STB DOCKET NO. 42051

WISCONSIN POWER AND LIGHT COMPANY
v.
UNION PACIFIC RAILROAD COMPANY

Decided September 12, 2001

The Board finds that the defendant railroad has market dominance over the transportation at issue and that the challenged rate is unreasonably high. Maximum reasonable rates are prescribed and reparations are ordered.

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ACRONYMS USED

AEC	Associated Electric Cooperative
AAR	Association of American Railroads
AREMA	American Railway Engineering and Maintenance-of-Way Association
BNSF	Burlington Northern and Santa Fe Railway Company
CMP	constrained market pricing
ComEd	Commonwealth Edison/Midwest Generation
CPSSA	City Public Service of San Antonio
CR&IC	Cedar Rapids and Iowa City Railway
CTC	centralized traffic control
CWR	continuous welded rail
DCF	discounted cash flow
DED	defective equipment detector
DOE/EIA	Department of Energy, Energy Information Agency
EJE	Elgin, Joliet and Eastern Railroad
EOTD	end-of-train device
EPA	Environmental Protection Agency
e-W.P.	electronic workpaper
EWRR	Edgewater and Western Railroad
Exh.	exhibit

G&A	general and administrative
GRI	Gas Research Institute
GTM	gross ton-mile
HLP	Houston Light and Power
ICC	Interstate Commerce Commission
IP	Illinois Power
IT	information technology
L&D	loss and damage
LUM	locomotive unit-mile
MGT	million gross tons
MGTM	million gross ton-miles
MOW	maintenance-of-way
O/D	origin/destination
Open.	opening evidence
OTM	other track material
PPI	producer price index
PRB	Powder River Basin
R-1	Annual Report Form R-1
RCAF-U	rail cost adjustment factor, unadjusted for changes in railroad productivity
Reb.	rebuttal evidence
ROI	return on investment
ROW	right-of-way
RTM	revenue ton-mile
R/VC	revenue-to-variable cost
SAC	stand-alone cost
SARR	stand-alone railroad
SCS	Soil Conservation Service
SEM	switch engine minutes
SFGT	speed factored gross ton
S&P	Standard and Poor's
STB	Surface Transportation Board
TPS	train performance simulator
UP	Union Pacific Railroad Company
URCS	Uniform Railroad Costing System
USOA	Uniform System of Accounts
V.S.	verified statement
WCL	Wisconsin Central Ltd.
WEPCO	Wisconsin Electric Power Company
W.P.	workpaper
WPL	Wisconsin Power and Light
WRPI	Western Rail Properties, Inc.
WSAC	weighted system average cost

BY THE BOARD:

By complaint filed December 30, 1999, Wisconsin Power and Light Company (WPL) challenges the reasonableness of the $14.66 per ton common carriage rate charged by the Union Pacific Railroad Company (UP) for trainload movements of coal from eleven mines located in the Powder River Basin (PRB) of Wyoming — the Antelope, Belle Ayr, Black Thunder, Caballo, Caballo Rojo, Coal Creek, Cordero, Jacobs Ranch, North Antelope, North Rochelle, and Rochelle mines — to WPL's Edgewater electricity generating facility at Sheboygan, WI. WPL began using this rate on January 1, 2000.[1]

In this decision, we address the reasonableness of the rate for shipments from the Black Thunder and Antelope mines only, even though the parties' rate reasonableness evidence in this case encompasses all eleven mines, because we have complete variable cost evidence only for movements from those two mines.[2] As the variable cost of providing service under the challenged rate can affect our jurisdiction to consider the reasonableness of the rate[3] and the resulting regulatory floor for a rate prescription, we cannot consider movements from other mines without the necessary variable cost evidence. For coal shipments from the other mines covered by the complaint, if the parties cannot agree on what the rate floor should be, WPL can petition to have the rate prescription extended to those mines and we will establish a procedural schedule to govern the filing of supplemental variable cost evidence.

I. PRELIMINARY MATTER

Each party filed its opening evidence and argument on June 15, 2000; its reply presentation on August 14, 2000; its rebuttal on September 28, 2000; and

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[1] Prior to 2000, all of WPL's traffic moved under a rail transportation contract under 49 U.S.C. 10709. When contract renegotiations were unsuccessful, WPL requested, and UP established, a common carriage rate and service terms under 49 U.S.C. 11101 to govern the transportation of coal from the PRB to Edgewater.

[2] Both parties submitted variable cost evidence on the movement of coal from the Black Thunder and Antelope mines. Because there had been some (pre-complaint) contract movements in 1999 from the North Antelope and Coal Creek mines, UP submitted variable cost evidence associated with movements from those mines as well in its opening evidence. On reply, WPL noted that no traffic had moved from the North Antelope or Coal Creek mines under the challenged common carriage rate. Accordingly, UP limited its rebuttal variable cost evidence to movements from the Black Thunder and Antelope mines. On rebuttal, WPL submitted new variable cost evidence on service from the North Rochelle and Black Thunder mines, but we do not consider that evidence here because UP had no opportunity to respond to it.

[3] 49 U.S.C. 10707(d)(1)(A).

its closing brief on December 15, 2000. On December 29, 2000, WPL filed another pleading (styled a reply to a motion to strike) responding to UP's argument on brief that WPL had improperly raised certain matters for the first time on rebuttal, or had delayed until rebuttal responsive material that should have been incorporated in WPL's reply evidence.[4] UP filed a reply on January 5, 2001. We find that the five matters addressed by WPL's December 29 pleading were appropriate matters for UP to raise in its brief, as our briefing order served November 15, 2000 (at 1) had directed the parties to "specifically address intervening changes in the opponent's position."

II. MARKET DOMINANCE

We may consider the reasonableness of a challenged rail rate only if the carrier has market dominance over the traffic involved. 49 U.S.C. 10701(d)(1), 10707(b),(c). Market dominance is "an absence of effective competition from other carriers or modes of transportation for the transportation to which a rate applies." 49 U.S.C. 10707(a). The statute precludes a finding of market dominance, however, where the carrier shows that the revenues produced by the movement at issue are less than 180% of the variable costs to the carrier of providing the service.[5] 49 U.S.C. 10707(d)(1)(A). We first address this quantitative threshold, then proceed to examine whether there are any effective transportation alternatives for this traffic (a qualitative market analysis).

A. Quantitative Threshold

Both WPL and UP relied on UP's preliminary 1999 Uniform Railroad Costing System (URCS) data to determine the variable cost of moving the traffic at issue here.[6] As explained in *Appendix A*, after the submission of evidence in this proceeding, final 1999 UP cost and statistical data became available. Therefore, we rely on the final application of URCS, rather than the applications used by the parties, which were based on preliminary data.

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[4] On brief, UP challenged as inappropriate WPL's use in rebuttal of: (1) actual joint-facility payments by UP on the Orin Line to validate the results of WPL's variable maintenance-of-way cost methodology; (2) additional evidence on train counts to adjust crew wages; (3) cycle time data for August 2000 that was not previously available; (4) a new locomotive capital study; and (5) a new general and administrative plan for its stand-alone railroad.

[5] Variable costs are those railroad costs that vary with the level of output.

[6] URCS is our general purpose costing model used to determine annually the system-average variable unit costs for each Class I railroad.

Both parties made general adjustments to the URCS costing model — WPL reduced UP's investment accounts to exclude what it considers the "acquisition premiums" UP paid to acquire other railroads over the past 15 years,[7] while UP excluded expenses recorded in its annual report (STB Form R-1) in Account 80 (other elements of investment) and in Account 76 (interest during construction) and included expenses in Account 90 (construction in progress). As explained in more detail in *Appendix A*, we reject (as we have previously)[8] these general adjustments.

Finally, as also discussed in *Appendix A*, we have considered the movement - specific data the parties have proposed to substitute for certain system-average data used in the URCS model and have incorporated appropriate adjustments into our variable cost analysis in this proceeding. Our analysis shows that the revenues earned by UP from providing service to WPL from the Black Thunder and Antelope mines exceed 180% of the variable costs of providing that service. *See Appendix A, Table A-1.*

B. Qualitative Analysis

We now turn to whether WPL has inter- or intramodal transportation alternatives that provide effective competition.[9] WPL acknowledges that origin service from the PRB could be provided by the Burlington Northern and Santa Fe Railway Company (BNSF) and that there are two potential means by which BNSF-originated traffic could be delivered to Edgewater that would not require

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[7] WPL describes acquisition premiums as the portion of the purchase price of assets that exceeds the book value of the assets acquired. Valuing UP's assets at the predecessor book value (rather than purchase price) would serve to lower UP's variable costs, which in turn would lower the rate level that is statutorily shielded from our regulatory review.

[8] *See FMC Wyoming Corp. & FMC Corp. v. Union Pacific RR Co.*, 4 S.T.B. 699 (2000) (*FMC*), at 708-09 and 747.

[9] We no longer consider evidence of product and geographic competition in determining whether a railroad has market dominance. *See Market Dominance Determinations*, 3 S.T.B. 937 (1998), *pets. for reconsideration & clarification denied*, 4 S.T.B. 269 (1999), *remanded for further consideration sub nom. Association of Am. Railroads v. STB*, 237 F.3d 676 (D.C. Cir. 2001), *reaffirmed*, 5 S.T.B. 492 (2001), *pet. for judicial review pending sub nom. Association of Am. Railroads v. STB*, No. 01-1213 (D.C. Cir. filed May 15, 2001). However, UP has reserved the right, should the court rule that we must consider product and geographic competition in the market dominance analysis, to present evidence of WPL's ability to shift production from Edgewater to another generating station.

UP's participation.[10] The first (intramodal) option would require a 14-mile rail line to be constructed (traversing a residential community, two rivers, an interstate highway, and several state highways and roads) to link Edgewater to the Wisconsin Central Ltd. (WCL) so that WCL could receive shipments from BNSF and deliver them to Edgewater. However, WPL argues that such a buildout would be too expensive to provide an effective competitive alternative. The second (multi-modal) option would be to transload coal from BNSF to a Great Lakes collier[11] for delivery to Edgewater,[12] but WPL maintains that this would not be an effective competitive alternative either because WPL would have to construct a prohibitively expensive unloading facility over 1,000 feet offshore. A third option — to transport the coal by truck — is also impractical, WPL argues, because of the high cost and significant community impact associated with moving such a large amount of traffic by truck.[13]

UP has offered no evidence to rebut WPL's evidence regarding the ineffectiveness of inter- or intramodal competition. Accordingly, we find that UP has market dominance over the traffic at issue.

III. RATE REASONABLENESS STANDARDS

A. Constrained Market Pricing

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

[10] BNSF cannot directly serve the Edgewater plant.

[11] A collier is a coal ship.

[12] WPL acknowledges that it has in the past moved small amounts of coal (less than 100,000 tons annually) via Great Lakes collier, but notes that the coal dock that it used has been closed and that the facility is now a "Superfund" toxic material cleanup site.

[13] WPL contends that the logistics of transporting all or even a substantial portion of its annual requirement of PRB coal (approximately 2.6 million tons) across local highways and roads and through communities make motor transport an ineffective alternative.

as "constrained market pricing" (CMP).[14] They contain three main constraints[15] on the extent to which a railroad may charge differentially higher rates on captive traffic: revenue adequacy,[16] management efficiency,[17] and stand-alone cost (SAC).[18]

The revenue adequacy and management efficiency constraints employ a "top-down" approach, examining the incumbent carrier's existing operations. If the carrier is revenue adequate (earning sufficient funds to cover its costs and provide a fair return on its investment), or would be revenue adequate after eliminating unnecessary costs from specifically identified inefficiencies in its operations, the complaining shipper may be entitled to rate relief.[19] The SAC constraint uses a "bottom-up" approach, calculating the revenue requirements that a hypothetical new, optimally efficient carrier would need to meet to provide rail service to the complaining shipper. WPL has chosen to proceed here using a SAC analysis.

B. SAC Test

A SAC analysis seeks to determine the lowest cost at which a hypothetical, optimally efficient carrier could provide the service at issue free from any costs associated with inefficiencies or cross-subsidization of other traffic. A stand-

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[14] The objectives of CMP can be simply stated. A captive shipper should not be required to pay more than is necessary for the carrier involved to earn adequate revenues. Nor should it pay more than is necessary for efficient service. A captive shipper should not bear the cost of any facilities or services from which it derives no benefit. And responsibility for payment for facilities or services that are shared by other shippers should be apportioned according to the demand elasticities of the various shippers. *Coal Rate Guidelines*, 1 I.C.C.2d at 523-524.

[15] A fourth constraint — phasing — can be used to limit the introduction of otherwise-permissible rate increases if they would lead to undue inflation and dislocation of important economic resources. *Id.* at 546-47.

[16] The revenue adequacy constraint ensures that a captive shipper will "not be required to continue to pay differentially higher rates than other shippers when some or all of that differential is no longer necessary to ensure a financially sound carrier capable of meeting its current and future service needs." *Id.* at 535-36.

[17] The management efficiency constraint protects captive shippers from paying for avoidable inefficiencies that are shown to increase a railroad's revenue need to a point where the shipper's rate is affected. The management efficiency constraint focuses on both short-run and long-run efficiency. *Id.* at 537-42.

[18] The SAC constraint measures efficiency, ensures that the captive shipper does not cross-subsidize other traffic, and protects the shipper from having to pay more than the revenue needed to replicate rail service in the absence of barriers to entry and exit. *Id.* at 542-46.

