside the RTC simulation period. For this reason, AEPCO's experts treated these trains as either terminating or originating at Texico for purposes of the RTC simulation, and used the real-world (Clovis) departure dates and times for these trains.[22]

West Vaughn Yard. All non-coal trains moving in both directions (except for the intermodal trains that originate or terminate at Texico Yard, as described above) and all westbound empty coal trains destined to the New Mexico mines are inspected and fueled at West Vaughn Yard. East/southbound loaded coal trains moving through West Vaughn stop only for a crew change. Three hours of dwell time have been allotted at West Vaughn Yard for the trains

[21] The subject intermodal trains that move between Defiance and Texico do not need to be inspected or fueled at the ANR's West Vaughn Yard, and dwell at West Vaughn for 15 minutes to change crews.

[22] AEPCO recognizes that the ANR incurs makeup/breakup switching and inspection costs for these trains at Texico. In the absence of data that enables the arriving and departing trains to be linked in a meaningful way, a per-train cost has been developed and applied for this activity. *See* Part III-D-9 below and associated e-workpaper "Texico block switching.xls" for details.

requiring inspection/fueling and 15 minutes of dwell time for the east/southbound coal trains.[23]

West El Paso Yard. All westbound non-coal trains moving through El Paso, and all eastbound non-coal trains that move to/beyond Vaughn on the ANR, are inspected and fueled at West El Paso Yard. Eastbound non-coal trains that are interchanged to the residual UP at El Paso are neither inspected nor fueled by the ANR; these functions are performed by UP after the trains are interchanged. All trains moving through El Paso change crews there. Eastbound (empty) coal trains are re-fueled at West El Paso Yard. Three hours of dwell time have also been allotted at West El Paso Yard for trains requiring inspection and fueling (which includes westbound non-coal trains received in interchange for UP at El Paso), one hour for eastbound coal trains that require re-fueling, and 15 minutes for a crew change for trains that are neither inspected nor fueled. No dwell time is assigned at West El Paso Yard for eastbound non-coal trains interchanged to UP, as the ANR crews move these trains directly to UP's Dallas Street Yard and detrain there.

The empty coal trains received from the FXE at El Paso require inspection before departing El Paso. Since these trains do not move through the ANR's West El Paso Yard, they are inspected at the FXE interchange yard. Three

[23] This time allotment is very generous. At BNSF's Belen yard, which is the functional equivalent of the ANR's West Vaughn Yard, BNSF targets a dwell time for inspections and fueling of only 45 minutes for through trains. *See* e-workpaper "belen inspection.pdf."

hours have been allotted to perform a Class A inspection on these trains at El Paso, which includes time to set out bad order cars and insert repaired cars.

viii. Crew-Change Locations/Times

Road Crews. Many of the ANR's crew changes take place at mines or other origins, yards, interchange points or destination power plants. There is plenty of time to change crews during the performance of other functions at these locations.

The ANR calls train crews sufficiently in advance of a train's arrival at the designated crew-change point so that the crew can complete paperwork, receive any necessary job briefing, and be ready to board the train when it arrives and the incoming crew has de-trained. At ANR crew-change points where the change of crews is the only function performed, 15 minutes have been allotted for this function. Again, this is consistent with the time allotted (and accepted by the Board) for SARR crew changes in the *WFA/Basin* case.

The operating plan for the ANR provides for the following crew districts and assignments:

1. Crews based at Laurel, MT (home terminal) operate in straightaway service between Laurel or Jones Jct., MT and Sheridan, WY or Nerco Jct./Spring Creek Mine or Decker Mine, MT. These crews also operate in turn service from Laurel/Mossmain to Signal Peak Mine or from Laurel to Jones Jct., MT (and return).

2. Crews based at Campbell, WY (home terminal) operate in straightaway service between Campbell or Donkey Creek and Sheridan or Nerco Jct./Spring Creek Mine or Decker Mine. These crews also operate in turn service from Campbell to mines on the Orin Sub, Reno Branch or Campbell Branch.

3. Crews based at Guernsey (home terminal) operate in straightaway service between Guernsey and Campbell, WY, between Guernsey and the Wyoming mines served by the Orin Sub, Reno Branch or Campbell Branch, or between Guernsey and Northport. These crews also operate in straightaway service between the BNSF interchanges at Bridger Jct. or Wendover and the Wyoming mines.

4. Crews based at Sterling, CO (home terminal) operate in straightaway service between Sterling and Guernsey, between Sterling and Denver (including the Arapahoe power plant), or between Brush, CO (BNSF interchange) and Denver. These crews also operate in straightaway service between Guernsey and the Pawnee power plant near Brush.

5. Crews based at Denver (home terminal) operate in straightaway service between Denver and Pueblo, Minnequa (including the Comanche power plant), La Junta or Las Animas Jct., CO.[24]

6. Crews based at North Amarillo (home terminal) operate in straightaway service between North Amarillo (including the Harrington power plant) and La Junta or between West Amarillo and Texico or Vaughn, NM.

7. Crews based at Vaughn, NM (home terminal) operate in straightaway service between Vaughn and El Paso (FXE interchange), West El Paso, Lee Ranch Mine, El Segundo Mine, Belen, NM and Defiance, NM. These crews also operate in straightaway service between Vaughn and Texico, NM.

8. Crews based at Defiance (home terminal) operate in turn service to Lee Ranch Mine or El Segundo Mine. These crews also operate in straightaway service between Defiance and Belen or Dalies.

9. Crews based at West El Paso (home terminal) operate in straightaway service between El Paso or West El Paso and Cochise, AZ (including the Apache power plant).

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[24] Some trains terminate at Pueblo from the south. These trains are manned by straightaway crews between North Amarillo and La Junta (per Crew District No. 6), and by turn crews between LaJunta and Pueblo,

These crew districts and assignments reflect the ANR's ability, as a start-up railroad, to operate in a manner that is not constrained by prior mergers and/or union work rules that limit a Class I railroad's flexibility to maximize the efficiency of its crew assignments. This gives the ANR much more flexibility in scheduling crews and maximizing their use within the constraints of the federal "12-hour" (Hours of Service) law, including the amendment thereof by the Rail Safety Improvement Act of 2008 ("RSIA"). The RTC simulation confirms that the distance for each crew assignment, as well as the allotted time at mines or other points served by turn crews, can generally be covered by a single tour of duty including an allowance of one hour for crew preparation/taxi time. A few crews expire under the Hours of Service law and need to be taxied to their next terminal. The cost of taxi service for these crews is included in the ANR's operating expenses.

Helper crews. The helper crews are engineer-only crews. They are based at Campbell, WY and Big Lift, CO. Based on the ANR's peak-week train volumes, a total of 12 employees are needed to man the helpers on a 24/7 basis, with each crew working a 12-hour shift.

ix. Time for Trains to Reverse Direction

The configuration of the ANR's trackage in El Paso, TX is such that certain trains must reverse direction in connection with their interchange to/from another carrier. This includes non-coal trains interchanged with UP and moving to/from UP points east of El Paso; these trains are interchanged either at the

ANR's West El Paso Yard or UP's Dallas Street Yard, depending on the direction of movement. The reversal of direction occurs at West El Paso Yard. Given the use of DP, with locomotives on both ends of the train, it can easily be accomplished in 30 minutes.

In addition, coal trains moving to/from the FXE interchange at El Paso must reverse direction to move between the Lordsburg Subdivision main line and the ANR/ FXE interchange yard. The reversal of direction of these trains is also facilitated by the use of DP, and also can be accomplished in 30 minutes or less (including time to clear the main line). Essentially, the lead locomotive on an inbound loaded train stops at the switch for the spur to/from the interchange and the conductor detrains. The engineer then pulls the train forward until the rear (DP) locomotive clears the switch. The conductor (who is also a qualified engineer) then boards the DP locomotive and the train moves in the opposite direction onto the spur and to the interchange. The reverse procedure is used for empty coal trains received in interchange from FXE.

x. <u>Track Inspections and Maintenance Windows</u>

Consistent with the SARR operating plans accepted by the Board in previous cases (*e.g. WFA/Basin I* and *AEP Texas*), no time has been allocated for scheduled track inspections or maintenance windows for purposes of the RTC simulation.

FRA rules require twice-weekly inspections for Class 4 and Class 5 track, which are the classifications for the ANR's main tracks. As described in

Part III-D-4 below (which addresses maintenance-of-way costs), the ANR's main and branch lines are inspected twice a week by the railroad's Assistant Roadmasters using hi-rail vehicles (pickup-type vehicles equipped with retractable flanged wheels so they can operate either on highways or on railroad tracks). These inspections of course have to be performed during the peak traffic (RTC simulation) period. However, they can be performed between train movements, and during periods of heavy traffic the hi-rail vehicle can follow a train on the same block with the dispatcher's approval. Accordingly, there is no need to allot separate time for FRA-prescribed track inspections in the RTC Model.

No program maintenance will be performed during the ANR's 15-day peak traffic period, which occurs in October. Program maintenance will be performed during other, less-busy periods. Since the ANR is being designed and configured for its peak traffic week, there is ample time for normal track maintenance during non-peak periods, and track/facility repairs of an emergency nature are accounted for in the time allotted for random outages (described below). Thus there is no need to provide for separate track maintenance windows during the RTC simulation period.

xi. <u>Time for Random Outages</u>

Random events that affect track, signals and equipment (operations) are a part of everyday railroading. Such events would inevitably occur during the ANR's peak traffic period used for the RTC simulation (although not with the frequency that they occur on the replicated BNSF and UP lines since the ANR

starts operations in 2009 with brand-new track, facilities and equipment including rolling stock). Accordingly, Messrs. Smith and Schuchmann allotted time for random outages for input into the RTC Model.

There is of course no way to know what events affecting train operations will occur during the 2018 RTC simulation period. AEPCO requested information from BNSF and UP in discovery on events of an unexpected or "random" nature that affected train operations on the lines being replicated by the ANR in 2008, including train-related, track-related and signal-related events. AEPCO's operating experts used the outage information produced by both carriers for the 2008 period comparable to the 2018 RTC simulation period to assign random outages to the ANR's lines and operations in the RTC simulation period.

The procedure followed in developing the random outages for input into the RTC Model was as follows. First, AEPCO witness Paul Reistrup (who worked with Mr. Schuchmann to complete the RTC Model inputs after Mr. Smith's stroke) reviewed the random outage information provided by BNSF for the BNSF lines replicated by the ANR for the 2008 equivalent of the RTC simulation period.[25] He then selected the kinds of outages he considered likely to occur on the ANR based on his own real-world experience (and experience with BNSF outage data in the *WFA/Basin* case, in which he worked with Paul Smith to

[25] The BNSF-produced random outage data for the 2008 equivalent of the RTC simulation period for the lines involved is shown in e-workpaper "BNSF 2008 outages.xls."

develop random outages for the RTC Model simulation of the SARR's operations in that case). The outages shown in the BNSF data were outages of the kind described in *WFA/Basin I* as "trouble ticket" outages, *i.e.,* track/signal outages, such as a broken rail or a dark signal (*e.g.*, a signal with its bulb out). Mr. Reistrup selected 52 random outages on the BNSF-replicated lines by date, time, location, type of outage, duration, and impact on train operations, as appropriate for inclusion in the RTC simulation of the ANR's operations. These outages, shown in e-workpaper "ANR Random Outages on BNSF Lines.xls," were provided to Mr. Schuchmann for input into the RTC Model.

UP provided outage data in response to AEPCO's discovery requests, in the form of Train Delay Reports.[26] All of the outage or delay data provided by UP for its lines replicated by the SARR (the lines between Vaughn and El Paso and between El Paso and Cochise) during the 2008 period equivalent to the RTC simulation period is set forth in e-workpaper "UP Trains Held.xls." A total of { } delay events are shown in this data. However, only one of these { } was an unplanned outage likely to affect train operations, but this outage occurred { } which is not part of the lines or tracks replicated by the ANR.

[26] AEPCO's counsel followed up with UP counsel to determine if there would be any additional production of random outage data by UP. UP's counsel responded that all information on unplanned outages was reflected in UP's Train Delay Reports. *See* e-workpaper "Discovery on UP Outages.pdf."

Of the remaining { } UP delay events, {

}. With respect to the { }, as indicated in the previous section the ANR will not {

}. With respect to the other { } events, the ANR's lines are configured to avoid significant delays due to { }, its crew districts and re-crewing (taxi) plan are designed to avoid train delays due to { }, and there is nothing in the UP data to indicate that {

} would prevent an ANR train from continuing to operate with one fewer locomotive until the problem is fixed.

In summary, Mr Reistrup did not deem any of the delay events incurred by UP on its lines being replicated by the ANR to be the kind of random outage that warrants inclusion in the RTC Model. Accordingly, based on the data provided by UP, he advised Mr. Schuchmann not to include any random outages on the UP-replicated lines in the RTC simulation of the ANR's operations.

d. <u>Results of the RTC Simulation</u>

After inputting the ANR's track and other relevant facilities, peak-period trains and operating parameters (including random outages) into the RTC Model, the model runs began. During the modeling process several changes were made to the ANR's initial track configuration, in particular the relocation, addition

or deletion of certain passing sidings and segments of second main track, refinement of the configuration of yards and interchange tracks, and the addition of locomotives to certain trains. With these refinements, the Model ran to a successful conclusion.

The key outputs generated by the RTC Model were elapsed train running times over each of the ANR's line segments, and train cycle and transit times (used to develop locomotive and car hours and train-crew counts) over the portion of the ANR system used by each train during the peak seven days of the 14-day period modeled by AEPCO's operating experts. A schematic diagram of the ANR's tracks as they appear in the Model is attached as Exhibit III-C-2. The electronic files containing the RTC Model runs, output and case files are included in AEPCO's Part III-C e-workpaper folder "RTC."[27]

The RTC Model simulation demonstrates that the ANR's system configuration and operating plan are feasible, and that the ANR's operations in the peak period of the peak year meet its customers' requirements. Specifically, the average train transit times produced by the RTC simulation have been compared with the BNSF and/or UP average train transit times for the same peak period in the Base Year, based on train movement data produced in discovery. The BNSF/UP and ANR transit-time comparisons for the ANR's principal coal and

[27] The Board is a licensee of the RTC Model, so the computer software is not being provided to the Board by AEPCO. Mr. Schuchmann used Version RTC 2.70 L52A of the Model for the simulation of the ANR's peak-period operations presented in e-workpaper folder "RTC."

non-coal traffic flows are shown in Exhibit III-C-3. Further details on a train-by-train basis are shown in e-workpapers "AEPCO Elapsed Travel Time Peak Period.xls" and "Base Year BN-UP Non-Coal Transit Times.xls."

Exhibit III-C-3 shows that the ANR's 2018 peak-period train transit times for each category of movement (coal, intermodal and other freight) generally are faster than the real-world BNSF and/or UP cycle times for the comparable trains during the same peak period in the Base Year (October 8 through 22 of 2008). This is a higher standard than that used by railroads in the real world.[28] In any event, the transit-time comparisons demonstrate that the ANR can provide service commensurate with its customers' requirements.

3. Other

a. Rerouted Traffic

As described in Part III-A-2, the ANR's traffic group includes some coal traffic that has been rerouted – that is, the ANR transports it in part over a route that is different from the route used by the real-world BNSF and/or UP in 2008. All of the rerouted traffic is internally-rerouted traffic, that is, (a) the

[28] The Board has recognized that a railroad is not required to "build a church for Easter Sunday" by providing capacity and personnel (*i.e.*, train crews) to handle its peak traffic volume (*PSCo/Xcel I* at 62), and no real-world railroad does this. Thus, there should be no need to model the peak week in a SARR's entire 10-year DCF existence, as opposed to the average weekly trains during the peak traffic year or the Base Year. However, to be conservative, and avoid the need for time-consuming multiple RTC simulations for different years during the DCF period, AEPCO's experts have modeled only the peak week of the peak year and compared the resulting transit times with real-world transit times during the Base Year.

change in routing is entirely internal to the ANR, and (b) to the extent the change in routing involves cross-over traffic, the traffic is interchanged with BNSF or UP at a point on its real-world route of movement. Thus, AEPCO need only show that the reroutes are reasonable and meet the shippers' transportation needs. *TMPA* at 594-595; *AEP Texas* at 10-11; *WFA/Basin II* at 11-12.

Four separate internal reroutes are involved. One reroute involves AEPCO and other coal trains moving between the New Mexico mines and Cochise, AZ. Two reroutes involve coal trains moving between certain PRB Montana and Wyoming mines and Northport, NE, as well as points in Arizona. The final reroute involves coal trains originated by { } and moving to El Paso, TX for interchange to the FXE for movement to Chihuahua, Mexico.

i. <u>New Mexico Coal Reroutes</u>

BNSF and UP presently move coal trains between the three New Mexico Mines served by the ANR and Cochise, AZ via the following route: BNSF–Deming, NM–UP.[29] The BNSF route to Deming uses its north-south line between Belen and Rincon, NM, and BNSF subcontracts with the SWRR to move the trains between Rincon and Deming. The ANR moves this traffic via Vaughn and El Paso (*i.e.*, east from Belen to Vaughn, southwest from Vaughn to El Paso,

[29] Two coal movements are involved: movements to AEPCO's Apache plant at Cochise and movements to Tucson Electric Power's Sundt (formerly Irvington) Generating Station near Tucson, AZ.

and west from El Paso to Cochise). The distance from the mines to Cochise is about 232 miles longer via Vaughn and El Paso than it is via Rincon/Deming.

The comparative transit times for the coal trains involved in this reroute (shown in lines 8 and 17 of Exhibit III-C-3) are inconclusive due to the lack of enough train movements for a meaningful comparison,[30] but are close enough to conclude that ANR's route meets the shippers' transportation needs. The revenues from the rerouted movements are the same as the revenues that would accrue via the present route, but the economies of density realized by moving this traffic (and other crossover traffic) over the route via Vaughn and El Paso more than make up for the costs of moving the traffic the additional distance (including both capital and operating costs). Since the re-route is entirely internal to the ANR, BNSF and UP will not incur any additional costs as a result of this reroute.

ii. PRB Coal Reroutes

Some coal trains originating at mines in Wyoming and Montana are subject to two reroutes involving portions of the BNSF and UP systems.

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[30] No trains moved during the 2008 period comparable to the RTC simulation period, so the average BNSF/UP transit times reflect full Base Year movement data (which probably involve faster transit times than one would expect for the peak week). Only one rerouted New Mexico coal train moved during the RTC simulation period (a train moving from Lee Ranch Mine to AEPCO's Apache plant and return); the transit time for this train is shown in line 8, column (6) of Exhibit III-C-3. The combined transit tines for the single loaded and empty train exceeds the BNSF/UP Base Year average combined transit times for Lee Ranch-to-Cochise trains by 3.5 hours. Assuming arguendo that the comparison is meaningful, AEPCO would gladly trade a slight increase in average transit time for its New Mexico coal trains for the rate relief described later in this filing.

Mines to Northport, NE. The ANR originates PRB coal traffic that moves to Northport, NE for interchange to UP or BNSF, and for continued movement southward by the ANR. BNSF has two alternative routes between Donkey Creek, WY and Northport that it uses to move loaded and empty coal trains. One route is the ANR's route via Orin Jct., Wendover and Guernsey, WY. The other BNSF route is via Edgemont, SD and Alliance, NE. The ANR's route between Donkey Creek (and the PRB mines north and west thereof) and Northport is 6.1 miles longer via Guernsey than the BNSF route via Alliance. However, the ANR's route is shorter from every PRB mine south of Donkey Creek that is served by the Orin Subdivision and the Reno Branch.[31]

AEPCO's RTC simulation confirms that the ANR moves coal trains between Northport and the mines, and return, faster than the real-world BNSF does. *See* Exhibit III-C-3, lines 3 and 12.[32] Moreover, these very same reroutes were accepted by the Board as reasonable and consistent with the involved shippers' transportation needs in other recent SAC rate cases involving BNSF coal movements. See *WFA/Basin II* at 11-12; *PSCo/Xcel I* at 19-23.

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[31] AEPCO notes that the ANR handles some coal traffic originated at Orin Subdivision mines that moves to Northport for interchange to BNSF, which is then moved by BNSF through Alliance. This traffic is not rerouted traffic; rather, it follows the actual route of movement used by BNSF.

[32] When transit times for trains involving this reroute are compared over a longer distance, such as the mine to Amarillo, TX, the disparity in favor of the ANR is even larger. *See, e.g.*, lines 2 and 11 of Exhibit III-C-3.

Stratford to Amarillo, TX. The ANR operates some PRB coal trains to destinations or interchange points in Arizona.[33] In the real world BNSF interchanges the loaded trains to UP at {

}, and thence its own line between Stratford and Vaughn via Dalhart, TX and Tucumcari, NM.[34] The ANR operates these trains between Stratford and Vaughn via its own (constructed) route through Amarillo, TX and Texico and Clovis, NM. The ANR has no need for two routes between Stratford and Vaughn and, consistent with the *Coal Rate Guidelines*, has chosen to build on the route with the highest traffic density.

The ANR's route between Stratford and Vaughn via Amarillo is 91.4 miles longer than UP's route via Tucumcari (317.7 miles for the ANR route versus 226.3 miles for the UP route). None of the ANR's coal trains carrying PRB coal to destinations in Arizona moved during the RTC simulation period, so AEPCO is unable to compare the ANR's transit times for these trains with real-world BNSF or BNSF/UP transit times. However, 91.4 miles of additional distance is not significant distance for trains that move a total of more than 1300 miles in each

[33] The destinations involved include AEPCO's Apache plant, Tucson Electric Power's Sundt power plant served by UP west of Cochise, and several power plants served by BNSF west of Defiance, NM.

[34] The empty coal trains use a different route between Dalhart and Pueblo, operating via trackage rights over BNSF's line via Trinidad, CO. The ANR does not need two routes for these trains, so its empty trains use the reverse route of the loaded trains, via Amarillo, Stratford, Las Animas Jct. and La Junta.

direction in the case of trains moving to/from Defiance, and more than 1450 miles in the case of trains moving to/from Cochise. In addition, the transit-time differences for coal trains moving between the PRB mines and the intermediate point of Amarillo shown in Exhibit III-C-3 are such that it is very likely that the transit times for ANR coal trains moving between the PRB and Defiance or Cochise are lower than BNSF's or BNSF/UP's real-world transit times. The inescapable conclusion is that this reroute is also reasonable and consistent with customer service requirements.

All of the ANR's capital and operating costs resulting from its use of the longer route between Stratford and Vaughn have been accounted for in the DCF Model. This reroute is entirely internal to the ANR (it does not involve any interchange points with either UP or BNSF), and neither UP nor BNSF will incur any additional costs (such as costs for new crew terminals) as a result of this reroute.

iii. FXE Coal Reroute

BNSF handles a coal movement to El Paso, TX that it interchanges to the FXE for delivery to destinations in Mexico. This movement originates at {

}

In the Base Year BNSF moved these coal trains to El Paso via

{ }. The ANR

receives these trains in interchange from BNSF at { } (a point on its real-world route of movement) and moves them to El Paso via {

}, Amarillo and Vaughn. The distance from {

}. Thus the ANR's route is { } miles longer than the route used by BNSF in the Base Year. However, AEPCO's RTC simulation shows that the ANR cycles these trains between { } and El Paso faster than the real-world BNSF does. *See* Exhibit III-C-3, line 9. This reroute involves cross-over traffic, but the traffic is interchanged with BNSF at a point on the real-world route of movement {

}.

Rerouting these FXE coal trains will not cause BNSF to incur any additional operating costs (for example, costs involved in setting up a new crew-change location). The interchange between the ANR and FXE occurs at the same location in El Paso where BNSF and FXE interchange these trains. All of the facilities needed to operate the trains via the ANR's route (including a spur to the FXE interchange at El Paso) are constructed by the ANR, and all of the operating costs resulting from using the longer routes are accounted for in the ANR's annual operating expenses.

Given the facts described above, the ANR's internal reroutes are reasonable and meet the shippers' needs. *See AEP Texas* at 10; *WFA/Basin II* at 11.

b. Fueling of Locomotives

As described earlier, the ANR re-fuels the road locomotives on all trains that stop at one or more of its five inspection/fueling yards for a 1,000-mile or 1,500-mile car inspection. The road locomotives on trains that do not stop at one of the ANR's inspection/fueling yards (and some coal trains that move through more than one yard) are fueled on other railroads and do not need to be fueled while on the ANR.

Permanent fueling platforms or stations are provided at each of the yards where fueling is performed except Texico Yard; the locomotives on intermodal trains that originate at Texico are re-fueled at Texico Yard by tanker truck (sometimes referred to as direct-to-locomotive or "DTL" fueling), as are some trains that require re-fueling at West Vaughn Yard. All of the locomotives on westbound empty coal trains moving through Guernsey Yard are removed from the trains and fueled at separate fueling/servicing facilities. Re-fueling of eastbound loaded coal trains at Guernsey is performed at a mainline fueling facility. The switch/work train locomotives stationed at each yard are also fueled at that yard. Helper locomotives are fueled by a contractor using tanker trucks.

c. Car Inspections

i. Inspection Locations

As described above, the ANR conducts 1,000/1,500-mile inspections of most trains moving over its system at one or more of its five inspection/fueling yards. All empty coal trains moving through Guernsey, North Amarillo and/or

West Vaughn receive a 1,500-mile extended-haul inspection at one or more of these yards. Some loaded trains originating at Signal Peak Mine, MT are also inspected in the loaded direction at Guernsey. Loaded Montana and Wyoming coal trains that move through Amarillo en route to power plants in Arizona are also inspected at the ANR's West Amarillo Yard; loaded coal trains interchanged to BNSF at Amarillo are not inspected at West Amarillo as they are inspected by BNSF after they leave the ANR system. Non-coal trains moving in both directions on the replicated BNSF Transcon are inspected at West Vaughn (except for certain eastbound intermodal trains that originate or terminate at Texico, NM).

All westbound non-coal trains are inspected by the ANR at West El Paso. Only eastbound non-coal trains that move via Vaughn are inspected at by the ANR at West El Paso. Eastbound non-coal trains that are interchanged to the residual UP at El Paso are inspected by UP after they leave the ANR system. Empty coal trains received in interchange from FXE at El Paso are inspected at the interchange yard before departing El Paso.

The ANR receives some intermodal trains in interchange from BNSF at Defiance, NM (eastbound trains) or Amarillo, TX or Texico, NM (westbound trains) which, in the real world, BNSF block-swaps at its yard at Clovis, NM. The ANR designates these trains as extended-haul trains under FRA rules, and inspects and fuels them at its Texico Yard (located about six miles east

of Clovis) after it performs similar block-swapping operations.[35] The ANR performs these functions at Texico Yard because it is inefficient to stop the trains at its West Vaughn Yard for inspection and refueling when it can perform these functions at Texico where the block-swapping occurs and new outbound trains are made up. These intermodal trains warrant treatment as extended-haul trains (thus permitting inspection every 1,500 miles rather than the "standard" 1,000 miles) because they operate intact, in both directions, between Los Angeles-area port facilities or yards and Texico or between points such as Houston or Kansas City and Texico, with no intermediate classification, pickups or setouts en route.[36]

ii. Inspection Procedures

The ANR conducts 1,500-mile inspections of coal trains and 1,000-mile inspections of non-coal trains (other than the eastbound intermodal trains described in the previous section) using state-of-the-art procedures, while complying at all times with FRA-mandated safety and inspection rules. It uses four-person inspection crews, with one crew member on each crew serving as foreman. These crews are on duty three shifts per day, seven days per week at

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[35] All other eastbound non-coal trains, including intermodal trains, are interchanged to BNSF at either West Amarillo or Texico.

[36] *See* e-workpaper "long trains.pdf" which is a recent article from BNSF's employee news. BNSF may not have designated these eastbound intermodal trains as extended-haul trains because it inspects them along with other trains using the Transcon at Belen, which is less than 1,000 miles from the L.A. area port facilities. For example, the distance from the Port of Long Beach, CA to Clovis is 1,226 miles.

each of the ANR's five inspection/fueling yards. Three inspection crews are on duty at Guernsey Yard, two crews are on duty at North Amarillo Yard, one crew is on duty at Texico Yard, nine crews are on duty at West Vaughn Yard, and five crews are on duty at West El Paso Yard.[37]

Gravel roadways are provided between each of the yard relay tracks where inspections are performed. Each inspection crew stationed at a yard is equipped with four low-slung, four-wheel ATV-type vehicles from which the inspectors can inspect cars at wheel/truck/air hose level which minimizes the need to dismount from the vehicle. The vehicles carry spare parts, such as brake shoes and air hoses. Some parts are also placed periodically adjacent to the rails on the inspection tracks for ready availability. Coupler knuckles are rarely replaced during 1,500- or 1,000-mile inspections and can be transported to a specific car needing a knuckle by a company pick-up truck as needed. One car inspector, each with an ATV, is placed on each side of the train at the front of the train and one inspector (again each with an ATV) is placed on each side of the train at the rear. The inspectors meet in the middle as the inspection progresses.

As described earlier, six hours of dwell time have been allotted at Guernsey Yard for empty coal trains for inspection and other functions, which is consistent with the approach used for the SARRs involved in other recent BNSF coal rate cases, and three hours of dwell time at all other inspection points for

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[37] One of the 24/7 inspection crews based at West El Paso Yard is taxied to the ANR/FXE El Paso interchange yard to inspect empty coal trains as needed.

trains requiring inspection. The dwell time at Guernsey includes three hours for the equivalent of a full initial-terminal inspection of the ANR's long coal trains, and the dwell time at the other inspection yards includes two hours for the actual inspection. These inspection time allotments are conservative given the deployment of the four-person inspection crews as described above. Additional dwell time is allotted at each yard to remove bad-ordered cars from trains and insert spare/repaired cars.[38]

d. Train Control and Communications

i. CTC/Communications System

The facilities reflected in the ANR's operating plan include a Centralized Traffic Control ("CTC") system covering the ANR's main lines south of Huntley/Jones Jct., MT This system includes remotely controlled power switches for all main-track crossovers, between single main tracks and passing sidings, and between main tracks and yard/interchange track leads, with appropriately-spaced wayside signals. Trains can operate in either direction on any track covered by the CTC system, which provides maximum flexibility and capacity. Just as BNSF and UP control all system train operations using centralized dispatchers at their control centers in Fort Worth and Omaha, all ANR train operations are controlled by centralized dispatchers located in the ANR's headquarters building at North Amarillo. This includes the "dark" main line (with

[38] FRA "blue flag" rules prohibit the switching of cars in or out of a train while inspections and locomotive fueling are being performed.

no signals or power switches) between Laurel and Walter Jct., MT, and the ANR's branch lines, which are CTC in part and dark in part. The centralized dispatchers control train operations on the dark portions of the railroad by means of radio communications and track warrants.

Communications among dispatchers, train crews, track inspectors and supervisory field personnel are conducted using radios connected to the ANR's fiber optic/microwave system (described in Part III-F-6 below). The fiber optic/microwave system is also linked with the CTC system. Each train crew, track inspector and field operating and maintenance-of-way supervisor also has a company-issued wireless (cell) phone for emergencies.

The Failed-Equipment Detectors, or FEDs, installed at appropriate intervals along the tracks as shown in Exhibit III-B-1, broadcast a local radio signal to the crew on the affected train. If a set-out is required, the train crew uses one of the double-ended setout tracks which are located on either side of each FED (one on each track in areas with two main tracks, *i.e.*, a passing siding).

ii. Dispatching Districts

The ANR's dispatchers are stationed at its North Amarillo headquarters. The railroad has nine dispatching districts or "desks." Each desk is manned by one dispatcher three shifts per day, seven days per week. Each dispatching desk is responsible for dispatching trains, inspection vehicles and work equipment in a defined district, which includes both main lines and associated branch lines (if any). The dispatching districts are as follows:

Desk 1 – Huntley/Jones Jct., MT to Campbell, WY (241 miles plus Dutch and Campbell Branches; MRL dispatches the segment between Laurel/Mossmain and Jones Jct., MT)
Desk 2 – Campbell to E. Guernsey, WY (172 miles plus Reno Branch)
Desk 3 – E. Guernsey to Brush Center, CO (208 miles)
Desk 4 – Brush Center to La Junta, CO (280 miles)
Desk 5 – La Junta to Amarillo, TX (254 miles)
Desk 6 – Amarillo to Vaughn, NM (242 miles)
Desk 7 – Vaughn to Defiance, NM (250 miles plus Lee Ranch Branch)
Desk 8 – Vaughn to El Paso, TX and Mossmain to Walter Jct., MT (262 miles)
Desk 9 – El Paso to Cochise, AZ (233 miles)

The dispatchers in each district should have no problem handling the associated volume of train movements. The ANR's operations are highly repetitive. It moves only complete trains with no intermediate switching (pick-ups or set-outs), no local or wayfreight trains, and no passenger or commuter trains. It also uses modern, computer-aided train control technology and communications, which makes it possible for one dispatching desk to control operations in geographically separate areas (as with the ANR's Desk 8).

The nine dispatching desks are located in the same room in the North Amarillo headquarters building. Modern computer-assisted dispatching technology, combined with close physical proximity, enables the dispatchers at the adjacent desks to communicate with each other quickly and easily. Thus, the territories can be rearranged temporarily, so that (for example) Desk 1 can cover part of Division Desk 2's normal territory, or vice versa, as necessary.

iii. PTC Implementation Under RSIA

Under the Rail Safety and Improvement Act of 2008, commonly known as RSIA, Class I rail carriers are directed to equip trains that operate over lines that carry regularly scheduled intercity or commuter rail passenger trains and/or poison or toxic-by-inhalation hazardous materials (as defined in DOT regulations) with positive train control ("PTC") systems by December 31, 2015. This is three years before the end of the 10-year DCF period applicable to the ANR, which qualifies as a Class I railroad based on its annual revenue. The ANR does not carry any intercity passenger or commuter trains, but its traffic group does include a relatively small volume of toxic-by-inhalation hazardous materials as defined by applicable DOT regulations that move over several of its lines.[39] The ANR will thus fall under RSIA's PTC requirements.

Under RSIA, each Class I rail carrier that handles the listed categories of trains/traffic must submit a plan for implementing a PTC system no later than April 16, 2010. Notwithstanding the approaching date for submitting PTC compliance plans, implementation remains uncertain. The Class I railroads, including BNSF and UP, have not yet made their implementation plan filings. It is also quite possible that the December 31, 2015 deadline for installation of PTC systems will be modified.

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[39] *See* e-workpaper "TIH Summary Table.xls," level "Density," for details on the volumes and the ANR lines over which the TIH materials move.

AEPCO's operating and engineering/maintenance-of-way experts are familiar with the status of PTC technology. The Class I railroads are experiencing difficulty in coming up with feasible, cost-effective PTC systems, and have challenged the FRA's current rulemaking proposal on PTC systems as unworkable and cost-prohibitive for the railroad industry.[40]

Other publicly-available information confirms that the railroads' implementation of PTC is encountering numerous obstacles. The major technical obstacles are developing braking software algorithms to stop trains of different weights and lengths, freeing up radio bandwidth for the required communications, and interoperability between railroads whose tracks regularly host other railroads' locomotives (including locomotives that are not PTC-equipped).[41]

In August of 2009, BNSF CEO Matt Rose stated that his company would ask Congress to scale back the PTC implementation requirements of RSIA. *See* e-workpaper "Bloomberg PTC Article.pdf." Amtrak recently stated that the cost of PTC implementation on its routes "may be so high as to not be undertaken

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[40] *See, e.g.*, the Comments of the Association of American Railroads filed August 20, 2009, in Docket No. FRA-2008-0132, *Positive Train Control Systems*. On January 12, 2010, the FRA adopted final rules on PTC implementation, which does not differ materially from the rules as initially proposed.

[41] John Dodge, *Railroad Safety at What Price?*, Design News, December 8, 2008 (*see* http://www.allbusiness.com/print/11783115-1-22eeq.html). In the same article, AAR spokesman Tom White stated that "the technology is not ready for implementation. There's so many variables given all the technical issues to be resolved . . . we can't say with confidence when PTC will be implemented." BNSF's director of corporate communications also stated that "[w]e do have a rollout plan, but I would not be comfortable in stating the time frame." *Id.*

and therefore result in the elimination of Amtrak service," and Amtrak and the freight railroads are pressing the White House and the FRA to scale back and delay the FRA's proposed PTC implementation rules because of the extremely high cost of implementation (up to $24 billion over 10 years) and because an internal FRA analysis found that the cost of the proposed rules would far exceed their benefits.[42]

More recently, on January 12, 2010, AEPCO Witness Reistrup attended a meeting of the Transportation Research Board's AR030 Railroad Operating Technologies Committee in Washington, DC (Mr. Reistrup is Chairman *Emeritus* of that committee). He heard nothing at the January 12 meeting to indicate that the freight railroads (much less the transit industry) will be able to meet the December 31, 2015 deadline by which PTC systems must be in place under RSIA in its current form. The technical difficulties with PTC technology are not close to being resolved, and in fact the technology needed for interoperability of PTC systems among different railroads has not yet been developed. The AAR representative who spoke at the meeting noted the FRA's estimate that the costs of PTC outweigh the benefits by 16 to 1. Although the freight railroads continue to publicly express a commitment to meeting the 2015 deadline if necessary, Mr. Reistrup thinks it highly unlikely that public transit

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[42] *Safety Costs Chafe Railroads*, Wall Street Journal, October 26, 2009, reproduced in e-workpaper "WSJ10.26.09.pdf."

(commuter rail) agencies will be able to do so due to a lack of funding.[43] This, along with the continuing technical issues, is likely to result in modification of the PTC requirements and postponement of PTC implementation.

Given these uncertainties, including the open questions on PTC technology and the likelihood that the current PTC implementation date under RSIA will be postponed, AEPCO has not included any capital or direct operating costs for implementation of the PTC requirements under RSIA in its SAC analysis.[44] However, in recognition that under current FRA requirements the ANR will have to submit a PTC compliance plan to FRA by April 16, 2010 and subsequently install a PTC system, AEPCO's operating and engineering experts (Messrs. Smith, Schuchmann, Whitbred and Davis) have provided for an inter-departmental team of ANR personnel to put together a compliance plan and otherwise prepare for PTC implementation. The PTC Compliance Group is described in more detail in Part III-D-3-a-i-b below.

e. Miscellaneous Aspects of the Operating Plan

Other elements of the ANR operating plan are described in Part III-D below. These include locomotive maintenance facilities and procedures, equipment maintenance facilities and procedures, and operating personnel

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[43] Mr. Reistrup, who served as Amtrak's second President in the 1970's, has worked closely with a number of public transit agencies, particularly in his most recent position with CSXT as Vice President-Passenger Integration, and is familiar with their views on PTC implementation.

[44] The capital and other cost implications of PTC compliance are discussed in more detail in Part III-F-6 below.

requirements – including Train & Engine ("T&E") crews and non-train operating personnel involved in field supervision, yard operations, and mechanical functions. As described in Part III-D-4, the ANR's maintenance-of-way plan has been carefully coordinated with its operating plan and is fully consistent with the operating plan.

f. Differences in Operating Plan Prior to Start-Up of Operations North of Mossmain, MT

The ANR will not initially construct the line between Mossmain and Walter Jct., MT, which it will use to serve the new Signal Creek Mine, and will not start operating over that line until January 1, 2012.[45] The ANR operating plan described above is designed for operations during the peak traffic year in the DCF period (2018), and thus covers operations over the entire system in that year (including the line north of Mossmain). The changes in the operating plan that are appropriate to reflect the ANR's facilities and operations during the first three years of the railroad's existence, when it will not conduct any operations north of Mossmain, are summarized below.

1. Elimination of train operations north of Mossmain. No train operations will be conducted on the main line north of Mossmain during the first three years of operations by the ANR (2009-2011). Thus, the ANR does not incur

[45] The ANR will, however construct the Dutch Branch serving the Spring Creek and Decker Mines at the same time it constructs its lines east/south of Dutch, and will commence operations over that branch and the other lines on January 1, 2009.

any operating expenses for such trains during this period, and the operating expenses for these trains based on the RTC Model simulation of the peak-year, peak-period operations should be removed to reflect the ANR's annual operating expenses in 2009-2011.[46]

2. Elimination of train crews and other operating personnel related to operations north of Mossmain. The T&E crews based at Laurel, MT would not start operating in turn service to Signal Peak Mine until 2012. This would result in a reduction of four T&E crew members in those years. *See* e-workpaper "ANR Crews and Ovenights.xls" for details of this calculation.

3. Elimination of MOW employees and equipment. Deferral of operations start-up north of Mossmain until 2012 enables the ANR to defer hiring five maintenance-of-way employees and the acquisition of a hi-rail truck for one field track crew until 1/1/12, as well as certain contract-maintenance costs. Details are provided in Part III-D-4-i below.

4. Elimination of inspection of eastbound loaded trains at Guernsey. Since no Signal Peak coal trains move via the ANR in 2009-2011, there would be no need to inspect any loaded trains originating at Signal Peak Mine at Guernsey in these years.

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[46] AEPCO has not gone to the time and expense of re-running the RTC Model to reflect the trains that operate during the peak period of 2009, 2010 or 2011. Obviously, if fewer trains operate on the ANR system, less congestion would occur and the remaining trains should operate at faster transit times.

5. Change in Dispatching Districts. Dispatching district/desk No. 8 would be modified by eliminating the territory between Mossmain and Walter Jct./Signal Peak Mine in 2009-2011. This would not result in any reduction in dispatching personnel costs. (Similarly, the territories covered by the ANR's field supervisory Operating personnel would be smaller during the ANR's first three years of operations, but no personnel reductions would result.)

6. Road Locomotives. The ANR's road locomotive requirements would be reduced by five units, based on a pro-rated reduction of locomotive horsepower hours for the trains that operate north and south of Mossmain.

III. D. OPERATING EXPENSES

This Part describes the ANR's annual operating expenses for equipment, personnel, general & administration, information technology, maintenance-of-way, loss and damage, insurance and ad valorem taxes, as well as the development of the related service units and costs. The expert witnesses responsible for the evidence in this Part include Paul Smith (locomotive requirements and operating and general & administrative personnel/equipment), assisted by Walter Schuchmann and Paul Reistrup; Joseph Kruzich (information technology requirements/costs); Philip Burris (operating statistics, crew requirements, locomotive and freight car requirements, fuel costs, personnel compensation, equipment lease/maintenance costs and operating unit costs, loss and damage, insurance and ad valorem tax costs); and Gene Davis (maintenance-of-way costs).

Mr. Schuchmann developed train transit/cycle times from the RTC Model simulation of the ANR's operations, described in Part III-C above. The RTC Model output was directly used to calculate the ANR's locomotive hours and car hours for the peak week of the 2018 peak year. The annualized operating statistics for the peak year were developed using the methodology accepted by the Board in *WFA/Basin I* at 33. Locomotive unit miles and car miles were calculated

for all trains moving in the peak year.[1] The locomotive and car statistics were then indexed to the first year in the DCF analysis (2009) based on the ratio of first year tons divided by peak year tons, calculated separately for coal, agricultural, consumer and industrial traffic.[2] The resulting statistics were utilized to determine overall locomotive requirements and car ownership requirements, as shown in e-workpapers "ANR Operating Statistics.xls" and "ANR Car Cost.xls."

The actual locomotive and car hours and associated expenses derived from train transit/cycle times for any year would be lower than those presented here because the average number of daily trains containing ANR traffic moved during each year from 2009 forward is less than the daily trains moved by the ANR during the peak one-week period of the 2018 peak year. Thus the ANR's transit/cycle times should be faster on a daily average basis for the entire year than as compared to the peak week.

The ANR's annual operating expenses for its first year of operations are shown in Table III-D-1 below.

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[1] Development of the locomotive miles, car miles, locomotive hours and car hours is shown in e-workpaper "ANR Peak Year Service Units.xls." Development of T&E crew requirements is shown in e-workpaper "ANR Crews and Overnights.xls."

[2] Consumer traffic is comprised of intermodal and automotive traffic, and industrial traffic is comprised of all other non-coal traffic.

TABLE III-D-1 ANR 2009 OPERATING EXPENSES ($ Millions)	
Locomotive Lease	$ 33.2
Locomotive Maintenance	$ 38.2
Locomotive Operations	$ 266.2
Railcar Lease	$ 80.9
Materials & Supply Operating	$ 1.5
Train & Engine Personnel	$ 120.2
Operating Managers	$ 49.3
General & Administrative	$ 28.3
Loss & Damage	$ 2.7
Ad Valorem Tax	$ 18.7
Maintenance-of-Way	$ 60.2
Trackage Rights	$ 0.1
Third Party Coal Loading Fees	$ 2.0
Intermodal Lift Cost	$ 2.4
Texico Train Expense Additive	$ 0.1
Insurance	$ 12.8
Startup and Training	$ 35.4
Total[1]	**$ 752.1**

[1] Total may differ slightly from the sum of the individual items due to rounding.

1. Locomotives

The ANR's peak-year locomotive requirements are summarized in Table III-C-3 in Part III-C above. The ANR uses two types of locomotives: GE ES44-AC locomotives for road service (including helper service), and EMD SW1500 locomotives for yard switching and work-train service. The ANR needs a total of 336 ES44-AC locomotives to transport its year 2018 trains (including helpers and spares), and a total of 15 SW1500 locomotives for non-road (switching) service.

a. **Leasing**

The ANR leases all of its locomotives. Locomotive lease costs were determined as follows:

ES44-AC road locomotive lease costs are based on a UP lease, effective { }, for this type of locomotive. The annual average lease cost stated in 2009 dollars for this lease equals ${ } per unit. *See* e-workpaper "ANR Loco Lease 20yr.xls," sheet "UP 2008-E." BNSF also provided a lease agreement for the acquisition of ES44-AC locomotives, which became effective { }. The annual average lease cost per ES44-AC unit stated in 2009 dollars equals ${ }. *See* e-workpaper "ANR Loco Lease 20yr.xls," sheet "Lease 2006-D."

The ANR leases its SW1500 locomotives at an annual lease price of $36,433 per unit. This lease price is developed from an article in the June 2008 issue of *Railway Age*, titled "2008 Guide to Equipment Leasing."[3] Application of this annual lease payment to the 15 SW1500 locomotives results in an annual lease payment of $546,495 in 2009.

As explained in Part III-C-2-c-ii above, AEPCO's experts used a road locomotive spare margin of { }% for ES44-AC locomotives, based BNSF's locomotive maintenance agreement with GE Rail Services and its actual experience

[3] *See* e-workpaper "Locomotive Cost.pdf." The lease price for SW1500 locomotives ranges from $75 to $125 per day. Using the average price of $100 per day, indexed to 1Q09 using the AAR equipment rents index, produces an annual lease payment of $36,433.

as shown in the materials produced in discovery. AEPCO's experts also applied a peaking factor, as mandated by the Board in *WFA/Basin I*, to arrive at the ANR's total annual road locomotive requirements. The peaking factor equals 1.057 and is equal to the trains moving in the October 15 to 21, 2018 peak week divided by the average number of trains moving per week during the 2018 peak year.

b. <u>Maintenance</u>

The ANR's locomotives undergo FRA-required 92-day inspections and minor repairs at two locations: Guernsey Yard and North Amarillo Yard. The locomotives are maintained at North Amarillo Yard, where the ANR has provided a locomotive maintenance facility to be used by its locomotive maintenance contractor.[4] Locomotives used for trains that do not operate through Guernsey or North Amarillo are exchanged with locomotives on trains that do operate through these points as necessary to enable them to receive required maintenance, including periodic overhauls. There are two exceptions: locomotives operating between West Amarillo and Defiance or between Vaughn-El Paso-Cochise are inspected and maintained on the residual BNSF or UP.

Annual maintenance costs of $\{ \quad \}$ and $\{ \quad \}$ per locomotive are used for ES44-AC and SW1500 locomotives, respectively. The amount for the ES44-AC locomotives is based on the daily rate BNSF pays GE Rail

[4] The locomotive servicing and maintenance facilities at Guernsey and North Amarillo are shown on pages 9B and 16A of Exhibit III-B-1. They are described in more detail in Part III-F-7 below.

Service, Inc. for maintaining locomotives as per {

}. The amount for SW1500 locomotives is based on the daily rate BNSF pays as per { }. BNSF provided a summary of the maintenance costs associated with these agreements in response to AEPCO's discovery requests. *See* BNSF discovery spreadsheet "Maintcontrsummary.xls" which is included in AEPCO's electronic workpapers for Part III-D.

In addition to normal locomotive maintenance costs, ANR incurs periodic overhaul costs for its locomotives. For ES44-AC locomotives the costs are incurred every eight years and are annualized to equal $\{ \} per locomotive.[5] The cost of the locomotive overhauls and the frequency of their occurrence are shown in BNSF discovery spreadsheet "Maintcontrsummary.xls" included in AEPCO's electronic workpapers.

The total locomotive maintenance cost for the ANR equals $38.2 million in 2009.[6]

c/d. <u>Servicing (Fuel, Sand and Lubrication)</u>

Contractors based at the ANR's five inspection/fueling yards fuel, sand and lubricate locomotives. The trains whose locomotives are to be fueled/serviced at one or more of these yards are described in Part III-C-2-c above.

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[5] See e-workpaper "ANR Loco Overhaul.xls." This same amount is used for overhauls on the 13 SW1500 locomotives.

[6] *See* e-workpapers "ANR Operating Expense.xls" and "Locomotive Cost. pdf."

All locomotives are removed from empty coal trains at Guernsey Yard and fueled, serviced and inspected (as necessary) at separate facilities provided for this purpose. Freshly fueled and serviced locomotives are placed on the empty trains at Guernsey for movement to the mines. Locomotives on certain intermodal trains that require fueling at Texico, and the ANR's helper locomotives, are fueled by tanker truck/DTL service. The locomotives on certain trains (*i.e.*, south/eastbound loaded coal trains interchanged to BNSF at North Amarillo Yard and westbound non-coal trains interchanged to UP at El Paso) do not require fueling while on the ANR system and are fueled by BNSF or UP.

The ANR's fuel cost is based on BNSF's and UP's actual 1Q2009 fuel costs, applied to the characteristics of the trains moving on the ANR system. The components of the ANR's fuel costs are discussed below.

Other ANR locomotive servicing costs (primarily sand and lubrication) are based on a cost of $0.0631 and $0.6101 per diesel unit-mile for ES44-AC and SW1500 locomotives, respectively. This cost was calculated using BNSF's 2008 R-1 with the cost indexed to 1Q09. *See* e-workpaper "III-D-1 Servicing Cost.xls."

i. <u>Fuel Cost</u>

The ANR's fuel cost is based on the price per gallon paid by BNSF at each of BNSF's fueling locations on the ANR route, including the cost of fuel, transportation and taxes. The cost per gallon at each location was weighted based on the maximum number of trains fueled per day at each location. The average

price per gallon for 1Q2009 equals ${ }. *See* e-workpaper "Fuel Consumption Summary.xls," tab "price per gallon" for details.[7]

ii. **Fuel Consumption**

An average fuel consumption rate for the ANR was also developed by applying BNSF's and UP's 2008 URCS fuel consumption factors per locomotive unit mile and gross ton-mile to the ANR's corresponding LUM and GTM statistics during the peak period of the peak year. The resulting fuel consumption rate for the ANR's trains equals 2.39 gallons per locomotive unit mile. *See* e-workpaper "Fuel Consumption Summary.xls" for details.

2. **Railcars**

a. **Leasing**

The ANR uses a mixture of railroad-provided cars and private cars. For railroad-provided cars, AEPCO developed car costs using three different approaches. First, for non-coal traffic moving in cars owned by foreign roads, car costs are based on time and mileage by car type developed from BNSF's and UP's 2008 R-1, depending on which railroad moved the traffic in the Base Year.

Second, for non-coal traffic moving in BNSF or UP equipment, an annual full service lease cost was developed for each car type from information

[7] As shown in this workpaper, in those instances where BNSF fueling does not occur at the same location as it does on the ANR, BNSF's fuel price for the next closest location is used.

provided by BNSF and UP in discovery or from publicly available sources.[8] A weighted annual car cost for each car type was then developed based on the percentage each car type moves on the ANR system. The weighted average annual car cost was then converted to a cost per hour and cost per mile and applied to the car hours and car miles for the 2018 peak-year trains.

Third, for ANR-provided coal cars, car lease payments are based on annual full service lease costs developed from the June 2008 Railway Age Guide to Equipment Leasing. These annual lease payments equal $5,340 and $5,220 for equipped (rotary) gondolas and hopper cars, respectively.[9]

The cars provided by the ANR for non-coal traffic include boxcars, covered hoppers, gondolas, open-top hoppers and flat cars. The annual full service lease cost per car for each car type is as follows:

Boxcars	$3,012
Gondolas	$5,340
Covered Hoppers	$4,080
Open-top Hoppers	$5,220
Flat Cars	$5,316

The lease costs for these car types are also based on the June 2008 Railway Age Guide to Equipment Leasing, with costs indexed to 1Q09 using the AAR Equipment Rents-West Region. *See* e-workpaper "ANR Car Costs.xls."

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[8] *See* e-workpapers "III-D-2 Car Cost.pdf" and "ANR Car Costs.xls" for details.

[9] *See* e-workpapers "III-D-2 Car Cost.pdf" and "ANR Car Costs.xls."

The ANR's freight car requirements include a spare margin of 5.0 percent. This spare margin is based on numerous BNSF transportation contracts with shippers who provide railcars {

}. A 5 percent spare margin was also accepted by the Board in *WFA/Basin I*.

b. Maintenance

As described above, the ANR uses full service car leases for the railcars it provides. As full service lease payments include maintenance costs, no other maintenance costs are included.

Shippers who supply railcars for their ANR movements make their own separate arrangements for maintenance of their cars at existing car repair facilities on or near the route of movement.

c. Private Car Allowances

For ANR coal movements that occur in private cars, the cars are provided per diem and mileage free under the terms of the relevant BNSF and UP transportation contracts and other pricing authorities (that is, the cars are provided free of charge to BNSF or UP and the freight rates reflect the fact that neither BNSF nor UP is incurring car costs). Because the ANR is replacing BNSF and UP with respect to its coal traffic, the ANR also pays no per diem or mileage allowances with respect to coal movements in private cars.

With respect to private cars used for non coal traffic, AEPCO's experts have included a private car charge per car-mile by car type which is applied

to all private car-miles on the ANR. The private car mileage charge by car type was developed from data contained in BNSF's 2008 R-1. *See* e-workpaper "ANR Car Costs.xls."

3. Personnel

The ANR has a traffic group that moves entirely in complete trainloads. Accordingly, the ANR does not need the staffing level of a large, unionized Class I railroad such as BNSF and UP. Each of those railroads was assembled from several smaller railroads that had their own union agreements and work rules prior to their incorporation into the present BNSF or UP system. Consistent with the stand-alone concept of identifying the least-cost, most-efficient feasible hypothetical alternative to the incumbent, the ANR is a non-union railroad that is built from the ground-up to handle a defined traffic group, and is not bound by existing BNSF or UP collective bargaining agreements and crew districts/ assignments.[10] Many of its employees can perform more than one function with appropriate training, without regard to traditional craft boundaries, and its Train & Engine ("T&E") personnel are not restricted to defined crew districts or types of service. This provides considerable flexibility in staffing the railroad, particularly its field transportation, mechanical and maintenance-of-way forces.

AEPCO's experts have developed a staffing plan and associated personnel for the ANR that minimizes cost and takes full advantage of modern

[10] The Board has accepted the concept that SARRs do not need to be unionized. *See TMPA* at 687; *PSCo/Xcel I* at 68, 69.

technology. At the same time, the staffing plan permits the railroad to handle its projected peak traffic volume safely and efficiently while maintaining its facilities in good condition.

a. Operating

i. Staffing Requirements

The ANR's operating personnel include train crew and line supervisory and field employees in the Transportation, Engineering/Maintenance-of-Way and Mechanical departments. The senior Operations staff (headquartered at North Amarillo) reports directly to the Vice Presidents of Transportation, Engineering and Mechanical. For the most part these employees are not included as operating personnel but are included in the ANR's General & Administrative ("G&A") staff, which is described in Part III-D-3-c below. The ANR's operating personnel requirements are discussed here.

(a) Train/Switch Crew Personnel

The ANR requires a total of 918 T&E crew employees to transport its 2009 trains (the number increases to 1,121 in the peak year). This count, which includes helper crews and switch crews based at the ANR's five inspection/fueling yards, is determined by the number of trains moving over the various parts of the ANR system during the peak year; the crew assignments developed by Messrs. Smith and Schuchmann (as described in Part III-C-2-c), and the switch assignments at the ANR's inspection/fueling yards. The RTC Model simulation performed by Mr. Schuchmann was used to confirm that train crews operating in these crew

districts could complete each tour of duty within 12 hours and otherwise comply with the federal Hours of Service law, as amended. Crews were assigned to each train moving in the 2018 peak year and then indexed to 2009 levels using the ratio of 2009 tons to peak-year tons. Details on the development of the ANR's T&E personnel are provided in e-workpaper "ANR Crews and Overnights.xls."

Consistent with Board precedent, T&E crews were developed using the total number of crew starts as determined by the actual train counts over the entire peak year. *See PSCo/Xcel I* at 62. The total crew starts from each crew base were then adjusted upward to reflect the 1.03% re-crewing requirements determined from a review of the number of crews whose on-duty time expired under the Hours of Service law, based on the results of the RTC simulation. The adjusted crew count was then used to determine the total number of T&E crews required using the standard formula employed by the Board to determine how many crews are required to cover the number of crew starts assuming that each crew member is available 270 days a year. *Id.*[11] A similar procedure was used for the 24/7 switch crews. The ANR's switch crews are on duty for 12-hour shifts with each crew assignment consisting of one person who is also available 270 days a year.

[11] The Board accepted crew members' availability to work 270 crew shifts per year in *WFA/Basin II* at 38. This number is not affected by RSIA.

(b) Non-Train Operating Personnel

The ANR's staffing requirements for operating personnel other than train and switch crews and maintenance-of-way ("MOW") personnel are summarized in Table III-D-2 below. MOW personnel are discussed separately in Part III-D-4 below.

TABLE III-D-2 ANR NON-TRAIN OPERATING PERSONNEL	
Position	**No. of Employees**
Vice President – Transportation	1
Administrative Assistants	2
Directors of Operations Control	2
Managers of Train Operations	6
Assistant Managers of Train Operations	8
Managers of Locomotive Operations	6
Managers of Yard Operations	25
Director of Crew Management	1
Crew Managers	9
Dispatchers	40
Director of Operating Rules, Safety & Training	1
Managers of Safety & Training	2
Director of PTC Implementation	1
Administrative Assistant	1
Vice President – Engineering	1
Administrative Assistant	1
Vice President – Mechanical	1
Administrative Assistant	1
Director of Mechanical Services	1
Manager PTC Implementation - Mechanical	1
Manager of Testing & Environmental	2
Equipment Inspectors	352
Total	**465**

The operating staff shown in Table III-D-2 is consistent with that approved by the Board in *WFA/Basin II*, taking into account the geographically

larger SARR system and more diverse traffic group involved in this case. A description of each operating position is provided below.[12]

Vice President – Transportation. This position is responsible for all transportation, customer service, and marketing functions. The Directors of Operations Control report to him. He has two assistants to help him with administrative matters, one for the lines north of North Amarillo and one for the lines south and west of North Amarillo.

Directors of Operations Control. There are two Directors of Operations Control, one for the lines north of North Amarillo and one for the lines south and west of North Amarillo. These individuals are responsible for all train operations in their respective territories and supervise the ANR's field operating managers. The Managers of Train and Locomotive Operations report to them.

Managers and Assistant Managers of Train Operations. The ANR needs six Managers of Train Operations ("MTO"). This position is the equivalent of Trainmaster on a Class I railroad. The MTOs are stationed at Campbell, Guernsey, Denver, Amarillo, Vaughn and El Paso. Their territories are as follows:

Campbell, WY – all lines west/north of Donkey Creek
Guernsey MTO – Donkey Creek to Northport
Denver MTO – Northport to Pueblo
Amarillo MTO – Pueblo to Texico
Vaughn MTO – Texico to Defiance
El Paso MTO – Vaughn to El Paso/Cochise

[12] In *WFA/Basin I* the Board treated Customer Service personnel as Operating personnel and Marketing personnel as G&A staff. However, all of these personnel are more appropriately considered G&A personnel (discussed below). This is how these personnel were treated in *AEP Texas* at 51, 54.

The ANR has eight Assistant Manager of Train Operations positions. These positions are located at Laurel, MT, Dutch, WY, Sterling, CO, La Junta, CO, Amarillo, TX, Texico, NM, Defiance, NM and Cochise, AZ. This enables the MTOs and Assistant MTOs to provide direct coverage at each of the ANR's five inspection/fueling yards, its largest interchange points, and key junction points for trains moving to and from the ANR's principal branch lines.

The MTOs and Assistant MTOs are responsible for train operations in their respective territories and for supervising train crews. They also perform FRA-mandated and other appropriate testing, and respond to and investigate accidents and day-to-day operating problems encountered by any busy railroad. The MTOs and Assistant MTOs technically are not 24/7 positions but, consistent with practice on many railroads, they are on call as needed at any hour of the day or night.[13]

Managers of Locomotive Operations. The ANR needs six Managers of Locomotive Operations ("MLO"), who are responsible for the safe and efficient handling of locomotives and trains by the ANR's engineers. They are based at the same locations as the MTOs, as described above, and their territories are the same as the MTOs' territories. Their duties are similar to those of a Road Foreman of Engines or Traveling Engineer on a Class I railroad. They are FRA-certified locomotive engineers and qualified on their respective territories. They perform

[13] The MTO and Assistant MTO at Amarillo are normally on duty during the second and third shifts, respectively. Two train management positions are based at Amarillo because traffic moves through two different yards at this location, both of which are interchange locations.

FRA-mandated training and observation of engineers in train handling, efficiency testing, and other assistance as needed.

Managers of Yard Operations. One Manager of Yard Operations is based at each of the ANR's five inspection/fueling yards (Guernsey, North Amarillo, Texico, West Vaughn and West El Paso). All of these positions are 24/7 positions. They work in coordination with the strategically-placed MTOs and Assistant MTOs to supervise the movement of power, equipment and trains in the yard and contiguous main lines, as well as the yard switching operations involved in the removal of bad-order cars from trains and the insertion of spare/repaired cars, and block-swapping at Texico Yard.

Given the supervisory coverage at the ANR's five inspection/fueling yards by the Managers of Yard Operations and the MTOs and Assistant MTOs (as well as the ANR's Managers of Operations Control), and the relatively simple operations at these yards, the ANR does not need any separate Yardmaster positions.[14]

Director, Crew Management and Crew Managers. The ANR has an automated crew-management system, as described below in Part III-D-3-c-i-d. Although the automated crew-management system is designed to handle virtually

[14] Nor does the ANR need any crew haulers to transport train crews to/from their trains in yards or relief points in the case of crews that exceed their hours of service. The ANR's T&E personnel transport themselves between their reporting locations and the train, and AEPCO has included an expense for taxi service to ferry crews to and from trains as needed. *See WFA/Basin I* at 42.

all basic crew interactions via automated calling and response systems (including identifying the proper crews for the proper jobs and automatically routing calls from crews to the appropriate dispatcher), the system requires some augmentation by human personnel. Accordingly, the ANR has one Director of Crew Management and two Crew Management positions, one for the lines north of Amarillo and one for the lines west/south of Amarillo. All three of these positions are based at the North Amarillo headquarters.

The Director of Crew Management manages the crew dispatching system, and supervises and assists the Crew Managers as needed. This individual also interfaces with the ANR's IT personnel as needed. The two Crew Managers (which are the equivalent of crew callers on most Class I railroads) are on duty on a 24/7 basis to augment the automated crew-management system. The crew callers' principal duties are to define the necessary jobs, assure the proper operation of the automated crew-calling system, and answer questions. The 24/7 staffing for these positions means a total of nine employees are required to man them. *See* e-workpaper "ANR Personnel Counts.xls."

Dispatchers. The ANR has nine dispatching desks located at the ANR's North Amarillo headquarters, as described in Part III-C-3. Each desk is manned by one dispatcher three shifts per day, seven days per week. A total of 40 employees are required to man the nine dispatcher positions (five north of Amarillo and four south/west of Amarillo) on a 24/7 basis. *See* e-workpaper "ANR Personnel Counts.xls."

Director and Managers of Operating Rules, Safety & Training. The ANR requires one Director and two Managers for this sub-department. The Director is responsible for safety and training on the ANR system. He is also responsible for the ANR's operating timetable, operating rules and related instructions, and for interfacing with the FRA and other government agencies in matters pertaining to rules and operating practices. In addition, he is a member of the ANR's PTC Implementation Group which is described below.

Two Managers of Safety & Training report to the Director. One Manager is responsible for the lines north of Amarillo and the other is responsible for the lines south and west of Amarillo. These individuals monitor safety and conduct training of operating personnel in their respective territories, and assist the Director in the performance of his functions.

Director of PTC Implementation. This position has overall responsibility for implementation of Positive Train Control ("PTC") on the ANR system. The Director of PTC Implementation chairs the ANR's PTC Implementation Group.

As described in Part III-C-3-d above, the 2008 RSIA legislation requires that non-passenger railroads install a Positive Train Control or PTC system on all lines that carry certain toxic or toxic-by-inhalation materials by December 31, 2015, which is three years prior to the end of the DCF period for this case. Each such railroad must also submit a PTC implementation plan by April 16, 2010. The

ANR will transport several of the defined toxic materials over certain of its main lines, so it is subject to the PTC requirements of RSIA.

AEPCO's operating and engineering/MOW experts have concluded that the ANR needs an inter-departmental PTC Implementation Group that is responsible for PTC planning, preparing the PTC implementation plan to be submitted to the FRA in April 2010, and PTC implementation. The PTC Implementation Group is chaired by the Director-PTC Implementation, a position in the Transportation Department that devotes full time to PTC implementation issues. The Director is assigned a full-time Administrative Assistant to deal with administrative issues involving PTC implementation.

The PTC Implementation Group has four other members, two of whom (the Manager PTC Implementation-Mechanical and the Assistant C&S Engineer-PTC) devote full time to PTC implementation and two of whom (the Director, Operating Rules, Safety & Training and the Director-Information Technology) have other duties but are also members of the Group.[15] The representation on the PTC Implementation Group thus covers all substantive areas affected by PTC implementation – Transportation, Mechanical, Safety, Communications/Signals, and IT.

Vice President – Engineering. The Vice President – Engineering is responsible for all engineering matters on the ANR. This primarily involves MOW,

[15] All of these positions are described elsewhere in this Part III-D. The Group members call on others within their respective departments for assistance as needed.

since the ANR does not need to construct any new facilities (other than the Mossmain to Walter Jct. line segment in Montana as well as installation of PTC compliance hardware) during the 10-year DCF period. In addition to supervising the MOW personnel (described in detail in Part III-D-4 below), the Vice President Engineering is responsible for the annual MOW capital and operating budgets, and for interfacing with the contractors involved in program and other maintenance-of-way work. He or she has one assistant who is chiefly responsible for engineering administration and secretarial duties.

Vice President – Mechanical. This Vice President supervises the ANR's mechanical function, which largely involves overseeing the acquisition and maintenance of the ANR's equipment (including rolling stock) as well as administration of the AAR Interchange Rules with respect to the ANR's use of other railroads' locomotives and equipment on trains that operate in interline service. The Vice President-Mechanical is also responsible for the interface with the ANR's locomotive and car maintenance contractors. Like the other Vice Presidents, he or she has an Assistant, who is responsible for mechanical and departmental secretarial work as needed.

Director of Mechanical Services. This position, which reports to the Vice President – Mechanical, is responsible for equipment repairs and for supervision of the Equipment Inspectors at the ANR's five inspection/fueling yards. This individual is also responsible for the day-to-day interface with the

ANR's locomotive and car maintenance contractors, as well as contract administration.

Managers of Testing & Environmental. The ANR has two Managers of Testing & Environmental, who report to the Director of Mechanical Services. One Manager is assigned to the lines north of Amarillo and one is assigned to the lines south and west of Amarillo. These individuals are responsible for testing of materials and environmental compliance, including investigation of any problems involving cars containing hazardous commodities while on the ANR (and related federal reporting requirements).

Manager PTC Implementation-Mechanical. This position, which also reports to the Director of Mechanical Services, is responsible for the equipment aspects of PTC implementation, including in particular the design and configuration of the PTC hardware/software that will be installed in the ANR's locomotives. This Manager is also a member of the ANR's PTC Implementation Group.

Equipment (Car) Inspectors. The ANR's Equipment Inspectors have duties similar to those of Carmen on a Class I railroad. They are located at the ANR's five locations where the railroad performs 1,000-mile/1,500-mile car inspections.[16] All Equipment Inspector positions are manned 24/7. The car inspection procedures are described in Part III-C-3-b above.

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[16] The ANR's coal trains and certain intermodal trains operate as unit trains from origin to destination and thus qualify for 1,500-mile "extended haul" inspections. It is assumed that the ANR's other trains carrying non-coal traffic may not operate as unit trains from initial origin to final destination, and thus that they

The Inspectors at each of the ANR's five car inspection locations are divided into four-person crews, with each crew assigned two small ATV-type vehicles which can travel on the roadways between the inspection tracks during the inspection process. This enhances the productivity of the crews, and the ANR has invested capital for roadways between the inspection tracks to achieve these savings. The inspection vehicles are equipped with tools and parts (such as brake shoes) needed for performing light car repairs.

A total of 352 employees are required to man the inspection crews on a 24/7 basis. The crews are broken down by location as follows:

Guernsey Yard	3 crews, 53 employees
North Amarillo Yard	2 crews, 35 employees
Texico Yard	1 crew, 18 employees
West Vaughn Yard	9 crews, 158 employees
West El Paso Yard	5 crews, 88 employees

The number of crews at each location is based on the maximum number of trains per day requiring inspection at that location during the ANR's peak traffic period in 2018. Empty coal trains requiring inspection at the ANR/FXE interchange yard in El Paso are inspected by one of the inspection crews based at West El Paso Yard; the crew is taxied to the interchange yard on an as-needed basis. Further details on the calculation of the ANR's Equipment Inspector requirements are provided in e-workpaper "equip inspectors.pdf;" *see also* "ANR Personnel Counts.xls."

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do not qualify as extended-haul trains and require inspections at intervals of 1,000 miles or less.

ii. Compensation

Salaries and total compensation for the ANR's operating personnel listed in Table III-D-2 above are shown in Table III-D-3 below.

TABLE III-D-3
ANR OPERATING PERSONNEL SALARIES (2009)

Position	No. of Employees	Annual Salary	Total Salaries
T&E and Switch Crew members	918	$ 93,442	$85,779,756
Vice President – Transportation	1	$346,553	$ 346,553
Administrative Assistants	2	$ 57,660	$ 115,320
Directors of Operations Control	2	$123,900	$ 247,801
Managers of Train & Locomotive Operations	6	$104,415	$ 626,487
Assistant Managers of Train Operations	8	$104,415	$ 835,320
Mangers of Locomotive Operations	6	$104,415	$ 626,487
Managers of Yard Operations	25	$104,415	$ 2,610,375
Director of Crew Management	1	$104, 415	$ 104,415
Crew Managers	9	$ 58,817	$ 529,353
Dispatchers	40	$ 86,833	$ 3 ,473,320
Director of Operating Rules, Safety & Training	1	$123,900	$ 123,900
Managers of Safety & Training	2	$104,415	$ 208,830
Director of PTC Implementation	1	$123,900	$ 123,900
Administrative Assistant	1	$ 57,660	$ 57,660
Vice President – Engineering	1	$346,553	$ 346,553
Administrative Assistant	1	$ 57,660	$ 57,660
Vice President – Mechanical	1	$346,553	$ 346,553
Administrative Assistant	1	$ 57,660	$ 57,660
Director of Mechanical Services	1	$123,900	$ 123,900
Manager of Testing & Environmental	2	$104,415	$ 208,830
Manager PTC Implementation – Mechanical	1	$104,415	$ 104,415
Equipment Inspectors	352	$ 68,097	$23,970,144
Total[1]		**xxx**	**$121,025,291**

[1] Total may differ slightly from the sum of the individual items due to rounding.

Details concerning the compensation levels set forth in Table III-D-3 are included in e-workpaper "ANR Salaries.xls." Compensation for the T&E

personnel and other non-train operating personnel as shown above is derived from BNSF's 2008 Wage Forms A&B and is established at the same levels as those paid by BNSF for comparable positions. The T&E wages include all constructive allowances paid by BNSF to its train and enginemen.

Fringe benefits for all ANR employees are included based on 39.8 percent of wages. This number is based on the average ratio of fringe benefits to total wages paid in 2008 to all railroad operating employees in the states in which the ANR operates, as reported by the Association of American Railroads. This method of determining the fringe benefit ratio was approved by the Board in *WFA/Basin I* at 66. Calculation of this fringe benefit ratio is shown in e-workpaper "ANR Fringe ratio.xls."

The ANR also incurs taxi and overnight expenses for train crews. The number of taxi trips required and the cost per trip are shown in e-workpaper "ANR Operating Expense.xls." This workpaper also shows the number of overnight stays and the cost per stay.

Consistent with Board precedent, taxi trips and overnight stays were developed using the actual train counts (and the crews' related taxi and hotel requirements) over the entire peak year. *See WFA/Basin I* at 48 and *PSCo/Xcel I* at 69. Details of the requirements for each service type are shown in e-workpaper "ANR Crew and Overnights.xls," tab "Hotel Taxi Costs."

The ANR's unit cost for taxi trips is estimated at $1.00 per mile. This amount was accepted by the Board in both *WFA/Basin I* and *PSCo/Xcel I.* The cost

per overnight stay ranges from $32 to $76 and is based on hotel room rates throughout the ANR system. These rates are shown in e-workpaper "ANR Crews and Overnights.xls."

iii. Materials, Supplies and Equipment

Materials, supplies and equipment for operating personnel (other than maintenance-of-way personnel) include office furniture and equipment, office supplies, safety equipment, EOTDs, motor vehicles (including railcar inspection vehicles), forklifts for intermodal container lifts at West El Paso Yard, and tools and supplies. The total annual operating expense for these items equals $1.5 million in the Base Year. Detailed development of these expenses is found in e-workpaper "ANR Materials and Supplies.xls."

The ANR provides a Head End Receiver, equivalent to (and herein referred to as) an End-of-Train Device ("EOTD"), for each of its locomotives. EOTDs are also used on short coal trains destined to the Corrette power plant at Billings, MT, as well as some short non-coal trains that have 25 cars or less. These trains are not operated with distributed power and thus do not have a locomotive on the rear of the train. The ANR's total EOTD requirements, and the annual EOTD cost, are detailed in e-workpaper "ANR Materials and Supplies.xls."

Information Technology ("IT") requirements, including computers and software, are described in Part III-D-3-c-iv below. Maintenance-of-way equipment requirements are described in Part III-D-4 below.

b. Non Operating

The ANR's personnel have all been designated as operating personnel or as General & Administrative ("G&A") personnel. The maintenance-of-way employees, while considered operating personnel, are discussed separately in Part III-D-4. Those employees who might be considered non-operating personnel on a Class I railroad are all included in the G&A staff, discussed below.

c. General and Administrative

The G&A expenses for the ANR include its headquarters (corporate) management and administrative staff, buildings and equipment, and other expenses, including information technology ("IT") requirements. These expenses have been developed on the basis of the experience of AEPCO's Witnesses Smith, Burris and Kruzich. Mr. Smith, who has held senior management positions at UP predecessors (Denver & Rio Grande Western and Southern Pacific), developed the G&A personnel and basic equipment requirements. (Mr. Reistrup reviewed Mr. Smith's staffing and equipment and concurs that they are appropriate.) Mr. Burris developed G&A personnel salaries based on salaries paid to comparable BNSF, UP or (where appropriate) other railroad personnel. AEPCO's IT expert, Joseph Kruzich, developed the ANR's IT requirements and costs including computer hardware systems, software, and support personnel as well as out-sourced needs.

The ANR's engineering staff was developed by Mr. Smith in consultation with AEPCO's engineering and maintenance-of-way witnesses, Willard Whitbred and Gene Davis. The senior Engineering staff is described in the

preceding section on the ANR's Operating employees. As the engineering function principally involves maintenance-of-way, the ANR's other engineering personnel are discussed below in Part III-D-4.

i. Staffing Requirements

The ANR's G&A staff is consistent with the G&A staffing for the SARRs approved by the Board in recent SAC cases, including *PSCo/Xcel*, *AEP Texas* and *WFA/Basin*, taking into account the ANR's geographic scope, traffic group and volumes, and train flows. Many G&A functions do not vary with the number of route-miles or the traffic volume. The repetitive nature of most G&A functions means that a railroad the size of the ANR can achieve greater staffing economies of scale than a small railroad such as the SARR involved in *WFA/Basin*, which had only 310 route miles compared with more than 2,200 route-miles for the ANR.

The ANR's G&A staff is based at North Amarillo, TX, where the ANR's corporate headquarters building is located. This staff covers all executive and administrative functions including marketing, legal services, accounting and bookkeeping, budgeting, financial reporting, payroll, information systems, human resources, secretarial and clerical services, and supervising contractors in the performance of out-sourced functions.

The G&A staff is summarized in Table III-D-4 below. This table does not include the Operating and MOW employees located at the North Amarillo headquarters, who are discussed elsewhere in this Part III-D.

TABLE III-D-4 ANR GENERAL & ADMINISTRATIVE STAFF	
Department/Position	**Employees**
Executive	
Outside Directors	[3 non-employees]
President and CEO	1
Administrative Assistant	1
Directors – Corporate Relations	2
Marketing and Customer Service	
Director – Marketing & Customer Service	1
Marketing Managers	4
Customer Service Managers	14
Finance and Accounting	
Vice President – Finance & Accounting	1
Administrative Assistant	1
Treasurer	1
Assistant Treasurer	1
Cash Manager	1
Controller	1
Asst. Controller – Revenue Accounting	1
Asst. Controller – Disbursements	1
Asst. Controller – Taxes	1
Asst. Controller – Financial Reporting	1
Revenue Analysts/Clerks	5
Director – Budgets and Purchasing	1
Managers of Budgets/Purchasing	2
Manager of Equipment Accounting	2
Director of Internal Auditing	1
Law and Administration	
Vice President-Law & Administration	1
General Attorneys	3
Paralegals/Administrative Assistant	2
Director of Claims	1
Managers of Claims	2
Director – Human Resources	1
Managers of Training	2
Director – Information Technology	1
IT Specialists	12
Total	**69**

(a) Executive Department

The ANR's Executive department consists of the President's Office, as well as the ANR's Board of Directors. The President's office consists of four people: the President, two Directors of Corporate Relations, and an Administrative Assistant. The ANR has a five-person Board of Directors, with two inside and three outside directors.

President's Office. The President serves as the ANR's CEO; the Vice Presidents, who are department heads, report to him. The President is also responsible for the ANR's external relations (other than marketing of its transportation services). This includes community and government relations other than those involving operating, legal and financial matters, which are the responsibility of the Vice President having jurisdiction over each function. The President does not need a large staff to assist him with these functions because the company is not publicly-owned/traded and does not have to compete for business with other railroads in its territory, in particular BNSF and UP.

The two Directors of Corporate Relations report directly to the President and are responsible for community and government relations. They interface with state and local governments in the eight states in which the ANR operates. The Executive Department's Administrative Assistant is also available to assist with corporate relations in addition to assisting the President.

Board of Directors. The President is also a member of the ANR's Board of Directors, and serves as its Chairman. Since the ANR is not a publicly-

owned company, it does not need a large board of directors with numerous outside directors. It has a five-person Board, consisting of the President, the Vice President-Transportation, and three outside directors. The outside directors would likely include a representative of the ANR's customer group, a representative of its investors, and an independent director with no other connection to the ANR.

This size and composition of a SARR's Board of Directors has been approved by the Board in several recent SAC rate cases. *See, e.g., WFA/Basin I* at 44.

(b) Marketing and Customer Service

The ANR's Marketing and Customer Service sub-department reports to the Vice President – Transportation since there is considerable interaction between the Transportation function and the marketing/customer service function. However, these personnel are more appropriately considered part of the G&A staff than as operating employees (as the Board recognized in *AEP Texas* at 51).[17]

Director of Marketing & Customer Service. This position is responsible for the ANR's marketing and customer service functions, which include communications with the railroad's customers and the operators of the coal mines served by the ANR. Although part of the ANR's G&A staff, this position reports to

[17] In *WFA/Basin I* the Board treated the SARR's Customer Service personnel as Operating personnel and Marketing personnel as G&A staff. However, it is more consistent with real-world railroad practice to treat all of these personnel as G&A personnel Consistent with the *WFA/Basin I* treatment, the Vice President-Engineering and the Vice President-Mechanical and their staffs are treated as Operating personnel, like the Vice President-Transportation and his staff.

the Vice President-Transportation due to the need to coordinate with other operating personnel in dealing with the mines and customers. The Director supervises a staff of four Marketing Managers and 14 Customer Service Managers.

Unlike a large Class I railroad such as BNSF or UP, the ANR does not need a large marketing department because it out-sources the bulk of the marketing function. Many railroads out-source their marketing functions to firms that specialize in transportation marketing, such as High Road Consulting. These firms have the resources and personnel to perform most day-to-day marketing functions including direct customer contact. Out-sourcing most of the marketing function is cost-efficient because the ANR has a relatively small number of well-defined traffic flows. Thus, the ANR needs only a small internal staff of four Market Managers who supervise and interface with the marketing contractor as well as the railroad's customers.[18]

Marketing Managers. The four Marketing Manager positions are divided along commodity lines. Two Managers are responsible for coal, one is responsible for intermodal traffic, and one is responsible for the general freight traffic handled by the ANR.

Two Marketing Managers are appropriate to interface with the ANR's coal customers given the number of coal mine origins served by the ANR and its stable number of coal movements. The ANR directly serves 20 mines located in

[18] The concept of out-sourcing part of a SARR's marketing function with supervision/supplementation by a small in-house marketing staff was accepted by the Board in *WFA/Basin I* at 46 and *AEP Texas* at 54.

Montana, Wyoming and New Mexico, and five power plants involving three different customers. It also moves coal in interline service with other carriers that is originated or terminated at off-system origins or destinations. The ANR moves or participates in movements of coal to a total of 77 known utility and industrial customers, including AEPCO, plus four port and transload facilities.[19] The ANR's connecting carriers participate in the marketing effort as regards coal movements that originate or terminate off the ANR system.

One Marketing Manager is responsible for the ANR's intermodal movements. The ANR's intermodal traffic moves in a few discrete flows, and almost all of this traffic moves in overhead service involving origination and termination by BNSF or UP. This means BNSF or UP marketing personnel take the lead in the marketing activity for all of the ANR's intermodal movements.

One Marketing Manager is also needed to handle the ANR's automotive and industrial freight business.[20] This traffic also moves in a few discrete flows and is originated or terminated by other carriers, so that the ANR acts exclusively as a bridge carrier. This again means the other carriers' marketing personnel will lead the joint marketing effort for this traffic. Given the limited

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[19] In addition, the ANR participates in the movement of coal to 14 other customers in the U.S. and Mexico that AEPCO was unable to identify due to limitations in the traffic data and the railroads' failure (despite follow-up by AEPCO) to provide all of the coal contracts requested in discovery.

[20] Details on the ANR's non-coal commodities and traffic flows are provided in e-workpapers "UP Selected Traffic Forecast.xlsx" and "BNSF_WAYBILL 200804_200903_MASTER_SUMMARY_EXTENDED_SELECTION-2Q4Q USDA2.xlsx."

number of freight traffic flows and the substantial marketing participation by other carriers, one in-house Marketing Manager can cover the ANR's marketing needs for this traffic. Again, all of these Marketing Managers will be assisted by the ANR's marketing contractor.

Customer Service Managers. The 14 Customer Service Managers cover three positions which are staffed around the clock seven days a week, and one additional position which is on duty during normal business hours on weekdays. These personnel are responsible for monitoring train locations, maintaining contact with the origin mine operators and destination facilities, answering customers' questions concerning the locations of specific trains and cars, and responding to customers' requests for diversion of trains/cars to different origins or destinations.

This level of staffing is appropriate for the ANR's size and the composition of its traffic group, including the fact that most of the ANR's traffic is interchanged with other railroads that have their own customer service personnel who interact with the same customers. Most customer contacts occur during the second shift which includes normal business hours, so an additional Customer Service position is on duty during those hours.

(c) Finance and Accounting Department

The Finance and Accounting Department is responsible for the ANR's basic financial and accounting functions, including treasury, taxation, revenue collection, disbursements for accounts payable, financial reporting, and budgeting and analysis. It consists of 21 employees and is headed by the Vice

President – Finance & Accounting who (like the other vice presidents) has an Administrative Assistant/Secretary. This department has a Treasurer, a Controller, a Director of Budgets and Purchasing, and a Director of Internal Auditing with various support positions reporting to these sub-department heads.

Many of the ANR's accounting and finance functions are performed using computerized packages and programs now common in the railroad industry, rather than being performed manually by in-house staff employees. These functions and the related programs are described in more detail below, in the discussion of the IT function. Given the advances in financial technology and the ANR's well-defined traffic flows and customer group, the ANR does not require a large finance and accounting staff to handle these functions. The personnel described below are consistent with those accepted by the Board in recent SAC cases including *WFA/Basin* and *AEP Texas*, although several positions have been added due to the ANR's more varied traffic base.

Treasury Function. The Treasury function is headed by the ANR's Treasurer, who is responsible for managing the company's cash and investments and manages the company's cash and interfaces with the outside investment company that manages the ANR's 401K retirement plan.

The Treasurer is assisted by an Assistant Treasurer and a Cash Manager. The Assistant Treasurer advises the Controller's Office on the receipt of funds from customers and the ANR's connecting carriers, monitors and supervises debt payment requirements, and assists the Treasurer in the performance of his

functions. The Cash Manager is responsible for day-to-day management of the company's cash.

Controller Function. This function is headed by the ANR's Controller who is responsible for all accounting functions, including direction of all billing, vendor payment processing, payroll, budgeting, and auditing. As the railroad's chief accounting officer, he advises the Vice President-Finance & Accounting on all accounting issues.

The Controller is assisted by four Assistant Controllers. These positions and their functions are as follows:

The Assistant Controller-Revenue Accounting oversees all customer and interline freight billing and collection, and is also responsible for supervising billing for demurrage, storage, and easements and utility crossings, as well as inputting contract and tariff rate and payment terms into the ANR's billing system.

The Assistant Controller-Disbursements is responsible for overseeing all accounts payable and payroll processing, issuing vendor payments, advising the Vice President and Treasurer on cash requirements, and reviewing all contracts with outside suppliers.

The Assistant Controller-Taxes manages the preparation of the ANR's federal and state income tax returns, state sales and use tax returns, and ad valorem property tax returns. He is the advisor to the Vice President-Finance & Accounting on all tax matters. Actual tax returns are prepared by an outside

accounting firm with property and payroll tax specialists. A financial accounting computer is used to track all of the ANR's physical assets and asset replacements.

The Assistant Controller-Financial Reporting is responsible for overseeing monthly accounting closing of the books, preparation of monthly, quarterly and annual reporting packages for review by the Controller and senior management, and maintenance of the company's chart of accounts. One individual is sufficient to perform the ANR's accounting reporting functions (with assistance from one of the Analyst/Clerks) because the ANR is not a publicly-held company and does not need to prepare reports to the SEC or the equity-investment community.

The four Assistant Controllers are assisted by five Analysts/Clerks, one of which is assigned to each Assistant Controller and an additional position that deals primarily with revenue accounting matters but that can assist any of the Assistant Controllers as needed. They perform routine administrative duties in addition to assisting the Assistant Controllers in the performance of their functions.

Budgeting and Purchasing Function. Consistent with the Board's *AEP Texas* and *WFA/Basin I* decisions, the ANR's budgeting and purchasing function has been centralized within the Finance and Accounting Department. The function is headed by a Director of Budgets and Purchasing, who is responsible for preparation of the annual budget and for the company-wide purchasing function. He is assisted by two Managers of Budgets/Purchasing and two Managers of Equipment Accounting.

One of the Managers of Budgets and Purchasing works primarily on budgeting and one works primarily on purchasing, but they also assist each other with these functions. They assist with preparation of the annual company budget, monitor monthly performance against plan, and prepare forecasts and cost and revenue analyses. One of the two Managers of Equipment Accounting is responsible for managing car hire and receivable issues. The other Manager interfaces with the ANR's equipment repair contractors, and oversees outsourced transactions such as locomotive and freight car repairs.

Internal Auditing. Although the ANR employs an outside auditing firm, consistent with the Board's decision in *AEP Texas* at 56-57, AEPCO's experts have added a Director of Internal Auditing to ensure adequate oversight of the company's various financial and accounting functions given its size.

(d) Law and Administration Department

The Law and Administration Department consists of 25 employees. It is headed by the Vice President – Law and Administration (with assistance from an Administrative Assistant) who is responsible for the ANR's legal affairs including litigation control, risk management and claims, and regulatory compliance. This Vice President is also responsible for other administrative functions including training, human resources and information technology.

Legal/Claims Function. The Vice President-Law & Administration is an attorney and serves as the company's General Counsel. Most of the railroad's legal work is handled by outside counsel, who are supervised by the Vice President

with the assistance of three in-house General Attorneys. Two of the General Attorneys are primarily responsible for claims and litigation; the third is primarily responsible for regulatory and environmental compliance and contract matters. They are assisted by two Paralegal/Administrative Assistants, who also handle departmental secretarial duties.

The legal side of the department is also staffed by a small claims sub-department, consisting of a Director of Claims who is responsible for the administration of claims on a system-wide basis (including supervision of the out-sourced risk and claims management contractor), and two Managers of Claims who provide assistance in investigating claims, and who are also responsible for government safety reporting and representing the ANR in industry associations and safety forums.

Human Resources and Training Function. The ANR's start-up and training needs are met largely by out-sourcing. This means that the primary responsibility of the in-house human resources staff is to interface with the outside contractor and assure that the ANR has a pool of employees that enable it to engage in ongoing operations.

Human Resources lends itself very well to out-sourcing, and plenty of external resources exist to support a small in-house human resources department. Accordingly, the appropriate staffing for the human resources function is a Director

of Human Resources and two Managers of Training.[21] This staff is sufficient to manage recruiting, compliance, compensation and benefits, employee relations, and training since most of these functions will be out-sourced.

IT Function. The ANR's IT systems and associated personnel were developed by AEPCO Witness Joseph Kruzich and reflect the ANR's traffic group and operating plan. Mr. Kruzich has considerable experience with the IT function at Class I and other railroads. The IT systems (described in the next section) are administered by a staff consisting of a Director-Information Technology and 12 IT Specialists. As discussed in more detail in the next section, the ANR does not have a main-frame environment, but rather a NT/PC-based system. This means far less IT effort is required than at a Class I railroad due to the relative simplicity of a NT/PC-based system.

A staff of 13 people (including the Director) is adequate to provide 24/7 coverage with at least one person on duty each shift seven days a week, and seven full-time specialists on duty five days per week during normal business hours. As most of the ANR's application software is available off-the-shelf, very little development and maintenance effort is required.

The primary IT staff function is to trouble-shoot various problems with vendors, coordinate the transportation software applications with the outside vendor (RMI) and the business users, and monitor the network infrastructure.

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[21] These two staff Managers interface with the two line Managers of Safety & Training who are Operating employees that report to the Vice President – Transportation, as discussed earlier.

There will also be occasions when enhancements are required to the crew-scheduling and dispatching systems. The ANR's staff of IT specialists will be active participants in this effort.

The Director oversees the IT department's daily activities, provides senior management with updates on new technology, and advises as to the future strategic direction of the department. This includes formulation of the logical and physical computer architecture plans and assessment of the cost and feasibility of all user requests. The Director also serves on the ANR's inter-departmental PTC Implementation Group, as described in Part III-D-3-a-i-b above, and calls on his Specialists as needed in planning and integrating the IT aspects of PTC implementation.

The 12 IT Specialists perform the following specific functions:

- One Lead RMI Technician - responsible for all RMI applications (RMI is the ANR's principal software vendor/contractor, as described in the next section) and serves as a liaison to RMI and the user Departments. This person ensures that all the users' needs are met in an efficient and timely manner.

- One Help Desk PC Technician - takes incoming calls from the various users and reroutes the call to a Programmer Technician for immediate handling. This position follows-up with the user to make sure the problem has been resolved. This assignment is during regular business hours with an answering machine to take calls during the night and the weekends. These messages are monitored by the on-duty Programmer Technician to assure prompt handling.

- Five Programmer/PC Technicians - a 24/7 position that provides user support in the day-to-day operation of the ANR's operating system and applications, software and computers. These employees provide technical support, including configuring desktops and maintaining network connectivity and printing capability.

- Two Network Engineers - responsible for overseeing network security matters and local area network (LAN) and wide area network (WAN) functionality. These two positions are also responsible for planning, designing and managing transmission facilities and cabling and communications devices, and also handle any telecommunications issues that may occur.

- Two Programmers/Development - responsible for maintaining and upgrading the crew calling and dispatching systems. These employees help manage the crew management, dispatching and accounting systems, and they also are responsible for developing a corporate information web site. The ANR's web site will not be elaborate because its customer base is small.

- One Exchange 2007 Engineer - responsible for messaging design and implementation of the Windows 2007 Exchange (server) environment. Handling the Exchange server is not a full time job, so this position also assists the Director with respect to PTC issues, as well as the PC technicians and network engineers as needed.

ii. Compensation

The salaries and benefits for the ANR's G&A personnel described above are based on comparable and competitive compensation packages presently available in the railroad industry (and in other service industries).

Specifically, annual salaries for the G&A personnel are based (or, in some cases, estimated) on data contained in BNSF's Wage Forms A and B, with several exceptions. Salaries for the President and the three Vice Presidents includes in the G&A staff (as well as the other Vice Presidents who are treated as Operating personnel) are based on the salaries, including bonuses, paid for similar positions by the Kansas City Southern Railway ("KCS") in 2008. As shown previously, fringe benefits for all employees are based on 39.8% of wages.

The G&A staff salaries are summarized in Table III-D-5 below.

TABLE III-D-5 ANR GENERAL & ADMINISTRATIVE STAFF SALARIES			
Position	**No. of Employees**	**Annual Salary**	**Total Salaries**
President and CEO	1	$ 828,653	$ 828,653
Administrative Assistant	1	$ 57,660	$ 57,660
Directors – Corporate Relations	2	$ 123,900	$ 247,801
Director – Marketing & Customer Service	1	$ 123,900	$ 123,900
Marketing Managers	4	$ 111,290	$ 445,160
Customer Service Managers	14	$ 111,290	$1,558,059
Vice President – Finance & Accounting	1	$ 262,296	$ 262,296
Administrative Assistant	1	$ 57,660	$ 57,660
Treasurer	1	$ 273,210	$ 273,210
Assistant Treasurer	1	$ 104,415	$ 104,415
Cash Manager	1	$ 104,415	$ 104,415
Controller	1	$ 273,210	$ 273,210
Asst. Controller – Revenue Accounting	1	$ 95,664	$ 95,664
Asst. Controller – Disbursements	1	$ 95,664	$ 95,664
Asst. Controller – Taxes	1	$ 95,664	$ 95,664
Asst. Controller – Financial Reporting	1	$ 95,664	$ 95,664
Revenue Analysts/Clerks	5	$ 91,065	$ 455,324
Director – Budgets and Purchasing	1	$ 123,900	$ 123,900
Managers of Budgets/Purchasing	2	$ 104,415	$ 208,829
Manager of Equipment Accounting	2	$ 104,415	$ 208,829
Director of Internal Auditing	1	$ 123,900	$ 123,900
Vice President-Law & Administration	1	$ 346,553	$ 346,553
General Attorneys	3	$ 123,900	$ 371,701
Paralegals/Administrative Assistant	2	$ 57,660	$ 115,320
Director of Claims	1	$ 123,900	$ 123,900
Managers of Claims	2	$ 104,415	$ 208,329
Director – Human Resources	1	$ 123,900	$ 123,900
Manager of Training	2	$ 104,415	$ 208,329
Director – Information Technology	1	$ 123,900	$ 123,900
IT Specialists	12	$ 91,065	$1,092,779
Total	**69**	**xxx**	**$ 8,553,585**

Details supporting the derivation of the compensation numbers in Table III-D-5 are included in e-workpapers "ANR Salaries.xls" and "ANR

Operating Expense.xls." It should be noted that the numbers in the Total Salaries column in this table may not equal the number of employees times annual salary due to rounding.

iii. Materials, Supplies and Equipment

The ANR owns or leases various types of vehicles and equipment used by its Operating and G&A staffs. Costs for this equipment have been included in the calculation of the ANR's annual operating expenses. *See* e-workpapers "ANR Operating Expense.xls" and "ANR Material and Supplies.xls" for details concerning equipment and supplies (except for IT and MOW equipment and supplies, which are discussed separately below).

Company vehicles are needed at the ANR's North Amarillo headquarters and by field operating personnel. A pool of Ford Explorers (a small SUV with all-wheel drive) is maintained at headquarters for use primarily by the headquarters G&A, Operating and Engineering staffs while traveling to the field on ANR business. Ford Explorers are also needed for the field transportation, mechanical and MOW personnel, and pick-up trucks and ATV-type vehicles are needed for the car inspection personnel. A total of 40 Ford Explorers are needed, including five Headquarters G&A vehicles. Each of the five car inspection locations (the ANR's yards) requires one pick-up truck for use by the inspection crews, and AEPCO's experts have selected a 4WD 4-door extended-cab pickup for use by each yard's car inspectors. A total of 80 4-wheel ATV-type vehicles are

also needed for use by the inspection crews, and two intermodal container forklifts are needed at the West El Paso Yard.

The ANR also needs miscellaneous office equipment and supplies including desks, telephones and janitorial supplies. Details on the miscellaneous equipment are provided in e-workpaper "ANR Materials and Supplies.xls."

iv. Other

(a) IT Systems

The ANR's information technology systems have been developed by AEPCO Witness Joseph Kruzich, its experienced railroad IT expert. Mr. Kruzich reviewed the ANR's operating plan and G&A requirements to determine the railroad's basic computer and communications needs and the kind of support needed by its staff. The IT systems described below enable the ANR to operate safely and efficiently and to perform all administrative functions.

The ANR does not have many of the complex computer system requirements of a large Class I railroad. Although the ANR has more customers than the SARRs in other recent SAC rate cases such as *WFA/Basin*, it does not need to classify cars to any large extent while trains are on its system, it does not have extensive yard switching operations, and it does not provide service to its customers on an individual car basis. It has a maximum of 391 train movements per day, all of which are full-trainload movements, as well as a limited number of local customers and interchange points. It has only multiple-car billing (using the RMI Revenue System to allocate revenues), rather than billing for individual railcars.

All this reduces the complexity of the computer and communication systems required to support operations, and renders unnecessary the expensive mainframe systems that large carriers such as BNSF and UP use. The ANR thus does not require a large data center facility to house mainframe computer systems and associated peripheral equipment. As described below, the ANR's IT system design is NT/PC-based, with outsourcing of many IT requirements to RMI in Atlanta, GA. This ANR's system can be housed in a room approximately 15' x 20', with normal office-environment heating and air conditioning. This room is located in the ANR's North Amarillo headquarters.

Based on the ANR operating plan and G&A staff departments, the capital requirements for IT and communications systems equal $3.2 million. *See* e-workpaper "ANR-Capital Budget.xls." The annual operating cost for IT and related communications equals $12.9 million at 2008 price levels. *See* e-workpaper file "ANR-Operating Budget.xls." Table III-D-6 below shows the capital and annual operating expenses separately for information technology and related communications systems.