[19] *See, e.g, CF Industries, Inc. v. Koch Pipeline Company, L.P.*, 4 S.T.B. 637 (2000), *aff'd sub nom. CF Industries, Inc v. STB*, No. 00-1209 *et al.* (D.C. Cir. July 27, 2001).

alone railroad (SARR) 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.

To make a SAC presentation, a shipper designs a SARR specifically tailored to serve an identified traffic group, using the optimum physical plant or rail system needed for that traffic.[20] Based on the traffic group, services provided, and terrain traversed, a detailed operating plan is developed to define further the physical plant that would be needed for the SARR.[21] The operating plan is a factor in determining the total investment that would be needed and annual operating costs that would be incurred by the SARR. It is assumed that investments normally would be made prior to the start of service and that recovery of the investments would occur over the economic life of the assets.[22] We use a computerized discounted cash flow (DCF) model to simulate how the SARR would likely recover its capital investments, taking into account inflation, Federal and state tax liabilities, and a reasonable rate of return. The annual revenue required to recover the SARR's capital cost is combined with the annual operating cost to calculate the total annual revenue requirement.

We then compare the revenue requirements of the SARR to the revenues that it could expect to receive from the traffic group that it would serve. Absent better evidence, we presume that the revenue contribution from non-issue traffic would be the SARR's share of the revenues produced by the current rates.[23] Forecast (future) traffic and rate levels for that traffic group are used to determine the future revenue contributions from that traffic.

By comparing the total costs of the stand-alone system to the total revenues that would be available to the SARR over the analysis period (usually, as here, a 20-year period), we determine whether there would be over- or under-recovery

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[20] Using computer models to simulate the flow of traffic over the defendant's rail system, the complainant can select a traffic group and route system for the SARR that would have sufficient economies of density to maximize revenues while minimizing costs.

[21] For example, roadway must be sufficient to permit the attainment of the speeds and traffic density that are presumed. The length and frequency of passing sidings must be able to accommodate the specific train lengths and frequency of train meets that are assumed, and traffic control devices must be designed to allow trains traveling in opposite directions on the same track to be handled safely and efficiently based on the traffic density assumed in the operating plan.

[22] Our SAC analyses are limited to finite periods of time (here, 20 years), but parties provide for sufficient investment to enable the SARR to operate into the indefinite future.

[23] *Coal Rate Guidelines*, 1 I.C.C.2d at 544.

of costs. Because the analysis period is lengthy, we use a present value analysis that takes into account the time value of money, netting annual over-recovery and under-recovery as of a common point in time.

If the sum of the present values of over-recoveries exceeds the under-recoveries, we conclude that the existing rate levels are too high. We must then determine the extent to which the revenues of the traffic group should be reduced so that, over the 20-year analysis period, there would be no net over- or under-recovery. Absent better evidence, we assume that any over-recovery should be distributed among the traffic in the group by applying a uniform percentage reduction to all rates. In that way, we can determine the rate that the SARR would need to charge to the complainant, and hence, where this rate exceeds the 180% regulatory floor, the maximum reasonable rate that the complainant should pay the defendant carrier for equivalent service. *See generally, West Texas Utilities Company v. Burlington Northern RR Co.*, 1 S.T.B. 638, 677-78 (1996) (*West Texas*), *aff'd sub nom. Burlington N.R.R. v. STB*, 114 F.3d 206 (D.C. Cir. 1997) (*Burlington N.*); *Arizona Public Service Co. v. Atchison, T.& SF. Ry. Co.*, 2 S.T.B. 367, 391-93 (1997) (*Arizona*).

IV. STAND-ALONE COST ANALYSIS

A. Configuration

The Edgewater and Western Railroad (EWRR) is the hypothetical stand-alone railroad that WPL designed for this case. The EWRR system was designed to replicate the routes that UP uses to serve this traffic: the UP-BNSF joint line in the PRB (the Orin Line); the UP line from Shawnee Jct., at the entrance to the PRB, to Joyce, NE (the WRPI Line); the UP line from Joyce to Chicago, IL; the Elgin, Joliet and Eastern Railroad (EJE) line (over which UP operates) from Chicago to Upton, IL; and the UP line from Upton to Sheboygan, WI. A map of the EWRR route is in *Appendix B*.

The EWRR system would be approximately 1,290 miles long and would transport only coal traffic. The EWRR would handle not only coal from the eleven mines covered by the complaint (which the EWRR would serve directly), but also coal originated on BNSF from other mines in the PRB that is currently interchanged to UP, and coal originating on UP from mines in the Hanna Basin of southern Wyoming, and mines in Colorado and Utah. The EWRR would transport the coal to various destinations that the EWRR would serve directly (including WPL's Edgewater plant) or to interchange points (with UP and other railroads, which would move the traffic to non-EWRR destinations). The parties are in basic agreement on the EWRR network configuration, which would

include alternating single-track and double-track sections with centralized traffic control (CTC) west of Chicago, trackage rights over the EJE between Chicago and Upton, and a "dark" (non-CTC) single-track line with several passing sidings north of Upton. *Appendix B* contains a more detailed description of the EWRR.

B. Traffic Group

The EWRR traffic group consists of coal shipments destined to 38 coal-burning electric generating facilities, including WPL's Edgewater facility. The EWRR would begin operations in 2000. Because there was no actual annual tonnage and revenue data for any portion of the 20-year (2000-2019) analysis period when the parties filed their opening evidence in June 2000, most tonnage and revenue projections were extrapolated from the 1999 (base-year) movements that UP transported for the shippers comprising the EWRR traffic group.[24]

1. Tonnages

WPL assumed that there would be continuous growth in the EWRR's traffic volumes from 2000 through 2019. UP, in contrast, projected that the EWRR's traffic would increase through 2002, but decline thereafter. The parties' tonnage figures and our restatement are shown in *Table 1*.

Table 1
EWRR Tonnage Projections

Year	WPL	UP	STB
1999*	145,139,592	147,137,319	145,139,592
2000	153,727,736	151,748,781	153,727,736
2001	165,287,701	162,491,649	165,287,701
2002	171,314,460	168,947,884	171,314,460
2003	173,218,657	159,772,745	173,218,657
2004	175,116,439	165,902,265	175,116,439
2005	176,936,618	161,287,888	176,936,618
2006	177,974,477	161,449,411	177,974,477
2007	178,909,348	158,572,752	178,909,348
2008	179,824,642	158,561,201	179,824,642
2009	180,676,328	156,163,380	180,676,328
2010	181,498,164	158,404,561	181,498,164

[24] Some projections were developed from the terms of contracts that took effect after 1999.

Year	WPL	UP	STB
2011	182,246,573	157,888,794	182,246,573
2012	182,809,916	156,832,242	182,809,916
2013	183,377,773	156,246,705	183,377,773
2014	183,950,193	155,064,003	183,950,193
2015	184,461,801	154,391,853	184,461,801
2016	185,029,407	153,880,890	185,029,407
2017	185,558,407	152,937,299	185,558,407
2018	186,091,649	153,011,295	186,091,649
2019	186,629,179	152,577,413	186,629,179

* The 1999 tonnages are base-year figures used to project traffic volumes for future years. The EWRR would not begin transporting traffic until 2000. The parties' base-year tonnage figures differ because UP included traffic for Portland General Electric's Boardman plant in its base-year tonnage, but excluded this traffic in subsequent years because UP lost this traffic to BNSF in late 1999. WPL excluded the Boardman traffic entirely, as do we.

a. 2000-2001 Tonnages

WPL initially based its EWRR tonnage projections for 2000-2001 on UP's Business Plan, an internal company assessment of near-term prospects for coal transportation prepared in December 1999. UP's Business Plan projected that UP's 1999 coal traffic would increase by 16.3% in 2000 and by an additional 9.4% in 2001.[25] However, for the first 6 months of 2000. UP's actual coal traffic was below what had been projected and, with the exception of three plants,[26] coal moving to the utilities in the EWRR traffic group declined from the corresponding time period in 1999. On the basis of that 6-month experience, UP contends that the general trend in demand for coal has changed since its Business Plan was prepared, and that the growth envisioned by its Business Plan will not materialize.[27] UP argues that its 2000 PRB tonnages should be adjusted for 2001 by a 2.1% growth factor and Colorado/Utah tonnages by a 23.8% factor,[28] based

[25] UP Reply V.S. Boone, Exh. MDB-2.

[26] On this record, UP projected that, in 2000, 5.2 million additional tons of coal (above 1999 levels) would move to Illinois Power (IP), 1.8 million tons of additional coal would move to Houston Light and Power (HLP), and 0.9 million tons of additional coal to the City of Lansing (Lansing). UP Reply V.S. Gaskins, at 4-5; UP Reply V.S. Boone, at 16-19.

[27] UP Reply V.S. Gaskins, at 4.

[28] Of UP's 1999 coal traffic, 144 million tons of PRB traffic and 3 million tons of Colorado/Utah traffic are included in the EWRR traffic group.

on *Annual Energy Outlook 2000 with Projections to 2020* (*AEO 2000*)[29] published by the U.S. Department of Energy, Energy Information Administration (DOE/EIA)

WPL argues that the deviation in the first half of 2000 was only a short-term phenomenon rooted in "high coal inventory levels at utilities as a result of Y2K concerns and mild winter weather."[30] Nevertheless, on rebuttal, WPL adjusted its 2000 traffic projections for the EWRR downward to 5.9% (from the 16.3% in the Business Plan) by assuming that, with the exception of the three plants where UP acknowledged a traffic increase,[31] utilities in the EWRR traffic group would receive the same amount of coal in 2000 as they received in 1999.[32] WPL assumed that coal demand would return to normal in 2001 and projected a growth rate of 5.48% from 2000 to 2001.[33]

We find that WPL's evidence on the amount of coal the EWRR would transport in 2000 and 2001 is the better evidence of record. In the absence of any source data from UP to corroborate its assertion that traffic levels declined from 1999 levels (other than the traffic moving to IP, HLP and Lansing), it is not unreasonable to assume that the 1999 levels for traffic moving to the plants in the EWRR traffic group would remain unchanged in 2000.[34] Nor is it unreasonable to assume that the additional traffic UP had projected in its Business Plan for IP

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[29] From the *AEO 2000* report, UP used the PRB/Green River forecast for low-sulfur coals to project the growth rate of PRB traffic. For Colorado and Utah traffic, UP applied the growth rate from the Rocky Mountain low-sulfur coal forecast.

[30] WPL Reb. V.S. Crowley, at 19-20. WPL notes that UP presented no documentation to support UP's assertion that coal volumes would decline from 1999 to 2000 for most plants or that traffic moving to IP, HLP and Lansing in 2000 would be different than that shown in UP's Business Plan.

[31] Based on UP's Business Plan, WPL assumed that 6.0 million tons of additional coal (above 1999 levels) would move to IP and 2.0 million tons of additional coal would move to HLP in 2000. In addition, WPL included 0.6 million tons of additional coal that would move under a transportation contract to Lansing.

[32] WPL notes that a recent forecast produced by UP and reported to the Western Coal Transportation Association indicates that its 2000 PRB coal traffic will be slightly above 1999 levels. WPL Reb. V.S. Crowley, at 28.

[33] WPL adjusted the 9.37% growth rate in UP's Business Plan down to 5.48% to avoid a double count of the tonnage moving to MidAmerican's Louisa and Riverside plants.

[34] We note that, in its *2000 Analysts Fact Book, Railroad Commodity Review–Energy* (at 13), UP stated that in 2000 "Colorado/Utah coal volume was flat" and that PRB coal volumes showed "a 7% increase over 1999." Indeed, even excluding the coal moving to IP, HLP and Lansing, PRB coal volumes appear to have increased slightly in 2000. *Id.* at 14.

and HLP, as well as the additional traffic slated to move under contract to Lansing in 2000, would be realized.[35]

For 2001, we have no evidence that the growth in coal traffic should moderate from what was projected in UP's Business Plan.[36] To the contrary, the current energy crisis should result in increased demand for PRB coal. Indeed, UP's Chairman and Chief Executive Officer recently stated that UP's "coal business is phenomenal. For the first quarter [of 2001], volume was up 12 percent."[37] UP has also publicly stated that "PRB [coal] represents the largest and fastest growing segment of the [coal] market, as utilities continue to favor the low cost and low-sulfur content of the coal mined there."[38] Specifically for 2001, UP has noted that "[c]ontinued improvement is expected for PRB coal volumes, as recent capacity improvements and strong service performance support growing demand for low-sulfur western coal."[39] Therefore, it is not unreasonable to rely on UP's own, more focused business forecast to project coal tonnage for 2001, rather than the broad-based *AEO 2000* forecast.

b. 2002-2019 Tonnages

WPL, relying initially on *AEO 2000*, contends that the coal traffic in the EWRR group will continue to increase over the entire 20-year analysis period, while UP projects that the traffic will decline after 2002. UP argues that the *AEO 2000* traffic projections are too optimistic because the long-term outlook for this traffic is clouded by many uncertainties, including environmental pressures (particularly those related to global warming) and competition from BNSF and from alternative fuels. To account for these uncertainties and pressures, UP blended together two different traffic forecasts: the *AEO 2000*

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[35] We note that, when given the opportunity to supply source data to WPL that would corroborate its assertion with respect to 2000 tonnages (*see* WPL Reb. V.S. Crowley, at 19), UP declined and simply noted that the tonnage figures had been supplied orally to its witness Gaskins by undisclosed personnel in the marketing department. Because traffic data is normally available on computerized traffic tapes that each railroad maintains, UP's failure to produce such documentation is troubling. We thus accord little weight to tonnage figures that are based solely on such oral representations.