TABLE III-D-6
CAPITAL AND OPERATING COSTS FOR ANR IT AND COMMUNICATIONS SYSTEMS

Item	Capital Cost	Operating Expense
Information Technology	$3,167,961	$12,660,886
Communications	$ 43,761	$ 257,461
Total	**$2,281,684**	**$12,918,347**

The ANR's computer and IT communications systems are described below. They have been designed to meet the company's mission-critical technology needs to achieve operating efficiencies, customer satisfaction, optimum staffing,[22] maximum productivity, and safe train operations. The costs shown in the workpapers are based on the ANR's highest daily train counts and number of annual carload transactions.

Transportation System. The key item in the ANR information technology architecture is RMI's Transportation Management Services ("TMS") package. TMS is an integrated system for managing day-to-day rail operations, and is in use on several railroads. It includes modules for yard and inventory control, waybilling, train operations, switching settlements, demurrage, EDI consists, waybills, bill of lading, blocking instructions, work orders, switch instructions, and many other features. This system is outsourced to RMI using frame relay communications from North Amarillo, TX (where the major transactions reporting occurs) to Atlanta, GA, where RMI is located. Field personnel access the RMI system via the internet. The annual operating expense for the RMI system is detailed in e-workpaper "ANR RMI Price Sheet.xls."

Crew Management System. A crew management system is needed to efficiently manage the ANR train crews and equipment. The ANR will purchase a license from PS Technology for the SCAT Client Server system, and related

[22] The ANR's IT personnel requirements are described above in the discussion of G&A personnel. The IT staff size is largely a function of the systems described in this section.

equipment and software (Oracle Data Base). This system provides the capacity needed to schedule crew requirements involving approximately 950 train/engine/ yard employees (peak year) and less than 20 crew-change points over the ANR system. It also minimizes the need for a large staff of crew callers or other crew management personnel. Costs for the crew management system are further detailed in e-workpaper "ANR-Capital Budget.xlx."

Dispatching System. A computerized dispatching system, assisted by 40 human dispatchers on a 24/7 basis, monitors the movement of trains and other equipment at all times, and distributes traffic efficiently across the railroad. The ANR will purchase and implement a PC-based version of the Alstom CTC Dispatching system. This system is similar to the one that is currently being used by the KCS. This system has plenty of capacity to meet the ANR's needs and includes all necessary equipment, installation and on-site tests. A detailed description of the system's capacity is included in e-workpaper "Technology and Communications Budget.pdf."

Revenue Accounting. The ANR needs a revenue system to handle interline settlements for all of its trainload transactions and the multiple-car transactions (the ANR does not move any traffic in less-than-trainload quantities). RMI has a revenue system that meets the ANR's requirements. In particular, the RMI Revenue Management Services ("RMS") is a full-function revenue management system that has been certified by the AAR for Interline Settlement System ("ISS") processing. *See* e-workpaper "Technology and Communications

Budget.pdf." This certification allows railroads using ISS/Connect to participate in the ISS. ISS/Connect provides complex rate management, EDI management, freight billing, support for industry reference files, revenue protection, and additional functionality. The RMS costs are based on the total monthly settlements. The ANR has an estimated 2.6 million carloads annually that are processed through the revenue management system at a cost of $2.8 million. These costs are shown in e-workpapers "ANR-Operating Budget.xls" and "ANR-RMI Price Sheet.xls."

Car Accounting. The ANR needs a receipt and a payable car hire system, because the ANR owns some railcars and uses some railcars provided by its connecting carriers. RMI has a car hire system for receipts and payables that provides the necessary features needed by the ANR to keep track of its cars off-line and foreign cars on-line. This system computes charges due ANR from foreign railroads and the ANR's payables to foreign roads. The system separates car earnings by designated owner groups, issues remittance and settlement summaries, flags non-moving cars and missing junctions, and helps keep track of assets with on-line access to car movement data. The annual operating expense for this system ($467,724) is based on the number of non-private interchange cars handled per month. *See* e-workpaper "ANR-Operating Budget.xls."

General Accounting. The ANR uses the Peachtree MAS 200 package for its general accounting system. Peachtree MAS 200 is an industrial-strength accounting software package that will adequately support all of the ANR's general accounting functions. It is capable of handling high-volume accounting

transactions daily, and has multi-user network capabilities. Peachtree MAS 200 provides financial snapshot and business analysis reporting and has the core accounting features needed to run a medium-size business. The software is designed to run on Windows 2007 and a Windows NT operating system. The system includes a Dell OptiPlex GX280 PC, cables, HP LaserJet 4250tn printer and the Peachtree MAS 200 software. Details are included in e-workpaper "ANR-Capital Budget.xls."

Human Resource Management. The ANR uses Optimum Solutions, Inc.'s NT/PC-based system for human resources. This system covers the ANR's human resource data needs at an affordable cost. The software package includes all basic employee reporting features, employee profile tracking, attendance reports, benefit, insurance and COBRA reports, compensation/job history reports, EEO and citizenship reports, organizational reports, and all OSHA and workers' compensation reports. The system uses a Dell OptiPlex 360 PC, cables, an HP Laser Jet P4015n printer and a Dell PowerEdge 2900 Server. *See* e-workpaper "ANR-Capital Budget.xls."

Network and Router Equipment. The ANR needs networking capability and routers because it has a relatively small number of computers in multiple locations. Networking and router equipment permit these computers to communicate with one another. The ANR needs one router at each field reporting location and two at its headquarters. The ANR's communications network consists of a fiber optic/microwave and commercial telephone system. The costs for these

items are included in the network infrastructure costs discussed elsewhere in this Part and in Part III-F. The IT operating-expense budget for a network computer system for LAN and WAN, routers at various locations, and internet access for headquarters and field locations is shown in e-workpaper "ANR-Operating Budget.xls."

Workstations and Printers. Both desktop and laptop PC's are provided, and included in the ANR's IT costs, with a high-end configuration to run a state-of-the-art operating system while avoiding the need to purchase other applications. One PC is provided for each G&A employee as well as for operating personnel located at headquarters. Additionally, two PCs are provided at each crew change point and the inspection/fueling yard locations where employees are assigned. Laptops are provided for use by employees who are required to travel a considerable amount of their time. The total capital cost for desktop and laptop computers is detailed in e-workpaper "ANR-Capital Budget.xls."

The ANR needs a variety of printers for work orders, safety bulletins and normal office work such as printing contracts, correspondence and reports. A color printer is needed for various maps, charts and diagrams. Printers are also needed in the field and at major interchange locations to print information relating to the work performed there. The equipment needs include a desktop laser printer for each desktop PC, a printer for laptop PCs where needed, one color and two line printers at headquarters, and one line printer at each of the ANR's five inspection/ fueling yards. *See* e-workpaper "ANR-Capital Budget.xls."

Voice and Data Communications. The ANR needs a telephone system and telephone service to handle external and internal telephone activity. This system includes traditional telephones for each administrative employee, the NTS telephone system, a voicemail system and a calling card system. NexPath Telephony Server-NTS Server Rack Mounted Systems is capable of handling 51 outside lines and up to 85 extensions. This system is capable of handling internal calls over the microwave system and external calls from various parties. The external calls consist of local and long-distance telephone servers, 800 services, paging and faxing.

Data telecommunications to support the RMI transportation system from North Amarillo to Atlanta is provided by AT&T. This is a frame relay system that is based on estimated transactions. The internet is used for data communications for all the field offices. The field offices also have internet access to the RMI transportation system in Atlanta. Cellular phones and pagers are provided for employees who need them to perform their work efficiently. *See* e-workpapers "ANR-Capital Budget.xls" and "ANR-Operating Budget.xls" for details on the capital and operating costs for all of these items.

Software Maintenance. Software products such as PC accounting packages that run on a server, and tools such as security software and monitoring software, require payment of annual maintenance fees for support and upgrades. Some of these fees are included in the licensing agreement, such as that for the Optimum Solutions program, which has an annual fee payable for the use of its

product. Other providers have a flat charge for the package with no annual fees, but they will have enhancement upgrade announcements from time to time with a specified charge for the upgrade. The annual fees payable by the ANR are detailed in e-workpaper "ANR-Operating Budget.xls."

Railinc Services. The ANR requires some Railinc services to pass and receive car location information to/from BNSF, UP and its other interchange partners for the various interchange locations. The annual cost for Railinc service is shown in e-workpaper "ANR-Operating Budget.xls."

Network Security. The ANR also needs security software to protect its network from exterior intrusion due to the large amount of data that is transmitted to Atlanta and other parts of the railroad. The system to be used is the Watchguard Firebox X6500e UTM Software Suite. The Watchguard suite offers comprehensive Unified Threat management and is an easily managed firewall abs AV/IPS security appliance for mid-size businesses requiring a secure, private network. The specifications for this system and its capital and operating costs are shown in e-workpapers "ANR-Capital Budget.xls" and "ANR-Operating Budget.xls."

(b) Other Out-Sourced Functions

As described earlier, several functions traditionally performed internally by large Class I railroads can be efficiently out-sourced by the ANR. Consistent with the stand-alone concept of an efficient, least-cost railroad, out-

sourcing is used wherever the economics so justify without sacrificing feasibility or service quality.

Out-sourced functions, in addition to those described in the preceding section, include marketing, initial training of operating employees (discussed in more detail below); several finance and accounting functions, including preparation of income, property and payroll tax returns and financial/account auditing; legal services, including claims administration and investigation; and administration of the company's retirement plan. *See* e-workpaper "ANR GA Outsourcing.xls."

A number of independent accounting, payroll service and other firms have the experience and systems to perform these functions. For example, the payroll service firm Paychex has experience in complying with Railroad Retirement and other railroad-specific tax and regulatory reporting requirements. In the human resources area, regional and industry employers' associations are available as a resource for the ANR's internal human resources staff.

Estimated annual costs have been developed for outsourcing all of the functions described above. Details are provided in e-workpaper "ANR GA Outsourcing.xls."

(c) Start-Up and Training Costs

The ANR's start-up and training costs have been calculated using the procedures approved by the Board in *WFA/Basin I* at 51-54.

Initial training costs for the ANR's train crew personnel amount to $27.3 million. Training for these T&E employees is based on the actual training

cost information provided by BNSF in response to AEPCO discovery requests. *See* e-workpaper "III-D-3 Training and Recruitment.pdf." The components of training costs for train crew personnel include BNSF's {

}.

Based on the information provided by BNSF in discovery, conductors and enginemen both receive { }, enginemen receive { } and conductors receive { }. BNSF's course cost equals ${ } per individual and the train crew wages, including fringes, for enginemen and conductors equals ${ }. Although the recent economic downturn has resulted in BNSF and UP furloughing large numbers of T&E employees beginning in 2008, AEPCO has conservatively assumed that all such ANR employees are new hires who require training.

Calculation of the training costs for the ANR's train crew personnel is shown in e-workpaper "ANR Operating Expense.xls," tab "T&E Training." The average training cost for train and enginemen is ${ } per individual, including tuition, travel and salary as appropriate.

Training for the ANR's dispatchers is based on the training available at Johnson County Community College ("JCCC") in Overland Park, KS. JCCC has a 14-week training course for new untrained dispatchers, which includes four weeks of classroom training and ten weeks of field training. According to the JCCC

website, individuals attending its dispatcher training are responsible for paying their own tuition, room, board and travel expenses. The ANR reimburses each dispatcher $3,498 for training tuition costs.

Training costs for the ANR's MOW employees are based on the actual training cost incurred by BNSF, based on information provided by BNSF in response to AEPCO's discovery requests. *See* BNSF discovery spreadsheet "Rfp 58 – Ttc Training Cost.xls, tab "Engineering, Signal Telecom," included in AEPCO's electronic workpapers for part III-D. MOW personnel training includes the cost of providing the training, which equals ${ } for track and signal employees, respectively. In addition to BNSF's cost of training, {

}. *See* e-workpaper "ANR Operating Expense.xls," tab "Training" for further details on MOW employee training costs.

IT Specialists are paid four weeks' salary to set up the ANR's computer system, a figure that has been accepted in prior SAC cases including *AEP Texas* and *WFA/Basin I.*

Recruiting costs have been added at $1,000 per employee for rank-and-file employees based on the amount accepted by the Board in *PSCo/Xcel I* and *WFA/Basin I.* Recruiting costs for managerial and executive employees equal { } percent of their first year's salary based on information provided by BNSF in discovery. *See* BNSF Bates No. "BNSF_AEPCO_0036444," reproduced in

AEPCO's electronic workpapers for Part III-D. Subsequent annual recruitment and training expenses are based on a 3 percent average annual attrition rate, which is the training failure rate experienced by MODOC Railroad Academy. *See* e-workpaper "III-D-3 Training and Recruitment.pdf."

A total amount of $35.4 million has been provided for initial ANR training and recruiting costs. Further details concerning the development of this figure are included in e-workpaper "ANR Operating Expense.xls," tab "Training." Consistent with *WFA/Basin I*, start-up training and recruitment costs are treated as operating expense in the ANR's first year of operations.

Travel expenses have been included for all ANR employees at the Manager level and higher (except for the Customer Service Managers and the Assistant Controllers, as these positions do not require travel) and for the three outside members of the Board of Directors. Annual travel expenses of $8,000 per employee are included. This amount is based on the most recent available annual survey of corporate travel managers performed by Runzheimer International, which estimates the annual cost of corporate business travel. *See* e-workpapers "ANR Operating Expense.xls" and "III-D-3 Material and Supplies.pdf."

The ANR's other start-up costs are covered elsewhere in Part III of AEPCO's Opening Evidence. These costs include road property investment costs, which are included in the ANR's capital costs, and equipment acquisition. Consistent with the stand-alone principles of unlimited resources and barrier-free entry, the ready availability of materials and equipment is assumed.

4. Maintenance-of-Way

The maintenance-of-way ("MOW") plan for the ANR was developed by one of AEPCO's expert railroad engineering witnesses, Gene Davis, P.E. Mr. Davis is well-qualified to prepare and co-sponsor the ANR's MOW plan and associated costs. He served in Norfolk Southern's Engineering Department for 18 years, from 1984 to 2002, including service as a Track Supervisor, Bridge and Building Supervisor, and Assistant Division Engineer-Bridges. As detailed in Mr. Davis's Statement of Qualifications in Part IV, his primary responsibilities in these positions related to MOW, with particular reference to inspection and repair/maintenance of track, bridges and culverts as well as building maintenance and repair. Mr. Davis was also responsible for the engineering design and management of railroad track structures, condition assessment, contractor supervision, and management of in-house field and office MOW forces involved in both capital and routine maintenance projects. He is an FRA-qualified track inspector.

a. General Approach to Developing the MOW Plan

Prior to preparing the MOW plan for the ANR, Mr. Davis reviewed the discussion of SARR MOW issues in prior Board decisions in SAC cases, including in particular the decisions in *WFA/Basin I* and *II* (whose SARR was situated in part of the same geographic region as the ANR). He followed the precepts set forth in those decisions, allowing for the ANR's substantially larger size than the *WFA/Basin* SARR.

Mr. Davis's MOW plan provides a substantial field staff to perform day-to-day inspection and maintenance activities, supported by a managerial/office engineering staff that reports to the ANR's Vice President–Engineering. Capital maintenance programs are also required during the 10-year DCF period to renew/replace the fixed facilities, including the principal elements of the track structure. The ANR's MOW staff has been structured to include planning, budgeting and contracting related to annual capital programs.[23]

Some maintenance that is considered operating expense is also contracted out, but the vast majority of the day-to-day spot maintenance work is performed by the ANR's field MOW employees with assistance and supervision from the office engineering staff. This includes twice-weekly, FRA-required track inspections, non-scheduled or special inspections necessitated by storms or extreme heat swings, monthly turnout and walking track inspections, annual bridge and culvert inspections, and routine day-to-day maintenance including spot-surfacing and lining rough track areas, repairing malfunctioning signals and power switches, replacing rail and welding track components, replacing broken turnout components, performing minor repairs to bridges, making emergency infrastructure repairs such as those caused by a derailment, replacing a broken rail, joint and frog maintenance,

[23] Consistent with the treatment of program renewal work in other rate cases such as *WFA/Basin I* and *AEP Texas*, all of the ANR's program maintenance work is performed by contractors and the cost of capital programs is accounted for in the DCF model. Under the DCF model, a portion of the ANR's fixed assets are assumed to be renewed each year even though the ANR starts operations with a new physical plant, which means there will be no need for significant program work in the first 10 years of its operations.

bridge and culvert emergency repairs, at-grade highway/rail crossing gate repairs or replacement, and minor vegetation control.

In crafting the ANR's MOW plan, Mr. Davis developed an appropriate field organization and supervisory/support staff for each needed maintenance function given the railroad's geographic scope, terrain, traffic volume, and gross tonnages by line segment.[24] The basic functions include track inspection and routine maintenance, communication and signal inspections, testing and maintenance, bridge/culvert inspection and minor building maintenance, as well as budgeting and administrative support. Mr. Davis also considered the equipment needed to perform each function, as well as the maintenance work (other than capital programs) that appropriately could be contracted out. The staff and equipment described below are those needed to accommodate the ANR's peak-year operations. The employment of some personnel and acquisition of some equipment can be deferred for three years given that the line between Mossmain and Walter Jct., MT will not be placed in service until January 1, 2012.

b. <u>MOW Personnel</u>

The ANR's MOW personnel (employee) requirements are summarized in Table III-D-7 below.

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[24] Development of the ANR's field MOW staff was guided by the principle that an efficient, least-cost SARR does not require unionized employees and does not face the same constraints as Class I railroads in terms of the level of supervision required and ability to cross-train. This enables field MOW employees to be utilized in a more versatile manner, such that an employee can perform more than one function where consistent with the level of specialization needed.

TABLE III-D-7 ANR MAINTENANCE-OF-WAY PERSONNEL	
Position	**No. of Employees**
HQ Office/Supervisory (based at Amarillo)	
Track Engineer	1
Communications & Signals Engineer	1
Assistant Engineer-Signals	1
Assistant Engineer-Communications	1
Assistant Engineer C&S – PTC Compliance	1
Bridge Engineer	1
Engineer of Programs and Contracts	1
Public Projects Engineers	2
Manager of Administration and Budgets	1
Manager of Environmental/Safety/Training	1
Manager of Welding & Grinding	1
Manager of Mechanical Operations	1
Supervisor of Work Equipment	1
Administrative Assistants/Clerks	4
Subtotal	18
Field	
Assistant Track Engineers (Field Production)	5
Roadmasters	15
Assistant Roadmasters	24
Track Crew Foreman	29
Track Crew Members	87
Roadway Machine Operators	18
Welders/Helpers/Grinders	30
Rail Lubricator Repairmen	5
Roadway Equipment Mechanic	8
Ditching Crew Foremen	5
Ditching Crew Members	5
Smoothing Crew Foremen	5
Smoothing Crew Members/Machine Operators	10
C&S Supervisors	5
Signal Maintainers	40
Communications Technicians	6
B&B Supervisors	2
B&B Inspectors	2
B&B Machine Operators	2
B&B Foremen	4
B&B Carpenters, Welders/Helpers & Water Service	12
Subtotal	319
Total	**337**

The MOW personnel shown in Table III-D-7 equate to 6.54 route miles per employee and 10.63 track miles per employee.[25] This level of MOW staffing reflects the ANR's size and the resulting economies of scale. In this regard, the ANR system is approximately the same size as most Class I railroads' operating divisions, and thus the ANR's Track Engineer corresponds to a large extent to a Class I railroad's Division Engineer position. However, unlike a typical Class I railroad, which possesses additional management to coordinate MOW among its various operating divisions, the ANR has no need for a management hierarchy between the Track Engineer (or the engineers in charge of the other MOW sub-departments) and the Vice President–Engineering.

c. **MOW Organization by Function**

The ANR's field MOW organization is dictated by the railroad's geographic scope (route miles), track miles, and peak-year traffic volume measured by the gross tons traversing each line segment. (Tonnage has the greatest impact on railroad infrastructure condition and largely dictates how MOW resources should be allocated.) In addition, the distances the field forces have to travel to cover their assigned territory were considered. The general office MOW staff (which reports to the Vice President–Engineering) was structured to provide adequate supervisory and administrative support to the field forces, as well as to prepare the annual MOW budget and supervise contractors in their performance of MOW work. The

[25] The miles represented by ANR trackage rights over MRL were excluded in making these calculations since the ANR does not maintain the MRL trackage.

field and office support personnel requirements for each MOW function are discussed below.

i. Track Department

The ANR's Track Department consists of 250 employees, organized into the positions shown in Table III-D-8 below. The annual compensation for each position, by employee and in total, is also shown in the table.[26] A discussion of each position follows the table.

TABLE III-D-8
ANR TRACK EMPLOYEES

Position	No. of Employees	Comp. Per Employee	Total Comp.
Track Engineer	1	$ 123,900	$ 123,900
Manager of Welding & Grinding	1	$ 104,415	$ 104,415
Supervisor of Work Equipment	1	$ 91,567	$ 91,567
Administrative Assistant/Clerk	1	$ 57,660	$ 57,660
Asst. Track Engineers (Field Production)	5	$ 91,065	$ 455,325
Roadmasters	15	$ 104, 415	$ 1,566,218
Asst. Roadmasters	24	$ 91,567	$ 2,197,600
Track Crew Foreman	29	$ 63,913	$ 1,853,471
Track Crew Members	87	$ 59,136	$ 5,144,820
Roadway Machine Operators	18	$ 66,208	$ 1,191,744
Welder/Helper/Grinders	30	$ 67,242	$ 2,017,273
Rail Lubricator Repairmen	5	$ 67,242	$ 336,210
Roadway Equipment Mechanics	8	$ 67,242	$ 537,940
Ditching Crew Foremen	5	$ 63,913	$ 319,565
Ditching Crew Members	5	$ 59,136	$ 295,680
Smoothing Crew Foremen	5	$ 63,913	$ 319,565
Smoothing Crew Member/Machine Operators	10	$ 66,208	$ 662,080
Total[1]	**250**	**xxx**	**$17,275,049**

[1] Total may not add due to rounding.

[26] Derivation of the annual compensation shown for each position is shown in Part III-D-4-b. Compensation amounts are salaries excluding fringe benefits.

General Office Staff. The Track Department is headed by the Track Engineer. He is responsible for maintaining all the ANR's track, preparing the annual track budget, and arranging for contractor performance of track maintenance (capital) programs. Directly reporting to the Track Engineer are a Manager of Welding & Grinding and a Supervisor of Work Equipment, with each individual covering the entire ANR system within their area of responsibility, as described further below. One Administrative Assistant/Clerk is assigned to the Track Department (as well as each of the other MOW sub-departments) to perform administrative and secretarial duties.

Field Staff. The Track Department's field staff is headed by five Assistant Track Engineers (Field Production) who report to the Track Engineer. The Assistant Track Engineers (Field Production) are based at Gillette, Pueblo, North Amarillo, Vaughn and El Paso, with the one based at Amarillo acting as a system-wide or floating position to fill in during vacations and/or provide assistance in times of heavily-contracted-out MOW activities. This enables the Assistant Track Engineers (Field Production) to efficiently cover the entire ANR territory. They oversee routine contract work (such as weed spraying, use of rail detector and track geometry cars, ballast cleaning or undercutting as well as rail grinding), maintenance programs, and track maintenance by the ANR's field track forces. They also work with the Roadmasters on their assigned territory in defining annual programs and overseeing contractor performance.

Roadmasters and Assistant Roadmasters. The Roadmasters are the ANR's principal field maintenance supervisors. They are responsible for day-to-day track maintenance in assigned geographic districts. There are 15 Roadmaster districts, each headed by a Roadmaster, averaging about 140 route miles and 239 track miles each. The specific territories each Roadmaster is responsible for, by Subdivision and milepost, are described in e-workpaper "MOW Roadmaster Territories.xls."

The Roadmasters are assisted by 24 Assistant Roadmasters. Each Assistant Roadmaster has an assigned territory of about 92 route miles. These individuals conduct scheduled routine and special track inspections in accordance with all applicable FRA regulations (specifically 49 CFR § 213.233), and are trained and certified by the ANR. They are responsible for track inspections and assist in routine field supervision of the track crews (described below). Each Assistant Roadmaster inspects approximately 45 to 50 route miles of track per day, four days per week (Monday, Tuesday, Thursday and Friday).[27] The Assistant Roadmasters also assist the Roadmasters with other MOW activities, such as, on Wednesdays, performing routine switch inspections, vehicle maintenance, working with the local track crews, checking quality behind the track crews, and other light

[27] The frequency of track inspections is dictated by the FRA class track involved. The ANR has mostly FRA Class 4 track, with Class 5 track on the main lines south and west of Amarillo. Both track classes require inspection twice per week with at least on calendar day interval between inspections.

maintenance, as well as additional track inspections as dictated by temperature, weather conditions or emergency situations.

It is now commonplace in the railroad industry to have Assistant Roadmasters perform track inspections. This obviates the need for separate Track Inspector positions. When an Assistant Roadmaster is on vacation or otherwise unavailable, the Roadmaster or one of the certified Track Crew Foremen, who are cross-trained for this purpose, would perform the routine and/or special track inspections.

Track Crews. The ANR has a total of 29 field track crews, each consisting of a Foreman and three Crew Members who are essentially track laborers. Each crew is 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.[28] These crews perform various tasks in connection with routine track maintenance, such as correcting track geometry defects (surface, line and gauge), repairing detected rail defects, replacing missing/broken joint bars and bolts, replacing failed tie plates/insulators/clips, replacing occasional defective ties at critical locations such as joints, switch points and frogs, removing snow/ice from switches, minor at-grade highway-rail crossing repairs, assisting smoothing gangs (upon request), and replacing/repairing damaged signs.

[28] The territories of the track crews are described in e-workpaper "MOW Roadmaster Territories.xls."

The territory assigned to each field track maintenance crew, the four-person crew size, and the tasks they are expected to perform are all consistent with modern practice on Class I railroads (including BNSF and UP) and regional railroads, as well as the approach approved by the Board in the *WFA/Basin* case. The crew territories also reflect the concept that some work traditionally handled by large in-house track program maintenance gangs at a Class I railroad is contracted out (as described further below). Moreover, each Roadmaster has a backhoe and dump truck available for his territory, which further limits the need for additional track and other field personnel.

Roadway Machine Operators. Mr. Davis has provided for a total of 18 Roadway Machine Operators. One Operator is assigned to each of the 15 backhoes (one backhoe is provided for each Roadmaster district). Two additional Operators are assigned to the two excavators, and one operator is assigned to a Prentice Loader, all of which are available system-wide. Additional Machine Operators are assigned under other classifications, such as Tamper and Regulator Operators and ditching crew members or Foremen. (The track crew members operate a Hi-rail Boom Truck, one of which is assigned to each track crew, and are not considered machine operators.)

Welder/Helper/Grinders. The ANR employs 15 two-person welding crews, coinciding with each Roadmaster District. Each welding crew consists of a welder and a welder helper. There are substantially fewer turnouts in each Roadmaster's district compared to those for which BNSF and UP are responsible

today, as well as very few joints to maintain, so there will not be much need for welding repair on the brand-new ANR. However, welding crew members are qualified and trained to Thermite-weld joints where replacement rail is installed; repair engine wheel burns, chipped rail ends or localized rail flow problems; and maintain turnout and rail crossing frogs and switch points without removing them from the track.[29] Although the entire ANR main track is composed of continuous welded rail (CWR), there are some joints associated with turnouts, insulated joints and defective rail replacement locations. Rail ends must be maintained and insulated joints may require slotting to prevent joint or signal failure and premature rail removal/replacement caused by significant rail-end batter and chipping. In addition, welding crews provide backup support on larger jobs such as contracted flash butt/Thermite welding programs and rail detector car/rail grinding operations. Each welding crew is assigned a hi-rail flatbed truck equipped with a self-contained, diesel-driven electric welding generator, cable crane winches for handling molds, oxygen and acetylene tanks, and the necessary hand tools and other welding equipment.

Rail Lubricator Repairmen. The ANR needs five Rail Lubricator Repairmen, each supporting three Roadmaster territories covering approximately 440 route miles on average. The Rail Lubricator Repairmen inspect and repair the ANR's 220 rail lubricators on a regular basis. The number of lubricators is based

[29] It is much more efficient to do the welding in place rather than remove the defective frog, install a replacement, and transport the defective frog to a shop for repairs.

on the 10 miles of average carry per lubricator recommended by the manufacturer (Portec). *See* e-workpaper "MOW Roadmaster Territories.xls," tab "Rail Lubricators" for more details on the Lubricator Repairmen territories.

Roadway Equipment Mechanics. The ANR also needs eight Roadway Equipment Mechanics, which are assigned as needed among the 15 Roadmaster territories. Each Mechanic covers approximately two Roadmaster territories. These individuals are responsible for maintaining and performing routine repairs to the ANR's field equipment, including tampers, regulators, backhoes, and the other specialized equipment assigned to the field MOW forces. The Machine Operators perform simple daily maintenance tasks on their machines. Trucks (hi-rail and regular) are maintained at dealerships and local mechanics are used for most auto or truck-related repairs and maintenance.

Ditching Crews. The ANR has five two-person ditching crews, each consisting of a Foreman and a Ditching Crew Member, assigned on a geographic basis covering approximately three Roadmaster territories each. The primary function of each of these crews is to keep the ANR's ditches free flowing and to work with B&B forces to clean culverts or culvert inlets/exits periodically. Each crew is assigned a Gradall (supplemented when necessary by an excavator), a three-way (rotary) hi-rail dump truck and a conventional pickup truck.[30] The Ditching

[30] Each Roadmaster is assigned a small rubber-tired backhoe and a dump truck which also can be used by the ditching crews for work in that Roadmaster's territory, as needed. The backhoe operators also drive their assigned dump trucks

Crew Foreman serves as the machine operator, and the other crew member serves as the dump truck driver. Each crew is also furnished a complement of necessary hand tools.

It should be noted that much of the BNSF and UP roadbed underlying the lines being replicated by the ANR is on fill or embankment with no parallel ditches except in cut sections. Thus, much of the ANR route does not feature ditches that need cleaning or repairing. Where ditching is warranted, it is performed by the ANR's field ditching crews using Gradalls and backhoes.

Smoothing Crews. The ANR employs five, three person smoothing crews, which perform spot surfacing and lining of the track as needed to correct any significant surface irregularities noted in geometry test car data, variations found by the Roadmaster/Assistant Roadmaster during track inspections, or as directed by the Assistant Track Engineer (Field Production). Each crew will cover an average of approximately 440 route miles. Given the ANR's new track structure, it is unlikely that there will be many surface or line irregularities within the first ten years of the railroad's existence.[31] Most of the surfacing and lining takes place in the areas featuring the highest number of curves. Each smoothing crew consists of a Foreman and two Smoothing Crew Members (Machine Operators), and each crew

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as needed. In addition, two excavators are available for the Roadmasters' use as needed. The excavators are normally based out of Guernsey and Amarillo.

[31] Even where existing railroads have installed CWR, it usually had replaced older, jointed rail whose joints takes a pounding that tends to damage the roadbed over time. The ANR does not maintain any old roadbed that has been pounded/ damaged by trains running over jointed rail for many years.

is assigned a Tamper and a Ballast Regulator. The Tamper is used to surface and line track. The Ballast Regulator is used to move ballast, restore the roadbed section and shoulder ballast, fill the tie cribs, and sweep the track following surfacing and lining. These crews also assist the field track forces and contractors with derailments or other problems requiring minor surfacing work. If additional labor is needed to assist a smoothing crew in unusual circumstances, it can be drawn from the nearest track crew.

ii. Communications & Signals Department

The ANR's Communications & Signals (C&S) Department consists of 56 employees. The specific positions and compensation levels for this department are shown in Table III-D-9 below.

TABLE III-D-9
ANR C&S EMPLOYEES

Position	No. of Employees	Comp. Per Employee	Total Comp.
Communications & Signals Engineer	1	$ 95,664	$ 95,664
Asst. Engineer – Signals	1	$ 91,065	$ 91,065
Asst. Engineer – Communications	1	$ 91,065	$ 91,065
Asst. Engineer C&S – PTC	1	$ 91,065	$ 91,065
Administrative Assistant/Clerk	1	$ 57,660	$ 57,660
C&S Supervisors	5	$ 91,567	$ 457,835
Signal Maintainers	40	$ 81,274	$3,250,960
Communications Technicians	6	$ 72,857	$ 437,142
Total	**56**	**xxx**	**$4,572,456**

General Office Staff. The C&S Department is headed by the Communications & Signals Engineer. This Engineer position is responsible for all

related communications and signals functions, for assuring the proper tests are conducted, and that any necessary maintenance is being performed. This position is also responsible for developing the necessary capital programs in order to keep the signal and communication equipment functioning reliably as well as supervising outside contractors who maintain the communications equipment including microwave towers and associated equipment and radios.

The three Assistant Engineers report directly to the Communications & Signals Engineer. One is in charge of supervising the signals function while another is in charge of supervising the communications function and their associated field personnel. The third, the Assistant Engineer C&S-PTC, has full-time responsibility for PTC planning and compliance with respect to the ANR's communications and signals systems and the maintenance thereof. This individual is a member of the ANR's PTC Compliance group described earlier in this Part.

This sub-department also employs an Administrative Assistant/Clerk who handles secretarial and administrative duties.

Field Staff. The field staff is led by five C&S Supervisors. The C&S Supervisor position is responsible for field supervision of the Signal Maintainers and Communications Technicians (described below). The C&S Supervisors are located at Gillette, Pueblo, North Amarillo, Vaughn and El Paso to provide adequate coverage of the ANR's geographic territory.

Signal Maintainers. The ANR employs 40 Signal Maintainers. This position is responsible for scheduled inspections and routine testing and

maintenance of the ANR's signal system. Signal Maintainers repair defective trackside signals that govern train movements, repair/replace at-grade, highway-rail crossing protection devices, perform monthly FRA-mandated tests, and change out broken signal bulbs. The number of Signal Maintainers required is a function of the number of AAR signal units.[32] Based on AEPCO Witness Willard Whitbred's calculation that 63,222 total signal units are to required to operate the ANR system safely and efficiently, Mr. Davis has provided one signal maintainer per 1,600 signal units, resulting in a total of 40 signal maintainers. This number is reflective of standard practice at several Class I and other railroads.

Communications Technicians. The ANR employs six Communications Technicians who are primarily responsible for maintaining train crew radios and other communications devices. Five of them are based at the ANR's five inspection/fueling yards (Guernsey, North Amarillo, Texico, West Vaughn and West El Paso) while the sixth is a "roving" position and also available to cover for one of the other five during vacations, etc. The Technician based at North Amarillo Yard (and a Signal Maintainer and a General Office IT specialist) are on call if a problem arises in the CTC control center.

[32] An AAR signal unit is a measure of the difficulty of maintaining a particular signal device. There are normally more AAR signal units than there are individual signals.

iii. Bridge & Building Department

The ANR's Bridge & Building (B&B) Department consists of 24 employees. The specific positions and compensation levels in this department are shown in Table III-D-10 below.

TABLE III-D-10 ANR B&B EMPLOYEES			
Position	**No. of Employees**	**Comp. Per Employee**	**Total Comp.**
Bridge Engineer	1	$ 95,664	$ 95,664
Administrative Assistant/Clerk	1	$ 57,660	$ 57,660
B&B Supervisor	2	$ 91,567	$ 183,134
B&B Inspector	2	$ 76,212	$ 152,424
B&B Machine Operator	2	$ 66,208	$ 132,416
B&B Foreman	4	$ 66,775	$ 267,100
B&B Carpenter/Welder/Helper	12	$ 56,789	$ 681,466
Total	**24**	**xxx**	**$ 1,569,866**

General Office Staff. The ANR's B&B Department is headed by the Bridge Engineer who is responsible for inspections and maintenance of the ANR's bridges, culverts and tunnels and for inspections of and minor repairs to buildings. This position is also responsible for preparing the annual bridge repair budget and supervising the contractors who perform periodic bridge maintenance and/or major structural repairs, as well as periodic building maintenance. Like the other MOW sub-departments, the B&B Department also has an Administrative Assistant/Clerk.

Field Staff. The B&B field staff is not large, reflecting the fact that all of the ANR's bridges will be constructed using modern technology as well as being constructed of concrete and steel components. This results in little or no

annual maintenance to the structures – unlike bridges with timber components which are common on Class I railroads, including BNSF and UP.

B&B Supervisors. The ANR employs two B&B Supervisors, who report to the Bridge Engineer. These individuals are headquartered at different geographic locations, with one located at Guernsey and the other at Amarillo. These individuals are primarily responsible for performing regular bridge, culvert and tunnel inspections, and for conducting periodic inspections of the ANR's buildings. They also recommend minor bridge repairs/maintenance to the B&B crews or, on occasion, the appropriate Roadmaster, to the extent the repairs (such as tightening or restoring missing bolts, clearing debris from bridge piers and culvert inlets, etc.) are within the capability of the field track or ditching crews. Major bridge, tunnel and culvert repairs are contracted out, as are periodic, detailed, extraordinary inspections of bridges.

Bridge Inspectors and other field B&B employees. The B&B Department's field employees include two Bridge Inspectors, who perform annual bridge, culvert and tunnel inspections as a part of their daily routine, two B&B Machine Operators, and four B&B crews that perform routine bridge, tunnel and culvert maintenance in assigned territories averaging about 550 route miles each. Each of the B&B Machine Operators is equipped with a rubber-tired bridge hoist/crane. Each B&B crew consists of a Foreman, a Carpenter, a Welder and a Helper. These crews perform bridge, culvert and tunnel repairs to the extent they do not involve major pier or superstructure repairs, which are contracted out.

iv. Misc. Administrative/Support Personnel

The ANR employs seven additional Engineering administrative and support personnel at the North Amarillo headquarters who are dedicated to the MOW function, but who do not support any particular field sub-department by itself. These office personnel, who report to the Vice President-Engineering, develop and administer the annual MOW budget (including the capital or program budget). They also interface with contractors performing both program and day-to-day work and with governmental agencies involved in public projects that affect the railroad, and deal with other MOW administrative matters including environmental, safety and training. These positions are summarized in Table III-D-11 below.

TABLE III-D-11
ANR MOW ADMINISTRATIVE/SUPPORT EMPLOYEES

Position	No. of Employees	Comp. Per Employee	Total Comp.
Engineer of Programs and Contracts	1	$ 91,065	$ 91,065
Public Project Engineer	2	$ 95,664	$ 191,328
Manager of Administration & Budgets	1	$ 104,415	$ 104,415
Manager of Environmental/Safety/Training	1	$ 95,664	$ 95,664
Manager of Mechanical Operations	1	$ 104,415	$ 104,415
Administrative Assistant/Clerk	1	$ 57,660	$ 57,660
Total	**7**	**xxx**	**$ 664,547**

The Engineer of Programs and Contracts is responsible for implementing and monitoring the ANR's contracts associated with program and other maintenance, as well as preparing the Engineering Department's overall budget for approval by the Vice President-Engineering and other senior management.

The two Public Project Engineers interface with governmental agencies and other entities on a geographic basis in handling requests for various types of public projects including rail/highway grade separations, new at-grade, highway-rail crossings, utility projects, and right-of-way encroachments. They also provide engineering expertise and support to the Roadmasters concerning issues related to such projects in their territory.

The Manager of Administration & Budgets interfaces with the Human Resources Department with respect to hiring MOW employees, as well as assisting the Engineer of Programs and Contracts in preparing the annual Engineering/MOW budget. This position is also responsible for the MOW payroll and monitoring/ payment of contractor invoices.[33]

The Manager of Environmental/Safety/Training interfaces with federal and state environmental authorities and monitors environmental compliance with respect to the ANR's MOW activities. This individual also manages the vegetation control program for the Track Department, and is responsible for MOW employee safety training and compliance with hazmat practices and procedures.

A separate Manager of Mechanical Operations is needed for the MOW staff, given the amount of equipment used under the MOW work umbrella. This individual is responsible for coordinating the deployment, use and

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[33] The ANR's purchasing function has been centralized in a four-person Budgets & Purchasing section within the Finance & Accounting Department, discussed above under General & Administrative expenses. However, purchasing associated with the ANR's MOW function is coordinated by the Manager of Administration & Budgets.

maintenance of MOW equipment and acts as a liaison by working closely with the Director of Mechanical Services, who is part of the Vice President-Mechanical's staff (and included with the ANR's other Operating employees discussed earlier in this Part III-D).

One additional Administrative Assistant/Clerk is assigned to the Engineer of Programs, Contracts/Public Project Engineer and other administrative staff, to assist with secretarial and other routine administrative duties.

d. <u>Compensation for MOW Employees</u>

Salaries of the ANR's MOW personnel, other than the Vice President-Engineering and his/her immediate staff (who are included in the Operating personnel discussed earlier in this Part III-D) are set forth in Tables III-D-8 through III-D-11 above. The total annual compensation for these MOW personnel in the base year (excluding fringe benefits) equals $24.1 million. MOW salaries are based on the salaries paid by BNSF to MOW personnel in 2008, as shown in BNSF's Wage Forms A and B, and indexed to 1Q09 levels. Details are provided in e-workpaper "ANR Salaries.xls."

e. <u>Non-Program MOW Work Performed by Contractors</u>

While the ANR's in-house MOW forces handle most day-to-day maintenance of the ANR's track and facilities, it is more cost-effective to contract out some maintenance work that is often treated as operating expense. The treatment of such contracted work by the ANR is consistent with the approach approved by the Board in *WFA/Basin I* at 69-73.

Such contracted work involves several broad categories including: (i) routine maintenance that can be scheduled on a regular basis, but is not performed frequently enough to justify the ANR's investment in the equipment and personnel required for it (such as track geometry, ultrasonic rail testing, rail grinding and ballast cleaning); (ii) unplanned maintenance that does not occur at regular intervals and is more economically handled by contractors who have the requisite expertise and specialized equipment available (such as snow and/or storm debris removal and bridge pier or superstructure repairs); and (iii) unplanned maintenance events requiring more people or specialized equipment than the ANR has because of the infrequency and unusual nature of the events (such as removing damaged cars/lading and repairing the track structure after a major derailment or weather event/storm).

Specific areas of maintenance that are performed by contractors are described below.

i. Planned Contract Maintenance

Track Geometry Testing. Track geometry testing is a routine maintenance function. The frequency of such testing is generally a function of the annual gross tonnage moving over the track. Such testing ensures that the track and related structures meet all FRA standards in terms of alignment, gauge and profile. Track geometry test results are used to prioritize work by the smoothing crews. Geometry testing is required and completed with varying frequency depending on the annual gross tonnage moving over various portions of the ANR. Generally,

track carrying between 5 and 30 million gross tons per year ("MGT") is tested once per year; track carrying 30 to 60 MGT is tested twice per year; and track carrying more than 60 MGT is tested three times per year. These frequencies are generally consistent with Class I railroad practice. The frequencies assumed with regard to testing track carrying above 30 MGT are conservative for a newly-constructed railroad that features better roadbed compaction, drainage, ballast and subballast, rail and timber. This newer construction means the track structure will hold up better than average. Also, the ANR will have experienced no roadbed damage from previous use of jointed rail, where low joints developed from batter weakening the subgrade over time.

The cost for track geometry testing is ${ } per track mile. This amount is based on information provided by BNSF in discovery (*see* e-workpaper "MOW Costs-Final.xls," tab "Geometry Testing." The total annual miles of testing and the related cost calculations are detailed in e-workpaper "MOW Costs.xls," tab "Annual MOW Expenses."

Ultrasonic Rail Testing. Ultrasonic rail testing is important in preventing derailments because it helps reveal internal rail defects before failure that could cause disruptions to the ANR's operations. FRA regulations (49 CFR § 213.237) require testing rail for internal defects in Class 3 track over which passenger trains do not operate for internal defects at least once every 30 MGT or once a year, whichever interval is longer, and similar testing of Class 4 through 5 track at least once every 40 MGT or once a year, whichever interval is shorter.

Consistent with these standards, the ANR will conduct ultrasonic rail testing at least once a year on all of its main lines, and twice a year on track carrying greater than 40 MGT annually. The branch lines will be tested once a year except that the Campbell and Dutch Branches will be tested twice a year. These testing frequencies are more than adequate given that the ANR starts operations with all new rail on its main tracks and sidings.

Based on a spreadsheet provided by BNSF in discovery ("AEPCO Litigation Info.xls"), the average cost for ultrasonic rail testing is ${ } per track mile for each pass over the track with a test car. *See* e-workpaper "MOW Costs-Final.xls,"tab "Rail Flaw Detection" for details. The total annual miles of ultrasonic testing and the related cost calculations are detailed in e-workpaper "MOW Costs-Final.xls," tab "Annual MOW Expense."

Rail Grinding. Rail grinding is a part of most Class I railroads' MOW plans that is deemed necessary based on traffic, tonnage and rail characteristics, along with the potential to extend the service life of the rail and increase locomotive fuel efficiency. Studies have indicated that premium rail in high-density territory, even with heavy curves, can withstand well in excess of 150 MGT without the need for grinding.[34] Here, 136-pound premium CWR rail is being used on the ANR's main tracks that carry more than 50 MGT annually and in

[34] *See* Kevin Sawley, Transportation Technology Test Center Inc, Report 928, "North American Rail Grinding Practices and Effectiveness," August 1999; *Railway Track and Structures*, December 2000, page 15 (included as e-workpaper "grinding.pdf").

curves of 3 degrees or more. This rail is extremely durable under heavy loads. However, to be conservative, the ANR will rail-grind every 100 MGT in curve areas with premium rail. Consistent with the approach used in *WFA/Basin*, rail grinding will be performed every 30 MGT in curves less than 3 degrees and every 60 MGT for tangent track. Tangent rail and rail in curves less than 3 degrees receive one pass, and rail in curves equal to or greater than three degrees receives two passes. Switches, rail crossings (diamonds) and rail located in at-grade road crossings also will be ground at the same time that normal rail grinding is performed.

The annual cost per mile allotted for rail grinding is $1,900 per pass mile. This cost is based on a recent study by two independent railway engineering experts.[35] The total miles of grinding and the related cost calculations are detailed in e-workpaper "MOW Costs-Final.xls," tab "RailGrinding Cap. Costs." Switch grinding is performed at the same intervals as the rail grinding, also at a cost of $1,900 per mile. The quantity has been included in the total rail grinding quantity.

In *WFA/Basin I*, the Board treated the cost of rail grinding as an operating expense, notwithstanding the complainant's argument that it should be capitalized because it extends rail life. *Id.* at 71. However, it is rail industry practice to capitalize the cost of rail (and related switch) grinding, and according to

[35] "A Quantitative Analysis of Factors Affecting Broken Rails" by Darwin H. Schafer II and Christopher P.L. Barkan. This study, which was compiled using data provided by railroads, was presented on May 9, 2008 at the William W. Hay Railroad Engineering Seminar, University of Illinois. It is reproduced in e-workpaper "Hay Engineering Seminar Rail Study.pdf."

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Ballast Cleaning/Undercutting. Recognizing that the portion of the ANR system north of Amarillo predominately carries coal unit trains, over time the ballast in this area may become fouled and require shoulder cleaning (and occasional undercutting) MOW activities. Little such work would be required in the early years of the ANR's operations, but after year three about five percent of the ANR's mileage north of Amarillo should be cleaned each year or about 60 miles annually at a cost of $36,000 per year. These costs are detailed in e-workpaper "MOW Costs-Final.xls," tab "Shoulder Cleaning Cap. Costs." By taking a proactive approach to shoulder cleaning, wholesale undercutting should not be necessary during the 10-year DCF period.

Yard Cleaning. The ANR's yards should be cleaned once a year in order to ensure that debris does not affect rail operations. The ANR has five inspection/fueling yards, at Guernsey, North Amarillo, Texico, West Vaughn and West El Paso. The amount and cost of yard cleaning required for these five yards is based on Mr. Davis's experience. Details of the calculations are shown in e-workpaper "MOW Costs-Final.xls," tab "Yard Cleaning." The total annual cost for yard cleaning is $27,000 per year.

Vegetation Control. Weed spraying, brush cutting and mowing are necessary in order to prevent overgrowth into the rail bed or other structures, which can cause a safety hazard. The most obvious and critical vegetation control

concerns the ballast section. If vegetation is allowed to flourish in the ballast section, it will soon foul the ballast and interfere with the most important function of ballast which is to permit water to drain from the track structure, uninterrupted. If water is allowed to be retained in the track structure it can reduce tie life and destabilize the track structure, thus increasing the risk of track irregularities and derailments. Vegetation control also is critical in the vicinity of at-grade, highway-rail crossings to ensure the safety of both train operations and the road traveling public.

The ANR's vegetation control requirements are based primarily on the climactic conditions and annual rainfall in the geographic areas it serves. The ANR system generally lies in areas of low rainfall (north of Amarillo) and in arid areas in New Mexico and Arizona. As a result, weed spraying is accomplished once per year in the spring with a second application as needed about three to five weeks after the initial application.

The annual cost for vegetation control is based on Mr. Davis's experience. The total cost per mile for vegetation control is $117.62, with a total annual expense of $259,000. *See* e-workpaper "MOW Costs-Final.xls," tab "Annual MOW Expenses."

Very little brush-cutting should be required because the ANR's right-of-way will be cleared during construction, and much of the right-of-way is located in arid areas where brush does not grow readily. Scheduled, periodic weed spraying will greatly inhibit brush growth. Because brush and weeds sometimes

tend to accumulate near road grade crossings. The ANR's system-wide excavators and the individual Roadmasters' backhoes will be used as needed to keep the right-of-way cleared near road crossings where contracted vegetation control work is not sufficient.

Crossing Repaving. At-grade, highway-rail crossings must be repaved periodically. Asphalt pavement is typically used with treated hardwood crossing timbers in many public grade crossings. The life of asphalt pavement is largely a function of highway/road traffic, at least beyond 24 inches outside each rail, although rail traffic is also a factor within the crossing zone proper. A typical pavement application will last 8 to 12 years, or longer. Consequently, there should be little need for the ANR to begin re-paving activities immediately. However, to be conservative, and consistent with the approach used in the DCF model, Mr. Davis has assumed that paving would begin in the ANR's first year of operations. As the paving should last at least 10 years, Mr. Davis assumed that 10% of the total crossing paving quantity would be re-paved each year. The total cost of crossing paving is $336,525 annually. This amount is capitalized as it is performed in conjunction with the annual capital (renewal) program. *See* e-workpaper "MOW Costs-Final.xls," tab "Crossing Repaving."