[36] UP's Business Plan was specifically focused on UP's coal traffic, most of which is included in the EWRR traffic base. *AEO 2000*, by contrast, is a much broader forecast encompassing coal originating throughout the PRB, Green River Basin and Rocky Mountains.

[37] UP April 10, 2001 press release, *Union Pacific "Pleased" With First Quarter Performance*. We also note that at the Merrill Lynch Transportation Conference on June 6, 2001, UP's slide presentation indicated that coal traffic grew 18% during April and May of 2001. *See* www.up.com/investor/merrill_lynch/merlynchpres_060601.pdf.

[38] *2000 Analysts Fact Book*, Railroad Commodity Review–Energy, at 14.

[39] *Id.*

forecast and another DOE/EIA forecast that considers the projected impact of the Kyoto Protocol.[40] UP assumed an 80% chance that the *AEO 2000* forecast will be accurate and a 20% probability that the *Kyoto Study* will better reflect future demand for coal.[41] UP then further reduced its traffic projection to reflect lower plant utilization and the retirement of plants after 50 years of service.

On rebuttal, WPL reduced its earlier traffic projections. Rather than relying solely on the *AEO 2000* forecast, WPL developed a composite forecast of future coal demand by averaging the projections in the *AEO 2000* forecast with the GRI and S&P forecasts cited in UP's evidence (forecasts that are less optimistic than *AEO 2000*) and a Resource Data International study, *Outlook for Coal and Competing Fuels, Winter 1999/2000* (which generally agrees with the overall growth rate projected in *AEO 2000*). The composite forecast is that coal traffic will continue to increase, although at a declining rate of increase, with a growth of 1.8% per year from 2002 to 2005, 1% per year from 2005 to 2010, and 0.6% per year from 2010 through 2019.[46]

We reject UP's forecast of declining coal traffic predicated on the possible implementation of the Kyoto Protocol, as it now appears that the Kyoto Protocol will not be ratified.[47] Not only was the Protocol never submitted to the Senate

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[40] In 1998, a U.S. delegation in Kyoto, Japan, led by then-Vice President Gore, signed the Kyoto Protocol, a proposed worldwide agreement aimed at combating global warming and calling for the United States to reduce its emissions of carbon dioxide from 1990 levels by 7% between 2008 and 2012. To evaluate the impact of this agreement on coal usage, the EIA prepared a study entitled *Impact of the Kyoto Protocol on U.S. Energy Markets and Economic Activity (Kyoto Study)*. The study concludes that PRB coal production would decline from 385 million tons in 2000 to 71 million tons in 2019. *See* WPL Reb. W.P. Heller/Kaplan 4465.

[41] UP notes that the growth projections in the *AEO 2000* forecast exceed other long-term forecasts. Specifically, UP notes that the Gas Research Institute (GRI), in its *Final Report, Coal Demand and Price Projections* (January 1999), and Standard and Poor's (S&P), in its *U.S. Energy Outlook, Fall/Winter 1999-2000*, have projected flat or negative growth late in the 20-year analysis period.

[46] WPL adjusted the forecast to account for 2 million tons of additional coal that, according to UP's Business Plan, would begin moving to HLP in 2000. UP claims that the 2 million additional tons to HLP is only a temporary volume increase. Relying on a BNSF news release, UP contends that after 2001 UP's share of the HLP traffic will drop from approximately 44% to 25%. The BNSF news release suggests that BNSF and HLP have entered into a substantial contract, but the news release makes no claim about the percentage share or total tonnages BNSF has secured. Without probative evidence to support UP's allegations as to the amount of traffic that it will lose, we assume the status quo as to the HLP traffic.

[47] UP also argues that current initiatives by the Environmental Protection Agency (EPA) to regulate nitrous oxide and sulfur dioxide will require coal-burning facilities to shut down to install new environmental control equipment, thereby constraining the demand for coal. However, we note

(continued...)

by the Clinton Administration, which had initiated the Kyoto Protocol, but the Senate (by an overwhelming margin) and President Bush have announced that they will not support its ratification.[48] Furthermore, UP continues to make substantial investments in coal-related rail infrastructure and equipment to serve the PRB,[49] demonstrating that UP does not believe that PRB coal production will decline.

We turn to UP's argument that the utilities in the EWRR traffic group cannot use all of the coal projected by WPL's composite forecast. WPL assumed increased utilization of existing coal-fired electric generators and that existing plants will not be retired but rather will either be maintained or replaced by new coal-fired plants. WPL contends that, on average, plants operating at less than full capacity will continue to burn increasing amounts of coal, up to the point that the plants will operate at 85% of capacity. UP argues that plants have not historically operated at that level of utilization — the utilization rate at plants in the EWRR traffic group has ranged from 60% to 64% over the past 4 years. UP asserts that, on average, plants will operate at no more than 80% of capacity, although it acknowledges that certain plants may operate at as much as 95% of capacity. UP further asserts that, because of age-related increases in maintenance costs and stricter nitrous oxide requirements, we should assume that all coal-fired plants will be retired after 50 years of service and that no new coal-fired plants will be built. WPL, on the other hand, argues that the potential problems associated with plant aging will be compensated for by enhanced maintenance and capital improvements.

The record shows that, as the demand for electricity has grown, plant utilization has increased — since 1982 the average utilization rate for all coal-fired generators has increased from 54% to 67%. Furthermore, *AEO 2000* predicts that the average utilization rate for coal-fired plants will increase from 68% to 83% between 1998 and 2020.[50] Therefore, WPL's assumption that the plants in the EWRR traffic group could operate at up to 85% of capacity is not

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[47](...continued)
that both the S&P and GRI forecasts relied on by UP as support for its traffic forecast took this into account. Thus, there is no need for a separate consideration of these factors.

[48] *See, e.g., The Washington Post,* March 29, 2001, "*U.S. Angers Allies Over Climate Pact,*" at A1.

[49] UP Reply V.S. Davidson, at 3-5.

[50] WPL Reb. V.S. Heller/Kaplan, at 22. WPL also notes that the S&P forecast states that "plant managers at coal-fired facilities will continue the recent trend to improve utilization rates of their power plants. These higher-utilization plants will become an integral component of many generation companies' portfolios of plants." *Id.*

unreasonable. Moreover, while there may be a point when an older plant will be retired, UP's assertion that all plants would be retired after 50 years of service lacks support.[51] And even if older plants are retired, UP ignores the possibility that replacement coal-fired capacity may be brought on-line. Thus, we see no reason to adjust the traffic forecasts to reflect the retirement of coal-burning plants.

In addition to arguing that coal production in general would decline, UP asserts that competition from BNSF on a large number of direct, single-line moves, as well as on many other moves on which BNSF could compete using an interchange partner, would exert downward pressure on EWRR's traffic volumes. WPL objects that UP "only sees downside risk from competing with BNSF with no upside opportunity."[52] We agree with WPL that competition can result in traffic gains as well as losses. Indeed, UP's Business Plan predicts that UP's share of western coal traffic will increase over the next decade.[53] Absent any evidence as to why BNSF will be the preferred carrier for PRB coal, we see no reason to adjust the traffic forecasts based on competition from BNSF.

Finally, UP asserts that competition from alternative fuels (including eastern coal, synfuels, and natural gas) could significantly reduce the predicted coal traffic from the PRB.[54] However, these potential sources of competition, which are common knowledge, should be reflected in the independent coal forecasts upon which the parties rely. Therefore, we see no reason to further adjust the forecasts.

In sum, we find that the best evidence on this record is that coal volumes will continue to increase modestly over the next 20 years. Indeed, UP's continuing investment in its coal carrying capacity suggests that UP also believes this traffic will continue to grow, notwithstanding the contrary views expressed by its witnesses for purposes of this case. Thus, we use WPL's consensus forecast as the better evidence of record.

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[51] Given the electricity shortages in the West (especially California), any prospect of widespread retirements of coal-fired generation units seems to have diminished. If anything, reliance on coal may increase beyond current forecasts.

[52] WPL Reb. V.S. Crowley, at 36.

[53] WPL Open. V.S. Crowley, Exh. TDC-13, at 2-3.

[54] UP claims that substantial decreases in eastern coal prices and the growing commercial acceptance of synfuels have begun to constrain PRB volumes. In addition, UP asserts that, while many utilities now meet their sulfur dioxide emission targets by burning low-sulfur PRB coal, this will not be possible under future, more stringent environmental regulations. It argues that, as large capital outlays for scrubbers become necessary, switching back to high-sulfur eastern coals would prove cost effective because of their higher energy content.

2. Revenues

Each party projected the revenues that the EWRR could expect to receive based mostly on UP's 1999 revenues for the EWRR traffic group.[55] However, they disagree on both the base-year revenues and the revenue forecasts. The parties' revenue estimates, and our restatement, are shown in *Table 2*.

Table 2
EWRR Revenue Projections

Year	WPL	UP	STB
1999*	$908,673,438	$897,212,286**	$908,673,438
2000	933,178,114	858,784,174	933,178,114
2001	1,009,992,021	920,732,624	1,009,936,974
2002	1,047,571,356	942,891,180	1,046,854,930
2003	1,065,432,887	888,372,307	1,063,848,287
2004	1,086,263,807	927,379,677	1,083,434,936
2005	1,114,986,307	904,848,099	1,111,719,132
2006	1,137,177,604	886,269,362	1,133,062,082
2007	1,161,645,244	881,083,596	1,157,441,125
2008	1,185,802,356	883,202,785	1,181,925,493
2009	1,211,945,002	865,196,923	1,208,283,591
2010	1,235,924,560	842,833,944	1,232,219,494
2011	1,261,655,945	850,421,156	1,258,502,077
2012	1,273,685,986	837,439,616	1,271,242,742
2013	1,299,303,629	835,204,748	1,297,217,502
2014	1,325,192,058	810,994,632	1,323,596,797
2015	1,350,730,262	815,266,784	1,349,633,825
2016	1,377,862,817	806,117,151	1,377,177,067
2017	1,405,289,961	802,148,432	1,405,022,933
2018	1,433,307,977	783,461,883	1,433,459,576
2019	1,461,930,460	787,645,583	1,462,500,046

* The EWRR would not begin transporting traffic until 2000. The 1999 base-year revenues were used to project revenues for future years, except where new, post-1999 rates have been negotiated and are documented in the record.

** Excludes revenues to the Portland General Electric Boardman plant that the EWRR would not serve. *See* note to *Table 1, supra.*

[55] Some forecast revenues were based on rates in contracts scheduled to take effect in 2000, 2001 and 2002.

a. Base-Year Revenues

The parties disagree on the portion of UP's base-year (1999) revenues that should be allocated to the EWRR for crossover traffic.[56] While they agree on using the modified mileage block proration methodology,[57] UP contends that WPL misapplied that methodology in its opening evidence and ignored revenue adjustments in the waybill records. On rebuttal, WPL adjusted its revenue estimates to correct for these errors. However, WPL notes that UP without explanation adjusted the distances for certain movements reflected in the UP traffic tapes produced during discovery, thereby affecting the revenue shares determined by the mileage proration.[58] As a result of UP's mileage adjustments, the parties' base-year revenue estimates for the EWRR differ by approximately $11.5 million.

Because UP provided no explanation for its mileage adjustments, we use WPL's revised base-year revenues for the EWRR, developed from the traffic tapes provided by UP during discovery, as the starting point for estimating EWRR revenues for the 2000-2019 period.

b. Forecast Revenues

The parties' forecasts of the EWRR's future revenues differ due to the various issues discussed below.

i. Year 2000 — UP and WPL disagree on the rate levels applicable to certain shippers in 2000. UP argues that WPL's opening evidence relied on out-of-date rates for six shippers. In its rebuttal evidence, WPL agreed with UP's updates for five of the shippers, but rejected UP's revised rate for City Public

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[56] Crossover traffic is current UP traffic that would (hypothetically) move in interline UP/EWRR service. The majority of EWRR traffic would be crossover traffic.

[57] Under the modified mileage block proration method, a carrier participating in a multi-carrier (interline) movement obtains one mileage block of "credit" for each 100 miles (or portion thereof) that it handles the shipment (*e.g.*, when a railroad's participation in a movement is between 101 and 199 miles, it would get 2 blocks credit). Originating or terminating carriers get credit for an additional block to cover the added costs associated with originating or terminating traffic. A carrier's share of the revenue for a movement is determined by multiplying the total movement revenue by the carrier's number of mileage blocks and dividing that product by the total number of mileage blocks for all participating carriers.

[58] For several movements, UP has multiple routes between the same origin and destination on its line. In computing the EWRR's revenue share, WPL derived the mileages for each actual movement from the traffic tapes, by dividing car-mile figures by the number of carloads or ton-mile figures by the number of net tons.

Service of San Antonio (CPSSA) on grounds that UP had not provided any documentation of the rate reduction UP claimed this shipper received in 2000.

We agree that UP has not supported its claim that the CPSSA rate was reduced.[59] There is no record of a UP/CPSSA agreement,[60] even though it would be highly unusual for a commercial transaction involving millions of dollars not to be reduced to writing. Therefore, we use WPL's revised estimate of the 2000 rate levels for these six shippers as the best evidence of record.