Equipment Maintenance. Normal maintenance of company-owned or leased equipment is contracted out, although the ANR has eight in-house mechanics who perform routine maintenance and repairs to the basic equipment used by its field track forces. Equipment that may require additional maintenance/repair by

contractors (because it may be beyond the capability of the ANR's mechanics) includes hi-rail trucks, excavators, Gradalls and backhoes, ballast regulators, tampers, hydraulic power units and certain power hand tools. The ANR's mechanics are prepared and equipped to perform preventive maintenance and straightforward repairs to this equipment.

A generally-accepted cost in the railroad industry for annual maintenance of MOW equipment is five percent of its purchase price.[36] *See* e-workpaper "MOW Costs-Final.xls," tab "Annual MOW Expenses."

Communications System Inspection and Repair. Periodic inspection and planned maintenance of the ANR's communications system, which is described in detail in Part III-F-6 below, is performed entirely by contractors. The ANR's communications system includes microwave towers, fiber optics and LMR radio facilities, which are inspected annually.

Communications maintenance and inspection costs are normally a component of maintenance agreements covering communications systems entered into at the time of installation. In *WFA/Basin I*, the complainant proposed and the Board accepted a communications system maintenance cost of two percent of original purchase cost. Based on Mr. Davis's experience this percentage is reasonable, and it has been applied to the ANR's communications-equipment

[36] In *WFA/Basin I* at 69 the Board accepted a higher figure on the basis of a special study performed by the defendant. In this case, neither defendant provided any information on its annual equipment maintenance costs in discovery, and Mr. Davis believes the five percent figure is reasonable.

acquisition costs developed by AEPCO Witness Willard Whitbred. The result is an annual cost of contracted repairs to the ANR's communications facilities of $17,040. *See* e-workpaper "MOW Costs.-Final.xls," tab "Annual MOW Expenses."

Bridge Inspections. As described earlier, the ANR's Bridge and Building Supervisors and B&B Inspectors perform basic bridge inspections as part of their duties, including annual inspections of all bridges. However, the ANR's three large river bridges require periodic in-depth inspection to assess integrity. These inspections, which involve careful examination of the substructure and superstructure of each bridge, are performed by professional outside contractors in the company of one of the B&B Inspectors, using specialized equipment including scuba gear to accomplish underwater inspection of the substructure. The ANR's bridges are new at start-up on January 1, 2009, and will be inspected on a five-year schedule by the outside contractors in addition to the annual inspections by the ANR's B&B department. Neither BNSF nor UP provided any cost data in discovery addressing this type of contract work. Mr. Davis applied an average cost of $9.00 per track foot of bridge length associated with contractor inspection totaling about 4,069 track feet of bridges. On a five-year cycle, the annual cost of inspecting major bridges using contracted inspections is $7,324. *See* e-workpaper "MOW Costs-Final.xls," tab "Bridge Inspection."

Building Maintenance. All of the ANR's buildings are new at operations start-up, so only occasional routine maintenance is required.[37] Other than general plumbing and electrical repairs over time, HVAC systems generally require semi-annual inspections and/or maintenance which are performed by contractors (as is occasional outside maintenance). Mr. Davis developed an annual cost of $2,039,600 for contract building maintenance, which is based on two percent of the total building cost. *See* e-workpaper "MOW Costs-Final.xls," tab "Annual MOW Expenses."

ii. Unplanned Contracted Maintenance

Snow Removal. The ANR's yards and main tracks north of Amarillo may require occasional snow removal. Snow removal should not be an issue on most of the ANR's lines south and west of Amarillo. Most snow removal activity is performed by the ANR's field maintenance personnel who are not normally as busy in the winter as during the remainder of the year in the areas where snowstorms are likely to occur.

All main track switches north of Amarillo and at the West Vaughn and Texico Yards are equipped with switch heaters. Ballast regulators equipped with snow blowers are used to blow out snow-laden switches and trackage in the northerly areas as needed; the regulators are run by Smoothing Gang members who are not as busy in the winter in these areas. Snow removal from roadways and

[37] Neither BNSF nor UP provided any information in discovery concerning building maintenance costs.

parking lots, primarily in the inspection/fueling yard areas other than West El Paso, will be contracted out; it is better handled with contractors because it is uneconomical to employ extra in-house staff and have specialized equipment available to perform this work.

Neither BNSF nor UP provided any data on snow removal costs in discovery. Based on his experience, Mr. Davis has allocated $25,000 per year for contract snow removal. *See* e-workpaper "MOW Costs-Final.xls," tab "Annual MOW Expense."

Storm Debris Removal. There may be infrequent occasions where severe winds bring down trees or scatter debris on the right of way, as well as infrequent ice storm damage during winter conditions in the portion of the ANR system north of Amarillo. Depending on the severity and extent of the damage, outside contractors will be called upon to clean up the debris. In-house MOW forces will be available to assist, but the ANR will not staff up to respond to such occasional potential events. Once again neither defendant provided any information in discovery on storm debris removal costs. Based on his experience, Mr. Davis has provided $25,000 annually for this activity. *See* e-workpaper "MOW Costs-Final.xls," tab "Annual MOW Expense."[38]

[38] Neither snow nor storm debris removal are significant when compared to other MOW activities. The cost estimates provided in the text are reasonable given the inability to realistically plan or forecast an annual amount covering activities that are based solely on the weather.

Building Repairs. As described earlier, all of the ANR's buildings are new. Nevertheless, the buildings may require the occasional unplanned repair. Typical occurrences include storm damage, water and sewer line repairs, electrical failure, HVAC repairs, etc. In Mr. Davis's experience, unplanned annual costs of building maintenance generally are subsumed within the general building maintenance costs described above.

iii. Large Magnitude Unplanned Maintenance

Derailments. A new railroad such as the ANR, constructed to modern standards, is less likely to experience a major track-caused derailment than the older track structure and subgrade of existing railroads. Nevertheless, over the ANR's 10-year life under the DCF model, derailments may occur. Removing equipment and lading and restoring the track structure after a major derailment usually require heavy specialized equipment. Today, few railroads use in-house staff to repair the track after such derailments without assistance from a contractor, and most Class I railroads no longer employ auxiliary forces dedicated to derailment response. The same is true for regional and short-line railroads, which are even less able to afford this stand-by resource. Almost all rail carriers rely primarily on contractors to respond to such occurrences because it is not cost-effective to have a separate complement of employees and heavy equipment on stand-by to deal with infrequent major derailments.

The ANR's average annual cost for repairing damage from derailments (primarily contractor expense) is $2,603,224. This figure is based on

2008 FRA Accident Reports for BNSF and UP. *See* e-workpaper "ANR Derailment and Clearing Wrecks.xlsx" for details of this calculation. Given the ANR's brand-new rail network at start-up (including the fact that it did not replace older, jointed rail with CWR but starts operations with CWR on all of its main tracks), and considering that it moves only complete trains, the ANR certainly should not incur greater derailment expenses than the real-world BNSF and UP do on a per-mile basis. When the estimated cost of clearing wrecks[39] is added, the ANR's total annual cost for derailments is $3,017,019.

Washouts. Again, a new railroad roadbed/track structure is not as prone to washouts as older, real-world railroad roadbed that may have experienced previous water-related damage. Nevertheless, washouts may occur – for example, when a culvert through the sub-grade becomes blocked, preventing the flow of water. This blockage can be caused by melting snow or severe rainstorms that cause heavy runoff to move against the right of way; floating debris on the upstream ends of some culverts also could prevent culverts from serving their intended purpose.

Based on the relatively arid territory in which most of the ANR is situated and the ANR's total route miles, the average annual cost of washout repairs likely would not exceed $50,000. This cost includes furnishing and placing up to

[39] The cost of clearing wrecks is based on the average costs incurred by BNSF and UP from their 2008 R-1's. The ANR's estimated annual cost for clearing wrecks is $413,795. *See* e-workpaper "ANR Derailment and Clearing Wrecks.xlsx.

1,000 tons of rip-rap at a material cost of $30 per ton. Other related work would be performed by the local field forces (including ditching and smoothing crews) as needed.

Environmental Cleanups. The ANR operates locomotive inspection and servicing or repair facilities at its Guernsey and Amarillo Yards that might be a source of inadvertent discharge of environmentally hazardous materials. In addition, the ANR transports some hazardous commodities over several of its lines. An infrequent environmental cleanup could occur if hazardous commodities are released during a derailment. Derailments are less likely to occur on the ANR than on a Class I railroad such as BNSF or UP because the ANR begins operations in 2009 over a brand-new track structure that includes CWR on all of its main tracks. It does not have to deal with situations where CWR replaced jointed rail that caused ballast and subgrade problems due to compression, which increases the risk of track-caused derailments.

Neither BNSF nor UP provided any information on the cost of environmental cleanups in discovery. However, the ANR is providing protective drip pads at the location where locomotives are fueled at each of its five inspection/fueling yards. This insures that oil emissions from idling locomotives are contained. At each yard, 600 track feet are protected by drip pads, at a cost of $3.00 per track foot. These pads are replaced every three months, at a cost of $7,200 per yard, or a total of $36,000 annually.

f. Contract Maintenance (Capitalized)

Program maintenance, such as rail and tie renewal programs, is performed by contractors and is capitalized in the DCF model. Consistent with the Board's SAC precedent and Class I railroad practice, the following more frequent MOW work that is contracted out is also capitalized rather than being included in operating expense.

i. Surfacing

The ANR employs five field smoothing crews which perform day-to-day surfacing of the track to correct rough spots. In addition, heavy-tonnage track subjected to the high axle loadings of unit coal and other trains needs to be surfaced on a regular basis (once every three years) to prevent it from deviating from acceptable standards. Consistent with standard railroad practice as well as the Board's approach in recent SAC cases, including *WFA/Basin*, this surfacing is performed by a contractor and it is capitalized in the DCF model because it is in the nature of program work

ii. Rail Grinding

As noted earlier, since {

}. The rail and switch grinding frequencies developed by Mr. Davis, as described in the preceding section, were provided to Mr. Crowley for purposes of capitalizing them in the DCF Model.

iii. Crossing Repaving

Again, as discussed earlier, BNSF and UP are assumed to follow standard industry practice and capitalize road crossing renewal in conjunction with track and signal program work. The ANR follows the same approach. The crossing repaving frequencies developed by Mr. Davis also were provided to Mr. Crowley for purposes of capitalizing them in the DCF Model.

iv. Bridge Substructure and Superstructure Repair

Bridge life expectancy under BNSF and UP's depreciation accounting is 60 years. This life expectancy generally reflects the longevity and stability of bridge superstructure and substructure components.[40] Nonetheless, unexpected minor repairs on a bridge substructure and superstructure will be required from time to time. The likelihood that steel and concrete repairs will be required is negligible given that the structures are new in year one and enjoy a life expectancy of over half a century.

In the experience of Mr. Davis, the annual cost for bridge superstructure and substructure repairs typically does not exceed the amount accepted by the STB in *WFA/Basin I* ($4,000 per major bridge every five years, which assumes a contractor's crew of four working over a period of two days ($2,000) plus material ($1,000) and equipment ($1,000). Accordingly, Mr. Davis uses this same approach here. This cost is capitalized.

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[40] The ANR's bridges are being replaced through the DCF process.

g. Equipment

The ANR's in-house MOW forces require a variety of equipment to perform their duties, some of which has been described previously. The MOW equipment requirements and costs (other than for small tools, whose cost is included as a materials additive to the base compensation cost for each employee) are described below. The costs of all of this equipment are detailed in e-workpaper "MOW Costs-Final.xls," tab "Annual MOW Equipment Cost."

i. Hi-Rail Vehicles

Each of the ANR's 29 field track crews has a hi-rail truck which provides transportation of the crew and is equipped with the tools necessary for the crew to perform its duties. This crew-cab vehicle comfortably seats a Foreman and three track workers. Its hi-rail gear provides the versatility required of maintenance forces to gain access to the track and carry out their duties, particularly on the portions of the ANR network where traffic density is high.

For example, if a track crew cannot access the track at its headquarters due to imminent train arrival, the crew travels by road to a point where the dispatcher can provide positive protection for the crew to get on the track. Alternatively, if the crew is on the track, and it cannot remain or proceed due to an oncoming train, the hi-rail vehicle is removed until the train clears the CTC block and then either returns to the track or moves, by road, to another point where (with authority from the dispatcher) it again gains access to the track.

Each of these hi-rail vehicles is equipped with a boom crane and overhead racks. This allows the crew to load 39-foot rails, frogs, switch points, switch ties, cross ties and other materials necessary to perform track maintenance. The vehicle also is equipped with a hydraulic system providing the capability for operating portable tamping tools (2), impact wrench (1), rail saw (1), rail drill (1), spike hammer or driver (1), spike puller (1), etc., which are included in the complement of tools carried on the vehicle.[41] Based on information produced by BNSF in discovery (a spreadsheet entitled "MOW Equipment.xls"), the ANR's cost to equip a gang truck or Assistant Roadmaster truck with these tools is ${ } per vehicle. *See* e-workpaper "MOW Costs-Final.xls," tab "Annual MOW Equipment Cost."

While B&B crew hi-rail trucks utilize a different type crane than the track crew hi-rail trucks, the trucks cost approximately the same and are similarly outfitted with hydraulic and hand tools.

Other MOW personnel are assigned smaller hi-rail vehicles. This includes the Roadmasters and Assistant Roadmasters, Signal Maintainers, welding crews and Lubricator Technicians. The Assistant Roadmasters' vehicles also are equipped with a hydraulic pump and tool set similar to the system in the track crew vehicles. The HQ Engineering/MOW staff also is assigned hi-rail vehicles as described in Part III-D-4-f. In addition, the ANR's equipment roster includes one

[41] The hydraulic systems on the track crew's hi-rail trucks can perform more functions than an air compressor. Air tools have largely been replaced by the hydraulic tools supplied to each crew and each Assistant Roadmaster.

trailer assigned to move excavators to job sites as well as a Prentice Loader (material handling) truck. There are also trailers for the backhoes assigned to each Roadmaster. These vehicles are used to deliver equipment, tools and materials to the field track and other crews.

The smaller hi-rail vehicles driven by the supervisory employees are intended essentially for their transportation and that of others who may accompany them together with some capability for small material transport. Vehicles rated three-quarters to one ton are suitable. Hi-rail vehicles assigned to Signal Maintainers, Welders and Lubricator Technicians not only provide transportation for the employees but are equipped with service bodies for transporting equipment, tools and parts. Here, too, vehicles rated three-quarters to one ton are appropriate. The rating tolerance accommodates a wide variety of vehicle manufacturers and body configurations.

As shown in e-workpaper "MOW Costs-Final.xls," tab "Annual MOW Equipment Cost," the ANR's total hi-rail vehicle cost is $10.8 million.

ii. Equipment for Track and Related Work

The ANR's field crews responsible for track maintenance (including the track crews, smoothing crews, ditching crews and welding crews) are assigned other specialized equipment needed to perform their tasks, including:

Rail Drills. Rail drills are needed by the field track crews for drilling holes in new replacement rail when bolted joints are installed by replacing a rail that is found to be defective through electronic testing or visual detection. Each

track crew and each Assistant Roadmaster is assigned one hydraulic rail drill as part of the hydraulic tool set on their trucks.

Rail saws. Rail saws are used by field MOW personnel to crop torch-cut rail ends or shorten existing rail ends when joints are to be installed. Providing smooth rail-sawn ends meets FRA requirements for the ANR's track classes, as no torch-cut rail is allowed in Class 4 or 5 track. Each hydraulic tool set contains one rail saw.

Impact Wrenches. Each track crew and Assistant Roadmaster also is outfitted with an impact wrench in the hydraulic tool set on their hi-rail vehicle. This piece of equipment is used to loosen and tighten joint bolts where joints are present in the track infrastructure. The impact feature of these tools is especially effective where a nut and bolt are rusted or seized and manual attempts to loosen them might prove unsafe. The impact wrench also is equipped with calibration capability so that applied force can be set in accordance with the manufacturer's specifications.

Tamping Tools. Each field track crew is equipped with two small, hand-held tampers. Major surfacing programs are incorporated into major rail and tie renewal projects and are performed by outside contractors with large tamping equipment. However, additional spot surfacing may be required to smooth joints, switch and railroad crossing frogs, switch points, bridge approaches, at-grade crossing approaches, local spots on the high sides of curves, and as curves move (out) in the spring and (in) during the fall. This spot power tamping (versus hand

tamping with ballast forks) minimizes speed restrictions due to track conditions. Thus, each track crew is equipped with a set of tamping tools powered by the hi-rail vehicle's hydraulic system.

Spike Hammers (Drivers). Each set of hydraulic tools is accompanied by a single spike hammer or driver which drives regular cut spikes into wooden ties or lag screws into timber headers (or planks) in at-grade, highway-rail crossings. These power tools reduce manual labor associated with spike installation.

Spike Puller. Lastly, each set of hydraulic tools is furnished with a single spike puller which again reduces the amount of manual labor associated with spikes, only this time involving the removal of existing spikes from timber ties.

Tampers and Ballast Regulators. Each of the five smoothing crews is equipped with a modern high-speed tamper with switch-tamping capability to perform spot tamping work, and a ballast regulator which is required for moving ballast, restoring the roadbed section and shoulder ballast, and sweeping the track. These crews perform virtually all of the spot tamping, lining and surfacing required to maintain proper track line and surface. The initial capital cost of five tampers is ${ } while the cost of five ballast regulators is ${ }. The initial capital cost of these items is from BNSF discovery document "MOW Equipment.xlsx." The amounts shown were indexed from the acquisition date to 2009 as shown in e-workpaper "MOW Equipment Index.xls."

Grinders. Each of the 15 welding crews is equipped with a complement of rail grinding equipment, including straight and profile grinders. This equipment is used to grind rail to the designed profile at specific locations. The ANR's welding crews use the Thermite welding process to eliminate joints created temporarily in CWR where a section of rail is replaced. They also restore, by welding, rail ends which are battered, chipped or crushed, switch and rail crossing frogs, and switch points. Once the welding is complete, the weld zone needs to be ground to conform with the rail profile adjacent to the zone. In addition, these crews slot insulated rail joints to be found in the vicinity of switches, railroad crossings and bridge approaches. The joints require slotting as the railhead flow, under traffic, moves to span the joint gap. If the flow is not checked by slotting, it eventually breaks off causing the rail end to chip or may cause signal failures.

Each of the 29 track crews also is equipped with a straight grinder in connection with their occasional rail repair work. The cost for 29 straight grinders for the track crews and 15 sets of grinding equipment for the welding crews is included in the cost of the hydraulic tool sets.

400-Amp Welders. Each of the 15 welding/grinding crews also is equipped with a 400-amp welder, which is mounted on the crew's hi-rail truck. This smaller welding tool provides the crew with the needed flexibility to access a work site regardless of the location of the track. The cost of 15 400-amp welders is $225,000, which is included in the truck cost for welders.

Oxy-Acetylene Welders. Finally, each of the 15 welding crews is equipped with welding and cutting torches and fuel cylinders. The total cost of oxy-acetylene equipment for the 15 welding crews is $8,250.

Gradalls. The ANR has five hi-rail Gradall hydraulic excavators which are available to the five ditching crews. These machines, which can be operated either on-track or off-track, are used primarily for cleaning and shaping the parallel and lateral ditches along the right-of-way. They can also assist in lading clean-up in the event of derailment spills. The cost of five Gradalls is $1.75 million.

Track Hoes. The ANR's MOW equipment roster includes two backhoe track excavators (also known as a "trackhoe"), normally stationed at Guernsey and at North Amarillo. These machines, which are operated off-track, are also available for use by the ditching crews. They are used primarily for clearing slide areas, installing culverts, and other miscellaneous excavation work which is not typically suited to a Gradall. They are also occasionally needed by the field track and signal forces. The trackhoe is effective for specialized ditching purposes (such as improving drainage in the vicinity of at-grade highway/rail crossings and placing signal conduit) and for spot excavating. It also can clear debris and beaver dams lodged at culverts and bridges when equipped with the optional grapple attachment. The total cost of two trackhoes is ${ } based on a document provided by BNSF in discovery ("MOW Equipment.xls)" which is reproduced in the e-workpapers for Part III-D.

Backhoes and Dump trucks. Each of the 15 Roadmaster territories is equipped with a small rubber-tired backhoe, dump truck, and trailer to transport the backhoe. These additional support vehicles supplement the equipment described in the preceding sections and are available to the track, ditching and smoothing crews on an as-needed basis. The cost of this equipment is $3,044,000.

Details (including sources) on the costs for all of the items of equipment described above are provided in e-workpaper "MOW Costs-Final.xls," tab "Annual MOW Equipment Cost."

iii. Work Trains

Contractors provide all of the equipment (except locomotives) necessary to support large track programs. As explained in Part III-C-2-c, the ANR has spare switching and road locomotives available for periodic use in contractor work-train service, as needed.[42] These locomotives can also be used to move the occasional car of ballast, etc., needed by the ANR's field MOW track forces.

The ANR does not need any separate work-train equipment of its own. Spot ballast is purchased by the carload, with the ANR simply moving the carload supplied by the vendor to the location where it is needed. Spot ties can be moved to the location where they are needed by truck. Based on Mr. Davis's personal knowledge and observation, many railroads (including Class I's) are now

[42] For example, CWR is laid in 1600-foot strings from a rail train of specialized flatcars that requires a locomotive. Other contractor equipment items such as a spike pullers, nipper-spikers, tampers and ballast regulators are self-propelled and do not require motive power.

using this approach and no longer employ fleets of work-train equipment for use by in-house MOW forces.

The ANR does need to store or hold work-train equipment temporarily, both for contract jobs and cars of material supplied by outside vendors. Mr. Davis has provided five 1,000-foot MOW equipment storage tracks for this purpose at each of the ANR's five inspection/fueling yards, with two additional tracks located at Donkey Creek and Denver. These tracks, and the setout tracks on either side of each FED, also can be used for temporary storage of some of the ANR's larger hi-rail equipment as well as contractor on-track equipment.

h. <u>Scheduling of Maintenance</u>

Spot maintenance work carried out by the ANR's MOW crews is not scheduled in planned maintenance windows. Although much of the work is routine, some occurrences are unplanned but require immediate attention and do not reflect the normal, routine approach to spot maintenance designed by AEPCO's MOW experts. Given the flow of traffic on the railroad, scheduling spot MOW work must be fluid and flexible to the extent feasible given specific maintenance needs. Although the ANR's field MOW crews (including signal maintainers) are responsible for all routine maintenance work that occurs on the ANR's right-of-way, they also address conditions requiring immediate remedial action such as a broken rails, broken joint bars, down or malfunctioning crossing signal gate arms, etc. Any condition requiring remedial action that cannot be met by the MOW field crews is referred to the proper authority, usually the Roadmaster or an Assistant

Roadmaster, who calls in the needed resources. In the meantime, the field MOW forces provide flag protection for such situations.

An ANR field maintenance crew may perform different work on succeeding days. In addition to regular duties, which the Foreman of each crew will have planned, the Roadmaster or other supervisor will assign specific tasks which will be referred to a particular crew or a combination of crews. The tasks assigned on a particular day will depend on what the expected rail traffic (train frequency) will be, and thus the work window available. A particular track crew may be able to move on track by hi-rail vehicle directly from its base to a location requiring, for example, the change-out of a defective rail which has precipitated a temporary slow order, thereby restricting the speed of trains. Another crew could have a similar task but, because of a differing circumstance with respect to train location and work window, must move by road (in its hi-rail vehicle) closer to the task's location, and then obtain a work window from the dispatcher.

Other activities can be scheduled more easily. For example, following the passage of an ultrasonic rail test car, some rails will require immediate removal and joints must be Thermite-welded. Since the testing is planned, the replacement of defective rails can be scheduled. The field track crew, assisted by a welding crew, can then be in position to replace the defective rails and weld them.

Ultimately, the ANR's field MOW crews are not relying on specific maintenance windows that are planned substantially in advance of the needed work.

Instead, crews plan their days around specific information concerning the number of trains expected that day in their territory and the work that needs to completed. Obviously, no scheduled maintenance would be performed during the ANR's peak traffic period; only emergency repairs would be performed.

i. Deferral of MOW on Line Segment North of Mossmain

The ANR will not construct the 32.95-mile line segment between Mossmain and Walter Jct., MT until 2011, and train operations on that line will not commence until January 1, 2012. The deferral of operations-startup means that the ANR does not need to start maintaining the Mossmain-Walter Jct. line until 2012, and thus can defer employing certain MOW personnel and acquiring certain equipment until that date.

Specifically, the ANR can defer the hiring of one Assistant Roadmaster (to be based at Laurel/Mossmain) and one field track crew (Foreman and three members) until 2012. The territory covered by the deferred Assistant Roadmaster and track crew can be covered by re-arranging the territories covered by the adjoining Assistant Roadmaster and track crews temporarily, as little track maintenance work will be required for the first three years of operation of this brand-new railroad.

The ANR can also defer the acquisition of a hi-rail boom truck for the deferred track crew until 2012. It also can reduce the required contract services by eliminating 32.95 miles of rail testing, track geometry testing, vegetation control,

and reducing equipment, communications and building maintenance expense proportionately.

j. Capital Program and Annual Operating Expense

The ANR's capital needs are addressed by application of the DCF model. All of the ANR's capital (program) MOW work is performed by outside contractors, using their own equipment except for locomotives associated with contractor-supplied work trains, such as rail trains. However, the ANR's in-house MOW forces support/perform duties related to both capital and expense or "spot" work, so their salaries and equipment need to be divided between capital and operating expense.

The Vice President-Engineering and the headquarters MOW administrative/support staff shown in Table III-D-11 above spend part of their time evaluating, planning and helping to execute capital MOW projects, as well as program contractor supervision. The field MOW forces assist in this effort to some extent, but their primary focus is on the day-to-day MOW work that is expensed. Consistent with the practice of most real-world railroads, Mr. Davis (in consultation with AEPCO's other engineering and operating experts) has concluded that one-third of the salaries of the Vice President-Engineering and the MOW administrative/support staff shown in Table III-D-11 should be capitalized and two-thirds should be treated as operating expense, and that 100% of the salaries and equipment used by the remaining supervisory and field forces should be treated as operating expense.

Therefore, the ANR's total annual MOW budget for the staff and equipment described above that is assigned to operating expense in the first year of operations is $60.2 million. *See* e-workpaper "MOW Costs-Final.xls."

5. Leased Facilities

The ANR has no leased track facilities. It shares a joint facility with one other railroad, MRL. (The ANR operates over MRL's line between Laurel and Jones Jct., MT.) The ANR's operations over this MRL trackage are included in the development of stand-alone operating costs. As a replacement for BNSF under its joint facility agreement with MRL covering its operations over this line,[43] the ANR incurs the same annual joint facility payments that BNSF incurs under that agreement. This payment is based on ${ } and equals ${ } in 2009. The development of the annual payments to MRL for use of these trackage rights is shown in e-workpaper "ANR Operating Expense.xls."

6. Loss and Damage

The ANR's annual loss and damage cost equals $2.7 million. This cost was developed based on the average of BNSF's and UP's actual 2008 loss and damage per ton for the commodities moving on the ANR, multiplied by the number of tons of each commodity moved on the ANR's replicated parts of the BNSF and UP systems in the Base Year, then multiplied by the traffic group ton ratios by

[43] The BNSF/MRL joint facility agreement is included in e-workpaper "MRL Trackage Rights.pdf."

commodity group to reflect 2009 ANR trains.[44] *See* e-workpaper "ANR Loss and Damage.xls."

7. **Insurance**

The standard practice of large railroads is to self-insure against potential liability except for catastrophic risks. The ANR also self-insures for most types of claims, and obtains insurance at competitive rates to cover catastrophic loss and Federal Employers Liability Act exposure.

Insurance expenses for the ANR were calculated using the average of BNSF's 2007 and 2008 insurance ratios (which are the latest available), or 1.73 percent of operating expenses. *See* e-workpaper "ANR Insurance.xls."

8. **Ad Valorem Tax**

The ANR operates in the states of Montana, Wyoming, Nebraska, Colorado, Oklahoma, Texas, New Mexico and Arizona. To develop ad valorem taxes, the amount of tax that BNSF and UP paid per route mile was calculated for each carrier's route miles in these states. These amounts were then applied to the ANR's route miles in each of these jurisdictions.

9. **Other**

a. **Costs related to Rerouted Traffic**

As described above in Parts III-A-1 and III-C-3-a, the ANR has four groups of internally-rerouted traffic. The first group consists of issue and other

[44] For cross-over traffic, the ANR's share of the loss and damage payments was calculated on the percentage of the ANR's car-miles to BNSF's and/or UP's total car-miles by two-digit STCC code.

New Mexico coal traffic that BNSF and UP move to Cochise, AZ via Rincon and Deming, NM. The ANR routes this traffic via Vaughn, NM and El Paso, TX.

The second group consists of coal traffic that moves from Wyoming mine origins to/beyond Northport, NE. BNSF routes most of this traffic via Donkey Creek, WY, Edgemont, SD and Alliance, NE. The ANR routes this traffic via Wendover and Guernsey, WY.

The third group consists of PRB loaded coal trains that BNSF and UP move between Stratford, TX and Vaughn, NM via UP's line between Stratford and Vaughn. The ANR routes these trains via Stratford to Amarillo, TX and from Amarillo to Vaughn, TX

The fourth group consists of coal traffic originating at Lee Ranch Mine in New Mexico and at a coal loadout in Utah served by the Utah Railway that moves to an interchange with FXE at El Paso, TX. BNSF routes the Lee Ranch traffic via Rincon, NM, and the Utah traffic (which it receives from the Utah Railway at Grand Jct., CO) via Denver, Pueblo, Trinidad, Albuquerque, Belen and Rincon. The ANR routes the Lee Ranch movement via Vaughn, and it routes the Utah movement (which is a cross-over movement that it receives in interchange from BNSF at Denver) via Pueblo, Las Animas Jct., Amarillo and Vaughn.

Neither BNSF nor UP should incur any net additional costs as a result of the reroutes. Neither carrier will have to establish any new crew bases or incur any additional crew costs for any of the rerouted movements. The only rerouted cross-over movement (the Utah-to-El Paso coal movement) is interchanged with

BNSF at a location (Denver) that is on the current route of movement for the traffic, and that is also an existing BNSF crew-change point.

The current routes for the PRB and Utah coal movements both traverse helper districts. BNSF will save the cost of helper locomotives and crews used to operate these trains at Crawford Hill in South Dakota/Nebraska and Big Lift/Palmer Lake in Colorado. All of the costs associated with the continued use of helpers have been included in the ANR's capital and annual operating costs. Indeed, all of the ANR's costs associated with using the longer routes have been included in its annual operating costs.

b. Third Party Coal Loading Fees

Third party (contract) loading fees are included for coal originating at certain mines in the PRB, based on fees per ton included in the third party loading contracts provided by BNSF in response to AEPCO's discovery requests. Loading fees are indexed to 1Q2009 and applied to the coal tons originating at these mines in the Base Year. The resulting expense was then indexed to 2009 volume levels based on the ratio of ANR 2009 coal tons to ANR Base year coal tons. The mines where loading fees apply and development of the third party loading fees are shown in e-workpaper "ANR Loading Fees.xlsx."

c. Intermodal Lift Cost

The ANR originates and terminates a limited number of intermodal containers and trailers at its West El Paso yard. According to information contained in the traffic files provided by UP in response to AEPCO's discovery

requests, all of the containers and trailers originating or terminating at El Paso included in the ANR traffic base move {

}. As a result, the ANR incurs lift costs associated with the origination or termination of each of these containers or trailers.

Lift costs are included in the ANR's operating expense based on UP's lift costs as developed from its 2008 R-1, indexed to 1Q2009 and applied to the number of trailers and containers originating at El Paso in the Base Year. The resultant lift costs were adjusted to 2009 traffic levels based on the ratio of 2009 consumer traffic tons to Base year consumer traffic tons. The development of the intermodal lift costs are shown in e-workpaper "Intermodal Lift Cost.xlsx."

d. <u>Texico Train Expense Additive</u>

As discussed in Part III-C-2-c-vii above, BNSF currently performs some re-blocking (intra and inter-train or "I&I" switching) of certain intermodal trains at its Clovis, NM yard. The ANR performs these same functions for these intermodal trains, to the extent they are included in the ANR traffic base, at its Texico, NM yard, located approximately six miles east of Clovis. To account for the additional costs associated with these switching/blocking operations, a fuel cost additive is included, based on the number of blocks switched per day, BNSF's fuel cost from its quarterly reports to shareholders, and fuel consumed per block as developed from BNSF's 2008 URCS. *See* e-workpaper "Texico block switching.xlx" for details.

The capital cost for the ANR's Texico Yard is included in the road property investment costs described in Part III-F below. Locomotive lease costs and crew costs are already included in the operating expenses for the ANR's switch locomotives and switch crews at Texico, and are therefore not included in the calculation of the Texico Train Expense Additive.

e. <u>Calculation of Annual Operating Expenses</u>

As noted at the beginning of this Part III-D, the statistical inputs used to develop the ANR's annual operating expenses (equipment and operating personnel needs, locomotive unit miles, crew starts, etc.) were developed by AEPCO's expert operating, IT and engineering/MOW witnesses, with assistance from AEPCO Witness Philip Burris. Mr. Burris also developed the annual salaries, equipment and operating unit costs. Mr. Burris used all of these inputs to develop the ANR's first-year (2009) operating expenses as shown in e-workpaper "ANR Operating Expense.xls." The 2009 operating expenses were then provided to AEPCO Witness Crowley who developed operating expenses for each period in the DCF model.

The procedures used to develop the ANR's annual operating expenses for the peak year (2018) and 2009 were those approved by the Board in *WFA/Basin I* and *II*, including the annualizing of certain operating statistics to reflect the peak traffic year (2018) from the peak-week analysis using the RTC Model. The resulting operating statistics were then adjusted to the 2009 requirements by applying the ratio of 2009 tons to 2018 peak-year tons by type of traffic, *i.e.* coal,

agricultural, consumer and industrial traffic. The deflator methodology is the same as that used by the Board in the *PSCo/Xcel* and *WFA/Basin* cases.

The resulting 2009 operating statistics were used to develop first-year operating expenses which were then input into to the DCF model.

III. E. NON-ROAD PROPERTY INVESTMENT

1. Locomotives

As previously described, the ANR leases all of its locomotives. The annual locomotive lease cost is included as an operating expense, as described in Part III-D-1 above.

2. Railcars

The ANR also leases all of its railcars. The annual railcar lease cost is also included as an operating expense; *see* Part III-D-2 above.

3. Other

Most of the ANR's other equipment, including company vehicles, maintenance-of-way equipment such as hi-rail trucks, radios, and telephones (*see* Parts III-D-3 and III-D-4 above) are leased. The annual lease cost for this equipment is included as an operating expense.

Some items of equipment will be purchased, in particular computers and related hardware. The ANR's IT and computer system needs, and the associated capital investment, are described in Part III-D-3-c-iv above.

The ANR operates over one joint facility, the line between Laurel and Jones Jct., MT, which is owned by MRL. Payments to MRL for the operating rights over this line are on a usage basis and are included in the ANR's annual operating expenses.

III. F. ROAD PROPERTY INVESTMENT

AEPCO's SARR road property investment evidence is being sponsored by Stuart Smith (land acquisition costs), Willard Whitbred and Timothy Wells (engineering, construction costs, communications and signals), and Charles Stedman (grading/roadbed preparation costs). These witnesses' qualifications are set forth in Part IV and summarized later in this Part.

The ANR replicates existing BNSF and UP rail lines in Arizona, New Mexico, Texas, Oklahoma, Colorado, Nebraska, Wyoming and Montana. As discussed in Part III-B, the ANR replicates key transcontinental intermodal and general freight corridors for BNSF and UP, as well as part of BNSF's coal corridors in Wyoming and Montana and extending south into Texas.

The ANR's road property investment costs are summarized in Table III-F-1 below and Exhibit III-F-1.

TABLE III-F-1
ANR ROAD PROPERTY INVESTMENT COSTS
(millions)

Item	Investment
1. Land	$ 217.1
2. Roadbed Preparation	1,147.8
3. Track	2,518.7
4. Tunnels	54.5
5. Bridges	795.6
6. Signals, Communications & Other Equipment	294.5
7. Buildings & Facilities (including Fueling Facilities)	131.0
8. Public Improvements	62.7
9. Subtotal	$5,222.1
10. Mobilization	56.5
11. Engineering	500.5
12. Contingencies	577.9
13. **Total Road Property Investment Costs**	**$6,357.0**

1. Land

The following evaluation of land acquisition costs for the ANR was prepared by Stuart A. Smith of MillenniuM Real Estate Advisors, Inc. Mr. Smith has over 25 years of real estate appraisal experience. He has prepared land acquisition cost testimony in prior STB maximum-reasonable rate cases, including *Wisconsin P&L* and *Seminole Electric Cooperative v. CSXT* (STB Docket No. 42110). Mr. Smith's extensive qualifications in the real estate appraisal field are set forth in Part IV.

The ANR's route passes through large stretches of rural and mostly undeveloped areas. However, small portions of the ANR route do pass through metropolitan areas, including Denver and Pueblo, CO and Amarillo and El Paso, TX. Mr. Smith's land acquisition report ("Report") focuses in more detail on these metropolitan locations, where land acquisition costs per acre are higher than in rural areas.

Mr. Smith's methodology and his determination of land acquisition costs for the ANR are set forth in his Report which is included as e-workpaper "Land Valuation Report.pdf." A summary of Mr. Smith's conclusions is provided in Table III-F-2 below.

TABLE III-F-2
ANR LAND ACQUISITION COSTS

Property Type	Acreage	Cost
ROW – Fee Simple	25,868	$213,278,042
Yards	716	2,795,982
Microwave Towers	147	$1,053,300
Total	**26,731**	**$217,127,324**

a. Right-of-Way Acreage

The ANR will acquire 25,868 acres in fee simple for its right-of-way at a cost of $213,278,042. Consistent with established Board precedent, the right-of-way has an average width of 100 feet in most areas, plus additional width at various locations as needed. *See PSCo/Xcel I* at 86. However, an average width

of 75 feet was used in industrial, commercial, and urban areas in and around Denver, Pueblo, Amarillo, El Paso and other locations as indicated in Mr. Smith's Report. *See Duke/CSXT* at 72-73; *Wisconsin P&L* at 1018; *West Texas Utilities* at 702.

b. Yard Acreage

The ANR has five primary yard locations, North Amarillo, TX (the ANR headquarters is also located here), Guernsey, WY, Texico, NM, West Vaughn, NM, and West El Paso (located in southeast New Mexico near El Paso, TX). The functions performed in each of these yards are detailed in Part III-B-3-b. The total yard acreage required is 716 acres. Details of the yard acreage calculations are included in e-workpaper "Yards.xls."

c. Microwave Tower Acreage

The ANR has 49 microwave tower locations situated on or near its right-of-way. Consistent with Board precedent, the ANR is purchasing three acres per microwave tower site. *See TMPA* at 699. Thus, the ANR acquires 147 acres for microwave towers at a total cost of $1,053,300.

d. Property Values

Consistent with recent Board decisions, property values were determined by evaluating the land adjacent to the BNSF and UP rights-of-way being replicated by the ANR. "The land along the ROW is a prime indicator of a ROW's value and has been used in all prior SAC cases." *Duke/CSXT* at 74; *see also Duke/NS* at 88. The total cost of the property necessary for construction of

the ANR is $217,127,324 million. The methodology used and analysis developed in determining the acquisition cost is summarized below.

i. Methodology

Vacant land is best appraised using the sales comparison approach. *PSCo/Xcel I* at 87-88. This method provides a price indication by comparing the subject properties to similar properties that have sold recently, applying appropriate units of comparison, and making adjustments based on the elements of comparison to the sale price of the analogues. Generally, the sales in the rural areas served by the ANR are analyzed using price per acre as the key determinant to establish a value estimate. Land sales in metropolitan areas traversed by the ROW were appraised using a variety of measures, such as cost per square foot and cost per acre, but all values were converted to per-acre costs in order to develop a final acquisition cost.

In valuing the ANR's ROW, Mr. Smith utilized a method that is consistent with traditional and accepted real estate practices applied to all types of rights-of-way when a corridor value is not required. Land sales in the vicinity of a right-of-way are examined to develop across-the-fence ("ATF") land prices. *See PSCo/Xcel I* at 88-89 (supporting ATF values). Land sales adjacent to or near the BNSF and UP rail lines being replicated form the basis for the ANR's real estate acquisition cost estimate.

Mr. Smith acquired land sale data from various land sale vendors for all states traversed by the ANR's lines. In addition, Mr. Smith consulted with local real estate appraisers where necessary.

ii. Application

Mr. Smith or his associates inspected most of the ANR right-of-way by driving near the replicated BNSF or UP right-of-way on public roads. Areas where physical inspection was not possible were reviewed using other data such as topographic maps and satellite imagery. Mr. Smith details his various inspection techniques in his Report (e-workpaper "Land Valuation Report.pdf").

These inspections aided in Mr. Smith's determination of the highest and best use of the property along the ROW, the specific breaks between land use segments, and the overall impression of an area relevant to potential value. Such inspections are inherently of more value in populated areas than in the isolated rural areas where land patterns are consistent for long stretches. Consequently, Mr. Smith concentrated his inspection efforts in the metropolitan areas traversed by the ANR.

After completing his inspections, Mr. Smith subdivided the ROW into various segments based on the land use types he identified. In particular, Mr. Smith utilized seven (7) different land use categories: Residential, General Commercial, Open Space/Wooded, Industrial/Warehouse, Small Town, Retail, and Open Space/Agriculture. Mr. Smith then examined comparative sales data for each segment and assigned a per acre value to the segment. The analysis was

performed assuming a fee simple ownership interest in property in undeveloped and unimproved condition. The appraisal includes the right-of-way for the tracks, yards and other facilities shown in Exhibit III-B-1 and as described above.

iii. Costing

The purpose of the costing process herein described is to provide the most probable hypothetical cost to acquire a fee simple interest in the right-of-way for the railroad lines being constructed by the hypothetical ANR. Land was evaluated in its undeveloped condition, without consideration of adjacent ownership boundaries, abutting ownership, or severance damages, with values determined as of January 1, 2009.

The ANR system is comprised of 2,201.97 miles of railroad right-of-way, covering 25,868 acres. The ANR's land requirements include five principal yards at several points along its lines as described above and in Part III-B-3-b. Total yard acreage is 716 acres. As explained above, the right-of-way width varies in different areas based on inspection and other evaluations of the existing BNSF and UP rights-of-way being replicated, and Board precedent. An average width of 100 feet was used in rural areas. An average width of 75 feet was used in industrial, commercial, urban, and suburban areas in and near the larger cities and towns traversed by the ROW. Thus, if an area was classified as General Commercial or Industrial/Warehouse, a right-of-way width of 75 feet was typically used.

(a) Assemblage Factor

In *PSCo/Xcel I* and *WFA/Basin I*, the Board accepted BNSF's inclusion of a 6.6 assemblage factor for fee simple purchases on the Orin, Reno and Campbell Subdivisions based on an assemblage factor study BNSF presented and the Board accepted in *West Texas Utilities*. Consistent with those decisions, Mr. Smith has included the same assemblage factor in his development of the costs for these three subdivisions.

iv. Conclusion

Based on the investigation and analysis undertaken by Mr. Smith, the cost of the fee simple estate and easements in the ROW needed for the ANR's lines as of January 1, 2009, subject to all stated assumptions and limiting conditions delineated in Mr. Smith's Report, is $217.1 million.

2. Roadbed Preparation

AEPCO's expert engineering witnesses, Willard Whitbred, Timothy Wells, and Charles Stedman, have developed the ANR's roadbed preparation costs in a manner generally consistent with prior Board decisions including *WFA/Basin I, AEP Texas, PSCo/Xcel I, Duke/CSXT, Duke/NS,* and *Carolina P&L*. Their expert qualifications are set forth in Part IV. Mr. Whitbred, currently a Senior Engineer and Project Manager at LTK Engineering Services has over 30 years of railroad engineering experience, including the engineering and construction of various transit systems and signals and communications systems. His engineering work has included extensive coordination with Class I railroads.

Mr. Wells, who is associated with Mr. Whitbred at LTK Engineering Services, has over 25 years of railroad engineering experience, including engineering and construction management experience with CSXT and the Dakota, Minnesota and Eastern Railroad. Mr. Wells also worked as track structures engineer for the Association of American Railroads ("AAR").

Mr. Stedman has 28 years of experience with L. E. Peabody & Associates, Inc. He has developed and presented evidence pertaining to roadbed preparation in numerous proceedings before the ICC and the Board. He has conducted several field inspections of eastern and western carriers' rail lines as well as detailed research into the valuation records of these same carriers. Mr. Stedman has also extensively researched Interstate Commerce Commission records including the ICC's Bureau of Valuation B.V. Form No. 561, commonly referred to as the ICC Engineering Reports.

The ANR's route replicates lines that have, with a few exceptions, been the subject of previous maximum rate proceedings. For example, the lines being replicated south of Northport, NE to Amarillo, TX are the same as those replicated by the SARR in the *AEP Texas* case. Thus, where possible, AEPCO's engineering witnesses utilized previously approved quantity development and costing procedures, including the use of real-world roadbed preparation and grading costs where available, efficient and cost effective.

In developing unit costs where no real-world costs were readily available or such costs did not reflect the ANR's economies of scale, AEPCO's engineering experts have used the Means Handbook, which has been the costing tool that complainants and defendants alike have used in virtually all maximum reasonable rate cases presented to the Board. The Means Handbook is very conservative because it bases its prices on an average of costs for projects of all sizes from around the country, without specific consideration for the economies of scale that benefit the ANR due to the much larger project size involved. The Means Handbook also assumes a unionized labor force, which can be considerably more expensive than non-unionized forces. For example, Means assumes that most heavy machinery is staffed by an operator and a helper (often called an oiler amongst contractors). Most non-unionized contractors do not use a second person.

Finally, the Means Handbook is an estimating tool. It cannot and does not attempt to recognize all the benefits that the ANR could realize through the competitive bid process. AEPCO's engineers expect that a competitive bid process for a project of this magnitude would result in costs considerably lower than those developed using the Means Handbook – a point borne out by many of the real-world unit costs for construction projects that AEPCO's engineers have used in this case.

A summary of the ANR's roadbed preparation costs is presented in Table III-F-3 below.

TABLE III-F-3 ANR ROADBED PREPARATION COSTS[1/]		
	Item	**Cost**
1.	Clearing and Grubbing	$ 6,731,185
2.	Earthwork	
	a. Common	280,800,249
	b. Loose Rock	65,845,167
	c. Solid Rock	137,610,545
	d. Borrow	528,748,613
	e. Land for Waste Excavation	1,561,628
3.	Drainage[2/]	
	a. Lateral Drainage	365,895
4.	Culverts[3/]	38,765,770
5.	Retaining Walls	9,314,510
6.	Rip Rap	11,632,095
7.	Relocation of Utilities	5,540,004
8.	Topsoil Placement/Seeding	5,742,079
9.	Surfacing for Detour Roads	6,817,225
10.	Environmental Compliance	2,876,225
11.	Tunnel Daylighting	17,453,056
12.	Sand and Drainage Berms	23,046,716
13	El Paso Trainway	4,917,650
14.	**Total**	**$ 1,147,768,613**

[1/] *See* e-workpaper "ANR Grading.xls."
[2/] Yard drainage is included in building site development costs.
[3/] *See* e-workpaper "ANR Culverts working.xls."

a. Clearing and Grubbing

i. Quantities of Clearing and Grubbing

Most of the Defendants' rail lines being replicated by the ANR were constructed in the 1800s or early 1900s, although a few segments were built in the 1930s and 1970s. Thus, most of these lines were built before the ICC Bureau of Valuation prepared the ICC Engineering Reports. Exhibit III-F-2 identifies the data obtained from the ICC Engineering Reports, including the acres per track mile that were cleared for those rail lines being replicated that were originally

constructed in the 1800s and early 1900s. The ICC Engineering Reports were obtained from the National Archives and Records Administration ("NARA"). *See* e-workpaper "ICC Engineering Reports.pdf." For the portion of the ANR route between Las Animas Jct., CO and Amarillo, TX, the B.V. Form 561 documents were not available. However, similar ICC Bureau of Valuation documents for the valuation sections covering these line segments, containing the same type of information as the B.V. Form 561, were obtained from NARA. *See* e-workpapers "Las Animas to Amarillo Engneering.xls" and "Las Animas to Amarillo Engineering docs.pdf." The clearing quantities for the valuation sections between Las Animas Jct. and Amarillo are also shown on Exhibit III-F-2.

For the line segments between Donkey Creek and Bridger Junction, WY (*i.e.*, the Orin and Reno Subdivisions) that BNSF constructed in the 1970's, AEPCO relied on publicly available roadbed preparation data. *See* e-workpaper "Masters.pdf." For the Campbell Branch (a/k/a the Eagle Butte Branch), which extends between Campbell and Eagle Butte Junction, WY, AEPCO relied on roadbed preparation data provided by BNSF in discovery. *See* e-workpaper "Eagle Butte Construction Docs.pdf."

Exhibit III-F-3 identifies the acres per track mile that were cleared for the construction of these line segments. As shown in Exhibit III-F-3, the documents for the Orin Line[1] and the Eagle Butte Branch do not indicate that any

[1] The "Orin Line," referred to in these documents, is part of BNSF's present-day Orin Subdivision.

acres were cleared for these lines. BNSF has long claimed that clearing occurred on these rail lines, but has never produced any supporting evidence. In *WFA/Basin*, construction documents for the third main track on the Orin Subdivision between Shawnee and Walker, WY contained quantities for a cost item entitled "Clearing/grubbing." Based on this item, BNSF claimed, and the STB accepted, that clearing quantities should be included for the Orin Subdivision and Campbell Branch. To minimize potential disputes, AEPCO has included quantities for clearing on these rail lines.