For the other shippers in the EWRR traffic group, both parties developed 2000 revenues from base-year (1999) data. WPL did this by constructing the rate that would be applicable to each utility based on the rate escalation clauses in the contracts.[61] (Other than WPL, each shipper in the EWRR traffic group moves its traffic under a transportation contract with UP.) UP used a different procedure,[62] which it claims shows that rates for the EWRR traffic group declined in 2000 as a result of competition and a soft coal market.

We reject UP's convoluted procedure. We see no reason to rely on such mathematical machinations when actual contract information is available. We use WPL's figures that consist of the actual 2000 rates for the five shippers that had new rates in 2000, and for the other movements escalate base-year rates by using the contract-specific escalator or rate schedule contained in the current

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[59] For UP's discussion of this issue, *see* UP Reply V.S. Boone, at 6.

[60] UP informed WPL that the rate reduction agreement would be reduced to writing, but the record does not contain any such documentation. WPL Reb. W.P. Crowley 4612-15.

[61] WPL first calculated a base rate for each origin/destination (O/D) pair by dividing the 1999 revenues for that O/D pair by the total tons moved in 1999. WPL then escalated the 1999 base rate using a plant-specific escalation factor — the relationship between the RCAF-U (the rail cost adjustment factor, unadjusted for changes in railroad productivity, published quarterly by the Board) and the escalation clause contained in the contract. Where actual contracts were not provided by UP during discovery (13 contracts), WPL assumed that the rates would escalate at the average escalation factor contained in the contracts that UP had disclosed.

[62] UP first developed the ratio of revenue per revenue ton mile (R/RTM) from the first 6 months of 2000 to same period for 1999. It applied this ratio to the 1999 rates to calculate rates for 2000; then divided those 2000 rates by the length of haul to develop R/RTM for 2000; and finally multiplied 2000 R/RTM by the ton-miles of traffic it forecasted that the EWRR would carry in 2000 to develop 2000 revenues.

There are several movements for which UP could not use this methodology because the data for 1999 or 2000 were not available. For those movements, UP developed 2000 rates by escalating 1999 rates by the average escalation factor from all contracts produced by UP during discovery — the same procedure WPL used when specific contract data was unavailable. However, even where UP used WPL's methodology, its numbers differed from WPL's due to UP's application of a modified mileage proration procedure based on mileages not derived from the traffic tapes produced during discovery — an application that, as discussed above, we reject.

contracts or, where escalation factors are not available, the average escalation factor in the contracts of the EWRR traffic group.

ii. 2001-2019 Period — The parties do not agree on the EWRR revenues for 2001 and beyond because they disagree on the rate for the Associated Electric Cooperative (AEC) and the procedure for escalating rates.

UP asserts that it has made a rate concession to AEC, to become effective in 2002, that should be reflected in the SAC analysis. WPL objects that a final agreement has not been reached. We agree that UP has not supported the rate concession to AEC. Moreover, it is not clear that a true rate concession has even been proposed, as the draft of the agreement between UP and AEC includes an apparently countervailing provision under which UP could purchase the shipper's coal cars at a price significantly below market value. Therefore, we assume that the existing rate is the best indicator of what the future rate will be. *See Coal Rate Guidelines*, 1 I.C.C.2d at 544.

For all traffic in the group, WPL used contract-specific information to project EWRR rates for each year that the existing contracts would be in effect. (For the 13 shippers for which escalation clauses had not been disclosed by UP during discovery, WPL inflated the rates by the average escalation factor in other contracts.) UP claims that WPL used incorrect escalation factors for four shippers (Oklahoma Gas & Electric, Nebraska Public Power District, Lower Colorado River Authority, and Union Electric), and UP supplied the correct escalation factors for those shippers. Moreover, for Commonwealth Edison/Midwest Generation (ComEd) traffic, UP contends that, notwithstanding the escalation provisions in the contracts, a 1999 compact calls for a rate freeze until the expiration of the existing contracts, and thus no escalator should be applied. For all other shippers, UP inflated rates using an average escalation factor for the period of the existing contracts.

WPL accepts UP's corrections to the contract escalation factors for the four shippers mentioned above. As for ComEd, WPL maintains that the 1999 compact applies only to one EWRR destination — the ComEd Kincaid plant — and not to other ComEd plants. Thus, WPL continues to apply the escalation factor in the existing contracts to ComEd plants other than Kincaid. For all other shippers, WPL continues to use a contract-specific approach for as long as the current contracts are scheduled to be in effect.

We agree that, where specific information is available for individual movements, that data is the best evidence. Thus, where available, we use the escalation factors from specific contracts to inflate rates for the duration of each contract. Furthermore, after reviewing the 1999 ComEd compact, we agree that

the only EWRR plant to which the rate freeze clearly applies is the Kincaid plant.[63] And where no movement-specific rate or escalation factor is available, we apply the average of the escalation factors from those contracts that are available. Thus, we use WPL's revised evidence on the level of rates during the pendency of existing contracts.

Upon expiration of the existing contracts, UP contends that the market would require the EWRR to grant significant rate concessions. UP states that, for eight plants in the EWRR traffic groups where contracts recently expired, the renegotiated rates were an average of 7.7% lower than in the previous contract and the new contracts were for an average of 4 years. On the assumption that this trend would continue, resulting in repeated rate decreases for all of the EWRR traffic over the 20-year analysis period,[64] UP calculated that the revenues for the traffic group would be 12.8% less in 2019 than base-year revenues.

WPL argues that UP's 7.7% downward adjustment is based on a selected sample that is biased because it does not reflect seven other recently renegotiated contracts.[65] On rebuttal, WPL submitted its own analysis of the rate changes that can be expected after current contracts expire. For traffic it considers captive, WPL assumed that rates would escalate by 52% of the RCAF-U.[66] For traffic it considers competitive, WPL developed market rates[67] and escalated those rates annually by 100% of UP's forecast of its changes in costs.

UP complains that WPL's captive traffic rate adjustment is based on only two contracts and that WPL's market rate adjustment for competitive movements fails to reflect competitive pressures that have forced UP to reduce rates as contracts expire.[68]

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[63] While several contracts are referenced in the compact, we cannot determine on this record that those contracts relate to traffic in the EWRR group.

[64] For Union Electric, UP maintains that, because of fierce competition from BNSF, the EWRR would need to reduce rates at the end of 2001 by even more to retain that traffic.

[65] Citing a June 12, 2000, *Traffic World* article, WPL also contends that competition for Union Electric's traffic is not as fierce as UP states and that a rate reduction of the magnitude suggested by UP would be unnecessary.

[66] The RCAF-U is a composite index of industry-wide railroad costs.

[67] To calculate a market rate, WPL used the lower of the average rate per ton-mile for all competitive coal traffic having contract renewals during the 1999-2002 time period or the rate per ton-mile the competitive shipper paid at the end of the current contract.

[68] UP Brief, at 12.

We reject UP's assumption that rates would decrease by 7.7% every 4 years. We find that UP's development of its 7.7% factor was flawed and unreliable.[69] Furthermore, because the record does not contain a comparison of the other terms in the expired and current contracts, we cannot determine the extent to which the rate reductions referenced by UP were due to competitive circumstances or some other reason (*e.g.*, changed service requirements, such as a switch to shipper-supplied cars that would lower the carrier's costs). Finally, we are troubled by UP's exclusion of information on rates in seven additional contracts that have recently expired.[70]

We also reject WPL's rebuttal evidence. The escalation factor of 52% of the RCAF-U is unreliable, as it is based on only two contracts.[71] In addition, WPL provided no support for its assumption that rates for competitive coal traffic would escalate at 100% of UP's forecast of its changes in costs. Indeed, by increasing rates on competitive traffic using this escalation factor, the rates on competitive traffic would eventually eclipse the rates on captive traffic. This is counter intuitive, as shippers of competitive traffic have more options, and therefore more negotiating leverage, than captive traffic shippers.

In the absence of better evidence, we assume that the rate trends reflected in the existing contracts will continue. *See Coal Rate Guidelines*, 1 I.C.C.2d at 544. Therefore, after expiration of a contract, we use the average of all escalation factors contained in unexpired contracts to project the rates for that traffic for the remainder of the SAC analysis period.

C. Operating Costs

After selecting the traffic group and the broad parameters of the EWRR network configuration, and determining the traffic volumes and revenues associated with the traffic group selected, WPL developed an operating plan for how the EWRR would handle this traffic. UP has challenged WPL's evidence in major respects. *Appendix C, Table C-1* summarizes the parties' differing estimates of the annual operating costs that would need to be incurred to operate the EWRR, as well as the figures we use for our SAC analysis.

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[69] UP overstated the Entergy rate reduction; the contract rate contained in the excerpt from the Fourth Addendum to ICC-WPRI-0065 contains a different rate than UP used in this case. UP Reply W.P. Gaskins 778-783. Furthermore, the claimed reduction for the Coleto Creek plant was based on the first 3 years of the contract and overstated the reduction over the life of the 6-year contract. UP Reply V.S. Gaskins, Exh. DWG-16.

[70] *See* WPL Reb. V.S. Crowley, at 58.

[71] We note that WPL has argued that UP's use of eight contracts is not representative of the entire shipper group.

Based upon a preliminary review of the parties' operating evidence, we believe that UP's cost figures are somewhat overstated, while WPL's are somewhat understated. However, we find it unnecessary to critique each individual element of the parties' competing evidence because, regardless of whose operating cost figures we accept, the resulting SAC rate would be less than 180% of UP's variable cost of providing service to WPL and we cannot prescribe a maximum rate below that level.[72] Therefore, for administrative convenience we use UP's evidence regarding the operating plan that would be needed to serve the EWRR traffic group, and the associated operating expenses, with certain minor adjustments discussed in *Appendix C*.[73] Because we find in favor of WPL (that UP's challenged rate is unreasonable), using UP's evidence demonstrates that neither party is prejudiced by this administrative shortcut.[74]

D. Road Property Investment

Despite the closeness of their track mileage estimates (a difference of less than 100 miles), the parties differ substantially regarding the total level of investment that would be required to construct the EWRR. WPL claims the EWRR could be built for approximately $2.2 billion, while UP claims that $3.3 billion would be necessary. *Table D-1* in *Appendix D* provides a summary of the parties' investment figures by category and our restatement. As discussed in *Appendix D*, we find that the construction of the EWRR would cost approximately $2.9 billion.

Five investment categories account for 80% of the difference between the parties' figures. They are (in order of magnitude) track construction, public improvements, earthwork, contingencies, and engineering. The difference between the parties' estimates of track construction costs is due mainly to differences in the unit costs that they use for track-laying, subballast, and ballast. As discussed in *Appendix D*, UP has presented the better evidence on track-laying and ballast cost. We use WPL's evidence on subballast costs.

The difference between the parties' cost figures for public improvements is due mostly to UP's inclusion of costs for highway grade separations and crossing gates east of Joyce. UP's evidence shows that it (or its predecessor railroad) incurred some costs associated with installing these public improvements and,

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[72] *West Texas*, 1 S.T.B. at 677; *Burlington N.*, 114 F.3d at 210.

[73] Because we use UP's evidence on these issues, UP's motion to strike portions of WPL's evidence of locomotive maintenance costs, filed August 14, 2000, is moot.

[74] *See McCarty Farms, et al. v. Burlington Northern, Inc.*, 2 S.T.B. 460, 468-69 (1997) (*McCarty*), *aff'd sub nom. McCarty Farms, Inc. v. STB*, 158 F.3d 1294 (D.C. Cir 1998).

therefore, that appropriate costs should also be included in the SAC analysis. However, UP did not bear all of the costs involved and we cannot determine from the record what share of these costs UP incurred. We need not decide what share of these costs the EWRR should bear because the outcome of our rate analysis would not be affected. Therefore, for administrative convenience, we apply to the EWRR UP's higher cost estimate. Similarly, for other types of public improvements east of Joyce, we find it unnecessary to resolve the disputes between the parties and we include the higher of the two parties' cost estimates, because, regardless of which cost estimate we use, the outcome of our rate analysis would not change.

The difference between the parties' earthwork cost figures arises from different unit costs for grading and different quantities (due to differences in side slopes, drainage ditch widths, and different amounts of yard fill). As discussed in *Appendix D*, we use WPL's figures.

Finally, contingencies and engineering costs are derivative expenses, calculated as a percentage of the total construction costs (excluding land). As explained in *Appendix D*, we use the same percentage as UP for contingencies and a figure between the parties' estimates for engineering costs.

E. DCF Analysis

The DCF analysis compares the stream of revenues that would be generated by the EWRR to the stream of costs that the EWRR would incur, discounted to a common point in time. To do that, the DCF model computes and distributes the total cost of the EWRR over the 20-year analysis period, thus determining the amount of revenues that would be needed by the EWRR to cover its operating expenses, meet its tax obligations, recover its investment and obtain an adequate return on that investment.

In this case, the most significant disagreements between the parties regarding the DCF model relate to how the EWRR investment should be recovered over time and the financial risk associated with that investment. We discuss these two issues below while addressing the remainder of the DCF issues in *Appendix E.*

The results of our DCF calculations are shown in *Appendix E, Table E-1.* These results show that, under the current rate structure, in each year of the 20-year SAC analysis period, the EWRR would generate greater revenues than it would need to cover all the costs that would be incurred in and assigned to that year.

1. Investment Allocation

WPL used the DCF model from the *West Texas* and *Arizona* cases, in which we allocated a pro rata share of investment costs to each ton of traffic, rather than the procedure we used in *FMC*, which allocated an equal amount of investment to each year regardless of the amount of traffic that would move. WPL argues that the tonnage-based allocation method provides greater rate stability.

The tonnage-based allocation procedure was initially developed in *Bituminous Coal — Hiawatha, UT to Moapa, NV* (*Nevada Power*), 10 I.C.C.2d 259, 277 (1994), to address a situation where traffic levels on the stand-alone railroad would fluctuate (both rising and falling) from year to year. There, using a time-based allocation of capital carrying charges would have resulted in the prescription of oscillating rates (rates rising one year only to fall the next). We noted that such a rate pattern was unrealistic and inconsistent with railroad industry pricing practice.

As we noted in *FMC*, however, applying a tonnage-based procedure to a situation where, as here, freight tonnage is projected to increase continuously over the 20-year SAC analysis period would result in a disproportionately large share of investment costs being assigned to the later part of the 20-year period. This procedure would also place unnecessary weight on the accuracy of traffic projections extending out 20 years. Where traffic is projected to increase significantly over time, it is preferable to allocate the capital carrying charges on a level annual basis. Applying that method here results in declining real capital investment recovery per ton as the EWRR's capital investment is used more efficiently[75] thereby setting maximum rates in a manner that takes account of the production economies that characterize the economic structure of the rail industry.[76] In contrast, the approach advocated by WPL would ignore the real world impact of increasing production economies and have capital recovery per ton remain constant. For these reasons, we reject WPL's per ton approach and use a per-year approach.

2. Real Options Adjustment

UP argues that we should make an adjustment to the standard DCF computation to account for the risk that the EWRR would not realize the revenue estimates projected here. To reflect this risk, UP would have us increase the

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[75] The DCF methodology calculates a real return on, and of, investment for the EWRR. This capital recovery is increased by the parties' forecast for inflation in the EWRR's road property assets and land.

[76] *See Coal Rate Guidelines*, 1 I.C.C.2d at 531-32.

capital carrying charges for the EWRR by 8.73% per year — a figure it claims to have derived using "real options" theory.[77]

UP maintains that this adjustment is required by contestable market theory[78] because the EWRR would in theory be subject to competition from yet another stand-alone railroad, resulting in an "asymmetric risk."[79] But as we have often explained, SAC principles require the exclusion of costs and risks not faced by the incumbent railroad, so as to remove any advantages which the existing railroad has over a hypothetical stand-alone railroad. *See Coal Rate Guidelines*, 1 I.C.C.2d at 529; *Burlington N.*, 114 F.3d at 214; *West Texas*, 1 S.T.B. at 668-73; *Arizona*, 2 S.T.B. at 385-87. Here, UP has acknowledged, as it must, that UP does not operate in a contestable market,[80] which means the risk UP's proposed adjustment is designed to take into account — that a rise in projected returns above a certain level will result in the carrier being replaced immediately and entirely by a new entrant — is not faced by UP itself. As we stated in *FMC* (at 846), we do not allow an existing railroad to charge captive shippers a rate designed to compensate for risks that the incumbent carrier's investors do not

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[77] Real options theory is a relatively new economic theory that applies to real (tangible) assets the Black-Scholes approach to valuing options on financial assets. UP would have us apply an 8.73% per year adjustment for the entire 20-year analysis period. UP Reply V.S. Klick/Baranowski, Exh. 5, at 26 (col. 3, capital recovery with an 8.73% adjustment to reflect Myers/Hausman real options adjustment); Exh. 6, at 26 (col. 3, capital recovery without real options adjustment). However, this seems inconsistent with UP's own explanation that, to account for this risk, real options theory demands that a greater portion of investment be recovered at the beginning of the investment period, with lesser recovery later in the investment period. UP Reply V.S. Hausman, at 13; *see also* UP/BNSF Joint Motion in Docket No. 42056 *et al.* (filed July 5, 2001), at 34 & V.S. Hausman, at 10.

Because we conclude that it is not appropriate to apply an adjustment of any size, we need not address WPL's well-supported argument that UP's measurement is based on exaggerated claims of the risks and uncertainty that would be present for coal transportation in a fully contestable market setting.

[78] Our SAC test was developed to "introduce[] the competitive standard of contestability into a non-competitive market." *Coal Rate Guidelines*, 1 I.C.C.2d at 529.

[79] According to UP, this additional risk would arise from the fact that, while both UP and the EWRR would have significant sunk investment, only the EWRR would operate in an environment with no barriers to entry or exit. UP Reply Narrative, at 73-74; UP Reply V.S. Hausman, at 8-9 ("in a contestable market, better than expected outcomes are likely to attract competitive entry, preventing the firm from capturing the full measure of the possible revenues and leading to returns that are cut off, or 'truncated'"). It is the truncation of better-than-expected outcomes, while worse-than-expected outcomes would have no such limitation, that would result in asymmetry, according to UP.

[80] UP Reply V.S. Hausman, at 20.

face. Thus, consistent with SAC principles and prior precedent, it would be inappropriate to include UP's proposed adjustment.

To the extent UP may face some (more limited) asymmetric earnings risk itself, as its counsel suggests,[81] UP has not shown why that risk is not already reflected in its cost of capital. We presume efficient capital markets recognize and reflect all of the risks faced by railroads, which is why in *FMC* we treated a real options adjustment as a collateral attack on the railroad cost-of-capital figure that we use in our SAC analysis. Here, UP maintains that its proposed adjustment is not to the cost-of-capital figure itself (nor to the revenue estimates directly), but rather would introduce an additional cost component to the annual capital carrying charges. The result of its proposed adjustment, however, is the same as if it applied a higher cost of capital or lowered the revenue projections.

UP argues that the adjustment it proposes is needed to address uncertainty with respect to the revenue and cost projections that we use in our SAC analysis. These projections are the best evidence of record and, while annual fluctuations are to be expected, we have no reason to believe that the overall trends reflected in these projections will not materialize. In any event, we do not believe that UP faces a significant risk from our reliance on these projections because, as we have said in prior SAC cases,[82] it may petition to reopen and adjust the rate prescription should these trends shift.[83] Thus, to compensate UP in advance for the possibility that the projections may not be realized is neither necessary nor appropriate and, in our view, would provide for an over-recovery of the total stand-alone costs.

V. CONCLUSION

Based on our review of the evidence submitted by the parties, we find that the challenged UP rate of $14.66 from the Black Thunder and Antelope mine origins to WPL's Edgewater plant is subject to our maximum rate regulation because WPL has no effective transportation alternative. We further find that the

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[81] UP Reply Narrative, at 77. *See also* UP Reply V.S. Hausman, at 20 ("But the railroad industry as a whole does not face asymmetric risks and returns to the same extent as EWRR since railroad markets are not contestable.")

[82] *Arizona*, 2 S.T.B. at 395; *FMC* at 741.

[83] UP argues that it is not fully protected by reopening, because severe reductions in the demand for coal could preclude it from being able to collect the higher rates that we might allow on WPL's traffic. UP Brief at 23. We believe the reopening process would protect the railroad in most instances. In any event, it would not be appropriate to require a shipper to pay higher rates now as insurance for the carrier against any unexpected future shifts in demand.

challenged rate is unreasonably high. Because we find that the SAC rate for the traffic at issue would result in revenues for UP that are less than 180% of UP's variable cost of providing service, and because we cannot prescribe a rate below that regulatory floor, we prescribe a maximum reasonable rate level at 180% of the variable cost of providing service.

The resulting maximum rate prescription and reparations due WPL for movements of the issue traffic from the Black Thunder and Antelope mines for the 1st and 2nd Quarters 2000 are shown in *Tables 3* through *5* below.[84] The parties should determine the maximum rate and the amount of any reparations that are due for subsequent movements from those mines. Interest is also awarded in accordance with 49 CFR Part 1141. The total amount of reparations and interest are to be calculated by the parties in accordance with this decision.

[84] We are not able to compute the rate floor for later periods, as we do not know the variable costs for those periods. The parties should calculate the rate floor for later periods in a manner consistent with the procedures and findings contained in *Appendix A*. If the rate floor is higher than the SAC rate shown in the tables, then the maximum reasonable rate will be the rate floor as so calculated.

Table 3
Rate Prescription
Black Thund0er Mine

Year	Tariff Rate	SAC Rate Reduction	SAC Rate	180% of Variable Cost	STB Prescribed Rate
2000 Q1	$14.66	14.4%	$12.55	$13.30	$13.30
2000 Q2	14.66	14.4%	12.55	$13.37	$13.37
2000 Q3/Q4	14.66	14.4%	12.55		
2001	14.66	25.3%	10.95		
2002	14.66	25.4%	10.94		
2003	14.66	25.1%	10.99		
2004	14.66	24.6%	11.05		
2005	14.66	25.1%	10.98		
2006	14.66	24.8%	11.02		
2007	14.66	24.8%	11.03		
2008	14.66	24.7%	11.04		
2009	14.66	24.7%	11.04		
2010	14.66	24.5%	11.07		
2011	14.66	24.4%	11.08		
2012	14.66	23.5%	11.21		
2013	14.66	23.4%	11.23		
2014	14.66	23.2%	11.26		
2015	14.66	23.0%	11.29		
2016	14.66	22.8%	11.31		
2017	14.66	22.7%	11.34		
2018	14.66	22.5%	11.36		
2019	14.66	22.3%	11.39		

Maximum reasonable rate is the higher of the SAC rate or the rate floor.

Rate floor to be determined by the parties once variable costs for each year are known.

Table 4
Rate Prescription
Antelope Mine

Year	Tariff Rate	SAC Rate Reduction	SAC Rate	180% of Variable Cost	STB Prescribed Rate
2000 Q1	$14.66	14.4%	$12.55	$12.71	$12.71
2000 Q2	14.66	14.4%	12.55	$12.83	$12.83
2000 Q3/Q4	14.66	14.4%	12.55		
2001	14.66	25.3%	10.95		
2002	14.66	25.4%	10.94		
2003	14.66	25.1%	10.99		
2004	14.66	24.6%	11.05		
2005	14.66	25.1%	10.98		
2006	14.66	24.8%	11.02		
2007	14.66	24.8%	11.03		
2008	14.66	24.7%	11.04		
2009	14.66	24.7%	11.04		
2010	14.66	24.5%	11.07		
2011	14.66	24.4%	11.08		
2012	14.66	23.5%	11.21		
2013	14.66	23.4%	11.23		
2014	14.66	23.2%	11.26		
2015	14.66	23.0%	11.29		
2016	14.66	22.8%	11.31		
2017	14.66	22.7%	11.34		
2018	14.66	22.5%	11.36		
2019	14.66	22.3%	11.39		

Maximum reasonable rate is the higher of the SAC rate or the rate floor.

Rate floor to be determined by the parties once variable costs for each year are known.

Table 5
Reparations

	Origin	Tons	Tariff Rate (per ton)	Amount Paid	Maximum Rate	Reparations
1Q2000	Antelope	25,462	$14.66	$373,276	$12.71	$49,651
	Black Thunder	493,626	14.66	7,236,553	13.3	$671,331
2Q2000	Antelope	25,595	14.66	375,224	12.83	$46,839
	Black Thunder	500,694	14.66	7,340,172	13.37	$645,895
Totals		1,045,377		$15,325,225		$1,413,716

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

It is ordered:

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

2. Defendant shall pay reparations and interest, in accordance with this decision, for all WPL shipments moving from the Black Thunder and Antelope mines that moved prior to the establishment of reasonable rates pursuant to ordering paragraph 1.

3. This decision is effective October 13, 2001.

By the Board, Chairman Morgan, Vice Chairman Clyburn and Commissioner Burkes.

APPENDIX A — R/VC CALCULATIONS FOR WPL TRAFFIC

In its complaint, WPL challenges UP's $14.66 rate for trainload movements of coal from eleven PRB mines to its Edgewater power plant at Sheboygan, WI. UP contends that the variable costs associated with these movements are less than 180% of the revenues that it receives from this traffic and that we therefore have no authority to examine the reasonableness of the rate for shipments from those mines. However, as discussed in the body of the decision, we do not have complete information as to the variable costs for movements except from the Black Thunder and Antelope mines. Therefore, our revenue-to-variable cost R/VC analysis is limited to traffic from those two mines.

The variable cost evidence associated with serving the Black Thunder and Antelope mines was developed for the 1st and 2nd Quarters of 2000. The parties' variable cost and R/VC presentations, as well as our findings relative to this evidence, are summarized in *Table A-1*. Based on the record before us, we find that the challenged rate produces R/VC percentages for shipments from the Black Thunder and Antelope mines that exceed the 180% jurisdictional threshold level.

Table A-1
Variable Costs and R/VC Percentages

	UP		WPL		STB	
	Var. Cost	**R/VC**	**Var. Cost**	**R/VC**	**Var. Cost**	**R/VC**
BLACK THUNDER						
1st Quarter 2000	$8.63	169.87%	$5.70	257.19%	$7.39	198.25%
2nd Quarter 2000	$8.62	170.07%	$5.70	257.19%	$7.43	197.32%
ANTELOPE						
1st Quarter 2000	$8.36	175.36%	$5.46	268.50%	$7.06	207.55%
2nd Quarter 2000	$8.40	174.52%	$5.49	267.03%	$7.13	205.59%

A. GENERAL COST ESTIMATION PROCEDURES

The Uniform Railroad Costing System (URCS) is the cost accounting tool that we use to estimate variable costs. URCS reflects the extent to which different types of costs incurred in the rail industry have been found to change in direct proportion to changes in output. Because a carrier's systemwide average costs are not necessarily representative of the costs of providing a particular service, movement-specific adjustments are sometimes made to better reflect the variable costs attributable to providing a particular service.