The quantities obtained from all of these documents, as shown in Exhibits III-F-2 and III-F-3 and discussed above, are assigned to the ANR's line segments in Exhibit III-F-4.

The clearing quantities (acres per track mile) were then increased by the ratio of the current roadbed specifications to the original construction specifications and applied to the track miles (including yards and sidings) of the ANR's line segments in the same manner as the grading quantities discussed below. Exhibit III-F-4 details the calculation of the ANR acreage requiring clearing. Further details are provided in e-workpaper "ANR Grading.xls."

The acres per track mile of grubbing were also obtained from the ICC Engineering Reports. These figures are displayed in Exhibit III-F-2, and applied to the ANR's line segments in Exhibit III-F-4, in the same manner as the acres for clearing. For the Orin Line and Eagle Butte Branch, there are no documents identifying how many of the cleared acres required grubbing. As

shown in Exhibit III-F-2, the acres of grubbing were significantly less than the acres of clearing for the ANR's other lines based on the ICC Engineering Reports. For the Orin Subdivision and Campbell Branch, AEPCO has assumed a ratio of grubbing acres to clearing acres of four (4) percent based on the other line segments of the ANR.

ii. Clearing & Grubbing Costs

Based on a field trip in September and October 2009 by Mr. Wells and others at LTK Engineering, as well as pictures from inspections by Stuart Smith (AEPCO's land valuation witness) and Paul Smith (AEPCO's principal operating witness), it was determined that much of the AEPCO route would require minimal clearing and most of the clearing would involve the removal of brush and grasses as opposed to trees. This is supported by the ICC Engineering Reports (and other ICC valuation documents) which show minimal clearing and substantially less grubbing. *See* Exhibit III-F-2. It is also supported by many photographs taken by AEPCO's witnesses during the field trips described above. In addition, the entire ANR route is classified as arid or semi-arid with typical vegetation of scrubs, grassland and bushes. *See* e-workpaper "ANR Average Rainfall.pdf."

In recent stand-alone cost proceedings, complainants have used two different costs for clearing and one cost for grubbing. This approach has been accepted by the Board. *See AEP Texas* at 78-79. For the acres that were grubbed (according to the ICC Engineering Reports), the complainants assumed that trees

were also cleared and used both the cost per acre for clearing and the cost per acre for grubbing from the Means Handbook. Therefore, AEPCO has used the cost per acre for clearing of $4,736 (cut and chip medium, trees to 12" in diameter) from the 2009 Means Handbook. This cost reflects the application of the Means Handbook location factors.[2] For these same acres, the AEPCO engineers have utilized the cost per acre for grubbing of $2,880 (associated with cut and chip medium, trees to 12" in diameter), also obtained from the 2009 Means Handbook and including the application of the Means Handbook location factors. For the remaining acres of clearing (*i.e.*, those acres not requiring grubbing), AEPCO's engineers applied the cost per acre of $221 from the Means Handbook, adjusted by the location factors, for clearing with dozer and brush rake, medium brush to 4" diameter. Based on this accepted methodology, the acres of grubbing are a subset of the acres cleared as grubbing stumps is not necessary if trees are not cleared.

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[2] The unit costs from the 2009 Means Handbook do not need to be indexed as they are at January 2009 levels, which coincides with the ANR's start-up. However, all of the unit costs from the Means Handbook utilized by the AEPCO engineers are adjusted by the Means Handbook location factors. The cost figures in the Means Handbook represent national averages. The Means Handbook city cost indexes for site construction are used to develop weighted average factors based on ANR route miles. *See* e-workpaper "ANR Grading.xls," tab "IIIF Loc Factor." The pages from the Means Handbook showing the city cost indexes, as well as the Means Handbook unit costs used in roadbed preparation, are contained in e-workpaper "Means Unit Costs.pdf."

The ANR requires 536 acres to be cleared and grubbed, and 11,976 acres to be simply cleared at a total cost of $6.7 million at 1Q09 levels. *See* Exhibit III-F-4.

iii. <u>Other</u>

(a) <u>Stripping</u>

Consistent with the Board's decisions in *PSCo/Xcel I* and *AEP Texas*, AEPCO's engineering experts have not included any costs for stripping. As the Board noted in *PSCo/Xcel I*, the defendant had not shown that stripping was required because "the top 6 inches of soil would be removed during excavation and because topsoil removal is included in waste costs, there would appear to be no need for a separate charge for stripping. To the contrary, including such an additional cost would result in a double count." *Id.* at 90. AEPCO's engineers also note that stripping was not an issue in *WFA/Basin*.

(b) <u>Undercutting</u>

AEPCO's engineers have not included a separate cost for undercutting, an item which the defendants in other SAC cases have repeatedly argued for and lost because the Board has consistently determined that undercutting for initial construction is unnecessary and additional costs for it are not warranted. *See WFA/Basin I* at 83; *AEP Texas* at 79; *Duke/NS* at 95; *Carolina P&L* at 82; *Duke/CSXT* at 80.

b. Earthwork

The ICC Engineering Reports have long been utilized in SAC rate cases (by both complainants and defendants) to determine a baseline for the development of earthwork quantities. *West Texas Utilities* at 702. The Board, likewise, has accepted the ICC Engineering Reports as an accurate tool for developing earthwork quantities. *Id.* As noted in the previous section on clearing and grubbing, no ICC Engineering Reports were available for the ANR line segments between Las Animas Jct., CO and Amarillo, TX but other ICC Bureau of Valuation documents, containing similar information, were obtained from NARA. The initial grading quantities obtained from these documents were adjusted in the same manner as the ICC Engineering Report quantities to reflect the ANR's modern roadbed specifications. The following is a description of the ICC Bureau of Valuation documents utilized for this portion of the ANR:[3]

The section between Las Animas Jct. and the CO/OK border is identified as valuation section 1A-CO of the Dodge City & Cimarron Valley Railway. Data for this valuation section was filed with the ICC on B.V. Form 643.

The section between the CO/OK border and Boise City, OK is identified as valuation section 22-OK of the Atchison Topeka & Santa Fe Railway

[3] AEPCO notes that the ICC documents used for the line between Las Animas Jct., CO and Amarillo, TX are the same documents that were used by the complainant and accepted by BNSF in the *AEP Texas* proceeding.

(formerly valuation section 2A-OK of the Elkhart and Santa Fe Railway). Data for this valuation section was also filed with the ICC on B.V. Form 643.

The section between Boise City, OK and the OK/TX border is identified as valuation section 2-OK of the Elkhart and Santa Fe Railway. Data for this valuation section was filed with the ICC on B.V. Form 588-R.

The section between the OK/TX border and Amarillo is identified as valuation section 1-TX of the North Plains and Santa Fe Railway. Data for this valuation section was filed with the ICC on B.V. Form 562.

Given the age of most of the lines being replicated by the ANR, AEPCO's engineering experts relied on the information contained in the ICC Engineering Reports and other ICC documents to develop the initial grading quantities, which were then adjusted to reflect the ANR's modern roadbed specifications.

i. Earthwork Quantities from ICC Engineering Reports

The history and use of the Engineering Reports is well documented and approved in other SAC rate cases.[4] Thus, AEPCO's engineering experts have dispensed with the recitation of the history of the ICC Engineering Reports. Details of the history can be found, most recently, in the Opening Narrative (Public Version) of Seminole Electric's evidence in STB Docket No. 42110 filed August 31, 2009, at pages III-F-20-24. Exhibit III-F-2 summarizes the data

[4] *See, e.g., Duke/CSXT* at 75, 80-81.

extracted from the ICC Engineering Reports for each valuation section applicable to the ANR. Exhibit III-F-5 contains a listing of the ICC Engineering Report valuation sections applicable to the ANR and the lines of the ANR to which they apply. Exhibit III-F-6 summarizes the distribution of earthwork quantities into the four earthwork categories shown on the ICC Engineering Reports: (1) common excavation; (2) loose rock; (3) solid rock; and (4) borrow. Exhibit III-F-7 summarizes the grading quantities after adjusting the ICC Engineering report quantities to reflect the ANR's modern roadbed specifications. Based on a review of the railroad construction literature prevailing at the time, the AEPCO engineers estimated that the ICC Engineering Report quantities for the rail lines comprising the portion of the ANR to be constructed reflect average roadbed widths of 17 feet for fills and 20 feet for cuts for BNSF lines, and 16 feet for fills and 18 feet for cuts for UP lines. *See* William C. Willard, *Maintenance of Way and Structures*, McGraw-Hill Book Company, 1915, pp. 29-31, included in e-workpaper "Original Roadbed Widths.pdf." These are the same original roadbed widths utilized by all parties in the prior *AEPCO* proceeding (STB Docket No. 42058). The ANR has single-track roadbed widths of 24 feet for fills and 40 feet for cuts and double-track (or passing siding) roadbed widths of 39 feet for fills and 55 feet for cuts based on 15-foot track center spacing, and a side slope of 1.5 to 1. *See WFA/Basin I* at 83 (accepting the same roadbed specifications used for the ANR).

ii. Earthwork Quantities for Segments Not Covered by the ICC Engineering Reports

(a) Donkey Creek to Bridger Junction, WY

There are no ICC Engineering Reports for the Donkey Creek to Bridger Jct. line segment (referred to here as the "Orin Line"), most of which was constructed in the 1970s, but there is publicly available data. *See Iowa Public Service Company v. Burlington Northern Railroad Company and Chicago and North Western Transportation Company* ("*IPS*"), ICC Docket No. 37029. The February 28, 1985 *IPS* testimony of BN witness Jerry R. Masters provided excavation figures covering 79.37 miles of BNSF's "Orin Line" from Reno to Orin Jct. *See* Exhibits JRM-3A and JRM-3B from *IPS*, which are included in e-workpaper "Masters.pdf."

Mr. Masters' testimony provided the cubic yards of excavation for this segment of the Orin Line and a wealth of other information pertaining to its construction. According to Mr. Masters' testimony, the roadbed width for the Orin Line construction equaled 28 feet for single track. Mr. Masters also stated that this portion of the Orin Subdivision (Reno to Orin Junction) was originally constructed as 50 percent single track and 50 percent double track.

Utilizing this information, combined with their specifications for the roadbed width, side ditch and side slope geometry, AEPCO's engineering experts estimated the earthwork quantities for the ANR's Orin Subdivision to equal 141,736 cubic yards per mile for single track and 174,843 cubic yards per mile for

double track (including excavation for special ditches) based on a 24-foot roadbed width. *See* Exhibit III-F-8.

(b) Eagle Butte Jct. to Campbell, WY

In response to AEPCO's discovery requests, BNSF provided information for this line segment in the same format as the Orin Line data included in Mr. Masters' *IPS* testimony. AEPCO's experts used this data in the same manner as they utilized the Orin Line data and estimated the earthwork quantities for this line segment to equal 222,550 cubic yards per mile for single track and 269,542 cubic yards per mile for double track (including excavation for special ditches) assuming a 24-foot roadbed width. *See* Exhibit III-F-8.

(c) Reno Jct. to Black Thunder Jct., WY

BNSF did not provide any earthwork quantity data for the line segment between Reno and Black Thunder Jct. To calculate the grading quantities for this branch line, AEPCO's experts used the per-mile quantities for the Orin Subdivision (Donkey Creek to Bridger Jct.), with which the branch connects, assuming a 24-foot roadbed width, as described above.

(d) Arapahoe and Harrington Destination Spurs

Two of the ANR's local destinations, the Arapahoe power plant near Denver, CO and the Harrington power plant near Amarillo, TX, require the construction of an ANR-owned destination spur from the main line. There are no ICC Engineering Reports for these two destination spurs, nor did BNSF provide any earthwork information for them in discovery. For the Arapahoe spur,

AEPCO's experts used the per-mile quantities for the adjacent valuation section, CBQ-2-CO. For the Harrington spur, they used the per-mile quantities for the adjacent valuation section, NPSF-1-TX.

(e) Vaughn Connecting Tracks

As described in Part III-B-1, the ANR is replicating the UP line from Vaughn, NM to El Paso, TX. In order to access the UP track, the ANR has constructed two connecting tracks totaling 3.12 miles in length. The earthwork quantities for these connecting tracks are based on the per-mile quantities for the adjacent valuation section, EPRI-1-NM.

(f) Dutch Subdivision

There are no ICC Engineering Reports that cover BNSF's Dutch Subdivision which extends from Dutch, WY to the Spring Creek and Decker Mines. BNSF did not provide any earthwork quantity data for this branch line in discovery. To estimate the grading quantities for this line, AEPCO utilized earthwork quantities developed using L. E. Peabody & Associates, Inc.'s Computer Aided Railway Design System ("CARDS") program – an approach that was accepted by the Board in *Otter Tail* at D-9 to D-10. CARDS uses the information from U.S. Geological Survey ("USGS") topographical maps in concert with the roadbed specifications to calculate the grading quantities for a particular rail line. Using what was accepted by the Board in *Otter Tail* for this

branch line, AEPCO's experts included 1,439,330 cubic yards of excavation[5] and 485,600 cubic yards of fill for the Dutch Branch. *See* e-workpaper "Dutch Branch Earthwork Quantities.pdf."

iii. ANR Earthwork Quantities and Costs

Once the adjusted earthwork quantities per mile were developed, it was necessary to calculate the total earthwork requirements and costs. The details of the procedures used are explained below.

(a) ANR Line Segments

Exhibit III-F-9 details the calculation of the earthwork quantities for all of the ANR's line segments. First, as discussed above, the ANR line segments were matched with the applicable valuation sections. Next, the track miles for each segment were categorized as first main (route miles), second main (double track and passing sidings) and other track (such as interchange tracks and setout tracks) based on the ANR's track configuration as developed by AEPCO witnesses Paul Smith, Walter Schuchmann and Paul Reistrup and detailed in Exhibit III-B-1. Finally, the number of tracks was multiplied by the applicable cubic yards per mile for the appropriate valuation section.

[5] The excavation quantity was distributed between common, loose rock and solid rock based on the distribution of the earthwork quantities for valuation section CBQ-6AB-WY which is the valuation section where the Dutch Branch connects to the main line.

(b) ANR Yards

The ANR has five major yards located at: North Amarillo, TX; Guernsey, WY; and Texico, West Vaughn, and West El Paso, NM. The ANR also has numerous small interchange "yards," characterized as interchange locations with two or more tracks. The ANR yard and interchange locations are shown on Exhibit III-F-10.

Consistent with the methodology used by the complainant in *WFA/Basin I*, AEPCO's engineers have divided the Guernsey Yard into two distinct segments. The western portion of the Guernsey Yard (the portion west of the US 26 highway bridge) was built when the main line was originally constructed and therefore is captured in the ICC Engineering Report data. The eastern portion of the Guernsey Yard was, according to BNSF, built in the 1970s. For the reasons explained below, grading quantities for the eastern portion of the yard were accounted for separately. Even though the Guernsey Yard is operationally one facility, for convenience AEPCO herein refers to the two sections of the yard as "Guernsey Yard West" and "Guernsey Yard East."

Guernsey Yard West, West Vaughn Yard, North Amarillo Yard, Texico Yard, West El Paso Yard and Interchange Yards. AEPCO's engineering experts calculated the grading requirements for the Guernsey Yard West, West Vaughn Yard, North Amarillo Yard, Texico Yard, and West El Paso Yard based on an assumed average fill height of one foot and 25-foot track centers, applied to the appropriate miles of track in these yards. The interchange yards were also

assumed to be an average fill height of one foot, but with 15-foot track centers. The one-foot fill height for yards is a technique that has been applied repeatedly to develop SARR yard earthwork calculations, and it is described in detail below.

The one-foot fill height was used for these yards because an assumed fill height of one foot is used to allocate earthwork quantities to the yard tracks involved in the original construction and reflected in the ICC Engineering Reports. *See Wisconsin P&L* at 1022. As the Board noted in *PSCo/Xcel I*, the earthwork quantities recorded in the ICC Engineering Reports reflect the requirements for all track in the particular valuation section – single main track, double main track, other sidings and yards. *Id.* at 94. There is no separation of these quantities by type of track, and no separate identification of earthwork quantities for yard track.

In order to differentiate the track types, AEPCO's engineers employed a spreadsheet program that makes the necessary adjustments to the quantities. In particular, the program determines the earthwork quantities per mile for the mainline track. The earthwork quantities for yard track then need to be removed. To do this, the spreadsheet formula calculates the number of yard track miles for each valuation section and develops the associated earthwork by assuming a one-foot fill. This amount of earthwork is then deducted from the total quantities for the particular valuation section and the remaining quantities are distributed to the main line miles. Therefore, when calculating the grading quantities for a yard that is placed in a particular valuation section, the one-foot fill

has to be used in order to be consistent and avoid overstating the required earthwork quantities.

Stated differently, any earthwork quantities for yard track that may have exceeded those required for a one-foot fill were allocated to the main track. Following this logic, when calculating yard track earthwork requirements for the ANR, a one-foot fill must be assumed. Otherwise, there will be a double-count in total earthwork quantities. This is a mathematical certainty, as the Board recognized in *Wisconsin P&L*:

> [I]n using the Engrg Rpts (which contain only the combined grading for yards and lines), the parties agreed to assume that the original rail yards required a minimum amount (1 foot) of fill. This allotted the vast majority of grading work to the roadbed. Given the parties' agreement on yard fill, it would be inappropriate for UP to seek to maximize the amount of grading on the line (by assuming minimum fill in the yards) and then, after the grading requirements are established, to revise upward the amount of grading in the yards.

Id. at 1022. The Board has continued to follow this holding in more recent decisions. *See AEP Texas* at 81; *Otter Tail* at D-10; *PSCo/Xcel I* at 94-95; *Duke/NS* at 91; *Carolina P&L* at 79; and *Duke/CSXT* at 77.

AEPCO notes that by utilizing the one-foot criteria for yard track, the vast majority of earthwork in each valuation section is assigned to the mainline tracks. For short valuation segments with a large number of yard miles, such as valuation sections in cities, this results in an abnormally high quantity of cubic yards per main line mile. However, AEPCO applies these high quantities to the

miles passing through cities in order to consistently apply the methodology to all of the ANR's lines.

AEPCO notes that the Defendants do not currently have yards at North Amarillo, Texico, West Vaughn or West El Paso. However, an analysis of the relevant valuation sections shows that the ICC Engineering Reports contain considerably more yard track than posited by AEPCO's engineers in the same or adjoining valuation section (some yards cross valuation section boundaries). *See* e-workpaper "ANR Grading.xls," tab "ICC Yard Track." Consequently, AEPCO's engineers used the one-foot fill rule for the yards listed above and multi-track interchange locations on the ANR. *See* Exhibit III-F-10.

Guernsey Yard East. The ANR is replicating BNSF's Guernsey Yard East, in much the same configuration that was utilized for the original SARR in the WFA/*Basin* case. Accordingly, AEPCO asked BNSF for data regarding the grading quantities or cost incurred by BNSF when it added this portion of the yard, but – as in the *WFA*/Basin case – BNSF did not produce any relevant documents. As noted above, the Guernsey Yard East was constructed in the early 1970s. Therefore, any grading quantities associated with that yard would not have been captured in the ICC Engineering Reports. Furthermore, the ANR's Guernsey Yard East is larger than BNSF's present Guernsey Yard East, and the topography surrounding BNSF's Guernsey Yard East is not flat. These complicating factors make it unrealistic to apply the one-foot rule in the unique circumstances presented. For these reasons, AEPCO's engineering experts, consistent with the

WFA/Basin I decision, included 2.73 million CY of excavation for Guernsey Yard East. *See* Exhibit III-F-10 and e-workpaper "Guernsey Yard earthwork.pdf."

(c) Daylighting of Tunnel No. 2 Near Guernsey

In the *WFA/Basin*, *PSCo/Xcel I* and *TMPA* cases, the complainants opted to have their SARRs daylight Tunnel No. 2 near Guernsey, WY, just as BNSF did in 1998. Consistent with the methodology approved by the Board in *WFA/Basin I*, AEPCO's engineers have included the actual costs to daylight the tunnel as derived from documents produced by BNSF in discovery rather than adding those quantities and costs to specific excavation categories. They have also included the permitting cost, the additional investment incurred by BNSF in 2002, and the additional cost to construct the Guernsey State Park bridge that crosses the daylighted tunnel. *See* e-workpaper "Tunnel Daylighting Cost.pdf."

(d) El Paso Trainway

In the prior *AEPCO* proceeding, defendants added costs to account for the construction of the El Paso Trainway. The Trainway is a partially submerged, half-mile long stretch of the UP's main line that runs under a portion of downtown El Paso, TX. According to the public filings in the prior *AEPCO* case, the Trainway was built in the late 1940s through a partnership of three UP predecessor railroads, the City of El Paso, and the State of Texas. UP's predecessor railroads paid for one third of the facility. The defendants' engineers in that case argued that the cost to UP to replicate the Trainway, as of 2001, would

have been $3.222 million, prior to removing the quantities and costs for this section of track from the general earthwork calculations.[6] In this case, AEPCO requested that UP provide the details from those calculations as well as the cost sharing agreement; *see* e-workpaper "Trainway and Sand Berm letter.pdf." However , UP did not respond to this request. Nevertheless, AEPCO's engineering witnesses have utilized the $3.222 million figure proposed by UP in the prior case and indexed it forward to 1Q09 using the Means Handbook construction index. Thus, AEPCO's experts have included $4.918 million for the Trainway, and excluded the relevant quantities for this section of track from their earthwork totals. *See* e-workpaper "ANR Grading.xls," tab "El Paso Trainway" and Exhibit III-F-11.

(e) Sand and Drainage Berms

In the prior *AEPCO* proceeding, the defendants added additional costs for the construction of sand and drainage berms alongside the SARR's track at various locations.[7] The complainant accepted the construction of these sand and drainage berms, but adjusted the defendants' costs from $24.5 million to $15.1 million to reflect the complainant's common earthwork costs.[8] In this case, AEPCO requested that UP provide the details behind the sand and drainage berms

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[6] *See* Defendants' Supplemental Reply Narrative (Public Version) in Docket No. 42058 filed Jan. 26, 2004, at III.F-237-239.

[7] *See* Defendants' Supplemental Reply Narrative (Public Version) in Docket No. 42058 filed Jan. 26, 2004, at III.F-27-30.

[8] See Complainant's Supplemental Rebuttal Narrative (Public Version) in Docket No. 42058 filed April 2, 2004, at III-F-15-16.

costs from the prior proceeding; *see* e-workpaper "Trainway and Sand Berm letter.pdf." Again, UP did not respond to this request. Therefore, AEPCO's experts have utilized the $15.1 million from the prior proceeding and indexed it forward to 1Q09 using the Means handbook construction index. They have included $23.0 million for the construction of sand and drainage berms along the ANR route. *See* "ANR Grading.xls," tab "Sand and Drainage Berms."

(f) Total Earthwork Quantities

In order to properly develop the quantities for grading the ANR's roadbed, it was necessary to separate the earthwork requirements into four types of material – common, loose rock, solid rock and borrow. This was done by distributing the total quantities for the line segments developed in Exhibit III-F-10 based on the distribution percentages obtained from the ICC Engineering Reports.

AEPCO's engineers classified the yard and interchange location earthwork as excavation because the estimated yard track quantities removed from the ICC Engineering Report total quantities were removed from the excavation quantities for each valuation section. The distribution of the earthwork quantities by type of material is shown in Exhibit III-F-11 and summarized in Table III-F-4 below.

Table III-F-4
ANR EARTHWORK
QUANTITIES BY TYPE OF MATERIAL MOVED

	Type of Earth Moved	Cubic Yards (000s)
1.	Common Excavation	82,346
2.	Loose Rock Excavation	6,826
3.	Solid Rock Excavation	10,805
4.	Borrow	41,416
5.	Total	141,393

Source: Exhibit III-F-11

(g) Earthwork Unit Costs

Following the approach approved in *WFA/Basin I*, AEPCO's engineers' common earthwork unit cost is based on a combination of real-world rail construction projects undertaken by BNSF on the Orin and Hereford Subdivisions. These projects are described in more detail below. The loose rock excavation category described in the ICC Engineering Reports is largely a product of bygone days – today, most loose rocks are easily handled by standard excavation equipment and are often subsumed within the meaning of common excavation in project bids. Nevertheless, to be conservative, AEPCO's engineering experts have retained the standard loose rock excavation category, and costs based on the Means Handbook, that have been repeatedly utilized by shippers and accepted by the Board in SAC rate cases. They also included solid

rock excavation costs based on the methodology and cost data accepted in prior SAC proceedings by the Board.

The important consideration in the use of real-world project costs is that it largely eliminates the often senseless debates that occurred in prior cases over the selection of equipment suitable for a particular type of excavation. For other earthwork unit costs where AEPCO's engineers have continued to use Means, the unit costs are the product of equipment selections made by AEPCO's experienced engineering experts. These selections generally reflect the lower cost equipment in a given equipment category because, as discussed above, use of the Means Handbook is an extremely conservative cost approach. AEPCO's engineers also confirmed their selections based on their field inspection of the UP and BNSF lines being replicated.

Based on this review, and as one might expect of rail lines generally, the lines being replicated were laid out to follow the path of least resistance (*i.e.*, following the natural ground as much as possible, minimizing grade changes and avoiding difficult terrain when possible). Thus, AEPCO's engineers have adopted the same least-cost-but-feasible grading approach approved by the Board in other rate cases. *See Duke/CSXT* at 78-80; *PSCo/Xcel I* at 95-98; and *FMC*, where the Board held:

> UP has not shown that it would be infeasible to use the equipment selected by FMC. Indeed, FMC's costs are based on a recognized source used by construction companies to estimate project costs. While the equipment UP would have the ORR use

> could also accomplish the required work, and may be more productive, it has higher unit cost for moving soil than the equipment FMC would have the ORR use. FMC is entitled to have the equipment that results in the overall lowest cost used. Therefore, we use FMC's unit costs for grading to determine earthwork costs.

Id. at 800.

(i) Common Earthwork

As noted above, AEPCO's common earthwork excavation unit cost is based on a combination of five railroad expansion projects undertaken by BNSF on the Orin and Hereford Subdivisions – which are parts of BNSF's (and partially UP's) primary coal and transcontinental freight transportation corridors.

One of the projects included in AEPCO's development of the common earthwork unit cost is the Walker to Shawnee Junction, WY project on BNSF's Orin Subdivision. This 14-mile, third main track construction project formed the basis of the common earthwork unit costs utilized by the complainants and accepted by the Board in *WFA/Basin*. Three other projects on BNSF's Orin Subdivision were also included in the AEPCO engineers' analysis. These three projects covered the construction of additional main track from south of Reno Jct., WY to Donkey Creek, WY, a total distance of 58 miles. The fifth project utilized by AEPCO's engineers was the construction of eight miles of third main on BNSF's Hereford Subdivision near Amarillo, TX. The separate common excavation and embankment costs from these five projects were combined in the following manner to produce AEPCO's common earthwork unit cost.

The cubic yard quantities and unit costs for common excavation and embankment were extracted from the documents provided by BNSF. The embankment cost for the Walker to Shawnee project was increased to include the cost for water for compaction as it was the only project where this cost was not included in the embankment cost. The unit costs for each project were indexed to January 2009 using the Means Historical Cost Index. The weighted average cost per cubic yard for common excavation and cost per cubic yard for embankment were calculated based on the quantity for each project. The weighted average unit cost for embankment was then reduced by 30% to reflect that only 70% of excavation is re-used as embankment, and combined with the weighted average common excavation unit cost to form the ANR's common earthwork unit cost. The reduction to the embankment cost is necessary because the common earthwork unit cost is applied to total excavation quantities.

The calculations described above are shown in e-workpaper "Roadbed prep costs from AFEs.xls." The BNSF construction documents are contained in e-workpaper "BNSF construction documents.pdf."

(ii) Loose Rock Excavation

Loose rock is a classification from a bygone era. Nevertheless, as in prior SAC cases, the ANR would need to excavate loose rock as defined in the ICC Engineering Reports. The definition provides:

> Loose rock shall comprise all detached masses of rock or stone of more than 1 cubic foot and less than 1 cubic yard, and all other rock which can be properly

> removed by pick and bar and without blasting, although steam shovel or blasting may be resorted to on favorable occasions in order to facilitate the work.

I.C.C. Division of Valuation, *Instructions for Field Work of the Roadway Branch of the Engineering Section*, 110 (1916). The ICC's definition of "loose rock" assumes that the materials could have been moved by pick and bar. Picks and bars are hand-held tools designed to pry rocks loose. The modern, mechanized equipment discussed below is a vast improvement over such tools. Indeed, in the prior *AEPCO* proceeding, BNSF and UP conceded that modern equipment is far more capable than the equipment available in 1916. *See* Defendants' Supplemental Reply Narrative (Public Version) in Docket No. 42058 filed Jan. 26, 2004, at III.F-53. In addition, AEPCO notes that BNSF does not even consider loose rock an excavation category. Its construction specifications are limited to common excavation and rock excavation. In particular, BNSF's construction specifications state that:

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See e-workpaper "Common-Rock Excavation.pdf." Thus, AEPCO's engineers are being extremely conservative in applying a separate loose rock unit cost to such excavation rather than simply including it in the common excavation quantities.

For the loose rock unit costs, AEPCO's engineers have chosen a combination of two 300 HP dozers for ripping the loose rock and pushing it into piles, a 3 CY power shovel for placing the ripped and dozed rock into the truck (including the Means 15% additive), a 42 CY off highway truck to haul the material to the fill or disposal site, and a dozer to spread the material after it is dumped. Both of the 300 HP dozers are equipped with rock rippers at their rear and with large push blades in front. The 42 CY off highway truck was selected because it is capable of turning in a 27' 11" foot radius and thus suitable for work in a railroad right-of-way. *See* e-workpaper "42 CY Truck.pdf." AEPCO's development of the loose rock excavation unit cost is consistent with the unit costs developed and accepted in prior SAC proceedings.

Material is compacted in fill areas using a combination of sheepsfoot and vibratory steel-wheeled rollers. The average cost for loose rock excavation is $9.65 per CY. *See* e-workpapers "ANR Grading.xls," tab "IIIF Unit Costs" and "Means Unit Costs.pdf."

(iii) <u>Solid Rock Excavation</u>

AEPCO's engineers developed solid rock excavation costs consistent with recent Board decisions, in particular *WFA/Basin I* at 86-87, *AEP Texas* at 82 and *PSCo/Xcel I* at 96-97. First, they developed a unit cost for solid rock blasting based on an average of the Means Handbook cost for blasting rock over 1,500 cubic yards and the cost for bulk drilling and blasting. The engineers then added the costs to excavate the blasted rock, load it into trucks, haul it away,

and dump it. They also included the cost to spread the material, and the average compaction cost for embankment that was used for the other earthwork categories was also applied. *See* e-workpaper "ANR Grading.xls," tab "IIIF Unit Costs." The unit costs and equipment mix developed by AEPCO's engineers are consistent with those approved in recent Board decisions. *See WFA/Basin I* at 86-87; *AEP Texas* at 82-83.

When applying the unit cost to the solid rock earthwork quantities, AEPCO's engineers used an average of the solid rock unit cost ($15.83 per CY) and the loose rock unit cost ($9.65 per CY). This reflects their expert opinion that at least half of the quantities classified by the ICC as solid rock would be rippable (and therefore classified as loose rock or common excavation) using modern equipment. This 50/50 combination has been repeatedly accepted by the Board. *See WFA/Basin* (parties agreed, not mentioned or altered in decision); *AEP Texas* (parties agreed, not mentioned or altered in decision); *Otter Tail* at D-12; *PSCo/Xcel I* at 96 (where BNSF also agreed on this split); *Duke/NS* at 93-94; *CPL* at 80; *Duke/CSXT* at 78. This 50/50 combination results in a cost per CY of $12.74 for solid rock excavation.

(iv) <u>Embankment/Borrow</u>

AEPCO's borrow unit cost is based on a combination of Means Handbook-based unit costs and actual BNSF construction costs. Specifically, AEPCO's engineers used the Means Handbook costs for a five cubic yard wheel-mounted front end loader to obtain the material and 20 CY capacity dump trucks

to haul the material to the construction site. To these costs, AEPCO's engineers added the full embankment cost that was previously discussed in the common earthwork section. The borrow unit cost equals $12.77 per CY at 1Q09 levels. *See* e-workpapers "ANR Grading.xls" and "Roadbed prep costs from AFEs.xls."

(v) Fine Grading

In the *WFA/Basin* case, the parties agreed that the common earthwork unit cost from the Walker to Shawnee Project included any necessary fine grading. The Board concurred in the parties' position; *see WFA/Basin I* at 88. The common earthwork costs for the other four BNSF construction projects also include any necessary fine grading. Consistent with *WFA/Basin I*, and the BNSF construction projects on which AEPCO is relying for earthwork costs, AEPCO has not included additional costs for fine grading.

(h) Land for Waste Excavation

Not all of the excavated material is re-used as fill. Consistent with the procedures used in other SAC cases, AEPCO's excavation calculations assume a 30 percent waste ratio. As this waste material needs to be placed somewhere, the ANR is acquiring additional land along the right-of-way to accommodate the dumping of the waste material. AEPCO's engineers have assumed an average 15-foot depth for wasted materials. AEPCO has included an additional 1,239 acres of rural land for this purpose at an estimated $1,260 per acre for a total cost of $1.6 million.

(i) Total Earthwork Cost

The total ANR earthwork cost, including land for waste excavation, is $1,014.6 million. AEPCO has also included $45.4 million for tunnel daylighting, sand and drainage berms, and the El Paso Trainway.

c. Drainage

i. Lateral Drainage

The linear feet of pipe per route mile for lateral drainage was obtained from the ICC Engineering Reports and applied to the lateral drainage needs for the ANR's lines. Pipe quantities were also extracted from the track charts for the Campbell Branch. The cost per linear foot for installed drainage pipe, including backfill and compaction, was taken from the 2009 Means Handbook. Based on the ICC Engineering Reports, the ANR requires 13,414 linear feet of lateral drainage pipe. The ANR's total investment in lateral drainage equals $0.4 million at the 1Q09 level. *See* Exhibit III-F-4 and e-workpaper "ANR grading.xls."

ii. Yard Drainage

AEPCO's engineering experts have included yard drainage facilities for each of the ANR's five inspection/fueling yards. However, before installing any particular drainage facilities, the roadbed for yard tracks are constructed to slope away from the main line. Storm water runoff thus will drain freely through the ballast and be collected by ditch lines around the perimeter of the yards. These ditches will then convey the storm water runoff offsite. Low areas can occur near

facilities and between tracks separated by non-typical spacing. In those instances, catch basins are used to collect the water in the low areas. This water is then conveyed under the track to the perimeter ditch. The number of catch basins and the length of pipe installed in the ANR's yard are based on the above design scheme, as well the layout of the facilities. This basic approach to yard drainage is typical of railroad yards, including BNSF's and UP's yards where LTK Engineering personnel saw little or no yard drainage.

d. Culverts

Culverts are devices placed in the roadbed to facilitate the movement of water from one side of the track to the other where large drainage areas, typical of bridges, are not required. The culverts specified by AEPCO's engineers are corrugated aluminized metal pipe ("cmp") except where the size of the opening required for the conditions exceeds the maximum cmp diameter. In such cases, concrete box culverts, using precast elements wherever size permits, were used. All culverts used by the ANR are adequate to withstand railroad loadings to a gross weight on rail of 286,000 pounds per car (Cooper E-80 standards).

Consistent with practice in other SAC cases, culverts replace any bridges less than 20 feet in length, assuming that the bridge crosses a waterway.[9] In addition, AEPCO's engineers have considered whether Type I bridges would be a better choice than large diameter cmp or concrete box culverts when building a new railroad today. Therefore, AEPCO's engineers have substituted 26 culverts

[9] *See, e.g., AEP Texas* at 93.

for existing BNSF or UP bridges and 72 bridges for existing BNSF or UP culverts. The details of the substitutions are shown in e-workpaper "ANR Culvert working.xls"

i. Culvert Unit Costs

Unit costs were developed for the installation of culverts assuming that the open trench placement method would be used. Unit costs for the cmp culverts are driven by the linear feet of the culvert required in a particular location as well as the diameter of the pipe. *See* e-workpaper "ANR Culverts working.xls" for details of the unit prices and sizes of the cmp utilized on the ANR. Unit costs for the concrete box culverts are driven by the width and height of the opening, as well as the linear feet through the track cross section. Additional unit costs were developed for excavation, furnishing and placing crushed stone for bedding material, rip rap for slope protection, and backfill for both culvert types. These unit costs are also detailed in e-workpaper "ANR Culverts working.xls."

ii. Culvert Installation Plans

All culverts are installed during the early stages of preparation of the railroad subgrade. The sites are easily accessible, in part through the ongoing preparation of the roadbed. Moreover, the culverts can be installed with a minimum of excavation using the open trench method of installation. In particular, culverts are installed after a sufficient depth of compacted roadbed fill has been placed. A trench is excavated to a depth of one foot below the flow line of the culvert, and one foot of bedding stone is placed in two compacted layers.

The culvert is laid, and then backfilled in compacted layers back to the top of the trench.

Work production of the crews is consistent with AEPCO's proposed construction schedule because there are no deep trenches to excavate or work in, and by installing the culverts at this stage of the project, no waterway diversions are required. In addition, the area traversed by the ANR is semi-arid, and no water is present in most of the stream courses except following brief periods of heavy rain. Moreover, in the few instances where water is flowing immediately adjacent to the culvert, the culvert can be installed while the water is flowing.

Once the base layer of the roadbed is in place, the trench for the cmp or concrete box culvert is excavated one foot wider on each side than the culvert width. The bottom of the excavation is covered with an average depth of 12" of crushed stone bedding material to act as a foundation and cushion for the culvert, providing a means for transferring the load into the ground below the culvert as well as a level surface. The first culvert section is placed on the prepared bedding material. The next section is placed adjacent to the first and a connecting band is installed to connect the two sections. This continues until all sections have been set in place. The culvert is backfilled, and Rip rap is placed for slope protection. After the subbase has been prepared, most culverts can be installed in less than one day.

iii. Culvert Quantities

AEPCO's engineers used the culvert inventories provided by BNSF in discovery, which included the length and diameter of the culvert. UP did not provide a separate culvert inventory list. AEPCO's engineers developed a list of culverts for UP by pulling this data from track charts. The inventory was culled to create a list of the culverts on the lines that the ANR is replicating. AEPCO's engineers then added additional culverts where a culvert was being substituted for a bridge shorter than 20 feet in length and removed culverts where a bridge was more economical.

AEPCO's engineers note that the inventory provided by BNSF does not reconcile with the culverts shown on BNSF's track charts. The engineers relied on the inventory rather than the track charts because this inventory provided more comprehensive data, and because BNSF uses this inventory for road property investment purposes.

iv. Total Culvert Costs

The total cost of the ANR's culverts is $36.8 million. *See* e-workpaper "ANR Culverts working.xls."

e. Other

i. Sideslopes

The ANR has average side slopes of 1.5:1. This side slope design has consistently been accepted by the Board. *See AEP Texas* at 80; *WFA/Basin I* at 83; *Otter Tail* at D-8; *PSCo/Xcel I* at 91; *Duke/NS* at 90; *Carolina P&L* at 78;

Duke/CSXT at 76; *TMPA* at 701, n.183; *Wisconsin P&L* at 1021-1022 and *FMC* at 795. Moreover, use of 1.5:1 side slopes is supported by Hay's definitive *Railroad Engineering Manual* and AREMA, §§ 1.2.3.3.2b and 1.2.3.3.3a at 1-1-22. LTK Engineering personnel observed 1.5:1 sideslopes on the lines being replicated during their recent field trips. *See* e-workpaper "sideslopes.pdf" for examples.

ii. **Ditches**

The ANR has side ditches in cuts that are two feet wide and two feet deep and that are trapezoidal in section. In many cases, this size ditch is larger than the existing ditches (where there were any at all) on the antecedent lines, as observed during the recent field inspection by Mr. Whitbred's team. *See* e-workpaper "ditches.pdf" for photographic examples. Two-foot ditches have repeatedly been accepted by the Board. *See Duke/NS* at 90; *Carolina P&L* at 78; *Duke/CSXT* at 76; *TMPA* at 701 n.183; *Wisconsin P&L* at 1023.

iii. **Retaining Walls**

Retaining wall quantities for the ANR are based on information in the ICC Engineering Reports under the category "Protection of Roadway" included in Account 3, Grading. This includes cubic yards of masonry, timber walls, and walls made from timber ties and pilings. Rather than construct masonry or timber retaining walls, the ANR uses gabions (galvanized steel mesh boxes filled with rock). Gabions are suitable because they can be assembled on site and bent to fit the existing terrain.

Consistent with the *PSCo/Xcel I* decision, AEPCO has used the cost for retaining wall gabions (including the rock) and the cost for timber pilings from the 2009 Means Handbook. Total retaining wall investment for the ANR equals $9.3 million at 1Q09 levels. *See* Exhibit III-F-4 and e-workpaper "ANR Grading.xls" for quantity and unit cost details.

iv. **Rip Rap**

AEPCO's engineers developed rip rap quantities for the protection of the roadway from the ICC Engineering Reports, and applied the unit cost from the Means Handbook to machine-place the rip rap. The engineers included the material portion of the unit cost because the necessary material (rock) is not readily available from the excavated rock that is wasted. This approach is conservative as the lines being replicated were observed to have very little rip-rap. AEPCO has included $11.6 million for rip rap investment at 1Q09 levels.[10] *See* Exhibit III-F-4 and e-workpaper "ANR Grading.xls."

v. **Relocating and Protecting Utilities**

Most of the lines being replicated were constructed by defendants' predecessors in the 19th and early 20th centuries. Few, if any, utility lines existed at that time and would have had to be relocated. These costs were not incurred by the incumbents and thus, under the *Coal Rate Guidelines*, would constitute a

[10] This rip rap investment does not include the rip rap used on culvert faces and for bridge pier and abutment protection. Those costs are included where needed in appropriate investment category.

barrier to entry if imposed on the ANR. *See AEP Texas* at 84; *PSCo/Xcel I* at 100; *Duke/CSXT* at 83.

However, a portion of the route miles the ANR is replicating were built subsequent to the existence of utility lines. These line segments are (1) Donkey Creek to Bridger Junction (including the Reno branch and the ANR-owned portions of the mine spurs); (2) Eagle Butte Jct. to Campbell (including the ANR-owned portions of the mine spurs); (3) the Dutch Branch; (4) Las Animas Jct. to Amarillo, TX; (5) the spurs to the Arapahoe and Harrington Power Plants; and (6) the Vaughn connecting tracks. These segments total 412.08 route miles. For these line segments, AEPCO's engineers, consistent with Board precedent,[11] have included a total estimate of $5.5 million for the costs to relocate and protect utilities based on the cost per mile accepted by the Board in *WFA/Basin* (indexed to 1Q09). *See WFA/Basin I* at 90. *See also* Exhibit III-F-12 and e-workpaper "ANR Grading.xls."

vi. Seeding/Topsoil Placement

Consistent with prior Board decisions, AEPCO's engineering experts included costs for seeding/topsoil placement in the same locations where BNSF and UP incurred these costs. *See AEP/Texas* at 85; *Xcel I* at 100; *Wisconsin P&L* at 84; *TMPA* at 121-122; and *Duke/NS* at 99. For the newly constructed line segments replicated by the ANR, primarily Eagle Butte Jct. to Campbell and Donkey Creek to Bridger Junction (including the Reno Branch and the ANR-

[11] *See Xcel I* at 99-100; *Wisconsin P&L* at 1024-1025; *APS* at 408.

owned portions of the mine spurs), AEPCO's engineers based the seeding and topsoil placement quantity calculations on the actual quantities used in the construction of the Orin Line from Exhibits 3A and 3B of Jerry Masters' testimony in *IPS* (*i.e.*, the same information used to develop the earthwork quantities for the Orin Subdivision discussed above). *See* Exhibit III-F-12 and e-workpapers "ANR Grading.xls" and "Masters.pdf." *See also AEP Texas* at 85 (accepting this procedure). For the other ANR lines, AEPCO's engineers relied on the embankment protection quantities obtained from the ICC Engineering Reports. Based on the ICC Engineering Report data, less than 0.01 percent of the remaining ANR-replicated miles had embankment protection quantities.

For seeding and topsoil placement costs, AEPCO's engineers used unit costs from BNSF construction project documents provided in response to AEPCO's discovery requests indexed to 1Q09 levels. *See* e-workpaper "Roadbed prep costs from AFEs.xls." The total ANR investment costs for seeding/placing topsoil equal $5.7 million. *See* Exhibit III-F-12.

vii. <u>Water for Compaction</u>

The costs for water for compaction of embankment are incidental to embankment costs according to BNSF's construction specifications and proposal requests. Based on the recent construction documents provided by BNSF in response to AEPCO's discovery requests, only one project, Walker to Shawnee, WY, included a separate cost for water for compaction. The water for compaction costs for the Walker to Shawnee project were incorporated into the embankment

cost per cubic yard used to develop the common excavation and borrow unit costs discussed previously. Therefore, the cost for water for compaction is already included in the ANR earthwork costs, and a separate cost is not necessary.

viii. Surfacing for Detour Roads

Consistent with Board precedent, AEPCO's engineers did not include costs for any road detours for the ANR's lines that are covered by ICC Engineering Reports, as it is unlikely that the defendants incurred any costs for this item when the lines were originally constructed. *See PSCo/Xcel I* at 101; *Duke/NS* at 100; *Carolina P&L* at 86; *Duke/CSXT* at 84; *TMPA* at 707-708; *Wisconsin P&L* at 1024-1025; *FMC* at 802.

For the ANR's line segments constructed after the ICC Engineering Reports wee prepared, as identified previously in the section on relocating and protecting utilities, AEPCO's engineers included an estimate of $6.8 million for the cost to provide road detours during construction. *See* Exhibit III-F-12 and e-workpapers "ANR Grading.xls" and "AEPCO crossing summary.xls." This cost assumes that for each private highway crossing on these line segments, a 6"-deep gravel detour road 10' wide and 300' long would be constructed. For each public highway crossing on these line segments, the engineers included costs for a paved detour road 24' wide and 500' long.

ix. Construction Site Access Roads

In general, the ANR's track subgrade is used for its site construction roads. In addition, most of the ANR right-of-way is accessible from public roads

and highways, thereby permitting construction access without building separate access roads. Further, the initial construction activity includes clearing the ANR right-of-way and creating initial site access with the heavy construction equipment. As the site is leveled by either cutting or filling the right-of-way, access roads are created for moving earth, rock and other materials to and from the construction sites. In any event, no additional costs should be incurred for site construction access roads because this is normally not a compensated portion of the grading contractor's requirements. For example, BNSF's construction specifications state that:

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See e-workpaper "Construction Roads.pdf." AEPCO's position on construction specifications is also consistent with recent Board decisions. *See Duke/CSXT* at 76; *Duke/NS* at 90-01; *Carolina P&L* at 78; *AEP Texas* at 80.

x. Environmental Compliance

Consistent with prior Board decisions, AEPCO's engineers did not include any costs for environmental compliance for the ANR's lines that are covered by ICC Engineering Reports because these costs were not incurred when the replicated lines were originally constructed by the defendants or their predecessors, and to require such costs now would be a barrier to entry. *See Wisconsin P&L* at 1025 (the parties agreed that environmental mitigation was only required for the recently constructed segments); *PSCo/Xcel I* at 101 (the parties agreed on the inapplicability of such costs); *AEP Texas* at 83. The public evidence in *WFA/Basin* also indicates that environmental compliance costs were applied only to recently-constructed lines.[12] The ANR's recently-constructed segments, for purposes of environmental compliance, are the same as those identified previously in the section on relocating and protecting utilities with the exception of the line from Las Animas Jct., CO to Amarillo, TX. While this line was constructed after the preparation of the ICC Engineering Reports, it was constructed prior to the advent of environmental regulations.

AEPCO's engineers have included a total of $2.9 million for environmental compliance. *See* Exhibit III-F-12 and e-workpaper "ANR Grading.xls."

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[12] *See* WFA/Basin Rebuttal Evidence in Docket No. 42088 (Public Version) filed Sept. 30, 2005, at III-F-81-82.

3. Track Construction

Track construction encompasses the work needed to lay track once the subgrade has been completed, including placing subballast, ballast, ties, rail, and other track components. The total cost for track construction as determined by AEPCO's engineers is shown in Table III-F-5 below, and equals $2,517.9 million. Details are provided in e-workpaper "ANR Track Construction working.xls." Development of this cost is discussed in detail below.

TABLE III-F-5
TRACK CONSTRUCTION COST
($ millions)

Item	Cost [1/]
1. Geotextile Fabric	$ n/a
2. Subballast & Ballast	184.7
3. Ties	472.0
4. Rail	650.9
5. Other Track Materials	221.8
6. Turnouts	127.9
7. Track Installation/Labor	860.5
TOTAL	$ 2517.9

[1/] Transportation costs are included in individual cost items.

a. Geotextile Fabric

Consistent with the *WFA/Basin I* decision, AEPCO's engineers have placed geotextile fabric only under turnouts and at-grade public crossings. *Id.* at 94-95. The quantities of geotextile reflect the amount needed for turnouts only because the cost per foot for at-grade public crossings already includes geotextile costs. The total ANR geotextile quantity calculations are included in the costs of

turnout and grade crossings shown in e-workpaper "ANR Track Construction working.xls."

b. <u>Ballast</u>

Consistent with past practice in the territory being replicated, AEPCO's engineers have used 20 inches of ballast and subballast, consisting of a 12-inch subballast layer and an 8-inch layer of clean rock ballast for all main tracks. *See WFA/Basin I* at 91, 93; *AEP Texas* at 86. Diagrams of the standard ANR main track cross sections (single and double) are included in e-workpapers "ANR Track Section Single.pdf" and "ANR Track Section Double.pdf."