Each year, we use cost and operating statistics from each Class I carrier's Annual Report (STB Form R-1), Waybill Sample, Annual Report of Cars Loaded and Terminated (AAR Form CS-54), and Report of Freight Commodity Statistics (STB Form QCS) to develop the URCS system-average variable costs for that year. Final URCS numbers for any given year are generally not available until the second half of the following calendar year; thus, UP's final 1999 URCS numbers were not available until September 1, 2000. Because the numbers were not yet available when the parties developed their variable cost evidence in this proceeding, they developed variable costs based on the partial and preliminary 1999 data available at the time. The variable cost figures we apply here are based on our final URCS run for UP for 1999, conducted on September 1, 2000, as well as those movement-specific adjustments agreed upon by the parties and those contested adjustments we find appropriate.

WPL advocates a general adjustment to the URCS model to exclude a portion of the cost UP incurred to acquire several other carriers — the amount by which the purchase prices exceeded the book values of the acquired companies. We considered and rejected this same argument in *FMC*, at 708-09, noting that our Uniform System of Accounts expressly provides (at 49 CFR 1201, Instruction 2-1-15(c)(1)) that acquisition costs should be recorded on the books of the acquiring carrier at the purchase price. WPL has presented no new arguments on this issue that we have not already considered and fully addressed. Therefore, as we noted in *Procedures for Presenting Evidence in Stand-Alone Cost Rate Cases*, 5 S.T.B. 441 (2001) (*SAC Procedures*), at 446, we need not and will not reconsider this issue.

UP argues that a general adjustment should be made to the URCS model to exclude expenses recorded in its R-1 report in Account 80 (other elements of investment) and Account 76 (interest during construction) and to include the expenses recorded in Account 90 (construction in progress). This argument was also addressed in *FMC*, at 747. As we explained there, Account 80 is not included in URCS and, in order to make an adjustment to exclude Account 76 and include Account 90 costs (the reverse of our general procedures),[85] it must be shown that the construction projects contained in Account 90 were of relatively short duration (*i.e.*, completed within one year).[86] Because UP has not attempted to meet this requirement, we do not accept these cost adjustments.

B. MOVEMENT — SPECIFIC ADJUSTMENTS

Table A-2 lists the various service characteristics taken into account in determining the variable costs associated with this traffic. The parties agree on the majority of the service units and operating characteristics (Items 1-11, 15-16 and 19 in *Table A-2*). The areas of disagreement (Items 12-14 and 17-18) are addressed below.

Table A-2
Traffic and Operating Statistics

ITEM	Black Thunder 1st Qtr 2000	Antelope 1st Qtr 2000	Black Thunder 2nd Qtr 2000	Antelope 2nd Qtr 2000
1. Lading Weight (tons)	110.8	110.7	111.9	110.8
2. Tare Weight (tons)	22	22	22	22
3. Cars Per Train	114.2	115	114.8	115.5
4. Loaded Miles	1,270.24	1,244.93	1,270.24	1,244.93
5. Empty Miles	1,263.67	1,238.36	1,263.67	1,238.36
6. Round Trip Miles	2,533.91	2,483.29	2,533.91	2,483.29
7. Origin Loop Miles-Loaded	1.52	1.9	1.52	1.9
8. Origin Loop Miles-Empty	2.56	2.85	2.56	2.85

[85] UP incorrectly argues that, since *Georgia Power Co. v. Southern Ry.*, No. 40581 (ICC served Nov. 8, 1993), we have included Account 90 and excluded Account 76 in the development of variable costs. *See West Texas; Arizona; FMC* (all of which excluded Account 90 and included Account 76).

[86] *See Establishment of Adequate Railroad Revenue Levels*, 358 I.C.C. 844 (1978).

ITEM	Black Thunder 1st Qtr 2000	Antelope 1st Qtr 2000	Black Thunder 2nd Qtr 2000	Antelope 2nd Qtr 2000
9. Destination Loop Track Miles*	0	0	0	0
10. Round Trip Miles (incl. loop track)	2,537.99	2,488.04	2,537.99	2,488.04
11. Number of Locomotives Units	2.29	2.16	2.29	2.16
12. Cycle Hours	168.7	166	163.7	158.8
13. Sw.-Yd. Loco. (SEM per car)	0.2588	0.257	0.2575	0.2559
14. Sw.-Rd. Loco.-non-yd.(SEM per car)	3.1436	3.1217	3.1272	3.1082
15. Sw.-Rd. Loco.-yd. (SEM per car)	0.1895	0.1882	0.1885	0.1874
16. Gross Ton Miles	196,488.61	192,446.13	197,885.88	192,570.62
17. Train-Miles Per Car	22.2241	21.6351	22.1079	21.5415
18. Locomotive Unit-Miles Per Car	51.3245	47.1522	51.0562	46.9481
19. Total All Freight Car Miles (000)	11,889,257	11,889,257	11,889,257	11,889,257

* On rebuttal, UP agreed that the 0.29 miles of loop track that is owned by WPL should not be included. UP Reb. V.S. Kent/Fisher, at 5-6. However, UP only excluded the 0.29 miles from its variable cost calculation for the Antelope mine in the 1st Quarter of 2000. This table excludes the miles associated with this track from the other mine and other quarter as well.

1. Cycle Time (Item 12)

UP estimated cycle time based on an average of the cycle times for a 1-year period (7/1/99-6/30/00), while WPL relied on actual cycle times for the 1st and 2nd Quarters of 2000. We adopt WPL's cycle time evidence because it uses the actual (rather than estimated) cycle times for the specific quarters for which variable costs are calculated.

2. Switching by Yard Locomotives (Item 13)

UP calculated that yard locomotives spend 36.16 minutes per train switching bad-order cars (*i.e.*, cars that are not fit for service and in need of repair) associated with WPL's traffic, while WPL contends that only 21.13 minutes per train are spent switching bad-order cars. WPL claims that UP's switching study overstates the switching minutes by:

- including switching minutes for 181 empty cars moving through the Butler Yard, even though 115 of those cars had been repaired at other locations and did not require switching for repairs; and

- double counting the switching time for bad-order cars at the Butler Yard.

UP's records (UP Open. W.P. Kent/Fisher KKA 0000336) show that 181 bad-order cars were indeed switched at Butler during the study period, and WPL has not provided any evidence to support its contention that 115 of these cars had already been repaired at other locations. Therefore, we include bad-order switching minutes for the 181 empty cars moving through the Butler Yard. We agree with WPL, however, that UP double counted the switching time at the Butler Yard. UP's witness Nezworski specifically states that "[o]n average, it takes a switch engine about four hours to transfer cars to the rip track, switch the rip track, and return cars to the main yard at Butler."[87] But UP's variable cost calculation, without explanation, doubled the round trip time that witness Nezworski had developed for these switching operations.[88] After correcting for UP's double count of switching time, we find that the switching of bad-order cars by yard locomotives takes, on average, 29.56 minutes per train.

3. Non-Yard Switching — Road Locomotives (Item 14)

UP notes that, because of yard track limitations at the Edgewater plant, road-haul locomotives must perform multiple switches outside the plant to deliver loaded cars and remove empty cars. According to UP, loaded trains stop on the main line (before reaching the Edgewater facility), where the road locomotives break up the train. Then 50 loaded cars are moved into the Edgewater plant, with 25 cars being placed on each of two different yard tracks. The road locomotives then return to the train and move the remainder of the loaded cars into the plant. Following the placement of the loaded cars on the yard tracks, the road locomotives then either assemble previously unloaded cars into an empty train or return light (without cars) to the Butler Yard.

WPL argues that switching operations generally involve the movement of a limited number of cars. Because the operations UP performs outside the Edgewater gates involve the movement of a large number of cars, WPL argues that the operation should be considered part of the line-haul *Statement No. 7-63* service. UP relies on *Statement No. 7-63*[89] for treating the operations outside of the Edgewater plant as switching.[90] *Statement No. 7-63* (at 116 n.2) notes that switching:

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[87] UP Open. V.S. Nezworski, at 12.

[88] UP Open. W.P. Kent/Fisher KKA-0000339.

[89] *Explanation of Rail Cost Finding Procedures and Principles Relating to the Use of Costs,* Statement No. 7-63, Interstate Commerce Commission (ICC), Bureau of Accounts, Nov. 1963.

[90] WPL has cited no precedent to support treatment of the activity outside the Edgewater plant as part of the line-haul movement. WPL merely argues that UP's treatment of the activities outside the Edgewater plant as switching results in a double count of investment costs. There is no double count of locomotive switching costs, however, because the assignment of locomotive costs to line-

(continued...)

[i]ncludes not only the switching work performed by the road haul carrier in originating or terminating a car * * * but also * * * the switch movement between the train make-up or break-up yard and the team or industry track at which the car is spotted for loading or unloading.

We agree with UP that activity performed outside the Edgewater plant is switching; the line-haul portion of the transportation has ended and all that remains is to move cars into and out of the Edgewater plant. Not including this activity as switching would not allow UP to recoup its locomotive costs associated with this service. Because UP presented the only evidence on this issue, we accept its estimate that, on average, this switching takes 359 minutes per train.

4. Train-Miles Per Car (Item 17)

UP's and WPL's train-miles per car figures reflect very minor differences (approximately 0.25% difference between the parties' figures). The difference is attributable to the fact that, although the parties agreed that origin loop track should be included, WPL omitted this from its calculation of train-miles per car. Because UP properly included origin loop track miles in its calculation of train-miles per car, we accept its procedure. However, we adjust UP's evidence to exclude the destination loop, which is track owned by WPL. *See* note to *Table A-2, supra.*

5. Locomotive Unit-Miles Per Car (Item 18)

The parties' calculations of locomotive unit-miles per car differ (by approximately 1%) because UP added 114.49 miles to the round-trip mileages to account for the switching operations at the Edgewater plant, while WPL added only 58.6 miles. UP has not offered any support for its 114.49-mile figure, while WPL submitted a detailed exhibit showing the derivation of its figure. WPL Reb. V.S. Crowley, Exh. TDC-28. Therefore, we accept WPL's evidence on this issue.

C. VARIABLE COSTS

Tables A-3 through *A-6* show the parties' estimates and our restatement of the variable costs for the Black Thunder and Antelope movements for the 1st and 2nd Quarters of 2000.[91] For Items 1, 8, and 14, the differences in the parties' cost estimates result from use of different URCS applications. As noted earlier, we use the final UP 1999 URCS run of September 1, 2000. The variable costs resulting from that URCS run for Items 1, 8, and 14 are reflected in the "STB" column in the tables below.

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[90](...continued)
haul service stops when the train break-up begins outside Edgewater.

[91] WPL's cost estimates are found in WPL Reb. V.S. Crowley Exhs. TDC-31 attachments A and B, and TDC-32 attachments A and B. UP's estimates are found in UP Reb. W.P. Kent/Fisher, KKA 0000780-0000827.

Table A-3
Variable Cost Per Ton
Black Thunder Mine to Edgewater Power Plant
(1st Quarter 2000)

ITEM	WPL	UP	STB
1. Carload O/T Clerical Expense	$ 26.45	$ 26.51	$ 26.35
2. Carload Handling - Other Expense	0.96	4.52	0.95
3. Switching Expense - Yard Locomotives	1.09	1.89	1.54
4. Switching Expense - Road Locomotives (Non-Yard)	1	3.07	2.76
5. Switching Expense - Road Locomotives (Yard)	0.54	0.58	0.55
6. Gross Ton-Mile Expense	238.21	532.75	428.98
7. Loop Track Expense - Origin Mine	0.26	0.4	0.36
8. Train-Mile Expense - Other Than Crew	17.38	17.39	17.37
9. Train-Mile Expense - T & E Crew	129.45	161.04	161.01
10. Helper Service Expense - Excluding Crew (N/A Here)	---	---	---
11. Helper Service Expense - Crew Expense (N/A Here)	---	---	---
12. Locomotive Unit-Mile Expense	130.4	104.12	89.67
13. Locomotive Ownership Expense	84.47	104.54	90.18
14. Private Car Rental & User Responsibility	4.94	4.95	4.94
15. Car Operating Expense (RR-Owned Only) (N/A Here)	---	---	---
16. Car Ownership Exp. (RR-Owned Only) (N/A Here)	---	---	---
17. Caboose & EOTD Ownership Expense	0.1	0.11	0.09
18. Loss & Damage Expense	0.03	0.39	0.03
19. Make-Whole Adj. for Single Car (N/A Here)	---	---	---
20. Total Variable Cost/Per Carload	635.27	962.27	824.77
21. Variable Cost Per Ton	5.73	8.68	7.44
22. RFA-URCS Linking Factor	0.9934	0.9934	0.9934
23. Linked Variable Cost Per Ton	5.7	8.63	7.39
24. Jurisdictional Threshold (L. 23 x 180%)	10.26	15.53	13.31
25. Rate Per Ton	14.66	14.66	14.66
26. R/VC Percentage (L.25/L.23)	257.19%	169.87%	198.25%

Table A-4
Variable Cost Per Ton
Antelope Mine to Edgewater Power Plant
(1st Quarter 2000)