Consistent with *WFA/Basin I*, AEPCO's engineers used 6 inches of subballast and 6 inches of ballast under yard tracks, origin and destination spurs, and helper pocket, set-out tracks and interchange tracks. Ballast for the ANR is locally obtained limestone or granite, crushed to meet AREMA No. 4 size requirements and meeting Los Angeles and Mill Abrasion requirements. Exact sources and suppliers are detailed in e-workpaper "ANR Unit Costs.xls." Subballast consists of similar parent materials crushed to provide a well-graded, dense layer of crushed rock similar to road base material. *See* e-workpaper "ANR Unit Costs.xls" for details of subballast sources.

Ballast and subballast quantities were developed for all sections of track based on the lengths of single and multiple track sections, and the roadbed section referenced above. As noted above, the AEPCO engineers have included cross-sections of the ANR track designs in e-workpapers "ANR Track Section

Single.pdf" and "ANR Track Section Double.pdf." E-workpaper "ANR Track Construction working.xls" includes the volume per foot of track for all items, including the volume per foot for ballast and subballast. The quantities were calculated by multiplying the sectional area in square feet by one foot in length and then dividing by 27 to obtain cubic yards. The volume of rock displaced by the volume of the ties being used in particular locations was removed from the total volume calculation.

Ballast and subballast quantities for yards were calculated assuming each track in the yard is a single track and using 6 inches of subballast and 6 inches of ballast. AEPCO's experts also used the standard conversion factor of 1.5 tons/CY in determining quantities, a figure approved by the Board in *WFA/Basin I* at 93.

AEPCO's engineers used prices for ballast derived from discovery documents provided by the Defendants. *See* e-workpaper "ANR Unit Costs.xls." Delivered costs for ballast are based on shipping distances from the sources to the railheads throughout the ANR system, which were then multiplied by 0.035 cents per mile based on a shipping charge used for inter-railroad transportation from *Wisconsin P&L* at 1029-1030. The supply and shipping costs were then totaled and averaged to develop an average cost per net ton delivered for ballast and subballast.

c. **Ties**

AEPCO's engineers selected wood ties with a tie spacing of 20.5 inches for all main track, passing sidings, and branch lines. This is consistent with railroad industry standards for mainline track, and the Board has also accepted SARR wood tie spacing of 20.5 inches. *See WFA/Basin I* at 96; *West Texas Utilities* at 707. Because of the lighter traffic and slower train speeds, AEPCO's engineers used wood ties with 24" spacing in yards, set-out tracks and interchange tracks. *See WFA/Basin I* at 96 (accepting this spacing in yards).

AEPCO's engineers selected standard Grade 5 treated hardwood railroad ties, whose dimensions are 7" x 9" x 8'6", for all track. Unit costs for Grade 5 ties were based on information provided by BNSF in discovery, as were transportation costs. *See* e-workpaper "ANR Unit Costs.xls."

The ANR is constructing its bridges with ballast decks, thereby obviating the need for transition ties. *See WFA/Basin I* at 97. Similarly, the Board has rejected transition ties at turnouts. *Id.* Transition ties are included at road crossings, but those particular costs are reflected in the road crossing unit prices.

d. **Track (Rail)**

i. **Main Line**

As discussed in Part III-B, 136-pound CWR is used for the ANR's main tracks and passing sidings, with premium rail in curves 3 degrees and greater and wherever traffic levels exceed 50 MGT annually. For the lightest-density

portions of the ANR (Mossmain to Walter Jct. in Montana and the Lee Ranch Branch in New Mexico), relay 136-pound rail is used.

The ANR's delivered cost for 136-pound standard and 136-pound premium rail was derived from information provided by BNSF in discovery. *See* e-workpaper "ANR Unit Costs.xls." The delivered cost of $351.66 per ton for 136-pound relay rail was derived from UP's 2008 R-1, Sch. 723. As explained in Instruction No. 3 to Sch. 723, the average cost per ton also includes transportation.

The rail is welded together into approximately 1600-foot lengths and then placed on a rail train. The rail is distributed by the rail installation contractor. These costs are included in the labor charges shown in e-workpaper "ANR Track Construction working.xls."

ii. Yard and Other Tracks

As discussed in Part III-B, the ANR is using 136-pound relay rail for yard, interchange, origin and destination spurs, helper pocket tracks, and set-out tracks. The delivered unit price per foot for the 136-pound relay rail is based on UP's R-1 data as described in the preceding section. *See* e-workpaper "ANR Unit Costs.xls."

iii. Field Welds

The cost of materials and labor for field welds was derived from documents provided by BNSF in discovery. *See* e-workpaper "ANR Track Construction working.xls." Field welds are required to connect the 1600-foot strings of welded rail produced by the manufacturer as well as to insert insulated

joints, make connections to turnouts and span grade crossings. The calculations for the number of field welds are shown in e-workpaper "ANR Track Construction working.xls."

iv. Insulated Joints

Insulated joint requirements are addressed in the signals and communications costs discussed in Part III-F-6 below.

v. Switches (Turnouts)

AEPCO's engineers included the number and size of turnouts specified in the ANR's track diagrams (Exhibit III-B-1). Unit costs for turnouts were obtained from documents provided by BNSF in discovery. *See* e-workpaper "ANR Unit Costs.xls." The turnout quotations include all materials necessary for construction of complete No. 24 power turnouts, No. 20 power turnouts, No. 15 power turnouts, No. 11 hand-thrown turnouts, and No. 9 hand-thrown turnouts, including, but not limited to rail, switch ties, frogs, guard rails, switch points, base plates and tie plates, switch plates, switch point heel blocks, adjustable wedge brace plates for the switch point section, insulated tie bar rods, connecting rods, the switch machine, and all other items incidental to turnout construction. The total cost for switches is shown in e-workpaper "ANR Track Construction working.xls."

e. Other

i. Rail Lubrication

Rail lubricators are used by the ANR to distribute grease to the wheel/flangeway interface where the degree of curve of the track is 4 degrees or greater on mainlines and branches. Spacing of lubricators is based on the coverage of the grease as defined by the supplier, and as warranted by track conditions. The unit cost for rail lubricators is based on documents provided by BNSF in discovery. *See* e-workpaper "ANR Unit Costs.xls."

ii. Plates, Spikes and Anchors

The ANR is using wood ties with cut spikes that will be used to hold the rail to the tie plate and the tie plate to the ties, and to provide lateral restraint to hold the rail to gauge (4'-8½" inside dimension between the railheads). Two spikes per tie plate (four spikes per tie) are used on all track with timber ties and less than 3-degree curves. This spiking pattern is standard practice for U.S. railroads, is used by BNSF in the territory being replicated, and was approved by the Board in *WFA/Basin I* at 103. AREMA standards also support two spikes per plate. *See* e-workpaper "Spiking.pdf."

For curves between 3 and 6 degrees, four spikes per plate are used. This pattern is consistent with industry practice and AREMA. *Id.* For curves greater than 6 degrees, five spikes per plate are used. *Id.*

Rail anchors are drive-on or spring clip-on devices that clamp under the base of the rail and bear against the sides of the timber ties. Anchorage of the

rail prevents the rail from running, or moving in a longitudinal direction down the track due to thermal expansion or train acceleration/braking loads. The anchors transmit the longitudinal stress forces in the rail to the ties, which then transmit the forces to the ballast thereby restraining movement of the track structure. Anchors are used on both sides of every other tie on main track, branch lines, yard tracks, set-out tracks and interchange tracks where the curvature does not exceed 3 degrees. Anchors are used on both sides of every tie for curves 3 degrees or greater and for 200 feet on each end of grade crossings (those costs are included in the grade crossing and turnout costs). The anchoring pattern being used on the ANR is consistent with AREMA. *See* e-workpaper "Anchoring.pdf."

The costs for plates, spikes, and anchors are detailed in e-workpapers "ANR Track Construction working.xls" and "ANR Unit Costs.xls."

iii. <u>Derails and Wheel Stops</u>

Derails are used to keep cars from rolling from a spur track or side track through a turnout and onto the main track. Derails are included at all FED set-out track turnouts and at yard turnouts at the five yard locations where cars are set out from trains and stored. Wheel stops are used at the end of single ended tracks to keep the cars from rolling off the end of the track, but there are no single ended tracks in the ANR configuration. The cost for derails was developed from documents provided by BNSF in discovery. The total costs are described in e-workpaper "Track Construction working.xls."

iv. Materials Transportation

Specific transportation costs associated with a given item are addressed in the relevant portions of this Subpart, or in the applicable e-workpapers. Therefore, no additional transportation costs have been added for those items.

v. Track Labor and Equipment

The ANR's track laying and related costs were derived from the *WFA/Basin* case. In particular, AEPCO's engineers utilized public data from the complainants' evidence, which was accepted by the Board. *See* WFA/Basin's Opening Evidence (Public Version) in Docket No. 42088 filed April 19, 2005, at III-F-71 (Table III-F-7), which details the installation costs for various track configurations. *See also WFA/Basin I* at 106-107 accepting WFA/Basin's track labor costs. The unit costs were then indexed forward to 1Q09. *See* e-workpaper "Track Construction working.xls" for details.

4. Tunnels

There are three tunnels on the lines that the ANR is replicating. Two of the tunnels are located on the Canyon Subdivision. The tunnels, known as Tunnel No. 1 and Tunnel No. 3, are both located near Guernsey, WY (at MP 96.85 and MP 101.47). One is 3,334 feet long and the other is 1,442 feet long. *See* e-workpaper "ANR Tunnels.xls." The third tunnel is located on the Laurel Subdivision (MP 12.70), and is 2,517 feet long. All three tunnels are single-track tunnels on BNSF and on the ANR as well.

Consistent with Board precedent, ANR's engineers utilized the base unit cost of $2,561 per linear foot developed in *Coal Trading Corp.* at 422, and then indexed this cost from 1980 to 1Q09. This procedure yields a unit cost of $7,431 per linear foot. The unit cost was multiplied by the total feet of tunnels (7,291 linear feet) to yield a cost of $54.2 million. *See* e-workpaper "ANR Tunnels.xls" for details of the Means Handbook indexing and total cost development.

In *WFA/Basin*, the Board accepted the unit cost for tunnels as described above, but it also accepted a tunnel-related additive to MOW costs proposed by BNSF. *See WFA/Basin I* at 107. Specifically, BNSF argued that the tunnels being replicated were timber-lined tunnels rather than the typical concrete and steel tunnels built today, and that such tunnels required additional upkeep. *Id.* WFA/Basin responded that the unit cost utilized for tunnels did not specify the tunnel type (*e.g.*, timber-lined or concrete and steel). However, WFA/Basin did note that its MOW witness had been involved with the construction of a tunnel during the early 1980s (about the same time period that the *Coal Trading* unit cost was derived from) where the unit cost was similar to the *Coal Trading* unit cost, and that tunnel was concrete-lined and steel reinforced. Therefore, WFA/Basin argued that the tunnel from the *Coal Trading* case was likely to have been a concrete and steel tunnel and not a timber-lined tunnel. The Board rejected WFA/Basin's assertion on the grounds that a witness' recollection was not sufficient, and as the tunnels being replicated were timber-lined, WFA/Basin was

stuck with the additive since it could not show that the tunnel cost would include concrete and steel construction techniques. *Id.*

AEPCO's engineers have assumed that the tunnels being constructed are concrete-lined and steel reinforced for the reasons set forth below. First, AEPCO's engineers note that any tunnel built in recent periods would not have been timber-lined. Such construction techniques are no longer utilized. Indeed, as early as 1902, treatises were already addressing how to swap out timber-lined supports for more durable materials. *See* Charles Prelini, *Tunneling: A Practical Treatise* 280 (1902). Second, AEPCO's engineers were directly involved with a railroad tunneling project from 1993 where the unit cost for a concrete-lined tunnel was $2,490 per linear foot – as indexed to 1Q09. *See* "Tunnels.pdf" for details of the project. Likewise, another tunnel project undertaken that same year was also concrete-lined and less per linear foot ($4,853) than AEPCO's unit cost in 1Q09 dollars. The second project also involved particularly challenging fractured rock formations. *Id.* As such, AEPCO has not included any additional MOW costs for the tunnels it is constructing.

In addition, to the three tunnels described above, BNSF also has a structure BNSF describes as "super span" (a large culvert that acts as a tunnel) on the small portion of the Spanish Peaks Subdivision that leads to the Comanche Power Plant. As BNSF explained in the *AEP Texas* case, this structure allows

trains to travel for 130 feet under an irrigation ditch.[13] In *AEP Texas* the parties agreed on a cost of $218,528 for this structure. *See AEP Texas* at 92. AEPCO's engineers have also utilized the same cost, but they have indexed it to 1Q09 levels.

5. Bridges

AEPCO's engineers have inspected the lines being replicated by the ANR and reviewed the specific information contained in BNSF's bridge inventory and other documentation produced by UP. From their inspection and review, AEPCO's engineering witnesses have developed bridge quantities and costs consistent with the ANR's needs. Bridge design and unit costs are derived from various real-world sources as described below. Thus, the ANR's bridges are consistent with real-world costs and designs.

a. Bridge Inventory

AEPCO's engineers prepared the ANR bridge inventory based on a review of the bridge information provided by BNSF and UP in discovery. The bridge inventory includes milepost, feature crossed, number of spans, structure type, and total length. The inventory is provided in e-workpaper "ANR Bridges working.xls." Consistent with Board precedent, bridges spanning 20 feet or less and crossing natural barriers are being been built as culverts. See e-workpaper "ANR Culverts working.xls," tab "ANR Culvert List." In addition, some existing

[13] *See* BNSF's Reply Narrative (Public Version) in Docket No. 41191 (Sub-No. 1) filed May 24, 2004, at III.F-132-133.

culverts have been converted to bridges. *See* e-workpaper "ANR Culverts working.xls," tab "ANR Bridge to Culvert list."

b. <u>Bridge Design and Cost Overview</u>

Consistent with past practice in SAC rate cases, AEPCO's engineers utilized several previously-accepted standard bridge designs (*e.g.*, Type I, II, III bridges) based on the diverse bridge lengths and heights that are required.

i. <u>Bridge Design</u>

When the lines replicated by the ANR were constructed, a variety of bridge types and lengths were used. This was due to the different technologies that were available at the time of original bridge construction, the proclivities of the particular railroad that constructed the bridge, the desired load rating, and the available materials. As technology has become more sophisticated, so has bridge design and implementation. Due to the nature of a railroad, when replacing/ building new bridges, the number of spans can be modified to create an efficient design. Indeed, the ANR's bridges have the same lengths as the real-world bridges on the lines being replicated, but AEPCO's engineers have designed and costed those bridges using more efficient spans where feasible. As no information was provided in discovery on the hydraulic area of the bridges, water flow increase/decrease was not taken into consideration in the engineers' methodology as this is negligible due to the fact that each ANR bridge either has the same number of spans, or has a decrease in span number, while keeping the length the same as the existing bridge.

(a) Type I Bridges

Type I bridges have spans of 13'-6" and 14'-0". The lengths of these bridges vary based on the number of spans. The same precast deck, column caps, abutment caps and wingwalls are used for all of these bridges. Each column and abutment uses three HP14x89 piles as the foundation. Any ANR bridge shorter than or equal to 30' tall and with its largest span less than or equal to 16'-0" was classified as Type I.

(b) Type II Bridges

Type II bridges have spans of 28'-0" to 33'-0". The lengths of these bridges also vary based on the number of spans. The same precast, hollow box deck, column caps, abutment caps and wingwalls are used for all of these bridges. The typical column and abutment uses three HP14x89 piles as the foundation. Any ANR bridge less than or equal to 30' tall and with its largest span greater than 16 feet and less than 35 feet was classified as Type II.

(c) Type III Bridges

Type III bridges have spans of 60'-0". The first and last span may be shorter and use the precast deck components from Type I or Type II bridges. The 60-foot spans are achieved using four precast I-girders side-by-side. A cast in place deck is installed over the I-girders. Each bridge uses the same abutment and column caps, which are larger than those on Type I and Type II bridges. Any ANR bridge less than or equal to 30 feet and with a maximum span greater than 35 feet and less than or equal to 65 feet was classified as a Type III bridge.

(d) Type IV Bridges

None of the Type I, II and III bridges are particularly tall. The only difference between bridges of different heights is the amount of pile material above ground and the degree of diagonal channel bracing between piles. Considering that most of the pile material is driven into the ground, this small variation above grade is insignificant for the Type I, II and III bridges.

However, there are several tall bridges on the ANR. Indeed, most are also long versus the other bridge types. Because the foundation design is affected considerably by unusual bridge height, and consistent with *WFA/Basin* and other cases, AEPCO's engineers included a fourth bridge type. Type IV bridges range up to 80 feet tall with spans as great as 125 feet. The bridges use a deck system similar to the Type III bridges, except they include five precast girders, side-by-side, rather than four. As with Type III bridges, the deck is cast in place and waterproofed on site. The main difference between the Type IV and Type III bridges are the massive foundations for the Type IV bridges. Driven piles are used for the abutments, and the columns are drilled caissons socketed into rock. Any ANR bridge taller than 30 feet or with spans greater than 65 feet was classified as a Type IV bridge.

(e) Type V Bridges

Finally, there are ANR bridges that exceed either the maximum span of the Type IV bridges, the maximum height of a Type IV bridge, or both. Thus, there is a need to provide additional foundation and span structure strength and

capability. Therefore, an additional factor has been developed and applied to bridges that exceed one or both of the Type IV bridge parameters of span and height, as shown in e-workpaper "ANR Bridges working.xls."

(f) Highway Overpasses

As noted in Part III-F-8-c below, grade separated crossings are included in the bridge calculations. The ANR is constructing 171 such overpasses. As noted previously, most of lines being replicated predate the roads in this territory. As such, AEPCO has included 10 percent of the costs for such bridges consistent with Board precedent. *See AEP Texas* at 102-103. AEPCO included 100 percent of the costs for such bridges in territory replicating recently-constructed lines, including the Orin, Reno, and Campbell Subdivisions.

The unit costs were derived from a spreadsheet that the California Department of Transportation publishes, "Comparative Bridge Costs 2004" for preliminary estimates of highway bridges. *See* e-workpaper "ANR OH Bridges Final.xls." An appropriate approach length, track span, and number and width of lanes appropriate for the category of road (Interstate, state highway, county or local road, and pedestrian) was determined for each structure. Based on the span, one of two types of span beam (RC Slab or RC T-Beam) was chosen. *See* e-workpaper "ANR OH Bridges Final.xls." The ANR highway overpass bridges will be constructed with the required clearances as specified in AREMA Figure 28-1-6.

ii. Bridge Costs

The design parameters for Type I, II and III bridges are identical to the parameters utilized for Type I, II and III bridges in *WFA/Basin*. Thus, AEPCO's engineers utilized the *WFA/Basin* unit costs for those bridge types indexed to 1Q09. *See Simplified Standards for Rail Rate Cases*, STB Docket No. 646 (Sub-No. 1) (STB served Aug. 14, 2009) at 4 (showing the *WFA/Basin* unit cost by bridge type) and "ANR Bridges working.xls" for indexing and final cost details by bridge type.

AEPCO's engineers utilized the same real world bridge project costs for Type IV bridges that were used in *WFA/Basin*. In particular, AEPCO's engineers relied on the publicly available bid documents for BNSF's Canadian River Bridge project that was built near Purcell, Oklahoma. Details of the cost development from this project are included in e-workpaper "ANR Bridges working.xls."

For Type V bridges, AEPCO's engineers evaluated the increased costs associated with the increased strength requirements from the longer spans, greater heights, or both, as a matter of degree, not as a matter of a totally new design vis-à-vis Type IV bridges. After all, Type IV bridges have significant strength and capacity, which are reflected in their significantly higher costs than the Type I, II, or III bridges. This difference of degree has an equivalent in the highway bridge design field – the difference between Interstate-design bridges and the more general category of National Highway System (NHS) bridges. While

Interstate bridges are part of the NHS, the non-Interstate bridges are built to higher standards with longer spans, greater heights, and greater road widths. The Nebraska Department of Highways published a comprehensive comparison of Interstate and NHS bridges built under its purview (*see* e-workpapers "NE bridge summary2 2008.jpg" and "ANR Bridges working.xls").

Based on actual costs from contracts for both types of bridges using the same concrete span construction (pre-stressed concrete I beam) as the ANR Type IV bridges, a premium of 17.8% was calculated as the effect of the higher standards, longer spans, and greater heights of the Interstate bridges on the contract prices for NHS bridges. This premium also takes into account the fact that the ANR bridges do not require phased construction, as no traffic has to be diverted during construction. Accordingly, the AEPCO engineers calculated the Type IV costs for each Type V bridge, then applied an additional 17.8% to the overall cost to reach a total Type V bridge cost.

iii. Cost Development

The total investment cost for the ANR's bridges is $794.4 million. *See* e-workpaper "ANR Bridges working.xls."

6. Signals and Communications

The ANR's signals and communications costs are summarized in Table III-F-6 below. As described in Part III-B, the ANR uses a CTC traffic control system to govern train movements on its main lines. Communications needs are met through a combination of fiber optic trunk lines, microwave towers

and land mobile radio stations. The systems and associated costs are described below.

TABLE III-F-6
SIGNALS AND COMMUNICATIONS SYSTEM COSTS
($ millions)

Item	Cost
1. CTC, FEDs, Crossing Signals, AEI Scanners, and Related Equipment	$ 273.7
2. Communications	$ 20.9
Total	**$294.6**

a. Centralized Traffic Control

The ANR's signal and communications systems were designed and costed by AEPCO witnesses Whitbred and Wells. The various component quantities were developed by reviewing the ANR system diagram included as Exhibit III-B-1. Intermediate locations are based on signal spacing of up to 13,000 feet.

Unit costs were derived from documents provided by UP in discovery, adjusted to remove cab signals, Train Advance Warning System materials, and otherwise match the ANR's needs. The costs developed for the CTC system includes all of the materials necessary for the operation of each signal, including vital control equipment, power distribution, cables, switch mechanisms, wayside signals, crossing gates, internal wiring, huts, batteries, power drops and insulated joints. Intelligent electronic track circuit technology is

applied for the automatic signal locations between interlockings. Insulated joint costs are included in the signal system unit prices.

Automatic signals have been spaced to provide a maximum block length of 13,000 feet, which is within the capability of the equipment. Interlocking huts employ vital microprocessor technology. These huts provide far greater capability for complex logic than relay-based systems, thereby making it possible to employ advance functionality, including the independent control and indication of the switches comprising a crossover. Sufficient switch cabling has been provided to support this feature.

AEPCO's engineers also provided for both manual and machine trench digging and cable installation as required to interconnect the equipment huts and wayside appliances. In addition, each interlocking and other CTC device also includes the data radios necessary to link them to the ANR's communication system. The entire system is linked into the dispatching center, which is also costed in this section.[14]

The dispatching center cost of $1,000,000 was based on previous dispatching center costs accepted by the Board. *See, e.g.*, *WFA/Basin I* at 114 (accepting, by incorporation, the dispatching center unit cost). The *WFA/Basin* cost was based on information provided by Alstom.

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[14] AEPCO's engineers also developed the total number of AAR signal units for the ANR system (63,222), and provided this number to AEPCO's MOW witness, Gene Davis, for use in developing annual maintenance costs for the ANR's signals and communications system.

In total, the CTC system includes 391 interlocking huts for switches. In addition, more than 740 automatic signal huts are included. As noted below, the CTC system also includes single and double track highway crossing protection huts and the related gates and flashers where needed.

Consistent with the Board's decision in *Duke/CSXT*, AEPCO's engineers included 10 percent of the costs for signalized crossing protection where needed on the ANR.

b. <u>Detectors</u>

Automatic roll-by failed equipment detectors ("FEDs") are included along the ANR main lines as required by operations and consistent with the current industry standard: AREMA 2001 Standards, Chapter 16, Section 5.3.1, Items j & k. These FEDs are located approximately every 25 miles along the main line (one for each main track in areas with two main tracks). In addition, the detectors have been strategically located to minimize the traffic back-ups should a train be required to stop for inspection and/or to remove a bad order car. Bad order setout tracks have been sited within three miles of the failed equipment detectors in each direction to provide for train stopping distances and allow removal of bad order cars to the setout tracks. All setout tracks near the detectors are 600-foot clear length (860 feet between switches) double-ended tracks.

The ANR also has 25 AEI scanners. Details of the costs and components for the FEDs and AEI scanners are shown in e-workpaper "ANR Signal Est working.xls."

The ANR also has slide detectors where such devices were shown on BNSF's and UP's track charts, as a specific inventory was not provided by either railroad. The unit cost per linear foot of slide fence was developed from a telephone quotation from a signals vendor. *See* e-workpaper "ANR Signal Est working.xls." The total cost for slide fences is $456,944. The ANR also has 61 high water detectors. This count was also derived from the BNSF and UP track charts. *See* e-workpaper "ANR Signal Est working.xls." The total cost for high water detectors is $404,064.

c. **Communications System**

The ANR's railroad radio system enables locomotive communications, two-way radio communications, general voice communications, general data communications, and FED alerts. A combination of fiber optic and microwave radio technology is used for the communications system backbone and land mobile radio technology is used to facilitate communications between end user applications and the radio system backbone. Land mobile radio ("LMR") technologies provide communication access (via fixed, mobile and portable radios) to the radio system backbone for operating crews, supervisory and track maintenance personnel that need to communicate with the railroad's operating headquarters and central dispatching facility at North Amarillo. LMR technologies are co-located with microwave radio technologies at network (tower) sites if appropriate. LMR technologies operate in Very High Frequency ("VHF") mode to accommodate railroad operational frequencies assigned by the AAR.

The backbone of the ANR's railroad radio system includes fiber optic cable and microwave towers along the ANR route. *See* e-workpaper "comms summary.xls." The use of both technologies is wide spread, but this is the first time that fiber optic systems have been incorporated into a SARR communications system. The split between territories served by fiber optic and those served with microwave towers is shown in e-workpaper folder "Fiber" and e-workpaper "comms summary.xls."

AEPCO's engineers opted to use fiber optic cable for the ANR's communications backbone where it has been installed on the BNSF and UP lines being replicated. Most of the fiber optic cable that exists on the lines being replicated was installed by telecommunications companies within the past 25 years. The typical arrangement between a telecom provider and a railroad grants the telecom provider the right to lay fiber optic cable along the railroad's right-of-way, and then operate that cable for a contracted for period of years. In exchange, the railroad is often paid fees for such access, and more importantly for present purposes, the railroad is typically allowed to use a portion of the available bandwidth free of charge. {

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AEPCO's engineers have included the equipment costs required to access the relevant fiber optic facilities. Each wayside control cabinet includes a fiber modem, replacing the data radio. Costs are based on equipment used on other projects with fiber data transmission. These fiber modems also act as repeaters, so additional locations are not required.

Only some of the lines being replicated are served by fiber optic cable. For those areas where fiber is not presently in place, AEPCO's engineers have included microwave tower facilities. Microwave sites have been priced based on 200 foot towers. North of La Junta, CO microwave towers are spaced every 25 miles, which is consistent with the spacing used in *AEP Texas.* On the ANR lines west and south of Amarillo, microwave towers are spaced every 40 miles, {

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Each tower includes a full set of microwave equipment, including two microwave base stations enabling sending and receiving along a straight path, and four microwave antennas. End towers have only one microwave station and two antennas. Where necessary, a tower may have three or four base stations and six or eight antennas. Each microwave tower also includes LMR base stations, with corresponding radio equipment. Finally, each tower includes the necessary communications shed.

CTC infrastructure components that are radio-enabled (*e.g.*, AEIs and FEDs) are equipped with Johnson JSLM radio and required cables. *See* e-workpaper "ANR Signal Est working.xls." This mobile radio is VHF capable and operates in the 148-174 Mhz frequency range. Finally, AEPCO's engineering experts have carefully reviewed the territory and determined that no LMR repeating stations are needed.

Investment costs for the ANR's communications/radio system equal $20.9 million. *See* e-workpaper "ANR Communications Costs.xls."

7. Buildings and Facilities

The ANR's has five principal yard facilities where the bulk of the ANR's buildings and facilities are located: Guernsey, North Amarillo, Texico, West Vaughn and West El Paso. Crew change and MOW buildings are located at these yards and other locations as well. The details for the various facilities are discussed below. The total building costs are summarized in Table III-F-7 below.

TABLE III-F-7 BUILDINGS AND FACILITIES ($ millions)	
Facility	**Cost**
1. Locomotive Repair Shops	$27.6
2. Headquarters Building	3.0
3. Fueling Facilities	63.7
4. Crew, MOW/Roadway Buildings	7.7
5. Yard Site Costs (Roads, Lighting, Drainage, etc.)	42.4
Total	**$144.4**

a. Headquarters Building

The ANR headquarters is located at the ANR's North Amarillo Yard. The building's design and costs were based on a combination of Means Handbook unit costs and quotations from vendors. *See* e-workpaper "ANR Buildings and Facilities Final.xls." The square footage of 21,500 feet was determined based on the number of employees that the headquarters building will house, with additional space for work rooms, IT equipment, hallways, bathrooms and mechanical services. The building is two stories with 10,750 square feet on each floor. *See* e-workpaper "ANR Buildings and Facilities Final.xls." From there, the engineers applied a standard square footage per employee based on the American Institute of Architects standards (executive employees were allotted

additional space per those same standards). *See* "Square Footage Standards.pdf." The total cost of the headquarters building is $2,988,971.

b. <u>Fueling Facilities</u>

i. <u>Guernsey Yard</u>

As in *WFA/Basin I*, the Guernsey Yard has a main line fueling facility and an inside fueling facility, which also provides sand, oil and lube servicing for locomotives. The mainline fueling facility includes four fueling spots capable of fueling two trains simultaneously, and an inside fueling and servicing facility with four tracks that can serve 12 locomotives simultaneously.

The fueling platforms are a modular design; meant to be duplicative if expanded capacity is desired. Each platform is centered between two tracks and has two rows of six fuel cranes that can service up to six locomotives on each side of the platform. Under, and down the center of the platform, is a concrete utility tunnel to allow fuel oil piping to run. The utility tunnel is tied into the spill containment system. The platform has four 50,000 gallon double wall tanks, arranged such that each two tanks serve one side of the platform. Transfer piping is arranged between the tanks to allow movement of oil from any one tank, to any other tank. Each set of two tanks has two 800 gallon per minute pumps connected by a common manifold. One pump stands in reserve as a backup. Filling rate per locomotive will be 180 to 190 gallons per minute. Tank heaters and oil recirculation is included. The entire system is protected by spill containment

channeling, a spill tank with jocky pump for emptying, and an oil/water separator to treat rainwater runoff.

A sand box filling system is installed at each fuel platform. The filling system draws from a heated central sand silo at each location. The sand is pumped to individual filling stations along the fuel platform. A dispensing unit with boom arm is present at each locomotive spot.

ii. North Amarillo Yard

The North Amarillo Yard includes a fixed fueling facility that can also provide lube oil and sand as necessary. The ANR's operating plan provides that only empty coal trains bound for Montana are fueled in this yard. Given the moderate volume of empty coal trains moving through the yard, AEPCO's engineers have included a two-platform facility that can service four tracks. The modular fueling platform (with sanding system) design is based on an actual commuter rail locomotive fueling facility project undertaken in January 2007 by AEPCO's engineers, and the costs for this facility are based on the actual 2007 project costs. AEPCO's engineers have modified those costs to reflect the size of the ANR's fuel storage and number of pumps. *See* e-workpaper "ANR Buildings and Facilities Final.xls," tab "ANR Yard Summary Cost."

iii. West Vaughn Yard

The West Vaughn Yard fuels and services all non-coal trains moving through this yard, as well as certain empty coal trains. Fueling and servicing of locomotives is generally performed at the same time these trains are being

inspected in the yard. In order to facilitate the inspection operations, the yard includes 17 inspection tracks. For 12 of the tracks, AEPCO engineers provided fixed fueling facilities at each end of the yard. Thus, the West Vaughn Yard includes 12 fueling platforms that can cover 24 tracks (each end of 12 inspection tracks). DTL fueling (defined below) will be performed for trains stopping on the five remaining inspection tracks, which are used less frequently.

iv. West El Paso Yard

The primary fueling activity conducted at the West El Paso Yard is the refueling of westbound non-coal trains. Thus, AEPCO's engineers have included fixed fueling and servicing facilities at the west end of the yard. As with the West Vaughn Yard, fueling of locomotives will take place while the train is being inspected. Thus, AEPCO's engineers have placed four platforms (each can service two tracks) at the west end of the eight inspection tracks included in the Yard.

A smaller number of eastbound non-coal and empty coal trains bound for Vaughn are also fueled in the yard. In most cases, these trains will be DTL-fueled.

v. Fueling by Truck

Locomotive fueling is also performed by trucks (*i.e.*, direct-to-locomotive or DTL fueling) as needed (typically for DP units) at all of the ANR's five inspection/fueling yards. All fueling will be performed track-side. The yard relay and locomotive inspection tracks where most locomotive fueling occurs are

built on 25-foot track centers, thereby providing sufficient space for the trucks to operate. The ANR's helper locomotives are also DTL-fueled.

c. **Locomotive Shop**

The ANR has two locomotive shops. The primary locomotive shop, where heavier repairs can be performed, is located at the ANR's North Amarillo Yard. A similar shop designed to perform FRA-required 92-day inspections is located in Guernsey. The two shops have the same foot print and general layout, but the Guernsey facility does not include certain equipment needed for heavier repairs. Aside from the difference in equipment, each 53,625 square foot shop consists of five maintenance tracks. Each track is a thru track with a 100 foot drip collection pan outside each track door.

Each building is a portal frame, pre-engineered metal building with steel siding encompassing the five tracks on 23'-3" centers. A sixth bay is attached as a lean-to to the main structure. The main building dimensions are 125 ft. x 325 ft. The lean-to bay is 40 ft. x 325 ft. Tracks 1 and 2 have a depressed slab with pedestal supported rails at a constant elevation suitable for work access to the sides of the locomotives. In addition, the shops include a secondary depressed pit running the length of track 1 and 2, centered on the rails, to provide work access below track level. This will also be the low drainage path for the facilities.

Duck-unders will be provided throughout the facilities to cross under tracks. These are depressed stairway access points that allow for OSHA regulated

head-clearance. Mobile stair platforms will be provided to access the tops of locomotives, where needed.

Each of the shops also includes an administrative office area of 3100 sq. ft that includes an entry vestibule/lobby, IT room, mechanical room, janitor's closet, lunchroom, men's locker room (including bathroom/shower facilities), women's locker room (including bathroom/shower facilities); a conference/ training room, general manager's office, and other cubicle spaces. In addition, there are three offices for foreman and other personnel. In addition to the above, there will be a free standing (outdoor) vehicle wash at North Amarillo and an enclosed locomotive wash at Guernsey.

Unit costs and designs are based on AEPCO engineers' experience with similar facilities, equipment lists from such facilities, previous shop project quotations and bids, and Means Handbook unit costs. *See* e-workpaper "ANR Buildings and Facilities Final.xls."

d. <u>Car Repair Shop</u>

Under the relevant ANR (BNSF and/or UP) car maintenance agreements, the contractor is responsible for providing all necessary shops. *See* Part III-D-2. Consequently, AEPCO's engineers have not included costs for any car repair facilities. However, they have provided the necessary space and tracks for such a facility at the ANR's North Amarillo Yard. *See* Exhibit III-B-1, p. 16A. *See also PSCo/Xcel I* at 113, *Carolina P&L* at 113; *Duke/NS* at 118.

e. Crew Change Facilities and Yard Offices

There are nine crew change locations on the ANR, and each location includes a crew change building. The facilities are generally sized to meet the needs of the number personnel for which a given station is considered to be his/her home terminal. In addition, "guest" lockers are also provided. Where necessary two or more buildings are used. These buildings are 36 feet wide by 75 feet long, and are pre-engineered metal building shells. The interiors are finished with sheet rock wall coverings, painted, hard wearing floor surfaces, one walled in office and unisex restroom. Each building will incorporate heat and air conditioning, a walled-in IT room, and a suitable number of doors and windows.

There are five yard offices, one at each of the ANR's inspection/ fueling yards. Each of these buildings is based on the same design and units costs. These buildings generally replicate the metal buildings used by both Defendants for such purposes, and which were observed by AEPCO's engineers during their field inspections. Each building includes basic facilities such as locker rooms, a break area, a work room and other necessities. The unit costs are based on Means Handbook costs. *See* e-workpaper "ANR Buildings and Facilities Final.xls."

f. Maintenance of Way Buildings (Roadway Buildings)

The ANR has 29 MOW buildings. Each building is similar in office space and design to the crew change facilities, but they are smaller as there are fewer employees using the space. However, additional area is provided for garaging certain vehicles as necessary and storing certain supplies. AEPCO's

engineers developed the space requirements based on the typical MOW crew located in each location as well as the need to house signal maintainers.

The MOW buildings use the same building shell foot print as the crew buildings, but with higher eave height. The buildings are unfinished inside and are suitable for storage racks, repair of non-revenue vehicles, and other needed functions. Each end of the MOW building will have a roll-up truck door and each side wall will have a man-door. Also included is electrical service for welders and light machinery and hand tools. All columns are specified for a 1 ton x 12 foot jib crane. The buildings also include heat and ventilation, but no air conditioning.

The unit costs are based on Means Handbook costs. *See* e-workpaper "ANR Buildings and Facilities Final.xls."

g. <u>Wastewater Treatment</u>

Since the ANR's building facilities are located near existing towns and cities, AEPCO's engineers determined that it would be feasible to serve each facility by a local sewer connection or similar service. *See* e-workpaper "ANR Public Wastewater Systems.pdf." AEPCO's engineers therefore included costs for sewer tie-ins. In addition, in order to handle runoff from various work by-products (*e.g.*, oil) before reaching the public sewer system, AEPCO's engineers have included oil/water separators. The effluent is then sent to an oil/water vaporizer which produces a dry powder that can be easily disposed of. AEPCO's engineers have utilized such facilities in projects for other railroads.

For Crew and MOW buildings, a package sewage treatment plant has been included at each site. The plant has a 2000 GPD throughput package with all necessary pumps, chambers, etc. The package comes on a flat bed and sets up on a flat concrete slab. The guaranteed outflow meets EPA 30/30 regulations (BoD/Suspended Solids). Included in the pricing is drain tile and seeding cost for the drain field; and electrical service to the equipment. *See* e-workpaper, "ANR Buildings and Facilities Final.xls."

h. Yard Air and Yard Lighting

Yard lighting is included at each of the ANR's five inspection/ fueling yards. Lighting is provided by 40 foot light poles, with dual 30 foot arms. Each arm has a 400 watt HPS cobra head luminaire. Spacing is every 150 feet along designated inspection tracks. Yard air is included at the ANR's Texico Yard as blocks of intermodal cars are being cut and reassembled in this yard. The costs and details of these items are included in the general yard development costs shown for each yard in e-workpaper "ANR Buildings and Facilities Final.xls."

8. Public Improvements

While public improvements are discussed in detail below, most of the costs for such items are included in other investment categories, such as bridges and signals.

a. Fences

The defendants provided no data concerning the quantities or locations of fencing on any of the lines being replicated by the ANR. BNSF did

provide track geometry video for certain of its lines, suggesting that it may be possible to determine the degree of fencing, if any, in the covered locations. However, AEPCO's review of the data showed that such videos were not illuminating. Despite protests from the complainants in prior SAC cases, the Board has not accepted observations from the complainants' engineers regarding the general lack of fencing on the lines being replicated or the apparent lack of uniformity in the fencing, which tends to suggest that a third party placed the fencing rather than BNSF or UP. As such, AEPCO has followed past Board decisions for the lines being replicated and included fencing for 100 percent of the lines except the Campbell Branch where 90 percent is fenced. In addition, AEPCO included snow fencing for three percent of the Orin Subdivision.

The unit costs for the ROW fencing were derived from documents provided by BNSF in discovery. *See* e-workpaper "ANR Unit Costs.xls." The snow fencing unit costs are from the Means Handbook. *See* e-workpaper "ANR Public Improvements.xls."

b. <u>Signs and Road Crossing Devices</u>

AEPCO's operating and engineering experts have included a standard package of railroad signs, including milepost, whistle post, yard limit, and cross-buck signs and posts. A complete description of the included signs is included in e-workpaper "ANR Grade Crossing final.xls," with the unit costs shown in e-workpaper "ANR Unit Costs.xls."

c. Grade-Separated and At-Grade Crossings

Consistent with *AEP Texas* at 102 and *PSCo/Xcel I* at 115-116, the ANR is building all at-grade crossings, and paying 100 percent of the cost for the crossing materials. *See* e-workpaper "ANR Grade Crossing final.xls." In addition, where applicable, AEPCO has included cattle guards at crossing locations. Cattle guards were not included at grade crossings located in cities and towns. Details of the unit costs and quantities for grade crossing materials and cattle guards are included in e-workpapers "ANR Grade Crossing final.xls," "ANR Public Improvements.xls," and unit costs from "ANR Unit Costs.xls."

Consistent with *AEP Texas*, on the Orin, Campbell, Reno and Boise City Subdivisions, AEPCO's engineers have included 100 percent of the costs associated with crossing protection, such as gates, flashers, and related signal elements such as crossing predictor huts. *See AEP Texas* at 103. For all other line segments, no costs have been included for crossing protection as these lines mostly predate any roads, and such signal upgrades are generally funded through state and federal contributions. *Id.* The costs for crossing protection are included with the signals costs described in Part III-F-6 above. *See also* e-workpaper "ANR Grade Crossing final.xls."

For grade-separated crossings, consistent with *WFA/Basin I* at 130, the ANR is paying for 10 percent of the total investment costs in such structures except for grade-separations on the recently-constructed line segment being replicated (*i.e.*, the Orin Subdivision) where the ANR is including 100 percent of

those costs. Highway overpass costs and designs are discussed in Part III-F-5 above.

9. Mobilization

Consistent with the *AEP Texas* decision, which also included most of the Orin Subdivision, the Campbell, Reno, Angora, Brush, Pikes Peak, Pueblo, and Boise City Subdivisions, AEPCO's engineers have added a 2.4% mobilization factor for all items where mobilization is not already included in the contractor's bid. *Id.* at 103. This is also consistent with the Defendants' position in the prior *AEPCO* proceeding, in which they proposed a 2.4 mobilization factor for the lines replicated in that case (which included all of the lines west and south of Vaughn, NM). *See* Defendants' Supplemental Reply Narrative (Public Version) in Docket No. 42058 filed Jan. 26, 2004, at III.F-211-212.

10. Engineering

In *PSCo/Xcel I*, the Board advised that, in that case and future cases, a 10 percent estimate for all engineering cost components would be used. *Id.* at 118. Not surprisingly, the Board followed its precedent in *Otter Tail* (at D-41), *AEP Texas* (at 104) and *WFA/Basin I* (at 132). Thus, AEPCO's engineers have used a 10 percent additive here to cover all engineering, construction management, and resident inspection costs, as well as other items such as soil testing.

11. Contingencies

Consistent with prior Board decisions in other SAC rate cases,[15] AEPCO's engineering experts have used a 10 percent contingency factor and applied it to the construction subtotal excluding land. *See* e-workpaper "III-F-Total.xls."

12. Other

a. Construction Time Period

i. All Mainline and Branch Tracks Except Mossmain Jct. to Walter Jct., MT

The construction time period for the ANR is controlled by the time it takes to construct the longest tunnel, which is Tunnel No. 1 near Guernsey, WY. This tunnel is located at MP 96.85 on the Canyon Subdivision and is 3,334 feet in length. The work will begin with surveying and aerial mapping operations. A three-month period will be allocated to obtain sufficient information to allow preliminary planning and engineering design to begin. Design of the railroad and appurtenances will require a sixteen month period including the three-month start up/surveying period.

Land acquisition will take approximately eight months to complete. It will commence five months after project initiation. Test borings will be timed

[15] *See WFA/Basin I* at 132-133; *AEP Texas* at 104-105; *Xcel* at 118 (parties agreed to a 10 percent contingency); *TMPA* at 746-747; *West Texas Utilities* at 710; *APS* at 402.

to coincide with land acquisition so sufficient test borings can be made during the design process.

By the ninth month, at about the 70 percent of design phase, the longest tunnel, Tunnel No. 1, will be bid with construction to start by the eleventh month. The remaining site work bid packages will be ready to bid in the tenth month and work on all sites, including bridges and tunnels will be started by the twelfth month. In the fourteenth month, the CTC, signal, communications and track packages will be bid.

Construction of all bridges and structures other than Tunnel No. 1 is anticipated to take a maximum period of eight months. The longest tunnel is 3,334 feet and it is expected that this tunnel, using today's technology, can be constructed in 12 months. AEPCO's experts have, therefore, allocated 12 months for the construction of this tunnel.

In general, the construction work has been planned by subdivision. The work has been structured so that all site work and bridges and tunnels can be completed prior to installation of track and signals. Total construction time for the Canyon Subdivision, which will take the longest to construct, will be 16 months. Total design and construction time for this project is 26 months with four months available at the end of construction for final operational testing. Thus a 30-month overall construction period has been provided.

The ANR construction project would be divided into 65 track packages, 108 grading packages, 105 major bridge packages, 189 other bridge

packages (including overhead bridges), two tunnel packages and 3 major building packages plus 18 crew/MOW building packages. *See* e-workpaper "ANR construction schedule info.xls." The bridge packages have been set-up to include no more than eight bridges in each package, and each bridge in a package is in the same subdivision and in relative proximity to each other.

Track gangs would lay track at an average of one-half mile per day, ballasted and anchored. With crews working six days per week, the rate of one half mile per day would allow for the project to be completed within the established schedule.

Finally, material prices have been obtained for most track materials delivered to railheads at 28 locations. Because of the numerous road access points along the lines, the generally uniform topography, and interstate roads paralleling many of the lines being replicated, materials that cannot be shipped by rail have been priced with shipping by truck to one or more of the road access points along the SARR railroad line (usually the point furthest from the source). The track construction costs include moving those materials from the various rail heads to where they are required along the line.

ii. <u>Mossmain to Walter Jct., MT</u>

The 32.95 mile segment being constructed by the ANR between Mossmain and Walter Jct., MT will not be placed into service until January 1, 2012. Consequently, AEPCO's engineers have provided a separate construction schedule and cost for this portion of the ANR. In particular, AEPCO's engineers

have developed a 19 month construction schedule as shown in e-workpaper "Schedule_Laurel Sub_1-19-10.pdf." The total cost to the ANR for this segment valued as of January 1, 2009 is $91.2 million. *See* e-workpaper "ANR III-F Total.xls." For DCF purposes the costs were indexed forward in time.

III. G. DISCOUNTED CASH FLOW ANALYSIS

The Board's SAC constraint rests on the premise that a captive shipper should pay no more than the minimum necessary to receive service from a least-cost, most-efficient replacement for the incumbent railroad and, in particular, the shipper should not bear the cost of any facilities or services from which it derives no benefit. *WFA/Basin* at 7; *Coal Rate Guidelines*, 1 I.C.C. 2d at 523-24.[1] The SAC constraint is derived from and constitutes an application of the theory of contestable markets.

In the Board's contestable market structure, the threat of entry by the hypothetical stand-alone entity, typically, as here, a stand-alone railroad ("SARR"), constrains the rates of the incumbent. The SARR, which faces no barriers to entry or exit, has an incentive to enter the incumbent's market if it can sustain itself by charging a rate below that of the incumbent. The presence of that incentive demonstrates that the incumbent's rates are causing the shipper to subsidize the defendant's rates, meaning that the shipper is contributing to (subsidizing) the cost of services that it does not use and/or monopoly profits for the incumbent.

SAC thus provides a regulatory ceiling on rates where a carrier has market dominance, and if the incumbent's rates exceed those that would be

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[1] The evidence in Part III-G is sponsored by AEPCO Witness Thomas Crowley and Daniel Fapp.

charged by the SARR (the ANR in this case), then the existing rates are unreasonable. As the Board summarized in *Carolina P&L*:

> A SAC analysis seeks to determine the lowest cost at which a hypothetical, optimally efficient carrier could provide the service at issue free from any costs associated with inefficiencies or cross-subsidization of other traffic. A stand-alone railroad is hypothesized that could serve the traffic if the rail industry were free of barriers to entry or exit. (It is such barriers that can make it possible for railroads to engage in monopoly pricing absent regulatory constraint.) Under the SAC constraint, the rate at issue cannot be higher than what the SARR would need to charge to serve the complaining shipper while fully covering all of its costs, including a reasonable return on investment.

Id. at 11.

Since the function of SAC analysis is to identify the cost associated with providing most-efficient, least-cost service to the captive shipper, it follows that the SAC should be applied in a manner that reflects rational economic behavior by the SARR. In particular, the SARR should pay no more than is necessary for its inputs. Moreover, while the ANR is considered to be a substitute or replacement for BNSF and UP to the extent of the scope of the ANR's planned services, SAC does not require that the ANR replicate the BNSF and UP systems, operations, policies, or practices in their entirety or even any single respect. As the Board's predecessor established in *Coal Rate Guidelines*, the design of the stand-alone system and the traffic it carries are chosen to achieve the goals of maximizing revenues and minimizing service costs to the shipper, regardless of the actual circumstances of the incumbent railroad. *Coal Rate Guidelines*, 1

I.C.C.2d at 543-44. The ANR must thus be considered a replacement for the relevant portions of the BNSF and UP systems, not a rival that is subject to retaliation from the incumbents, and it must be afforded the flexibility to configure its system and service scope in a manner that maximizes efficiency and cost effectiveness. *See, e.g., Bituminous Coal - Hiawatha, Utah to Moapa, Nevada,* 10 I.C.C. 2d 259, 280-81 (1994) (Chairman McDonald, commenting) ("*Nevada Power II*").

These core principles guide the ANR's traffic group, design, configuration, and planned operation, as detailed in the previous Parts of this Narrative. They also guide the proper treatment of inflation, taxes, and capital cost recovery, as addressed next.

1. **Cost of Capital**

Calculation of the capital recovery charge for the ANR necessarily reflects the ANR's assumed cost of capital ("COC"). While the Board has indicated, at least in theory, a willingness to consider alternative approaches to estimate this assumed cost, past cases have consistently utilized the general (sample Class I) railroad industry's average costs of common equity ("COE"), debt capital, and preferred equity capital (if any), and their percentage mix within capital structure for the industry, as determined by the Board in its annual cost of capital proceedings, in calculating the COC elements for the SARR over the relevant construction period (2006-2008 in this case) and operating period (2009-2018) . *See WFA/Basin I* at 135; *Duke/NS* at 37; *Carolina P&L* at 28.