ITEM	WPL	UP	STB
1. Carload O/T Clerical Expense	$ 26.45	$ 26.51	$ 26.35
2. Carload Handling - Other Expense	0.96	4.52	0.95
3. Switching Expense - Yard Locomotives	1.09	1.89	1.52
4. Switching Expense - Road Locomotives (Non-Yard)	1	2.93	2.64
5. Switching Expense - Road Locomotives (Yard)	0.54	0.58	0.55
6. Gross Ton-Mile Expense	233.3	521.9	420.15
7. Loop Track Expense - Origin Mine	0.31	0.44	0.4
8. Train-Mile Expense - Other Than Crew	16.92	16.92	16.92
9. Train-Mile Expense - T & E Crew	125.25	147.2	147.16
10. Helper Service Expense - Excluding Crew (N/A Here)	---	---	---
11. Helper Service Expense - Crew Expense (N/A Here)	---	---	---
12. Locomotive Unit-Mile Expense	119.8	95.74	82.37
13. Locomotive Ownership Expense	77.85	107.27	83.12
14. Private Car Rental & User Responsibility	4.83	4.85	4.85
15. Car Operating Expense (RR Owned Only) (N/A Here)	---	---	---
16. Car Ownership Exp. (RR-Owned Only) (N/A Here)	---	---	---
17. Caboose & EOTD Ownership Expense	0.09	0.12	0.09
18. Loss & Damage Expense	0.03	0.39	0.03
19. Make-Whole Adj. for Single Car (N/A Here)	---	---	---
20. Total Variable Cost/Per Carload	608.42	931.27	787.11
21. Variable Cost Per Ton	5.5	8.41	7.11
22. RFA-URCS Linking Factor	0.9934	0.9934	0.9934
23. Linked Variable Cost Per Ton	5.46	8.36	7.06
24. Jurisdictional Threshold (L. 23 x 180%)	9.83	15.04	12.71
25. Rate Per Ton	14.66	14.66	14.66
26. R/VC Percentage (L.25/L.23)	268.50%	175.36%	207.55%

Table A-5
Variable Cost Per Ton
Black Thunder Mine to Edgewater Power Plant
(2nd Quarter 2000)

ITEM	WPL	UP	STB
1. Carload O/T Clerical Expense	$ 26.55	$ 26.63	$ 26.49
2. Carload Handling - Other Expense	0.96	4.55	0.95
3. Switching Expense - Yard Locomotives	1.1	1.9	1.54
4. Switching Expense - Road Locomotives (Non-Yard)	1.04	3.12	2.87
5. Switching Expense - Road Locomotives (Yard)	0.55	0.59	0.56
6. Gross Ton-Mile Expense	240.49	541.03	440.33
7. Loop Track Expense - Origin Mine	0.26	0.41	0.38
8. Train-Mile Expense - Other Than Crew	17.36	17.36	17.38
9. Train-Mile Expense - T & E Crew	128.78	160.21	160.16
10. Helper Service Exp.- Excluding Crew (N/A Here)	---	---	---
11. Helper Service Expense - Crew Expense (N/A Here)	---	---	---
12. Locomotive Unit-Mile Expense	137.81	105.91	93.87
13. Locomotive Ownership Expense	81.61	103.55	87.27
14. Private Car Rental & User Responsibility	4.95	4.97	4.97
15. Car Operating Exp. (RR-Owned Only) (N/A Here)	---	---	---
16. Car Ownership Exp. (RR Owned Only) (N/A Here)	---	---	---
17. Caboose & EOTD Ownership Expense	0.09	0.11	0.09
18. Loss & Damage Expense	0.03	0.39	0.03
19. Make-Whole Adj. for Single Car (N/A Here)	---	---	---
20. Total Variable Cost/Per Carload	641.57	970.72	836.89
21. Variable Cost Per Ton	5.73	8.67	7.48
22. RFA-URCS Linking Factor	0.9934	0.9934	0.9934
23. Linked Variable Cost Per Ton	5.7	8.62	7.43
24. Jurisdictional Threshold (L. 23 x 180%)	10.26	15.51	13.37
25. Rate Per Ton	14.66	14.66	14.66
26. R/VC Percentage (L.25/L.23)	257.19%	170.07%	197.32%

Table A-6
Variable Cost Per Ton
Antelope Mine to Edgewater Power Plant
(2nd Quarter 2000)

ITEM	WPL	UP	STB
1. Carload O/T Clerical Expense	$ 26.55	$ 26.63	$ 26.49
2. Carload Handling - Other Expense	0.96	4.55	0.95
3. Switching Expense - Yard Locomotives	1.09	1.89	1.53
4. Switching Expense - Road Locomotives (Non-Yard)	1.02	2.98	2.74
5. Switching Expense - Road Locomotives (Yard)	0.55	0.59	0.56
6. Gross Ton-Mile Expense	234.01	526.63	428.5
7. Loop Track Expense - Origin Mine	0.31	0.47	0.42
8. Train-Mile Expense - Other Than Crew	16.92	16.92	16.93
9. Train-Mile Expense - T & E Crew	124.71	146.56	146.53
10. Helper Service Exp.- Excluding Crew (N/A Here)	---	---	---
11. Helper Service Exp. - Crew Expense (N/A Here)	---	----	---
12. Locomotive Unit-Mile Expense	126.75	97.45	86.32
13. Locomotive Ownership Expense	74.23	106.34	79.37
14. Private Car Rental & User Responsibility	4.85	4.87	4.87
15. Car Operating Exp. (RR-Owned Only) (N/A Here)	---	---	---
16. Car Ownership Exp. (RR-Owned Only) (N/A Here)	---	---	---
17. Caboose & EOTD Ownership Expense	0.09	0.12	0.09
18. Loss & Damage Expense	0.03	0.39	0.03
19. Make-Whole Adj. for Single Car (N/A Here)	---	---	---
20. Total Variable Cost/Per Carload	612.05	936.38	795.35
21. Variable Cost Per Ton	5.52	8.45	7.18
22. RFA-URCS Linking Factor	0.9934	0.9934	0.9934
23. Linked Variable Cost Per Ton	5.49	8.4	7.13
24. Jurisdictional Threshold (L. 23 x 180%)	9.88	15.11	12.84
25. Rate Per Ton	14.66	14.66	14.66
26. R/VC Percentage (L.25/L.23)	267.03%	174.52%	205.59%

1. Carload Handling — Other Expense (Item 2)

UP developed "carload handling expense" using system-average costs. WPL reduced system-average costs (by 78.88%) to exclude costs associated with car loading devices, grain doors and cleaning car interiors. UP claims that WPL's adjustment is inappropriate because it excludes expenses associated with the transferring and adjusting of loads.

The costs that WPL excluded are clearly not costs associated with the transportation of coal. And, contrary to UP's allegation, WPL's electronic spreadsheets show that WPL did not exclude the cost for transferring and adjusting loads.[92] Therefore, we use WPL's adjustment.

2. Switching Expense — Yard Locomotives (Item 3)

The difference in the parties' cost estimates for this item is due to their differing calculations of the switching minutes associated with yard locomotives.[93] Our restatement reflects the 29.56 minutes-per-train figure discussed in Section B, Part 2, *supra*.

3. Switching Expense — Road Locomotives — Non-Yard (Item 4)

The difference in the parties' cost estimates for this item is due to their differing treatment of switching minutes associated with road locomotives performing non-yard switching. Our restatement uses the road locomotive non-yard switching minutes discussed in Section B, Part 3, *supra*.

4. Switching Expense — Road Locomotives — Yard (Item 5)

The parties agree on the time that road locomotives perform yard switching, and our restatement uses that figure.

5. Gross Ton-Mile Expenses (Item 6)

Gross ton-mile (GTM) expenses consist of maintenance-of-way (MOW), return on investment and depreciation for road property, locomotive fuel, locomotive maintenance, and other costs. Listed below is a summary of the GTM expenses included in our restatement of variable costs.

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[92] *See* WPL Open. e-W.P. Crowley claimadj.wk4, which includes "Total Adjusting & Transferring Loads" expense from schedule 410, line 502 of UP's 1999 R-1 report.

[93] Generally, unit costs for switching operations have been developed on a composite basis for both yard and road switch engine minutes (SEMs). However, in this proceeding the parties used separate yard and road SEM unit costs.

Table A-7
GTM Expense Per Car

	Black Thunder (1st Qtr)	Antelope (1st Qtr)	Black Thunder (2nd Qtr)	Antelope (2nd Qtr)
Maintenance-of-Way Exp.	$54.56	$53.43	$55.24	$53.76
Return on Road Property Invest.	163.08	159.72	164.24	159.83
Road Property Depreciation	68.50	67.08	69.36	67.49
Locomotive Fuel Expense	73.36	71.86	81.12	78.94
Locomotive Maintenance Exp.	29.35	28.75	29.72	28.92
Other GTM Expense	40.13	39.31	40.64	39.55
TOTAL	$428.98	$420.15	$440.33	$428.50

a. *Maintenance-of-Way Expense* — To develop the MOW cost for the route used by this traffic, UP used the "weighted system-average cost" (WSAC) procedure, while WPL relied on the "speed factored gross ton" (SFGT) method used in prior rate cases. We discuss each of these methods below.

i. WSAC — WSAC is a computer program that develops the "wear rate" of road property assets. UP claims that WSAC, which was used in the *Amtrak* case,[94] is considerably more detailed than SFGT. UP computed the relationship between the WSAC wear rates for the route used to transport WPL's traffic and the WSAC wear rates for the entire UP system, and UP adjusted the URCS system-average MOW cost by that ratio.

The WSAC model was used in *Amtrak* to calculate the incremental (not variable) costs associated with adding passenger traffic to a line;[95] WSAC has never been accepted for determining variable cost in a freight rate case because WSAC only develops the wear rates associated with the

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[94] *National Railroad Passenger Corporation and Consolidated Rail Corporation — Application under Section 402(a) of the Rail Passenger Service Act for an Order Fixing Just Compensation*, ICC Finance Docket No. 32467 (STB served Jan. 19, 1996).

[95] Incremental cost is the additional expense incurred with adding the last unit (increment) of traffic, whereas variable cost is an average of those costs that change depending on the level of service provided.

different types of traffic moving over a given route. UP has submitted no data indicating that the WSAC results are comparable to actual MOW costs for any rail line.[96]

UP notes that engineering studies show that, for high-density lines, MOW costs increase at a constant rate as traffic volumes increase.[97] The engineering studies, however, only support the proposition that wear rates vary directly with tonnage changes on high-density lines. We have no evidence that wear rates and maintenance costs are directly related.[98] In the absence of evidence comparing WSAC results to actual maintenance costs, we cannot tell whether WSAC (which was not developed as a costing tool) can be used to estimate MOW costs.[99]

ii. SFGT— SFGT is a long-recognized computerized process for developing MOW cost for specific segments of track.[100] Using SFGT, WPL computed MOW costs for each line segment both with and without traffic.[101] The difference between these two computations represents the variable MOW cost per line segment. The variable costs developed by the SFGT program are indexed to the relevant time period by the so-called "R-factor."

The SFGT formula is an accepted method for estimating MOW variable costs and has been used in all of our previous freight rate cases. Nonetheless, UP contends that the SFGT formula has no validity because it assigns the same mix of traffic to each line segment and ignores specific track characteristics. UP is incorrect. In developing its variable cost evidence, WPL used UP's traffic

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[96] In the past, parties have submitted evidence comparing the results of the SFGT model to actual MOW costs. UP has offered no such comparison for WSAC here.

[97] UP cites *FAST/HAL Rail Performance Experiment and Overview*, AAR Report R-796, Nov. 1991, and *The Road Maintenance Cost Model*, Canadian Institute of Guided Ground Transport, Report No. 80-16, Mar. 1981. These reports do not specifically relate wear rates to maintenance costs, however.

[98] WPL notes that data from UP's 1983 and 1999 R-1 reports show that, while the average traffic density per route-mile increased 172.2% over the time period, MOW cost per million gross ton-miles (MGTM) decreased 32.0%, indicating the presence of economies of density. UP argues that the reduction in MOW cost per MGTM could be due to a combination of new technology and higher density. In addition, UP argues that WPL failed: (1) to include capital expenditures in the calculation of MOW costs, (2) to account for inflation, and (3) to account for railroad productivity improvements. After correcting for these supposed errors, UP contends that MOW cost per MGTM increased as densities increased.

We do not agree with UP. There is no evidence from which we can conclude that the introduction of new technologies or higher densities make the 1983-1999 comparison developed by WPL unreliable. Furthermore, we see no need to separately include capital investment in WPL's 1983-1999 comparison of MOW, as UP suggests, because the costs associated with such investment are accounted for by the depreciation expense that WPL has included. In addition, while UP correctly notes that inflation must be considered, indexing 1983 MOW costs for inflation indicates that MOW costs per MGTM have decreased while densities have risen, as WPL suggests. Finally, because railroad productivity data is not available before 1987 and MOW costs for 1987 are not in the record, it is not possible to evaluate the validity of UP's productivity argument.

[99] We question why such evidence has not been offered, as the railroads surely have the cost data available to make such a comparison.

[100] The SFGT formula contains embedded costs derived from national average cost data.

[101] Applying the SFGT formula without traffic yields fixed MOW costs. Fixed MOW costs are incurred, for example, when climatic conditions cause track assets (such as ties) to deteriorate.

mix and track data for each line segment;[102] systemwide figures were only used to compute the R-factor.