The ANR's cost of debt ("COD") and preferred equity[2] during the 10-year DCF period is assumed to equal the weighted average railroad industry cost of debt or preferred equity over the ANR's construction period, weighted by the ANR's investment by construction year. The COE during the construction period is calculated as the simple average of the COE during that period. The ANR's capital structure reflects the industry average during each year of the construction period, is also weighted by the ANR's investment by construction year, and is thus effectively frozen as of the end of the construction period.

AEPCO has modified the Board's standard approach modestly to treat the extension of the ANR from Mossmain to Jones Jct., MT (the "Signal Peak Construction") as a separate "mini-construction" that occurs within the ten-year operating period of the SAC DCF model. Under the Board's standard DCF model, the construction costs accumulate before the railroad starts operation and then the construction costs are recovered over the operating period, as explained *infra*. The construction costs for the Signal Peak Construction thus accumulate during 2010 and 2011 and then are recovered beginning in 2012 as part of the ANR's general capital recovery requirement. The ANR's COC and carrying costs starting 2012 thus reflect a blend of the original construction and the Signal Peak Construction.

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[2] In fact, the railroad industry has no preferred equity over the relevant years, and thus the ANR also has no preferred equity in its capital structure.

The COE for the ANR during each operating year reflects the COE for the railroad industry as determined by the Board, if that value has been determined. When the value has not been determined (which is presently the case for all years of the ANR's operation, 2009-2018), the simple average of the COE values for the prior construction and operating years is utilized, which means 2006-2008 in the present circumstances. The COD, the COE, and the capital structure for the period of the Signal Peak Construction (2010-2011) are not known at this time, and so the same values used to construct the ANR have been used as that is the most current data available.

AEPCO has followed the Board's prior approach in developing capital costs for the ANR with the modification for the Signal Peak Construction and one other exception. For 2006 and 2007, AEPCO utilized the industry average costs determined by the Board in its annual cost of capital proceedings.[3] For 2008, AEPCO also utilized the industry average capital structure and COD determined by the Board,[4] but AEPCO used only the COE determined under the Capital Asset Pricing Model ("CAPM") and did not use the figure determined under the Board's new Multi-Stage Discounted Cash Flow model ("MSDCF").[5]

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[3] *See Railroad Cost of Capital -- 2006*, Ex Parte No. 558 (Sub-No. 10) (STB served April 15, 2008); *Railroad Cost of Capital -- 2007*, Ex Parte No. 558 (Sub-No. 11) (STB served September 26, 2008).

[4] *Railroad Cost of Capital -- 2008*, Ex Parte No. 558 (Sub-No. 12) (STB served Sept. 25, 2009) ("*Cost of Capital -- 2008*").

[5] AEPCO's electronic workpapers contain an alternate DCF calculation that utilized the Board's hybrid 2008 CAMP/MSDCF COE value.

The Board's CAPM COE was 10.39%, its MSDCF COE was 15.95%, and the resulting average was 13.17%. The overall cost of capital determined by the Board was 11.75%. If the MSDCF COE value is excluded, the overall average is 9.57%.

AEPCO's position here does not require that the Board conclude that its use of the hybrid CAPM/MSDCF approach results in a less accurate estimate of the 2008 COE for the railroad industry than use of CAPM alone.[6] Instead, the key question is whether the MSDCF analysis produces an accurate estimate or surrogate for the COE of the ANR. The answer is that it most certainly does not, as explained *infra*.

The Board's MSDCF COE analysis rests upon the relationship between the initial (normalized) level of cash flow, the projected level of growth in that cash flow, and the stock price. The COE is then the discount rate that is

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[6] The comments that the Western Coal Traffic League ("WCTL"), of which AEPCO is a member, filed in *Railroad Cost of Capital -- 2008* on May 20, 2009, do demonstrate substantial infirmities in the growth projections adopted and utilized by the Board in its MSDCF analysis. A copy of those comments is included in AEPCO's e-workpaper "WCTL 2008 EP 558 (Sub-No. 12).pdf." AEPCO's point here is that even if those projections are somehow reasonable for BNSF and UP in their entirety, they are not reasonable for the portions of those railroads encompassed in the ANR. Beyond that, {
} confirm that the growth projections utilized in the Board's MSDCF growth estimates are not reasonable. The unreasonableness of the MSDCF COE figure, as well as the reasonableness of the CAPM COE figure, are further confirmed by analyses conducted for BNSF in conjunction with its proposed acquisition by Berkshire Hathaway, Inc. ("Berkshire"). These matters are discussed *infra*.

implied to have the net present value (the stock price) equal the stream of future cash flows.

The key driver in the Board's 2008 MSDCF COE calculation is the use of a 13.61% average growth rate for the first ten years or the first two stages of the MSDCF model, 2009-2018.[7] These ten years correspond to the same ten years covered by the operating period of the DCF model for the ANR.

The Board's 2008 COE determination reflects the conclusion that the four largest Class I railroads will achieve a 13.61% compound annual growth rate in earnings on a weighted average basis over those ten years. Even if that projection is reasonable {

}, what should be beyond reasonable dispute is that the ANR simply does not begin to have prospects to achieve anywhere near that level of growth.

The MSDCF COE is largely a function of the growth rate in earnings, and the 13.61% utilized in the Board's calculation is beyond that available to a SARR in a contestable market.[8] For the reasons previously

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[7] *See Railroad Cost of Capital -- 2008* at p. 18 (Table 11). In the first stage, each railroad's individual five-year (which may consist of three-to-five year growth rates) rate applies to that railroad and the railroads are weighted by market capitalization. In the second five years, the weighted average of the four railroads applies to each railroad. In substance, the same growth rate applies throughout the first ten years.

[8] The other constituents of the MSDF calculation are the current stock price and the initial level of free cash flow. The ANR is a hypothetical entity, and it has no stock price. Defining its free cash flow would also be a speculative exercise, particularly as it would not be linked to any stock price. That said, the ANR is, by

explained by WCTL in its comments in the STB Ex Parte No. 558 proceeding, the MSDCF growth projections appear to be driven primarily by rate increases rather than increases in volumes or productivity. In any event, the ANR is not projected to experience such high rate of growth in its prices or productivity. The ANR's projected traffic growth is modest, it is not projected to have the rate increases that appear to form the predicate for the MSDCF growth projections,[9] and the ANR will also, by virtue of the Board's decision in *Major Issues*, achieve only a fraction of the projected productivity growth of the Class I's, especially over the ten-year DCF period.[10] There is thus no plausible reason to expect that the ANR will achieve the growth rate of the Class I's.

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definition, required to yield a sustainable return to enable it to achieve revenue adequacy, a result which cannot be said of the Class I's (as defined by the Board's standards). Accordingly, the ANR should constitute a less risky enterprise, especially as its success is not premised on its achieving a high level of growth. These characteristics should translate into a lower COE, all other things being equal. (Of course, things are not equal. In particular, the ANR does not share the Class I's growth prospects.)

[9] Unlike BNSF and UP that foist large rate increases on shippers when so-called "legacy" contracts expire, the ANR assumes expiring contracts will grow at the industry average.

[10] Productivity growth for the Class I's has recently been quite modest, and the December 2009 Global Insight RCAF Forecast (e-workpaper "RlCstAdjstmntFctrFrcst 1209.PDF" Table 1), projects that productivity will continue at very modest levels. Global Insight projects that the RCAF-U will grow from 95.2 in 2009 to 141.1 in 2019, a total increase of 48.2% over ten years, or a compound annual growth rate of 4.0% per year. The RCAF-A is similarly projected to increase from 43.3 in 2001 to 60.3 in 2019, a total increase of 39.3% over ten years, or a compound annual growth rate of 3.4%. Productivity, which accounts for the difference between the growth in the RCAF-U and the RCAF-A, then amounts to 6.4% over the ten years (1.482=1.393 x 1.064), which corresponds to 0.6% per year.

In fact, there is strong reason – { } -- to conclude that at least the real-world BNSF will not meet the growth projections utilized in the Board's 2008 MSDCF COE calculation. Specifically, the Board in Table 11 of its *Cost of Capital -- 2008* decision calculated and utilized a 12.0% BNSF-specific earnings growth rate for Stage 1, which covers the five years 2009-2013.[11] {

}

Revenue growth is not a perfect surrogate for earnings growth in that it does not address the change in output relative to the change in input (costs), otherwise known as productivity, by which revenues, sales, or output is converted into earnings, profits, or cash flow. However, revenue growth does become a very good proxy for earnings growth when productivity growth is expected to be very low, which is the case as noted at n.10, *supra*. As BNSF accounts for 29.13% of

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[11] The Board utilized IBES growth rate projections from December 2008. *Cost of Capital -- 2008* at 9.

[12] {

}

the MSDCF market capitalization for the railroad industry in 2008 (*Cost of Capital --2008* at Table 13), and the IBES earnings growth projection is { }, there is substantial reason to conclude that the MSDCF COE calculation for 2008 (which utilizes the five-year projection for effectively a ten-year period) is vastly overstated.[13]

Applying the Board's overstated MSDCF COE to the ANR would thus be unfair and contrary to SAC theory. Under SAC principles, as discussed above, the SARR should pay no more than is necessary for an input as doing so would cause the SARR and its shippers, including AEPCO, either to bestow monopoly profits on BNSF and UP or to subsidize other traffic. Requiring the ANR to pay more than necessary for the imputed equity portion of its capital would thus violate that principle and impose an unwarranted hardship on AEPCO and the ANR's other shippers.

Additionally, even if the Board still believes that its 13.61% growth rate projection has any plausibility as an overall estimate, the projected growth in earnings for BNSF and UP must be attributable to other aspects of their operations that are not encompassed in the ANR. The ANR's revenues, operations, and associated earnings were derived directly from data, including projections,

[13] AEPCO expects that data from UP would show that the 17.45% growth projection utilized for UP in *Cost of Capital -- 2008* is similarly overstated. However, UP did not produce a multi-year general forecast to AEPCO in discovery. It would be rather odd for UP to achieve almost three times the growth rate of BNSF over a five-year or a ten-year period.

produced by BNSF and UP in discovery as well as from publicly available projections that similarly impact the railroads, *e.g.*, EIA coal production forecasts. Accordingly, to the extent that BNSF and UP are projected and/or do experience growth at the level projected in the Board's 2008 MSDCF COE calculation,[14] that growth can only come from business, operational, and/or track segments that are not encompassed within the ANR.

Using the MSDCF COE figure (assuming, contrary to fact, that the calculation accurately reflects the earnings growth rates for the four Class I railroads as a whole) thus amounts to requiring the SARR to pay for a cost (in this case, the COE) associated with operations that are not encompassed within the SARR. Because this growth is not associated with the SARR, it provides no benefit to the SARR or to the issue (and other) traffic served by the SARR. Requiring the SARR to pay a higher cost (in this case, a higher COE) associated with serving traffic not handled by the SARR violates fundamental SAC principles. As explained *supra*, a captive shipper should not be forced to pay for facilities or operations from which it derives no benefit. Requiring the ANR to pay a higher cost of capital because BNSF and UP are projected to experience greater growth on facilities or operations that are not part of those subsumed into the ANR violates the principle that the SARR should pay no more than is necessary for its inputs. Such a requirement would force the SARR and its

[14] The Board's 2008 MSDCF COE calculation used a projected growth rate of 12.00% for BNSF and 17.45% for UP. The average is thus actually higher than the 13.61% for the four Class I railroads utilized in the Board's sample.

shippers, including AEPCO, to subsidize the Defendants' other traffic and operations.

Accordingly, the MSDCF COE is a particularly inappropriate proxy for the ANR.

The CAPM COE calculation reflects observations of changes in the railroads' stock prices relative to changes in the market as a whole, and not perceived changes in subparts or segments of the individual railroads. Nonetheless, CAPM has several virtues relative to MSDCF. In particular, unlike MSDCF, CAPM does not depend directly on the accuracy of earning growth projections, but instead seeks to determine the amount of risk (or lack thereof) for which investors seek compensation to induce them to invest in railroads (or at least purchase and hold onto their stock) relative to competing investments. In this sense, CAPM more directly reflects the opportunity cost of capital, as directly reflected in the market itself. CAPM thus comports well with the revenue-adequacy foundation of SAC and CMP generally.

The Board's 2008 CAPM value has the additional virtue of yielding a COE value that corresponds to the judgment and assessment of the financial community, whereas the Board's 2008 MSDCF value falls far outside that range. In that regard, it is especially appropriate to consider the Form S-4 that Berkshire filed with the Securities and Exchange Commission on November 25, 2009, in

conjunction with its proposed acquisition of BNSF.[15] The S-4 explains that BNSF (actually, its Board of Directors) retained Goldman Sachs and Evercore "as financial advisors in connection with the evaluation of the transaction" and that Goldman Sachs and Evercore both delivered opinions finding that the transaction was fair to BNSF shareholders. *See* S-4 at 36-73 and Appendices C and D.

The S-4 states that Goldman Sachs performed valuation analyses "using discount rates ranged from 8% - 12%, reflecting estimates of BNSF's cost of equity," "discount rates ranged from 7.0% to 11.0%, reflecting estimates of BNSF's weighted average cost of capital," and "discount rates ranging from 7.0% to 11.0%, but using terminal values based on a perpetuity growth rate ranging from 1.5% to 3.5%." *Id.* at 47-48. The S-4 also reports that Evercore used "discount rates ranging from 8.0% to 10.0%" reflecting "among other things, a weighted average cost of capital calculation" and "discount rates of 10.0% to 12.0%" reflecting "among other things, a cost of equity calculation." *Id.* at 59.

The Goldman Sachs and Evercore analyses thus reflect median COE values of 10% (Goldman Sachs) and 11% (Evercore) and median overall COC values of 9% (both Goldman Sachs and Evercore). The Board's 2008 CAPM values of 10.39% (COE) and 9.57% (overall COC) thus correspond very closely to the fairness values obtained by BNSF. In contrast, the average CAPM/MSDCF values determined by the Board (13.17% COE and 11.75% overall cost of capital)

[15] A copy of the document is included as AEPCO's e-workpaper "Berkshire Form S-4.pdf."

both fall outside even the range considered by Goldman Sachs. The MSDCF COE value utilized by the Board (15.95%) is almost a third higher than the highest COE value (12%) considered by either Goldman Sachs or Evercore. The MSDCF value is simply not reasonable and should not be utilized for any purpose.

The Goldman Sachs and Evercore values should carry particular weight for present purposes. Both firms would appear to be very competent and reliable, at least in the view of the BNSF Directors. Moreover, the analyses were prepared for a legitimate business purpose and are independent of rate case litigation. Additionally, the BNSF Directors, Goldman Sachs, and Evercore intended that the analyses would be relied upon for business purposes. There is also a prospect of substantial litigation and liability if the analyses are seen to be defective. If BNSF or its Directors believed the values were too low, they would have had an incentive to note and explore that belief, as the higher cost of capital or equity discount rate would have yielded a lower current value, making the Berkshire offer more attractive. The Goldman Sachs and Evercore values thus appear to be particularly credible, especially as contrasted with the Board's MSDCF calculation. Indeed, there is no evidence that any investor or financial analyst considers the Board's MSDCF calculation to be accurate in any way.

The Goldman Sachs and Evercore analyses thus confirm the reasonableness and utility of the CAPM figure calculated by the Board, just as they demonstrate the unreasonableness and unreliability of the Board's MSDCF figure.

Nonetheless, CAPM retains some potential to overstate the COE for a SARR. In particular, stock price fluctuations will likely reflect, among other things, the extent the carriers appear to be achieving the lofty growth projections or not. The CAPM may thus overstate the ANR's COE, albeit to a lesser extent than MSDCF under current conditions. There is also the potential that the MSDCF COE could be lower than the CAPM COE, although such an outcome would seem to require considerably lower growth rate projections, a higher stock price, or a more realistic MSDCF model itself, *e.g.*, one that does not assume that a five-year growth rate more than triple that of the general economy will continue for ten years. Should that occur, the possibility should be reserved for the affected shipper to argue that the COE should be based on the lower MSDCF figure, consistent with the principle that the SARR should pay no more than is necessary for any input.

2. Inflation Indices

The prices of goods and services used by the ANR undoubtedly will change over the 10-year DCF period.[16] It is then necessary to forecast rates of inflation for application to the capital assets and operating expenses over the timeline covered by the SAC analysis; *i.e.* 2009 through 2018. Moreover, the ANR will expand to serve the Signal Peak Mine during the first part of this period.

[16] The overall change is likely to be an increase, but there is a possibility of deflation, especially for a portion of the period.

The time path of capital recovery charges for the ANR likewise must maintain the real purchasing power of those charges.

The annual inflation forecast that is used to calculate the value of the ANR's road property assets is based on actual railroad chargeout prices and wage rate indexes calculated by the AAR for materials and supplies, wage rates and supplements, and materials prices, wage rates, and supplements combined (excluding fuel) ("MWSExFuel") for western railroads, and the current Global Insight December 2009 forecast for rail labor and rail materials and supplies.[17] Board precedent endorses this approach. *See AEP Texas* at 109; *Duke/NS* at 37; *Carolina P&L* at 28. For land assets, the annual forecast inflation rate is based on a weighted combination of indices that reflect rural and urban land prices in proportion to the mix of these types on the ANR system routes. Rural and urban land indexes were developed from rural land values reported by the U.S. Department of Agriculture.[18] This is consistent with prior cases as well. *See, e.g.*, *Duke/NS*; *Carolina P&L.* This collection of forecasts and their application is shown on Exhibit III-H-1.

In *Major Issues*, the Board adopted a convention for the indexing of operating expenses for a SARR under which expenses for the first year would

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[17] Global Insight does not develop a forecast of the AAR's MWSExFuel index. AEPCO therefore uses a proxy that weights Global Insight's materials and supplies and labor rate index forecasts, which the Board has relied upon for purposes of execution of the DCF model.

[18] *See* e-workpaper "ANR Land Appreciation.xlsx."

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[18] *See* e-workpaper "ANR Land Appreciation.xlsx."

adjust based on 100% of the change in the RCAF-U; expenses for the second year would adjust based on 95% of the change in the RCAF-U and 5% of the change in the RCAF-A; and each succeeding year of the DCF period would use a mix reflecting increasing shares of the RCAF-A in 5% increments.[19] *Id.* at 40. AEPCO applies the Board's method to the indexing of operating expenses for the ANR. AEPCO's model uses actual RCAF-U and RCAF-A indexes through 1Q10, the latest quarter available, and applies Global Insight's December 2009 RCAF-U and RCAF-A forecasted indexes thereafter. AEPCO reserves the right to supplement this data on rebuttal.

3. Tax Liability

Federal taxes for the ANR are calculated on the assumption that it pays taxes at the 35% corporate rate, with all payments for debt interest, state income taxes and depreciation expenses treated as reductions in taxable income. *See FMC,* 4 S.T.B. at 847-48. Interest expense is amortized on a 20-year period, pursuant to Board precedent. Depreciation expenses for tax purposes use accounting lives from the Modified Accelerated Cost Recovery System ("MACRS") with investments placed in service in the first quarter using a mid-quarter convention. In addition, as described in Part III-H-l-f, the ANR calculated bonus depreciation available under 2008 and 2009 tax laws.

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[19] Under the Board's hybrid approach, operating expenses for the tenth and final year of the DCF period would be determined using an index comprised of 55% of the change in the RCAF-U, and 45% of the change in the RCAF-A.

The ANR also must account for any income tax liability accruing in the eight (8) states in which it operates. Following Board-approved procedures, the taxes applicable to railroads in each of these jurisdictions were weighted together based on the ANR miles of constructions located within each jurisdiction. As detailed in Exhibit III-H-1, the weighted average rates for the states produce a weighted-average effective state tax rate of 4.8% for the ANR. *See* Exhibit III-H-1.

4. <u>Capital Cost Recovery</u>

The Board's DCF methodology uses economic depreciation to calculate the capital recovery cost of the ANR's property. Economic depreciation effectively represents an asset's loss of earning power as it approaches the end of its life and/or its replacement date. As a result of *Major Issues*, a 10-year analysis period is used to benchmark the ANR's asset value. However, the ANR's investments would not be retired at the end of the 10-year DCF period, and it is instead assumed that ANR will make continuing investments to enable it to operate, hypothetically, in perpetuity. AEPCO's calculation of SAC in III-H-1 thus accounts for the costs associated with the renewed investments in and continued operation of the ANR after 2018, using the approach approved by the Board in previous cases. *See, e.g.*, *AEP Texas* at 105-06.

Beginning with *FMC*, the Board requires an equal capital carrying charge in real terms in each year of the DCF period, regardless of changes in the SARR's volume. Accordingly, annual changes in volumes, rates, and associated

revenues produce changes in the SAC results and the measure of SAC relief. *See WFA/Basin I* at 134-35. AEPCO's computations of the pattern of capital recovery apply this approach. *See* Exhibit III-H-1.

III. H. RESULTS OF SAC ANALYSIS

1. Results of SAC DCF Analysis

The results of the Primary SAC DCF analysis conducted by AEPCO are shown in Exhibit III-H-1. As explained in detail in Section III-G, AEPCO also performed a Secondary DCF analysis to account for the capital costs of constructing the rail line from Mossmain, MT to Walter Jct., MT to connect with the Signal Peak Mine spur (the "Signal Peak Construction"). The results of the Secondary DCF are shown in Exhibit III-H-2. The combined results of the two Exhibits (the Primary and Secondary DCF analyses) are shown in Exhibit III-H-3. The calculations shown in each table of Exhibits III-H-1 and III-H-2 are summarized below.[1]

a. Cost of Capital

The cost of capital for the ANR reflects the Board's annual cost of capital determinations for 2006 through 2008, except for the exclusion of the 2008 MSDCF COE figure for reasons explained in Part III-G. The weighted average of the available years' capital costs is used through the remaining years of the Primary DCF model. The Secondary DCF model uses the same cost of capital values as the Primary DCF model for the years 2011 through 2018.

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[1] The cost of capital (Table A) and inflation indices (Table B) are addressed in Part III-G.

b. Road Property Investment Values

The calculation of road property investment costs is summarized in Table C of Exhibits III-H-1 and III-H-2. The investment cost also incorporates one-time fees paid for land easements.

c. Interest During Construction

Interest During Construction ("IDC") accrues on the road property assets of the ANR. Table D of Exhibits III-H-1 and III-H-2 shows the total IDC amount and the portion that is debt-related. IDC is calculated based on the investment values in Table C, the composite cost of capital by year from Table A, and the assumed length of the finance period for each account. The construction schedule described in Part III-F-12 is used as the basis for the length of the finance period for the Primary DCF model. As further discussed in Part III-F-12, the Signal Peak Construction is assumed to take 19 months. The portion of IDC that is debt-related is calculated by multiplying the investment by the length of the finance period, the ANR's debt percentage, and the annual cost of debt for the year of investment. Debt-related IDC is shown as an interest deduction for tax purposes during the construction period.

d. Amortization Schedule of Assets Purchased With Debt Capital

The amortization schedule calculates the quarterly principal and interest payments required for the debt-related portion of the ANR's investment, as depicted in Table E of Exhibits III-H-1 and III-H-2. The debt-related portion of

the investment base (referred to as "principal") is developed by multiplying the appropriate Table A cost of debt by the sum of total investment and IDC for the year. The quarterly annuity payment is then calculated based on the principal and the debt rate from Table A. Consistent with *Major Issues* and previous Board decisions, the debt for road property investment is assumed to be amortized over 20 years. The amount of interest included in the quarterly payment is calculated by multiplying the remaining balance by the interest rate, and is deducted from taxable income for federal and state income tax purposes.

e. Present Value of Replacement Cost

Table F of Exhibits III-H-1 and III-H-2 shows the additional investment (on a present value basis) required to make each of the ANR's assets (excluding land) continue indefinitely at the end of its useful life. The 2006-2008 average cost of capital values are used to calculate replacement value for road property assets. This calculated investment is added to the initial investment in Table I prior to determining the quarterly cash flows.

f. Tax Depreciation Schedules

Table G of Exhibits III-H-1 and III-H-2 displays the tax depreciation required under the Federal Tax Code as currently in effect.[2] Depreciation was calculated assuming a mid-quarter convention, with assets placed in service in the

[2] The mandatory method for depreciating most tangible property placed in service after December 31, 1986 is MACRS. In addition, Engineering Costs have been amortized over a 60-month period, starting with the month in which the business begins.

first quarter. Investments in communications (Account 26), signals and interlockers (Account 27), and the track accounts (Accounts 8-12) were depreciated over seven years employing a 200 percent declining balance methodology, then switching to straight-line depreciation when the straight line percentage exceeds the declining balance percentage. Investments in bridges and culverts (Account 6), public improvements (Account 39), fences and roadway signs (Account 13), station and office buildings (Account 16), roadway buildings (Account 17), and shops and engine houses (Account 20) were depreciated over 15 years using a 150 percent declining balance method, and then switching to straight-line depreciation at the same point. Investments in grading (Account 3) and tunnels (Account 5) were amortized over 50 years using straight-line amortization. Investments in engineering (Account 1) were amortized over five (5) years using straight-line amortization.

The ANR will take advantage of additional or "bonus" depreciation provisions enacted in 2008 and 2009 as part of federal economic stimulus legislation. The Economic Stimulus Act of 2008 ("Stimulus Act") provided bonus depreciation on capital investments with MACRS recovery periods of 20 years or less.[3] The American Reinvestment and Recovery Act ("ARRA") extended this

[3] BSNF and UP took advantage of the Stimulus Act's bonus depreciation provision in 2008 to defer significant taxes to later years. *See, e.g.,* BNSF 2009 SEC Form 10-Q for 1Q09 at 25 ("The Company anticipates that capital commitments for 2008 will be about $2,575 million ... in order to take advantage of the bonus depreciation provision provided in the Fiscal Stimulus Act."). BNSF

bonus depreciation into 2009. Under both the Stimulus Act and the ARRA, qualifying investments are allowed a 50 percent depreciation bonus in the year that they are placed into service. Tax depreciation for the remaining 50 percent of the cost, or the remaining cost basis, is calculated using the standard MACRS schedules.[4] Because the Primary DCF model assumes that most of the ANR's assets are placed into service in the first year of the 10-year DCF period, which is in this case is 2009, the majority of the ANR's investment qualifies for the bonus depreciation.[5] Table G of Exhibit III-H-1 displays the amount of bonus depreciation available to the ANR in 2009. Because the Secondary DCF model will not begin until 2012, it does not employ bonus depreciation.

g. Average Annual Inflation in Asset Prices

Table H of Exhibits III-H-1 and III-H-2 computes the average annual inflation rate by which the capital recovery charge in Table I is indexed. The weighted average inflation rate was used because Table H calculates the

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and UP will presumably take further advantage of the bonus depreciation provision of the ARRA in their 2009 tax calculations.

[4] For example, a $1 million asset with a five year MACRS life would accrue $500,000 in bonus depreciation in year 1 ($1 million x 50 percent bonus factor), plus $100,000 in standard MACRS depreciation ($500,000 remaining cost basis x 20% Year 1 MACRS factor for a 5-year asset) for a total of $600,000 in first year depreciation. See http://www.depreciationbonus.org/ for a description and example of bonus depreciation under the Stimulus Act and ARRA.

[5] The ANR begins calculating depreciation on all assets in the first year of railroad operations. This is consistent with the fact that no depreciation charges are incurred during the 30-month construction and testing period. A modest portion of the ANR's assets are not placed in operation until 2012, when the ANR begins serving the Signal Peak Mine.

required capital recovery necessary to return the investment. All road property and equipment accounts are indexed at the quarterly rates shown in Table B of both Exhibits. The weighted average inflation rates are based on the inflation indexes discussed in Part III-G.

h. Discounted Cash Flow

Table I of Exhibits III-H-1 and III-H-2 shows the calculation of the capital carrying charge and associated flow of funds required to recover the total road property investment and equipment investment. Inputs to this spreadsheet were taken from the Tables described *supra*. Table I calculates the quarterly capital carrying charge required over the 40 quarters of the DCF period, after consideration of the applicable tax liability. Although the Secondary DCF model will not commence until 2012, it will also utilize a 40-quarter DCF period consistent with the Board's decision in *Major Issues*.

The total start-up investment is comprised of the road property and equipment investment shown in Table C, the road property IDC calculated in Table D, and the present value of replacement investment calculated in Table F. The result equals the total investment to be recovered over the life of the ANR from the quarterly capital recovery stream. The quarterly capital recovery stream reflects the tax benefits associated with interest on the investment financed with debt from Table E and the asset tax depreciation from Table G.

The cash flow shown in Column (8) of Table I is the amount remaining each quarter after the payment of federal and state tax liabilities. This

cash flow is used for payment of return on total investment in the ANR. For road property investment included in the Primary DCF, this quarterly figure is then discounted by the fourth root of the composite annual cost of capital from Table A, adjusted to reflect the assets being placed in service on January 1, 2009. The Secondary DCF model adjusts values to be placed in service January 1, 2012. The present value cash flow is then summed for each quarter along with the future cash flow; the total equals the total cost that must be recovered. The future cash flow is the residual value of the ANR's unconsumed assets, unamortized debt and remaining tax liabilities (remaining interest and depreciation), and serves to reflect the cash flow required to account for the value of the assets not consumed during the 10-year life of the DCF model.

The development of the quarterly levelized capital carrying charge requirement is a relatively simple calculation, *i.e.,* starting capital carrying charge requirement times the quarterly index factor from Table H, which will recover total investment during the 10-year DCF model period. The starting capital carrying charge requirement which recovers the total investment is developed through an iterative process. The Primary and Secondary DCF models both begin with a specified amount and then run through the calculation described above to develop the cumulative present value of the cash flow. If this cumulative number does not equal the total costs to be recovered from the quarterly revenue flow (start-up investment plus the present value of the replacement investment), the starting cost is adjusted upward or downward as necessary and the DCF model

runs through the calculations again. The process is repeated until the starting quarterly charge yields a cumulative present value cash flow which equals the required investment to be recovered from the quarterly capital recovery flow.

i. Computation of Tax Liability -- Taxable Income

Table J, Part 1 of Exhibits III-H-1 and III-H-2 displays the calculation of the ANR's federal tax liability. The procedures followed to develop the federal tax liability are discussed in Part III-G. Table J, Part 2 shows the calculation of the ANR's state income tax liability.

j. Operating Expenses

Table K of the Primary DCF model displays the operating expenses incurred in each year of the DCF period based on the traffic levels described in Part III-A. In previous cases involving application of the SAC test, annual operating expenses that change with the level of traffic volumes tended to be adjusted annually by the change in the net tons transported by the SARR. However, this approach implicitly assumes a static mix of origin-destination pairs over the DCF model period, which in many cases would not reflect the actual changes in the SARR's traffic. A better approach is to adjust this group of costs by the annual change in ton-miles, which takes into consideration the shifting nature of a SARR's traffic.[6] In this case, AEPCO has adjusted train and engine

[6] For example, assume that in Year 1 of the 10-year period Movement A transports 1,000 tons of product over 1,000 miles of the SARR, producing 1 million net ton-miles of traffic. In Year 2, Movement A is forecasted to be discontinued, but is replaced in the SARR traffic group by Movement B.

personnel expenses, locomotive related expenses (except road locomotive acquisition costs), loss and damage expenses, trackage rights fees, intermodal lift costs, manifest line-haul credits, switching costs and maintenance of way expenses annually by the change in ANR net ton-miles.[7] Table K states the annual operating costs on a quarterly basis, and indexes them to reflect inflation over the 10-year analysis period based on the inflation rates shown in Table B. The installation of the Signal Peak Construction will not materially impact or change the ANR's basic operations. Moreover, as explained in Section III-D-1, AEPCO calculated operating expenses based upon peak-year train operations, which include movements from the Signal Peak Mine. Therefore, all operating expenses incurred for the start-up of the Signal Peak Construction are accounted for in Table K of the Primary DCF model.

Movement B also transports 1,000 tons of product, but only moves over 100 miles of the SARR, producing 100,000 net ton-miles. Movement B will be less expensive than Movement A, given the lower aggregate costs associated with a shorter movement and the 90 percent reduction in net ton-miles. However, under the methodology used in prior SAC cases wherein certain operating costs were adjusted solely based on changes in total tons, the annual operating costs would remain unchanged (before accounting for the change in the wage and price levels) when Movement B replaces Movement A. Adjusting costs by the change in ton-miles instead of the change in tons reflects the shifting nature of the SARR's traffic mix and its actual impact on the SARR's operating costs.

[7] Like other investments, the ANR is assumed to acquire its peak year locomotive assets in the base year. This means that the ANR will have surplus locomotives in its early years of operation.

k. Summary of SAC

Total SAC for the ANR based on investment and operating costs is summarized in Table L of Exhibits III-H-1 and III-H-2. The capital requirement from Table I and the annual operating expenses from Table K are presented and summed in Table L for each year of the ANR's operation. Exhibit III-H-3 combines the SAC results from both DCF models.

2. Maximum Rate Calculations

The SAC analysis summarized in Parts III-A through III-G and the accompanying Exhibits, and displayed in Exhibit III-H-3, demonstrates that over the 10-year DCF period the revenues generated by the ANR exceed its total capital and operating costs. Table III-H-1 below shows the measure of excess revenue over SAC in each year of the DCF period for this case.

Table III-H-1 Summary of DCF Results -- 2009 to 2018 ($ in millions)					
Year (1)	Annual Stand-Alone Requirement (2)	Stand-Alone Revenues (3)	Overpayments or Shortfalls (4)	PV Difference (5)	Cumulative PV Difference (6)
2009	$1,250.4	$2,187.4	$937.0	$892.1	$892.1
2010	$1,322.7	$2,449.8	$1,127.1	$972.4	$1,864.5
2011	$1,409.6	$2,700.6	$1,290.9	$1,009.3	$2,873.8
2012	$1,499.1	$2,953.0	$1,453.9	$1,030.2	$3,904.0
2013	$1,566.9	$3,198.8	$1,631.9	$1,047.9	$4,951.9
2014	$1,633.3	$3,372.2	$1,738.9	$1,011.9	$5,963.8
2015	$1,692.0	$3,540.8	$1,848.8	$975.0	$6,938.8
2016	$1,752.9	$3,776.9	$2,023.9	$967.3	$7.906.2
2017	$1,805.1	$4,028.2	$2,223.1	$962.9	$8,869.1
2018	$1,856.7	$4,269.8	$2,413.1	$947.2	$9,816.4
Source: Exhibit III-H-3.					

Where, as in this case, stand-alone revenues are shown to exceed costs, rates for the members of the ANR traffic group -- including AEPCO in particular -- must be adjusted to bring revenues and SAC into equilibrium. In *Major Issues*, the Board adopted MMM as its rate prescription approach for use in proceedings under the *Coal Rate Guidelines*. *See Major Issues* at 14-23.

Under MMM, maximum reasonable rates for each year of the DCF period are expressed as a ratio of each movement's stand-alone revenues to the variable cost of providing the subject service over the ANR route. Revenues are expressed as each movement's annual stand-alone revenue calculated using the ATC methodology detailed in Part III-A-3. Revenues are categorized based on traffic type (*i.e.*, coal, industrial/chemical, consumer (includes automotive and

intermodal), and agricultural), BNSF/UP origin and destination, and ANR origin and destination. For coal traffic, movements were separated further based on the pricing instrument (*e.g.,* contract or tariff), railcar type, and railcar ownership. Variable costs for each movement are calculated using the Board's 2008 Phase III URCS costs applied to the nine cost inputs identified in *Major Issues*.

A threshold issue related to the execution of MMM in this case concerns the projection of the BNSF and UP Phase III variable costs for each of the movements in the ANR traffic group. In *WFA/Basin II*, the Board directed use of the RCAFA for this purpose on the grounds that it would "properly forecast the defendant carrier's variable costs" to calculate the degree of differential pricing needed to cover total SAC. *Id.* at 30. More recently, however, the Board determined that in calculating variable costs to implement an R/VC ratio rate standard, the Board's standard URCS indexing approach would produce more accurate results. *OG&E* at 11. As it obviously would be inappropriate to use two different indices to accomplish the same, singular purpose, AEPCO is relying on the Board's more recent precedent, and using the Board's URCS indexing procedure to forecast variable costs for the MMM calculation.

The STB's URCS index uses five indexes: the AAR's Wage, Wage Supplements, Materials and Supplies and Fuel Indices, and the Producer Price Index – All Commodities ("PPI"), which are weighted by actual railroad costs reported in Annual Report Form R-1. Global Insight publishes forecasts for each of the first four indices, and the Board already accepts Global Insight's forecasts

of the first three for use in the DCF model. The fuel forecast is included in the same documentation. Likewise, EIA -- whose coal production, transportation cost and GDP-IPD forecasts already are accepted by the Board -- publishes a PPI forecast. To forecast BNSF and UP URCS Phase III variable costs for MMM purposes, therefore, AEPCO uses the STB's URCS index, with the December 2009 Global Insight and most recent EIA forecasts of its components. Weighting factors are taken from BNSF's and UP's Annual Report Form R-1 data.

Following the calculation of the specific annual variable costs for each movement, AEPCO calculated each movement's maximum contribution toward SAC each year, expressed as a mark-up over the movement's variable costs. Under MMM, a movement cannot contribute more to SAC than the contribution reflected in the mark-up of its current, actual or forecasted rate over variable cost. For each year in the DCF period, the MMM model sets each movement's R/VC ratio at the lesser of the average R/VC ratio required to cover total SAC, or the movement's actual R/VC ratio. The average R/VC ratio required to cover SAC then is iteratively increased until no movement in the traffic group is assigned a share of SAC greater than its actual contribution over variable costs as measured by its R/VC ratio, and the aggregate adjusted stand-alone revenues equal total SAC.[8] *Major Issues* at 14.

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[8] According to the Board, this step reflects the assumption that the rates charged by BNSF and UP on all non-issue traffic are profit-maximizing rates, such that the reapportionment represents "an appropriate application of demand-based differential pricing." *Major Issues* at 14.

Application of MMM yields the following maximum R/VC ratios for each year of the DCF model:

Table III-H-2 MMM Results	
Year	**Maximum R/VC**
2009	76.0%
2010	74.0%
2011	72.4%
2012	72.4%
2013	71.9%
2014	71.7%
2015	71.6%
2016	71.2%
2017	70.8%
2018	70.2%
Source: Exhibit III-H-4.	

As indicated in Table III-H-2, the maximum R/VC ranges from 76.0% to 70.2% over the 10-year DCF period. That the application of MMM results in R/VC ratios below 1.0, as shown in Table III-H-2, may appear counterintuitive. However, AEPCO's consultants simply followed the procedures that the Board specified in Major Issues with respect to the use of URCS Phase III costing procedures for the calculation of ATC and MMM, and the Board stated that adherence to those procedures is mandatory.

As applied to the unadjusted Phase III URCS variable costs for the issue movements, the following MMM maximum reasonable rates apply to shipments to Apache from the various origins at the 1Q09 through 4Q09 wage and price levels:

Table III-H-3 AEPCO MMM Rates per Ton – 1Q09 Through 4Q09 Maximum Reasonable Rates for Coal Movements to Apache				
Origin	**1Q09**	**2Q09**	**3Q09**	**4Q09**
Lee Ranch	$4.59	$4.60	$4.75	$4.83
El Segundo	$4.53	$4.53	$4.68	$4.77
Gillette Area Mines (Eagle Butte)	$12.41	$12.42	$12.82	$13.03
Spring Creek	$13.30	$13.31	$13.75	$13.97
Decker	$13.23	$13.25	$13.68	$13.90
Source: "Cochise MMM Rates.xlsx." Note that no rates are shown for Signal Peak because that origin does not enter the SARR system until 2012.				

The maximum lawful rates for the transportation of coal from the origins covered by BNSF 57966, 57988, and 58039 equal the greater of the jurisdictional threshold or the MMM maximum rates. Tables III-H-4 compares BNSF/UP rates to AEPCO as of January 1, 2009, to the jurisdictional threshold and the MMM maximum. The issue rates are greater than both the jurisdictional threshold and the MMM rates for all origins.

Table III-H-4 Maximum Rate Summary for 1Q09				
Origin	**January 1, 2009 BNSF/UP Rate Level**	**Jurisdictional Threshold per Ton**	**MMM Rate Per Ton**	**Maximum Rate Per Ton[1/]**
Lee Ranch	$14.88	$10.88	$4.59	$10.88
El Segundo	$14.87	$10.73	$4.53	$10.73
Gillette Area Mines (Eagle Butte)	$40.32	$29.40	$12.41	$29.40
Spring Creek	$42.17	$31.50	$13.30	$31.50
Decker	$42.16	$31.35	$13.23	$31.35

[1/] The Maximum Rate Per Ton equals the greater of the Jurisdictional Threshold or MMM Rate per ton.

Source: Exhibit III-A-4 and electronic workpaper "Cochise MMM Rates.xlsx." The jurisdictional threshold for the Gillette Area Mines is that for Eagle Butte. No figure is shown for Signal Peak because that origin does not enter the SAC analysis until January 1, 2012.

3. Reparations

As described in Part I, AEPCO has been paying rates under BNSF 57966 and 57988 in excess of the maximum reasonable per ton since January 1, 2009. BNSF/UP thus owe AEPCO the difference between the rates paid and the lawful maximum levels in principal reparations payments. Such principal will increase until BNSF/UP comply with a final order of the Board in this proceeding. AEPCO is also entitled to interest on all principal reparations amounts, calculated from the date that the first unlawful charge was paid at the rate described in Part I-D-2, and otherwise in accordance with 49 C.F.R. Part 1141.1, *et seq.*

The Board's regulations (49 C.F.R. Part 1141.1, *et seq.*) provide for interest at the coupon equivalent of the 91-day United States Treasure bill ("T-Bill"), updated and compounded each calendar quarter. The rate is currently very low, approximately 0.06% per year, less than 1/180th of most recent (2008) annual cost of capital. There is a significant asymmetry in having the reasonableness of AEPCO's adjudged under a very high cost of capital and then having interest on AEPCO's reparations awarded at a much lower level. In effect, AEPCO is forced to lend funds to or invest capital with the Railroads, but AEPCO receives a much lower return than BNSF/UP's other investors, even though AEPCO's investment is forced, rather than voluntary. The arrangement also provides BNSF/UP with little incentive to set their rates at a reasonable level initially, that is, the worst that happens is that BNSF/UP receive the temporary use of capital at a nearly interest-free rate. AEPCO respectfully submits that the Board has the discretion under the present circumstances to depart from its regulations and grant AEPCO interest on reparations at a reasonable rate.

PART IV

WITNESS QUALIFICATIONS AND VERIFICATIONS

This Part contains the Statements of Qualifications of the witnesses who are responsible for the Narrative portions of AEPCO's Opening Evidence (and the exhibits and workpapers referred to therein) identified with respect to each witness.

1. GARFIELD (GARY) G. GRIM

Mr. Grim is currently AEPCO's Senior Vice President and Chief Operating Officer and has served in that capacity since 2006. Mr. Grim is sponsoring the portions of the Opening Evidence that provide background information concerning AEPCO and its efforts to obtain reasonable transportation rates for the coal consumed at its Apache Generating Station ("Apache") near Cochise, AZ, and AEPCO's lack of effective competition at Apache. Specifically, he is sponsoring Parts I-B and II-B.

In his current position, Mr. Grim is responsible for AEPCO's day-to-day activities, including the operation and fuel procurement for the coal-fired and other generating units at Apache. He was actively involved in AEPCO's unsuccessful efforts to obtain reasonable railroad coal transportation rates from BNSF and UP without recourse to litigation. He is very familiar with AEPCO's coal transportation and coal procurement arrangements as well as the coal-fired unit themselves.

Mr. Grim was responsible for the acceptance testing of the Apache coal-fired units when he joined AEPCO as a Mechanical Engineer in 1981. He served as AEPCO's Generation Engineering Manager from 1982 to 1993 and as its Manager of Engineering from 1993 to 2006, at which time he assumed his present position. Throughout his time at AEPCO he has had substantial responsibility for the Apache units.

Mr. Grim is a Registered Professional Engineer (Mechanical) in the State of Arizona and a member of the American Society of Mechanical Engineers. He earned his B.S. in Mechanical Engineering from the University of Nebraska in 1970. He worked as a Mechanical Field Engineer at Morrison-Knudsen from 1970 to 1973, procuring nuclear grade and other materials and providing technical support for the construction of an anti-ballistic missile site and a nuclear loss of fluid test facility. From 1973 to 1981, he worked for the Nebraska Public Power District as a Project Engineer, Mechanical Construction Engineering Supervisor, and Assistant Site Manager, first with respect to the installation of a baghouse fly ash filter collection system on a 1950s era coal-fired plant and then on the construction of two new 650 MW pulverized coal fired power plants.

VERIFICATION

I, Garfield G. Grim, verify under penalty of perjury that I have read the Opening Evidence of Arizona Electric Power Cooperative, Inc. in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Garfield G. Grim

Executed on January 15, 2010

2. PAUL E. SMITH

[COUNSEL's NOTE: On November 19, 2009, Mr. Smith suffered a severe stroke and as of the date of filing of AEPCO's Opening Evidence is unable to sign his verification. The following statement of qualifications was prepared for Mr. Smith prior to his stroke. The narrative portion of AEPCO's Opening Evidence on the SARR system and operating plan (Parts III-B and III-C), and the portion of Part III-D relating to operating and general & administrative personnel and equipment, were largely completed by Mr. Smith before his stroke. However, AEPCO subsequently engaged Paul Reistrup to review and complete the operating plan and personnel and the operating inputs to the RTC Model, as well as the configuration of the SARR's inspection and fueling yards. Mr. Reistrup and AEPCO Witness Walter Schuchmann, who conducted the simulation of the SARR's operations using the RTC Model and collaborated with Messrs. Smith and Reistrup in developing the SARR system and operating plan, are co-sponsoring these portions of AEPCO's opening evidence.]

Mr. Smith is founder and President of Smith Railway Consulting, with offices at 1900 Locust Street, Denver, CO 80220. Mr. Smith largely developed, and is co-sponsoring, AEPCO's evidence with respect to the SARR system (Part III-B), operating plan (Part III-C) and the portion of operating expenses (Part III-D) related to equipment requirements and Operating and General & Administrative personnel (other than train crew counts and employee compensation, which are sponsored by AEPCO Witness Philip Burris). Mr. Smith

also collaborated with Mr. Schuchmann in the initial development of the operating inputs to the Rail Traffic Controller ("RTC") Model which is being used to verify the SARR's capacity and develop certain operating statistics used in determining annual SARR operating expenses for purposes of the DCF model.

Mr. Smith has nearly 40 years of direct experience in railroad operations and management, largely with UP and its predecessors including the Denver & Rio Grande Western Railroad ("DRGW") and Southern Pacific Transportation Company ("SP"). He has a B.S. in Business from Indiana University and a M.S. in Economics from Minnesota State university. He also served in the U.S. Army and is a Vietnam Veteran with an honorable discharge.

Mr. Smith's railroad career began in 1965, with the dining car department of the Great Northern Railway, one of BNSF's predecessors. He also served as an Assistant Trainmaster/Brakeman/Switchman for the Northern Pacific Railway, another BNSF predecessor, and as a Switchman/Brakeman for the Chicago and North Western Railway (a UP predecessor). Mr. Smith began working for the DRGW in 1972, and for the next eleven years he served in various positions at DRGW including T&E service as a Brakeman and Locomotive Fireman, and management service as Manager-Equipment Planning, Market Analyst, Market Manager and Director-Industrial Development.

In 1983 Mr. Smith was appointed General Manager-Intermodal in DRGW's Operating Department, where he was responsible for coordination of all TOFC and related railroad operations. In 1989 he was appointed Regional

Transportation Manager for the Central Region of the combined SP/DRGW system. In that position he coordinated and directed train schedules with the railroad's operating units to effect timely train operations within the Central Region. He was also responsible for service design and make-up of trains operating in the region.

In 1992 Mr. Smith became SP's Director of Crew Management and Time Keeping, where he was responsible for crew scheduling and timely compensation for train and yard operations system-wide. In 1994 he was appointed Director-Transportation Service Center ("TSC"), where he served as relief director for various TSC functions including intermodal and unit train operations. In August 1994 Mr. Smith was promoted by SP to General Director Unit Trains. In that position he was responsible for coordination, planning and operation of all unit trains system-wide, including a substantial number of unit coal trains that originated at SP-served mines in Colorado and Utah.

Mr. Smith left his officer position with SP in April of 1995, and returned to train service as a locomotive engineer based at Denver. He continued as a locomotive engineer after the UP/SP merger in 1996, and retired from engine service in June of 2002.

In October of 1999, Mr. Smith formed his own railway consulting firm. He has consulted with the Denver Regional Transportation District on a feasibility study to move intermodal facilities form the inner city of Denver, and with engineering companies on the implementation and coordination of passenger

and freight operations along the Front Range of Colorado and safety improvements associated with grade crossing elimination. He was also retained by an engineering firm to study switching activities in the Denver metropolitan area and develop a plan for more consolidated railcar switching operations. Mr. Smith was also retained by Western Fuels Association/Basin Electric Cooperative, along with Paul Reistrup, to develop and co-sponsor their evidence on the SARR system and operating plan in the *WFA/Basin* coal rate case (STB Docket No. 42088).

Mr. Smith is a member of the Colorado Department of Transportation Freight Advisory Council, the Metro Denver Chamber of Commerce Transportation Committee, the University of Denver's National Center for Intermodal Transportation, the Transportation Advisory Committee of the Denver Regional Council of Governments, and the Governor's Transportation Finance and Implementation Panel. He was the recipient of the Delta Nu Alpha Colorado Transportation Leadership Award for 2005.

During the course of his railroad career at DRGW/SP/UP, Mr. Smith became thoroughly familiar with all aspects of Western railroad operations, including the planning and operation of intermodal trains and unit coal trains. He is personally familiar with many of the BNSF and UP lines being replicated by the SARR in this case, and has visited the Powder River Basin on several occasions to observe the mine loading and rail operations in the area. Most recently, in the summer of 2009, Mr. Smith conducted field trips in which he observed all of the

BNSF and UP rail lines and facilities being replicated by AEPCO's SARR that were accessible from public roads. He also observed the new private line serving the Signal Peak Mine in Montana as well as the coal loading facilities at that mine and most of the other coal mines from which the SARR originates coal, and the track layout and coal unloading facilities at AEPCO's Apache power plant. Mr. Smith's summaries of his observations during these field trips are included in the electronic workpapers for Part III-B.

3. WALTER H. SCHUCHMANN

Mr. Schuchmann is Vice President of R. L. Banks & Associates, Inc. ("RLBA"), with offices at 2107 Wilson Boulevard, Suite 750, Arlington, Virginia 22201. Mr. Schuchmann is co-sponsoring, with Paul Smith, the portion of AEPCO's Opening Evidence relating to the configuration and capacity of the SARR system (Parts III-B and III-C). Mr. Schuchmann also conducted the simulation of the SARR's operations using the RTC Model described in Part III-C-2, worked with Messrs. Smith and Paul Reistrup in developing/finalizing the operating and other inputs used in the Model, and ran the Model for purposes of developing the SARR's track and yard configuration and confirming the SARR's capacity to handle its peak-period traffic efficiently.

Mr. Schuchmann is responsible for rail operations and service planning at RLBA. During his twenty-year tenure at RLBA, Mr. Schuchmann has directed or participated in numerous rail service planning and implementation studies involving both freight and passenger service. He has performed a freight rail capacity study on behalf of the Port Authority of New York and New Jersey and conducted operations and cost analyses involving coal, intermodal and solid waste operations. He has also participated in rail passenger service implementation projects on behalf of Metrolink, Virginia Railway Express, Baltimore's Central Light Rail Line and New Jersey Transit's Southern New Jersey Light Rail Transit System. He has advised public bodies evaluating the initiation or expansion of intercity passenger or commuter rail services in Kansas

City, Nashville, Fort Worth, Orlando, Seattle, and the San Francisco Bay area with respect to service planning, operations planning and minimizing conflicts between existing/planned passenger operations and existing/planned freight operations and requirements.

Mr. Schuchmann has over 25 years' experience in the railroad industry, including eight years in the Operating Department of the Norfolk Southern Railway ("NS"). Mr. Schuchmann was a Superintendent of Safety for Norfolk Southern's Pocahontas Division from 1985 to 1987. In this position, he worked with department heads to develop and administer effective programs to reduce accidents and employee injuries. Mr. Schuchmann participated in the Norfolk Southern's first application of Voice Block Authority, which controls train movements. In the course of serving as Trainmaster and Assistant Trainmaster at Lynchburg, VA, Chicago, IL and Fort Wayne, IN, Mr. Schuchmann supervised NS' commuter, intermodal and merchandise freight operations. As an operating officer, he was responsible for service to local shippers, as well as road and terminal operations.

Mr. Schuchmann's thorough familiarity with the computerized RTC Model is predicated on his use of that Model on numerous occasions to assess rail infrastructure capacity and develop recommendations for infrastructure improvements, such as additional track capacity. His specific RTC Model engagements include simulating the SARR's operations in *Seminole Electric Cooperative v. CSX Transportation, Inc.*,. STB Docket No. 42110, *Western Fuels*

Association, et al. v. BNSF Railway Company, STB Docket No. 42088, and *AEP Texas North Company v. Burlington Northern & Santa Fe Railway Company*, STB Docket No. 41191 (Sub-No.1), as well as simulations of operations in the Washington, D.C. to Richmond, VA corridor and the Kansas City I-35 corridor, and a review of the Model's use in evaluating rail freight and passenger operations and infrastructure in Southern California. In addition, Mr. Schuchmann has worked with and reviewed other rail capacity simulation models.

Mr. Schuchmann has a Masters of Business Administration degree from Indiana University and a Bachelor of Science degree in Industrial Management from Purdue University. He is a Certified Member of the American Society of Transportation and Logistics, a member of the American Association of Railroad Superintendents and a member of the National Defense Transportation Association.

Mr. Schuchmann has authored and co-authored a number of publications, including "Is Your Railroad Leaving Town? New Transportation Challenges and Opportunities for Coal Producers and Users," invited and distributed by the Utility Data Institute, and "Shortline Railroad Owner/Operator Groups – Empire Builders of the 1980's," American Society of Transportation and Logistics. Mr. Schuchmann's presentations include "Capacity Improvements: Who Pays and When?" at the Railway Age Creating Capacity Conference, Chicago, 2009, "Lessons Learned in Performing Shortline Due Diligence," AASHTO Standing Committee on Rail Transportation, Indianapolis, 1997; "How

Can Short Lines Obtain Better Cooperation from Major Railways," Canadian Shortline Railroad Conference, Toronto, 1993; and "Railroads for Non-Railroaders," sponsored by the Railroad Financial Corporation, 1989.

VERIFICATION

I, Walter H. Schuchmann, verify under penalty of perjury that I have read the Opening Evidence of Arizona Electric Power Cooperative, Inc. in this proceeding that I have sponsored or co-sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Walter H. Schuchmann

Walter H. Schuchmann

Executed on January 15, 2010

4. PAUL H. REISTRUP

Mr. Reistrup is a nationally recognized expert on rail operations and engineering matters. His address is 8614 Brook Road, McLean, VA 22102. Mr. Reistrup was engaged by AEPCO in mid-December of 2009, following Mr. Paul Smith's stroke, to review the SARR track and yard configuration, operating plan, and operating/general & administrative personnel and equipment as initially developed by Mr. Smith, and to complete several aspects of the system configuration and operating plan used as inputs in the RTC Model simulation of the SARR's peak-period operations conducted by Walter Schuchmann. Accordingly, Mr. Reistrup is co-sponsoring AEPCO's evidence with respect to the SARR system, operating plan and operating/general & administrative personnel costs (Parts III-B, III-C and part of III-D).

Mr. Reistrup is well-known to the Board as a result of various consulting assignments, including the development of SARR operating plans in other SAC rate cases.[1] He has 50 years of experience in railroad engineering, operations and management, and has served as President of two railroads, the Monongahela Railway (a large regional coal-carrying railroad) and Amtrak. He has also served as a consultant on rail operations and management matters,

[1] Among other rate cases, Mr. Reistrup worked with Paul Smith in developing and sponsoring the evidence on the SARR system and operating plan presented on behalf of the complaint in STB Docket No. 42088, *Western Fuels Association, et. al. v. BNSF Railway Company.*

including service with R.L. Banks & Associates, Inc. and as Vice President of the rail division of Parsons Brinckerhoff, an international engineering firm.

Mr. Reistrup's railroad career began in 1959, following his graduation from the United States Military Academy at West Point, NY with a B.S. in Civil Engineering and service in the United States Army, with the Baltimore & Ohio Railroad ("B&O"). He held various engineering and operating positions with the B&O and its successor, Chessie System until 1967. From 1967 to 1970 Mr. Reistrup held several senior management positions with the Illinois Central Railroad and its successor, including Vice President Passenger Services, Vice President Intermodal Services, and Senior Vice President and Director of the Illinois Central Gulf Railroad in charge of marketing, sales, pricing, piggyback, coal and industrial development. During Mr. Reistrup's tenure at IC, that carrier was the largest rail originator of Midwestern coal, and it also terminated large quantities of Western coal originated by the Union Pacific and Burlington Northern Railroads.

From early 1975 until 1978, Mr. Reistrup served as Amtrak's second President and Chief Executive Officer. During his tenure, Amtrak was transformed from primarily a contracting entity to an operating railroad that had the highest-density mix of freight, commuter and inter-city passenger trains in the nation in what is known as the Northeast Corridor between Washington, D.C. and Boston through New York City. Amtrak acquired the Northeast Corridor from Conrail in 1976.

From 1978 to 1988 Mr. Reistrup was Vice President of R.L. Banks & Associates, Inc. of Washington, D.C. ("RLBA"), a transportation consulting firm. There, he directed a wide variety of railroad projects related to operations, engineering, marketing and costing for a number of private clients and government entities. He directed the firm's coal transportation work on behalf of the Intermountain Power Project ("IPP") from 1980 to 1988, during which period IPP constructed a large coal-fired, rail-served power plant near Lynndyl, UT. Mr. Reistrup also led the RLBA team that developed alternative rail corridors to route coal and other freight traffic away from downtown Denver on behalf of the Colorado Department of Transportation, and in the course of that assignment became familiar with the rail lines in and around Denver including the line extending along the Front range from Denver to Pueblo, CO, which was then owned and operated by three carriers (predecessors of BNSF and UP). In particular, Mr. Reistrup's team recommended the consolidation of three routes extending south of Denver into one joint, multiple-track route through Littleton, CO, a recommendation that was largely adopted by the carriers.

In 1982, while still at RLBA, Mr. Reistrup was engaged to be Chief Traffic Officer of the Monongahela Railway ("MGA"), a regional coal-hauling railroad in southwestern Pennsylvania and northern West Virginia originating approximately 23 million tons of coal annually. In 1988, Mr. Reistrup was elected President of the MGA, and continued to serve in that position until 1992, when the MGA was merged into Conrail. While at MGA, Mr. Reistrup became familiar

with all aspects of MGA's coal transportation services and the operation of MGA's coal trains. During his Presidency of the MGA, Mr. Reistrup was NORAC Rules-qualified and ran as a conductor on MGA coal trains ten times during strike situations. As a conductor, Mr. Reistrup handled brake tests and on at least one occasion loaded a coal train in the engineer's stead.

From mid-1992 to mid-1994, Mr. Reistrup served as Principal of the Railroad Development Corporation, a Pittsburgh-based railway investment and management company, where he served as General Manager of the firm's project to privatize two railroads consisting of 5,000 route-miles in Argentina. In 1994, Mr. Reistrup joined Parsons Brinckerhoff as a Vice President. Mr. Reistrup was responsible for all of Parsons Brinckerhoff's activities involving railroad operations and worked closely with another Parson Brinckerhoff Vice President, Robert Pattison, on rail engineering matters.

On July 1, 1997, Mr. Reistrup left Parson Brinckerhoff and joined CSX Transportation as Vice President-Passenger Integration, with offices in Washington, D.C. In this position, Mr. Reistrup was responsible for overseeing CSXT's relations with all public and quasi-public rail transportation agencies (including but not limited to Amtrak, VRE, MARC, SEPTA, Metro North and MBTA) that operate passenger and commuter trains on CSXT's line and vice versa. He was also responsible for negotiating settlements with these entities on behalf of CSXT during the Conrail Control proceeding, and for the successful integration of CSXT's freight and passenger operations on the Northeast Corridor

(which was new passenger territory for CSXT) following consummation of the acquisition of Conrail by CSXT and Norfolk Southern.

Mr. Reistrup retired from CSXT at the end of February, 2003, and returned to his consulting work. At that time he embarked on a six-month consulting arrangement with CSXT, under which he was on call to furnish consulting services relating to passenger/commuter and freight integration issues and to provide advice as requested by CSXT's CEO and other senior officers. That consulting agreement terminated on August 31, 2003.

Mr. Reistrup was an active member of the Transportation Research Board ("TRB"), a unit of the National Research Council of the National Academy of Sciences, from 1980 to 1998. In 1981, Mr. Reistrup was appointed a member of the Transportation Research Board ("TRB")'s Committee A2M02, which dealt with electrification and Train Control systems (signals, grade crossing protection, etc.). From 1997 to 1992, Mr. Reistrup served as Chairman of the TRB's A2M02 Committee, focusing on Train Control systems including Positive Train Control ("PTC") evolving from ATS/Cab Signals/ATC/speed control, *etc.* Mr. Reistrup was appointed Chairman of the TRB's AR030 Railroad Operating Technologies Committee, effective April 15, 2005. This committee is charged with exploration of innovative strategies and application of new technologies to enhance rail operations in the areas of command, control, communications, and information systems; energy supply distribution and efficiency; and propulsion systems. Mr. Reistrup continues to serve on this committee as Chairman *Emeritus*, and has

participated in committee meetings addressing the complex issue of PTC implementation including, most recently, a meeting on January 12, 2010.

Mr. Reistrup is the author of an article in the Fall 2002 issue of the *Journal of Transportation Law, Logistics and Policy* (Vol. 70, Number 1, p. 57), entitled "Passenger Trains on Freight Railroads: A View From Both Sides of the Track" in which, *inter alia*, he discusses freight/passenger train use of the same lines during his recent tenure as Vice President-Passenger Integration at CSXT.

Mr. Reistrup is familiar with most of the BNSF and UP lines being replicated by the SARR in this case. He has visited the Powder River Basin on several occasions (most recently in September, 2009) and observed the rail lines, facilities and operations in that area on several occasions, as well as the rail loading operations at PRB coal mines. He has also observed BNSF facilities and operations involving unit coal trains on the replicated BNSF lines between Orin Jct., WY and Amarillo, TX, as well operations on the BNSF "Transcon" west of Amarillo and on UP's Sunset Route through El Paso.

VERIFICATION

I, Paul H. Reistrup, verify under penalty of perjury that I have read the Opening Evidence of Arizona Electric Power Cooperative, Inc. in this proceeding that I have co-sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Paul H. Reistrup

Executed on January 15, 2010

5. THOMAS D. CROWLEY

Mr. Crowley is an economist and President of L.E. Peabody & Associates, Inc., an economic consulting firm that specializes in solving economic, marketing, and transportation problems. The firm's offices are located at 1501 Duke Street, Suite 200, Alexandria, VA 22314, 10445 N. Oracle Road, Suite 151, Tucson, AZ 85737 and 21 Founders Way, Queensbury, NY 12804.

Mr. Crowley is sponsoring portions of AEPCO's Opening Evidence in Parts II and III. Specifically, Mr. Crowley is sponsoring the portions of AEPCO's Opening Evidence that relate to quantitative market dominance (Part II-A-1 and 2); the SARR traffic group, including volumes and revenues (Part III-A-1, 2 and 3); identification of the SARR peak traffic period and peak period train counts and development of the peak year traffic density by line segment and identification of movements in railroad-owned cars (Part III-C-2); non-road property investment (Part III-E); the discounted cash flow analysis (Part III-G); and the results of the SAC analysis (Part III-H).

Mr. Crowley is a graduate of the University of Maine from which he obtained a Bachelor of Science degree in Economics. He has also taken graduate courses in transportation at The George Washington University in Washington, D.C. He spent three years in the United States Army and has been employed by L.E. Peabody & Associates, Inc. since February, 1971. He is a member of the American Economic Association, the Transportation Research Forum, and the American Railway Engineering Association.

As an economic consultant, Mr. Crowley has organized and directed economic studies and prepared reports for railroads, freight forwarders and other carriers, shippers, associations, and state governments and other public bodies dealing with transportation and related economic and financial matters. Examples of studies in which he has participated include organizing and directing traffic, operational and cost analyses in connection with multiple car movements, unit train operations for coal and other commodities, freight forwarder facilities, TOFC/COFC rail facilities, divisions of through rail rates, operating commuter passenger service, and other studies dealing with markets and the transportation by different modes of various commodities from both eastern and western origins to various destinations in the United States. The nature of these studies has enabled Mr. Crowley to become familiar with the operating and accounting procedures utilized by railroads in the normal course of business.

Additionally, Mr. Crowley has inspected both railroad terminal and line-haul facilities used in handling general freight, intermodal and unit train movements of coal and other commodities in all portions of the United States. The determination of the traffic and operating characteristics for specific movements was based, in part, on these field trips.

In addition to utilizing the methodology for developing a maximum rail rate based on stand-alone costs, Mr. Crowley also presented testimony before the ICC in Ex Parte No. 347 (Sub-No. 1), *Coal Rate Guidelines - Nationwide*, the proceeding that established this methodology and before the STB in Ex Parte No.

657 (Sub-No. 1), *Major Issues In Rail Rate Cases*, the proceeding that modified the application of the stand-alone cost test. Mr. Crowley also presented testimony in a number of the annual proceedings at the STB to determine the railroad industry current cost of capital, *i.e.*, STB Ex Parte No. 558, *Railroad Cost of Capital*. He has submitted evidence applying ICC (now the STB) stand-alone cost procedures in numerous rail rate cases. He has also developed and presented numerous calculations utilizing the various formulas employed by the ICC and STB (both Rail Form A and Uniform Railroad Costing System ("URCS")) to develop variable costs for rail common carriers. In this regard, Mr. Crowley was actively involved in the development of the URCS formula, and presented evidence to the ICC analyzing the formula in Ex Parte No. 431, *Adoption of the Uniform Railroad Costing System for Determining Variable Costs for the Purposes of Surcharge and Jurisdictional Threshold Calculations*.

As a result of his extensive economic consulting practice since 1971 and his participating in maximum-rate, rail merger, and rule-making proceedings before the ICC and the STB, Mr. Crowley has become thoroughly familiar with the operations, practices and costs of the rail carriers that move traffic over the major rail routes in the United States.

VERIFICATION

I, Thomas D. Crowley, verify under penalty of perjury that I have read the Opening Evidence of Arizona Electric Power Cooperative, Inc. in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Thomas D. Crowley

Executed on January 22, 2010

6. MICHAEL E. LILLIS

Mr. Lillis is a Vice President of L.E. Peabody & Associates, Inc., an economic consulting firm that specializes in solving economic, marketing, and transportation problems. The Firm's offices are located at 1501 Duke Street, Suite 200, Alexandria, VA 22314, 10445 N. Oracle Road, Suite 151, Tucson, AZ 85737 and 21 Founders Way, Queensbury, NY 12804. Together with Mr. Crowley, Mr. Lillis is sponsoring the development of the ANR's route miles as set forth in Part III-B-1.

Mr. Lillis received a Bachelor of Arts degree in economics from the University of Virginia in 1985. He has taken continuing education courses in law at the University of Virginia and has taken numerous graduate courses while enrolled in the MBA program at George Washington University.

Mr. Lillis has been employed by L.E. Peabody & Associates, Inc. since 1995. Prior to joining L. E. Peabody & Associates, Inc., Mr. Lillis worked for Western Fuels Association, Inc. ("WFA"), a national fuel supply organization in the electric utility industry. While with WFA, he managed coal supply and rail transportation agreements for shippers that represented the membership of WFA. He organized and presented numerous economic studies and analyses for shippers relating to coal transportation, coal supply and related economic and regulatory problems. Mr. Lillis has negotiated, implemented and monitored both long term coal supply and rail transportation agreements. Mr. Lillis has conducted field trips to coal suppliers in Wyoming's Powder River Basin and New Mexico's San Juan

Basin to develop on-site information used in the quantification of contract provisions and the development of operational mine costs.

While at L.E. Peabody & Associates, Inc., Mr. Lillis has participated in studies that utilize various formulas employed by the Surface Transportation Board ("STB") in the development of costs for common carriers, including the Uniform Railroad Costing System ("URCS"). He has developed variable costs for common carriers with particular emphasis on the general purpose costing system for rail carriers. Mr. Lillis has also performed extensive analyses in the area of stand-alone costing including route layout, design and construction costs, traffic and revenue development, forecasting and the development of detailed operating plans for various stand-alone railroads.

As part of his work at L.E. Peabody & Associates, Inc., Mr. Lillis conducted numerous studies for electric utilities regarding least cost alternatives for coal and natural gas delivery to various power plants. These studies included the valuation of existing contractual arrangements for fuel supply and transportation service, the evaluation of alternative fuel sources and transportation options (including trucking coal from nearby railroad locations, rail built-out to a competing railroad and conveyor delivery) and the development of operating characteristics and the associated operating and investment costs for each alternative. He has also developed numerous forecasts of coal prices, natural gas prices, freight rates and general economic indicators for electric utilities.

VERIFICATION

I, Michael E. Lillis, verify under penalty of perjury that I have read the Opening Evidence of Arizona Electric Power Cooperative, Inc. in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Michael E. Lillis

Executed on January 22, 2010

7. ROBERT D. MULHOLLAND

Mr. Mulholland is a Vice President of L.E. Peabody & Associates, Inc., an economic consulting firm that specializes in solving economic, marketing, and transportation problems. The Firm's offices are located at 1501 Duke Street, Suite 200, Alexandria, VA 22314, 10445 N. Oracle Road, Suite 151, Tucson, AZ 85737 and 21 Founders Way, Queensbury, NY 12804. Together with Mr. Crowley, Mr. Mulholland is co-sponsoring Part III A-2 and 3 of AEPCO's Opening Evidence with respect to general freight and intermodal traffic.

Mr. Mulholland received a Bachelor's degree in Government & Legal Studies from Bowdoin College in 1995. In 2004, he received a Master's degree in Transportation Policy, Operations & Logistics from George Mason University's School of Public Policy.

Mr. Mulholland was employed by L.E. Peabody & Associates, Inc. from 1995 through 2004 and rejoined the firm in 2008. In 2004, Mr. Mulholland joined the Federal Highway Administration ("FHWA") where he directed the freight economics and freight infrastructure delivery programs for the Office of Freight Management & Operations of the FHWA. While employed at FHWA, Mr. Mulholland was a member of the US Department of Transportation ("USDOT") inter-agency working group that drafted the current National Freight Policy. In addition, Mr. Mulholland served on the United State Department of Transportation ("USDOT") Freight Gateway Team, a group headed by the Undersecretary for Policy and composed of one representative from each of the

surface modal agencies. In 2006, Mr. Mulholland joined ICF International where he directed and conducted numerous analyses of the trucking and rail industries for Federal transportation agencies including the Federal Motor Carrier Safety Administration ("FMCSA"), the Federal Railroad Administration ("FRA"), and the FHWA. His work included analyses of the current rail and trucking industries and forecasts of future trends in both industries.

As part of his work for L.E. Peabody & Associates, Inc., Mr. Mulholland has developed evidence containing traffic and revenue forecasts for hypothetical stand-alone railroads in several STB proceedings dealing with the calculation of maximum reasonable rail transportation rates for coal shippers. He has conducted analyses of historical and forecasted coal transportation rates based on contract and tariff provisions and U.S. Government economic data for use in rail transportation contract negotiations. He has developed studies analyzing delivered fuel prices to electric utilities using Federal Energy Regulatory Commission ("FERC") and related data. Mr. Mulholland also conducted studies forecasting the impact of the Union Pacific - Southern Pacific merger on shippers with reduced access to rail competition following the merger, and developed studies analyzing the impact of the 1997-1998 Union Pacific Railroad service crisis on system traffic flows and transit times.

VERIFICATION

I, Robert D. Mulholland, verify under penalty of perjury that I have read the Opening Evidence of Arizona Electric Power Cooperative, Inc. in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Robert D. Mulholland

Executed on January 21, 2010

8. PHILIP H. BURRIS

Mr. Burris is a Senior Vice President of L.E. Peabody & Associates, Inc., an economic consulting firm, with offices at 1501 Duke Street, Suite 200, Alexandria, VA 22314. The specific evidence Mr. Burris is sponsoring relates to the development of SARR operating statistics based on the output of the RTC model and the operating plan, including the development of train crew personnel requirements (Part III-D), development of equipment lease, maintenance and servicing costs (Parts III-D-1 and III-D-2), operating unit costs (Parts III-D-3 and III-D-5 through III-D-9) and compensation levels for all the SARR transportation and operating (including engineering) employees, non-operating (General and Administrative) personnel, and training and recruiting costs (Parts III-D-2, III-D-3-d, and III-D-4). Mr. Burris is also sponsoring the application of the SARR operating unit costs to the operating statistics, thus yielding the SARR operating expenses in the base year and the development of the land value index for use in the DCF model (Part III-G-2).

Mr. Burris received his Bachelors of Science in Business Administration from Virginia Polytechnic Institute and State University in 1971. He was awarded a Masters in Business Administration, specializing in transportation economics, from American University in 1978. Mr. Burris has worked in the consulting industry for a period of 30 years. In addition to his current position as a Senior Vice President of L.E. Peabody & Associates, Inc., Mr. Burris has been an employee of the following consulting firms:

A. T. Kearney, Wyer Dick & Associates, Inc. and George C. Shaffer & Associates.

Mr. Burris has extensive experience in the field of transportation economics as it pertains to transportation supply alternatives, plant location analysis, regulatory policy and dispute resolution before regulatory agencies as well as state and federal courts. He has designed, directed and executed analyses of the costs of moving various commodities by different modes of transportation including rail, barge, truck, pipeline and intermodal. He has also performed economic analyses of maximum reasonable rate levels for the movement of coal and other commodities using the Board's CMP methodology, and specifically the stand-alone cost constraint. Mr. Burris has submitted evidence regarding maximum reasonable rate levels using the stand-alone cost constraint to the Board and its predecessor and testified before the Railroad Commission of Texas, the Colorado Public Utilities Commission, the Illinois Commerce Commission, the Public Service Commission of Nevada and various state and federal courts.

In the public sector, Mr. Burris has performed studies and written draft reports for the Railroad Accounting Principles Board, an independent body created by Congress to establish cost accounting principles for use in implementing the regulatory provisions of the Staggers Act of 1980.

VERIFICATION

I, Philip H. Burris, verify under penalty of perjury that I have read the Opening Evidence of Arizona Electric Power Cooperative, Inc. in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Philip H. Burris

Executed on January 22, 2010

9. JOSEPH A. KRUZICH

Mr. Kruzich is President of J&A Business Consulting, Inc., a firm specializing in information technology and communications. His business address is 209 Violet Drive, Sanibel, FL 33957. Mr. Kruzich is sponsoring AEPCO's evidence related to the SARR's information technology capital (hardware) and personnel requirements and other expenses for the SARR (Part III-D-3-c).

Mr. Kruzich has 38 years of experience in railroad accounting, executive administration and information technology. He began his railroad career with the Chicago, Burlington and Quincy Railroad ("CB&Q") in 1963 as a tax accountant and was promoted to an internal auditor in 1965. In June of 1968, he joined the Atchison, Topeka and Santa Fe Railroad ("ATSF") as a manager of work control procedures. His job responsibilities included reviewing various work procedures and providing recommendations on how the work processes could be improved to achieve a high degree of efficiency. This position provided him an opportunity to become very familiar with various work processes involved in running a railroad.

From 1973 through 1994, Mr. Kruzich held various positions of increasing responsibility at ATSF and its parent. As Acting Controller of Santa Fe Air Freight Company and Manager of Industrial Engineering at ATSF he performed various efficiency studies in the operating, engineering and mechanical departments. Mr. Kruzich also held the position of Director of Budgets for the entire ATSF operating department including engineering, mechanical,

transportation and all support groups, and as such was responsible for coordination of all information technology issues with the Information Systems Department that related to the Operating Department. He was responsible for all administration duties related to the Vice President of Operations office as General Director of Administration and as Assistant to the President of ATSF and Assistant Vice President of Administration in the Information Technology Group he oversaw all budget, administration, special studies and the corporate measurements systems. These positions provided him with the opportunity to manage a complete process in developing new systems from beginning to end.

In 1995, Mr. Kruzich joined the Kansas City Southern Railway ("KCS") as Vice President of Administration, where he designed profitability, corporate measurement, revenue forecasting and corporate policy systems. In January 1997, he was promoted to Vice President Telecommunications and CIO. As CIO, Mr. Kruzich led the effort in developing the state-of-the-art railroad transportation system known as MCS ("Management Control System"). This system uses some of the most advanced technology such as MQ workflow, Citrix Metaframe, the latest version of Visual Basic and many other technologies and is designed around the business process.

In January 2000, Mr. Kruzich left KCS and formed Forging Ahead Associates, LLC, recently renamed J&A Business Consulting, Inc. This company provides state-of-the-art services in the areas of strategic planning and the development of web sites and e-business initiatives, evaluates the benefits of

outsourcing information technology and business processes, and works with clients to make the initial contacts in developing global market opportunities.

Mr. Kruzich graduated from Northeast Missouri State University (Truman University) in 1962 with a Bachelor of Science degree in Business. In 1984, he received a Masters of Business Administration in Finance from the Keller Graduate School of Management in Chicago, Illinois.

VERIFICATION

I, Joseph A. Kruzich, verify under penalty of perjury that I have read the Opening Evidence of Arizona Electric Power Cooperative, Inc. in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Joseph A. Kruzich

Executed on January 19, 2010

10. GENE A. DAVIS

Mr. Davis is Director, Transportation Engineering of R.L. Banks & Associates, Inc. ("RLBA"). His business address is 2494 Turnstone Drive, Soddy Daisy, TN 37379. Mr. Davis is sponsoring AEPCO's Opening Evidence in Part III-D-4 related to the SARR's maintenance-of-way ("MOW") plan and annual MOW operating expenses.

Mr. Davis joined RLBA in 2002, after 18 years of experience with Norfolk Sothern Corporation ("NS"). Mr. Davis held positions of increasing responsibility within the NS Engineering Department spanning management and engineering of railroad track structures, bridge and building inspection, track/facilities condition assessment, maintenance, rehabilitation, design and construction, as well as railroad operations. Mr. Davis has planned, scheduled and supervised numerous large track projects, such as tie renewals, rail installation, track resurfacing, shoulder cleaning and undercutting operations, structure upgrading and grade/subgrade stabilization. He has supervised numerous bridge and culvert rehabilitation projects including complete renewals, extensive tunnel repairs and tunnel portal reconfigurations. He was responsible for creating capital and operating budgets at NS, and working within them. He has managed tasks at all levels of engineering responsibility, including third party contract work on many projects as well as emergency response and repair.

Mr. Davis's specific positions at NS included Assistant Track Supervisor on the Pocahontas and Virginia Divisions from 1985 to 1987, in which

position he performed FRA track inspections and remedial repairs to track structures, and coordinated program maintenance work and contract service work on the track structure. His territory on the Pocahontas Division encompassed trackage used to transport a high volume of coal and other traffic in the Bluefield and Welch areas of West Virginia; specifically, he was responsible for 34 miles of double and triple track on the mainline as well as Bluefield Yard. His Virginia Division responsibilities included seven miles of double track mainline and NS's key export coal terminal at Lamberts Point, VA as well as Portlock Yard in the Norfolk terminal.

From 1987 to 1994, Mr. Davis was a Track Supervisor on NS's Lake and Pocahontas Divisions, and his territories encompassed substantial mainline trackage in Ohio (Lake Division) and West Virginia (Pocahontas Division). As track Supervisor Mr. Davis performed FRA track inspections and supervised daily MOW activities as well as maintenance and remedial repairs to the track structure via rail gang, tie and surfacing work, and he coordinated contract work including rail grinding and undercutting.

From 1994 to 2000, Mr. Davis served as Bridge and Building Supervisor on NS's Georgia Division. In a territory spanning 500 miles, including the terminals at Savannah and Augusta, GA, he performed inspections and supervised maintenance repairs and new construction by company forces of drainage structures including bridges and culverts as well as NS-owned buildings in his territory.

From 2000 to 2002, Mr. Davis served as Assistant Division Engineer-Bridges on NS's Pocahontas Division, in which position he was responsible for drainage structures (bridges and culverts) in a 1,300-mile (route) territory covering parts of Virginia, West Virginia, Kentucky and Ohio. He coordinated and facilitated new construction (when applicable), inspection and maintenance of existing drainage structures, remedial repairs to tunnel structures including portal upgrades, solicited bids for repairs by contractors, and performed repairs to roadway buildings using company forces. His territory included over 24 total miles of various bridge types, 8,000 culverts of varying types, 20 total miles of tunnels, and 16 total miles of slide fences.

Since joining RLBA Mr. Davis has worked on various railroad engineering projects for private and public entities in various states. Among other projects, he was recently engaged by the Oregon International Port of Coos Bay to conduct a physical inspection of the right of way and estimated rehabilitation and maintenance costs of a Rail America Subsidiary, Central Oregon and Pacific Railroad ("CORP"), in connection with the Port's successful feeder line application to the STB to acquire the CORP's line and facilities between Coos Bay and Eugene, OR.

Mr. Davis obtained a Bachelor of Science degree in Civil Engineering from Tennessee Technological University in 1983, and a Master of Business Administration from Georgia Southern University in 1997. He is a Registered Professional Civil Engineer in Virginia, and continues to be an FRA-

certified track inspector. He has been a member of the American Railway Engineering and Maintenance of Way Association ("AREMA") since 1996 and one of its predecessor organizations (the Roadmasters' Association), and is currently serving as Chairman of AREMA Committee 18 (Light Density & Short Line Railways) as well as being a member of Committee 12 (Rail Transit).

VERIFICATION

I, Gene A. Davis, verify under penalty of perjury that I have read the Opening Evidence of Arizona Electric Power Cooperative, Inc. in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Gene A. Davis

Gene A. Davis

Executed on January 15, 2010

11. WILLARD R. WHITBRED

Mr. Whitbred is Senior Engineer and Project Manager at LTK Engineering Services ("LTK"). LTK is one of the nation's leading rail systems engineering consulting firms, with offices at 100 West Butler Avenue, Ambler, PA 19002. The specific section of AEPCO's Opening Evidence that Mr. Whitbred is sponsoring is the portion of Part III-F relating to the SARR's construction costs, including the costs for the SARR's signal and communications system. Mr. Whitbred also developed the ANR's track miles as set forth in part III-B, and he consulted with AEPCO Witnesses Paul Smith and Gene Davis in developing the PTC Implementation Group, described in Parts III-C-3-d and III-D-3-a, which is responsible for planning and executing the implementation of Positive Train Control on the SARR system in compliance with the Rail Safety Improvement Act of 2008.

Mr. Whitbred has more than 30 years of experience in railroad and rail transit engineering, operations planning, systems engineering, facilities, and costing. His construction experience includes operating a structural steel fabrication company for 10 years and overseeing the planning, design, construction and start-up operation of a commuter railroad service in Texas, which project included negotiation, coordination and oversight of two Class I railroads' (BNSF and UP) design and construction of railroad track, structures, signal system and communications (including CTC) installations.

Mr. Whitbred has been with LTK since 1992. His most recent assignment was as Project Manager for the new Railcar and Signaling Program for PATH (Port Authority Trans-Hudson). This project involved the acquisition of 340 new, modern-design heavy transit railcars and a modern CBTC signal system. On behalf of LTK, Mr. Whitbred was responsible for development of the technical specifications and procurement documents, plus support during solicitation and negotiations as well as providing program management services. Prior to the PATH project, Mr. Whitbred managed new light rail transit projects for Sound Transit (Seattle) with responsibilities for systems engineering as well as operations and maintenance facilities.

Prior to joining LTK in 1996 Mr. Whitbred spent ten years as President of Arny Steel Construction Co., Inc., a construction steel fabrication company based in Rahway, NJ. Prior to that, he was an independent consultant and a Staff Engineer for the George Beetle Company, Philadelphia, PA, with responsible charge of such projects as the rehabilitation of Conrail branch lines that otherwise would have been abandoned for the State of Maryland and rail infrastructure improvements at the Lukens Steel facility in Coatesville, PA. Mr. Whitbred also provided engineering support to Lease Line Trustees in the Penn Central bankruptcy proceeding as required.

Mr. Whitbred received a B.S. in Civil Engineering and a B.A. in Economics from Lafayette College in 1976. He is a licensed Professional Civil Engineer in New York, New Jersey, Pennsylvania and Delaware. He is a member

of the American Society of Civil Engineers and the National Society of Professional Engineers.

Mr. Whitbred was assisted in preparing the SARR construction-cost evidence in Part III-F by others at LTK, including in particular Timothy R. Wells. Mr. Wells also assisted in planning and executing field trips by LTK personnel in the fall of 2009 to inspect the BNSF and UP lines being replicated by the SARR. Mr. Well's statement of qualifications follows Mr. Whitbred's.

VERIFICATION

I, Willard R. Whitbred, verify under penalty of perjury that I have read the Opening Evidence of Arizona Electric Power Cooperative, Inc. in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Willard R. Whitbred

Executed on January 21, 2010

12. TIMOTHY WELLS

Mr. Wells is a Senior Engineer at LTK Engineering Services ("LTK"), with offices at 100 West Butler Avenue, Ambler, PA 19002. Mr. Wells assisted AEPCO Witness Willard Whitbred in developing the SARR's construction plan and costs as described in Part III-F. He also led the LTK team that conducted field trips in the summer of 2009 to observe the BNSF and UP rail lines and facilities being replicated by the SARR.

Mr. Wells is a professional engineer licensed in Pennsylvania. He earned Bachelor of Science and Master of Science degrees in Civil Engineering from the University of Illinois in 1978 and 1979, respectively, and an M.B.A. from Northwestern University in 1983. He is a member of the American Railway Engineering and Maintenance-of-Way Association ("AREMA"), and Chairman of AREMA's Committee 16, Economics of Railway Engineering and Operations.

Mr. Wells has extensive experience in railroad track work and evaluation, and has participated in project work that includes track layouts, facilities, railway operations, and maintenance. He has conducted numerous conceptual feasibility studies and cost models, including those for track construction, support systems, vehicles, facilities, operations and track degradation. He is also experienced in coordinating the efforts of railroads and contractors and has worked directly for various railroads including CSX Transportation ("CSXT") and the Dakota, Minnesota & Eastern ("DME").

As relevant to his current assignment for AEPCO, from 1979 to 1983 Mr. Wells was employed by the Association of American Railroads as a Track Structures Engineer, in which position he was involved in the strategic development of track maintenance computer planning models through participative management of an industry task force. He also engineered economic life analysis of railroad infrastructure, including intermediate depreciated values.

From 1983 to 1992 Mr. Wells worked for CSXT as Assistant Director for Planning and Systems Development in the Engineering Department, Manager of Implementation in the Operating Department, and Manager of Shortline Sales in the Finance Department. In the first position Mr. Wells provided team leadership in the Engineering Department for developing advanced technology-based systems, developed and conducted special studies involving long-term planning models and maintenance improvement. In the second position he served as the cross-functional team leader that implemented plans for plant rationalization projects. In the third position he managed the asset-transfer of rail branch lines.

From 1997 to 2000 Mr. Wells served as Manager of Budgets/ Engineering for the DME, in which position he formulated and executed a $15 million capital and operating budget, coordinated track layout location and design work, and developed and implemented departmental financial plans. Mr. Wells joined LTK in 2001, where he has performed numerous feasibility studies and

analyses involving freight and passenger rail engineering and construction/ upgrading projects.

VERIFICATION

I, Timothy R. Wells, verify under penalty of perjury that I have read the Opening Evidence of Arizona Electric Power Cooperative, Inc. in this proceeding that I have co-sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Timothy R. Wells

Timothy R. Wells

Executed on January 21, 2010

13. STUART I. SMITH

Mr. Smith is a principal of MilleniuM Real Estate Advisors, Inc., a real estate appraisal and consulting firm with offices at 3204 Tower Oaks Boulevard, Suite 100, Rockville, MD 20852. The specific portions of AEPCO's Opening Evidence that Mr. Smith is sponsoring relate to the appraisal and determination of unit-land values for the right-of-way for the SARR (Part III-F-1). Mr. Smith's Report setting forth his methodology, procedures and conclusions is included in the e-workpapers for Part III-F.

Mr. Smith is a Licensed Certified General Appraiser for the District of Columbia, Virginia, Maryland, and Nevada (inactive). He also holds the MAI designation from the American Institute of Real Estate Appraisers, is a member of the Royal Institute of Chartered Surveyors (MRICS), and is a licensed real estate broker.

Mr. Smith has over 25 years of experience in public and private real estate. He has been with MilleniuM Real Estate Advisors since 1993 and, in that time, he has provided market value appraisals of commercial office buildings, shopping centers, time-share projects, apartments, hotels, mixed-use projects, congregate housing, industrial properties and special use properties. He has also conducted market studies and highest and best use analyses. Additionally, Mr. Smith has consulted both private sector clients and Federal agencies regarding a variety of real estate matters.

From 1986 to 1993, Mr. Smith was the Co-Manager of the Appraisal Division at the Washington, D.C. office of Cushman & Wakefield. As Manager, Mr. Stuart conducted market value appraisals and offered consulting and brokerage services. His brokerage transactions included leases to the Peace Corps, the Internal Revenue Service, the Small Business Administration, the National Science Foundation, and the General Services Administration.

Mr. Smith was Executive Director of the GSA/Public Building Service from 1984 to 1986. In this position, he was responsible for nation-wide activities regarding financial reporting, the GSA-rent program, capital budgeting, performance management, and administration. Prior to that, from 1983 to 1984, Mr. Smith was Director for the Office of Budget and Finance of the U.S. Customs Service. In his capacity as Director, Mr. Smith was responsible for Service-wide financial activities.

From 1977 to 1983, Mr. Smith served as Senior Examiner, Office of Management and Budget, Executive Office of the President of the United States. As Senior Examiner, Mr. Smith was responsible for government-wide civilian real estate issues and for reviewing and making recommendations on the nationwide operations of the General Services Administration. Prior to working at the Office of Management and Budget, Mr. Smith held various positions with the U.S. Treasury Department.

In addition to his valuation experience, Mr. Smith received a Bachelor of Science in Business and Economics from the University of Maryland.

He also did some graduate work in Economics at Georgetown University and received his Masters in Business Administration, Corporate Finance, from American University.

VERIFICATION

I, Stuart I. Smith, verify under penalty of perjury that I have read the Opening Evidence of Arizona Electric Power Cooperative, Inc. in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Stuart I. Smith

Executed on January 22, 2010

14. CHARLES A. STEDMAN

Mr. Stedman is a Vice President of L. E. Peabody & Associates, Inc., headquartered in Alexandria, VA. The specific evidence Mr. Stedman is co-sponsoring relates to the roadbed preparation/earthworks component of the road property investment cost of the SARR, exclusive of culverts, roadbed specifications and yard drainage (Part III-F-2 of AEPCO's Opening Evidence).

Mr. Stedman has been employed by L. E. Peabody & Associates, Inc. since October 1981. Since that time, he has performed and directed numerous extensive projects and analyses undertaken on behalf of utility companies, short line railroads, state and local governments and entrepreneurs. These projects include: (a) participation in the development of variable cost evidence presented to the ICC and the Board in numerous cases; (b) the development of variable costs contained in numerous reports and other analyses presented to clients; (c) the development of stand-alone cost evidence presented to the ICC and the Board in numerous cases; (d) the development of evidence in abandonment cases before the ICC; (e) the development of net liquidation values and rehabilitation costs for interested parties in abandonments and acquisitions; and (f) the preliminary design (including route layout), construction and maintenance costs associated with the construction of a new rail line.

Prior to joining L. E. Peabody & Associates, Inc., Mr. Stedman was employed by the United States Railway Association ("USRA") where he monitored the effectiveness of the operating plan of Consolidated Rail Corporation

("Conrail") using a computer model, participated in data manipulation and analyzed results in order to make projections about Conrail's future operations.

Mr. Stedman worked as the chief research assistant on a transportation project for the Maryland Department of Transportation and was the co-author of the resulting Report "International Air Cargo Potential at Baltimore-Washington International Airport." Recommendations in this Report were used to increase international air cargo shipment volumes through Baltimore-Washington International Airport. As a research assistant for the ICC, Mr. Stedman studied the effect of selected railroad mergers on the national railroad system using a computer model to aid in determining shifts in traffic patterns caused by specific rail mergers.

Mr. Stedman is a graduate of the University of Maryland where he obtained a Bachelor of Arts degree in Political Science with a minor in Business Transportation. He has attended numerous railroad construction and maintenance seminars across the country and is a Certified Track Foreman and a member of the American Railway Engineering and Maintenance-of-Way Association.

Mr. Stedman has conducted several field inspections of eastern and western carriers' rail lines in order to develop and determine the existing and potential operating and economic conditions of these lines. He has also conducted and directed detailed research into the valuation records of major eastern and western railroads. This research entailed, among other things, detailed reviews of both ICC and railroad valuation maps, land acquisition records (including title

status and market value) and the ICC's Bureau of Valuation B.V. Form No. 561, commonly referred to as the ICC Engineering Reports.

VERIFICATION

I, Charles A. Stedman, verify under penalty of perjury that I have read the Opening Evidence of Arizona Electric Power Cooperative, Inc. in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Charles A. Stedman

Executed on January 22, 2010

15. DANIEL L. FAPP

Mr. Fapp is a Vice President of L.E. Peabody & Associates, Inc., an economic consulting firm that specializes in solving economic, transportation, marketing, and fuel supply problems. The Firm's offices are located at 1501 Duke Street, Suite 200, Alexandria, VA, 22314, 10445 N. Oracle Road, Suite 151, Tucson, AZ 85737 and 21 Founders Way, Queensbury, NY 12804. Together with Mr. Crowley, Mr. Fapp is co-sponsoring Part III A-2 and 3 of AEPCO's Opening Evidence with respect to coal traffic, Part III-G, discounted cash flow analysis, and Part III-H, the results of the SAC analysis.

Mr. Fapp received a Bachelor of Science degree in Business Administration with an option in Marketing (cum laude) from the California State University, Northridge in 1987. In 1993, he received a Master of Business Administration degree specializing in finance and operations management from the University of Arizona's Eller College of Management. He is also a member of Beta Gamma Sigma, the national honor society for collegiate schools of business.

Mr. Fapp has been employed by L. E. Peabody & Associates, Inc. since December 1997. Prior to joining L. E. Peabody & Associates, Inc., he was employed by BHP Copper Inc. in the role of Transportation Manager - Finance and Administration, where he also served as an officer of the three BHP Copper Inc. subsidiary railroads: The San Manual Arizona Railroad, the Magma Arizona Railroad (also known as the BHP Arizona Railroad) and the BHP Nevada

Railroad. Mr. Fapp has also held operations management positions with Arizona Lithographers in Tucson, AZ and MCA-Universal Studios in Universal City, CA.

While at BHP Copper Inc., Mr. Fapp was responsible for all financial and administrative functions of the company's transportation group. He also directed the BHP Copper Inc. subsidiary railroads' cost and revenue accounting staff, and managed the San Manuel Arizona Railroad's and BHP Arizona Railroad's dispatchers and the railroad dispatching functions. He served on the company's Commercial and Transportation Management Team and the company's Railroad Acquisition Team, where he was responsible for evaluating the acquisition of new railroads, including developing financial and economic assessment models. During his time with MCA-Universal Studios, Mr. Fapp held several operations management positions, including Tour Operations Manager, where his duties included vehicle routing and scheduling, personnel scheduling, forecasting facilities utilization, and designing and performing queuing analyses.

As part of his work for L.E. Peabody & Associates, Inc., Mr. Fapp has performed and directed numerous projects and analyses undertaken on behalf of utility companies, short line railroads, bulk shippers, and industry and trade associations. Examples of studies which he has participated in organizing and directing include, traffic, operational and cost analyses in connection with the rail movement of coal, metallic ores, pulp and paper products, and other commodities. He has also analyzed multiple car movements, unit train operations, divisions of through rail rates and switching operations throughout the United States. The

nature of these studies enabled him to become familiar with the operating procedures utilized by railroads in the normal course of business.

Since 1997, Mr. Fapp has participated in the development of cost of service analyses for the movement of coal over the major eastern and western coal-hauling railroads. He has conducted on-site studies of switching, detention and line-haul activities relating to the handling of coal. He has also participated in and managed several projects assisting short-line railroads. In these engagements, he assisted short-line railroads in their negotiations with connecting Class I carriers, performed railroad property and business evaluations, and worked on rail line abandonment projects.

Mr. Fapp has been frequently called upon to perform financial analyses and assessments of Class I, Class II and Class III railroad companies. In addition, he has developed various financial models exploring alternative methods of transportation contracting and cost assessment, developed corporate profitability and cost studies, and evaluated capital expenditure requirements. He has also determined the Going Concern Value of privately held freight and passenger railroads, including developing company specific costs of debt and equity for use in discounting future company cash flows.

His consulting assignments regularly involve working with and determining various facets of railroad financial issues, including cost of capital determinations. In these assignments, Mr. Fapp has calculated railroad capital structures, market values, cost of railroad debt, cost of preferred railroad equity

and common railroad equity. He is also well acquainted with and has used the commonly accepted models for determining a firm's cost of equity, including single-stage and multi-stage Discounted Cash Flow models ("DCF"), Capital Asset Pricing Model ("CAPM"), Farma-French Three Factor Model and Arbitrage Pricing Model.

In his tenure with L. E. Peabody & Associates, Inc., Mr. Fapp has assisted in the development and presentation of traffic and revenue forecasts, operating expense forecasts, and DCF, which were presented in numerous proceedings before the STB. He presented evidence applying the STB's stand-alone cost procedures in a number or rail proceedings before the STB. He has also presented evidence before the STB in Ex Parte No. 661, *Rail Fuel Surcharges,* in Ex Parte No. 664, *Methodology To Be Employed In Determining the Rail Road Industry's Cost of Capital,* in Ex Parte No. 664 (Sub-No. 1), *Use Of A Multi-Stage Discounted Cash Flow Model In Determining The Railroad Industry's Cost of Capital*, and in Ex Parte No. 558 (Sub-No. 10), *Railroad Cost of Capital – 2006,* Ex Parte No. 661 (Sub No. 11), *Railroad Cost of Capital – 2007,* and Ex Parte No. 661 (Sub No. 12), *Railroad Cost of Capital – 2008.* In addition, his reports have been used as evidence before the Nevada State Tax Commission.

VERIFICATION

I, Daniel L. Fapp, verify under penalty of perjury that I have read the Opening Evidence of Arizona Electric Power Cooperative, Inc. in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Daniel L. Fapp

Executed on January 21, 2010

CERTIFICATE OF SERVICE

I hereby certify that on this 25th day of January, 2010, I caused copies of AEPCO's Opening Evidence, including the Narrative, Exhibits and electronic workpapers, to be served by hand-delivery on counsel for Defendants Union Pacific Railroad Company and BNSF Railway Company, as follows:

Samuel M. Sipe, Esq.
Anthony J. LaRocca, Esq.
Steptoe & Johnson LLP
1330 Connecticut Avenue. NW
Washington, DC 20036-1795

Linda J. Morgan, Esq.
Michael L. Rosenthal, Esq.
Covington & Burling
1201 Pennsylvania Avenue. NW
Washington, DC 20004-2401

Daniel M. Jaffe