In developing the R-factor, the parties agree on the total route-miles and track-miles, but assigned the track-miles to different track categories. Without explanation, UP assigned only route-miles to track category D (tracks carrying less than 1 MGT annually), implicitly assuming that all category D track is single-line. WPL spread the difference between route-miles and track miles over all four track categories. We accept WPL's procedure. It is inappropriate to assume, without any supporting documentation, that all category D track is single-line.

Furthermore, while the parties agree that the joint-facility costs should be included in the development of the R-factor, UP excluded $23,171 in joint-facilities rent from its R-factor computation. Because this adjustment is unsupported and the parties agree that joint-facility costs should be included, we accept WPL's evidence on this issue. Finally, UP reduced traffic density by multiplying density by a factor of 0.9006, the ratio of trailing (car and caboose) GTMs to total (car, caboose, and locomotive) GTMs. WPL argues that this adjustment is inappropriate because locomotive GTMs were not included in the URCS data used to compute the R-factor. We agree. GTMs used to compute the R-factor are from URCS cell A1L122C01, which includes only cars, contents and caboose GTMs.[103] Therefore, no adjustment to GTMs used to compute the R-factor is required.

Finally, WPL developed variable MOW cost per GTM by dividing total variable cost by total GTM, while UP developed MOW costs per GTM for each line segment. We accept WPL's procedure, which has been used in prior cases. The procedure proposed by UP is inconsistent with its development of other variable costs, such as fuel or crew wages, where the aggregate costs for the entire route were calculated and then divided by the actual service units (*e.g.*, gallons or trains).

To summarize, while the WSAC model may be an appropriate tool to estimate MOW costs, we cannot rely on it absent empirical data showing a direct relationship between the wear rates developed by the model and actual MOW costs. In the absence of such evidence, we accept WPL's SFGT method of estimating variable MOW costs. However, we restate the MOW expense using WPL's method in conjunction with the final UP 1999 URCS application.

b. Return on Investment and Depreciation for Road Property — Both parties adjusted the URCS system-average return on investment and depreciation expenses for road property by a ratio of UP's investment in the route used for the WPL traffic (on a per-GTM basis) to system-average investment (on a per-GTM basis). WPL's adjustment reduced URCS system-average return on investment by 51.5% and system-average depreciation by 28%.[104] In contrast, UP's adjustment increased system-average return on investment by 18% and depreciation by 24.3%.[105] The difference results from disagreement over which investment figures should be used to develop the adjustment ratio.

WPL contends that the line-specific investment figures from UP's records should be divided by the URCS system-average investment costs. UP argues that, because a significant portion of investment is never assigned to specific line segments, WPL's ratio is understated. UP explains that some investment used to provide service to WPL is assigned to a general (default) account and that

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[102] WPL Reb. V.S. Prescott, at 5 n.5, 18-19, & 22.

[103] Locomotive GTM is found in URCS cell A1L118C01.

[104] WPL Reb. V.S. Crowley, Exh. TDC-38 and e-W.P. rd_rebuttf.123.

[105] UP Reply V.S. Kent/Fisher, at 22-29; UP Reb.V.S. Kent/Fisher, at 34-39; W.P. KKA 0000729-0000731 and e-W.P. rwsacwpl.wk4.

some portion of this investment should, in theory, be reflected in the line-specific investment.[106] Because it is not possible to match this unassigned investment with specific line segments, UP suggests that all unassigned investment be deducted from the systemwide figures before computing the adjustment ratio, so that unassigned investment would not be included in either the numerator or denominator of the ratio.

In *FMC*, we accepted the procedure advocated by WPL here, because no evidence had been presented indicating that any of the unassigned costs related to the line segments at issue there. Here, by contrast, UP has clearly demonstrated that investment not specifically assigned on the books of the railroad to the line segments used by the WPL traffic was nevertheless investment needed to provide service to WPL. Thus, it would be inappropriate to use WPL's adjustment ratio.

On the other hand, UP's suggested procedure contradicts its argument that unassigned costs should be considered. Indeed, it is because system-average return on investment and depreciation expense spread the unassigned costs over the entire system that we find it is most appropriate to use the system-average figures. We will not apply a procedure that has not been shown to be more appropriate than the procedure UP criticizes and, indeed, suffers from the same problem as WPL's procedure. In short, we find both parties' adjustments flawed. We therefore use system-average figures for return on investment and depreciation expense.[107]

c. Locomotive Fuel Expense — Locomotive fuel expense is a component of both GTM and locomotive unit mile (LUM) expense. To develop its costs, WPL used a fuel consumption rate of 2.44 gallons per LUM, a figure which it asserts was accepted in *Nevada Power*.[108] UP questions WPL's reliance on the *Nevada Power* case for the fuel consumption rate here, because the service in that case differed significantly from the service provided to WPL (different types of locomotives, train sizes and terrain). Indeed, UP states that the only similarity between the two services is that they both involve the movement of coal. We agree that WPL has not shown that the fuel consumption rate associated with the service that was provided in the *Nevada Power* case is representative of the operations associated with providing service to WPL.[109]

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[106] This general assignment of costs is necessary because UP's records were not always detailed enough to indicate the particular line segment on which an investment was made (*e.g.*, when ballast was installed at various points along the right-of-way during MOW activities, UP's records do not always reflect how much of the ballast was installed on each line segment and the costs associated with the ballast installation were assigned to a default account). Furthermore, UP notes that significant investment needed for general rail operations was not necessarily apportioned to individual line segments (*e.g.*, WPL traffic is dispatched from the dispatching center in Fort Worth, TX, but none of the dispatching center investment was specifically assigned to the line segments used to provide service to WPL).

[107] The parties made various other adjustments to the system-average return on investment and depreciation expense figures, but because we find their investment adjustments unacceptable, we need not address those subsidiary issues.

[108] We note that the 2.44 gallons per LUM figure was the low point of a fuel consumption range used to evaluate the reasonableness of the fuel consumption evidence submitted in that case. The fuel consumption rate actually used in *Nevada Power* was 2.57 gallons per LUM.

[109] While WPL attempted to make some comparison (WPL's Exhibit TDC-40), it did not address all the relevant factors. *See San Antonio, TX v. Burlington Northern, Inc.*, 1 I.C.C.2d 561 (1986) (*San Antonio*), App. B at B-26 (noting that track grade, curvature, train speed, trailing tons, environmental conditions, train handling, locomotive types, and car types should be considered).

(continued...)

We also cannot accept UP's evidence on this expense. UP would have us rely on fuel consumption rates generated by its "Train Performance Simulator" (TPS), a computerized simulation model. However, as WPL points out, there is no evidence that the results of UP's TPS model correlate with measured fuel consumption of any actual trains. In addition, UP's model relies on cycle times for the Black Thunder and Antelope mines of 177.0 hours and 144.8 hours, respectively — figures which are inconsistent with the cycle times used by UP to develop locomotive ownership cost.[110] Moreover, the total fuel consumption per trip shown in UP's reply workpapers (UP Reply W.P. Kent/Fisher KKA 0000431) does not correspond to the simulation results reflected in its rebuttal workpapers (UP Reb. W.P. Kent/Fisher KKA 0000740). These inconsistencies make reliance on UP's TPS model problematic.

Because we find both parties' special studies on fuel consumption fatally flawed, we use the system-average unit-costs as the default value for the development of GTM and LUM fuel expenses.[111]

d. Locomotive Maintenance — UP relied on system-average cost for the development of locomotive maintenance expense. WPL used the locomotive maintenance cost accepted in *Nevada Power*. UP again argues that WPL has not shown that the transportation characteristics of the service to WPL are similar to those of the service in *Nevada Power*. WPL counters that the transportation characteristics of the WPL service are closer to those of the *Nevada Power* service than they are to UP's 1999 system-average traffic.

As with locomotive fuel, WPL has not shown that the *Nevada Power* costs are reasonable estimates for the costs in this case. Indeed, the locomotives used to provide the service that was at issue in the *Nevada Power* case were an entirely different type of locomotive than those used to serve WPL, and we have no evidence to show that maintenance costs for the locomotives used to serve WPL have similar maintenance costs to those used in the *Nevada Power* case. In the absence of any reliable evidence on maintenance costs for the locomotives that serve WPL, we follow UP's procedure of using system-average costs and we develop this cost using the final UP 1999 URCS application.

e. Other GTM Expenses — The parties developed the other GTM expenses based on system-average costs. Our restatement reflects system-average costs as developed in the final UP 1999 URCS application.

6. Loop Track Expense (Item 7)

The difference in the parties' loop track expense figures results from their use of different preliminary URCS runs and different fuel cost adjustments. In addition, while UP relied on system-average locomotive maintenance costs, WPL used the locomotive maintenance costs from *Nevada Power*. WPL also failed to index the 1999 costs to 2000 levels.

As noted previously, we use the final UP 1999 URCS run to develop variable costs. Furthermore, as discussed in the previous section, we reject both parties' fuel adjustments and WPL's use of the *Nevada Power* locomotive maintenance costs. Finally, as with all expense items, costs must be indexed to the 1st and 2nd Quarter of 2000.

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[109](...continued)
Moreover, even some of the comparisons WPL made do not show comparability.

[110] UP Reb. W.P. Kent/Fisher KKA 0000738.

[111] The system-average unit-costs contained in the final UP 1999 URCS application are $0.00027258 for GTMs and $0.64758 for LUMs.

7. Train-Mile Expense — Train and Enginemen (Item 9)

The parties adjusted 1999 crew wages to include non-train-related compensation. UP used the system-average markup ratio for non-train-related expenses to adjust wages, while WPL used a lower ratio. However, WPL has not explained how it developed its markup ratio. Indeed, we cannot even determine from WPL's evidence what numeric ratio was used. Thus, we accept UP's use of the standard URCS markup ratio as the best evidence of record.

In addition to adjusting 1999 wages by a markup ratio,[112] WPL adjusted wages to reflect what it believes to be more efficient operations by UP in 2000. WPL conducted a study which it claims shows that UP's crews spent less time in 2000 operating WPL trains than was spent in 1999. As UP has shown, however, WPL's differing results are due to its failure to include the time crews spend prior to beginning the line-haul to Edgewater.[113] Therefore, we reject WPL's efficiency adjustment.

8. Locomotive Unit-Mile Expense (Item 12)

LUM expenses include costs associated with locomotive maintenance, fuel, ownership, repair, servicing, and administration. Locomotive maintenance and fuel costs have already been discussed and locomotive ownership is discussed immediately below. Regarding locomotive repair, servicing and administration costs, the parties are in substantial agreement, with the only differences between them attributable to the use of different URCS applications. We have restated the cost for these items based on the final UP 1999 URCS unit-costs and the service units reflected in *Table A-2*.

9. Locomotive Ownership Expense (Item 13)

The parties developed locomotive ownership expenses from data on cycle time, locomotive capital costs (depreciation and return on investment), and lease costs for the locomotive units used in WPL service. The parties agree on all aspects of developing locomotive ownership expense with the exception of cycle time, the general overhead ratio, and the average annual cost per leased locomotive.[114]

We have already discussed cycle time. *See* Section B, Part 1, *supra*. The difference in the overhead ratios used by the parties is attributable to UP's general adjustments to the URCS model discussed in Section A, *supra*. Because we have rejected these general adjustments, we use the overhead ratios from the final UP 1999 URCS application.

WPL developed an annual cost per leased locomotive based on a simple average of actual 1999 lease costs for the locomotives used to serve WPL.[115] UP, which developed the cost for leased locomotives based on the average lease rate over the life of the lease agreement, objects to WPL's failure to weight lease costs based on the amount of time specific locomotives are dedicated to WPL service.

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[112] On rebuttal, WPL introduced and substituted 2000 crew wage data, thereby circumventing the need to adjust 1999 data. We do not accept this new evidence, however, because UP has not had an opportunity to respond to it.

[113] As UP points out, crew time does not begin when the train departs, but rather when the crew reports for duty. Prior to beginning the line haul, a crew must collect work and slow orders, inspect the train, perform safety checks, and wait for permission to enter the mainline.

[114] On rebuttal, WPL amended its locomotive ownership cost to reflect a different average age for a different universe of locomotives. (WPL increased the number of locomotives surveyed from 338 to 1,264.) We do not accept such new evidence on rebuttal, because UP has not had an opportunity to respond to it.

[115] On rebuttal, in response to UP's criticism that 2000 costs were substantially higher than 1999 costs, WPL amended its evidence to use average 2000 lease costs.

We reject UP's calculation because the variable costs should be for the 1st and 2nd Quarters of 2000. Locomotive leases often have an annual rent inflation factor, and averaging lease costs over the life of the lease would likely produce a different lease cost from that actually incurred in the first half of 2000. We agree, however, with UP's weighting of the locomotive costs based on the time each locomotive served WPL. The portion of an individual locomotive lease cost that is attributable to the WPL service is appropriately dependent on the amount of time that locomotive spends serving WPL. Unfortunately, there is not enough detail in either party's lease data to enable us to restate using the weighted approach. Therefore, we rely on WPL's lease data for 2000 as the best evidence of record.

10. EOTD Ownership Expense (Item 17)

End-of-train devices (EOTDs) are used on all trains serving WPL. The differences in the parties' cost figures associated with this equipment are attributable to the use of different cycle times and different URCS applications. Our restatement reflects WPL's cycle time evidence (*see* Section B, Part 1, *supra*) and use of the final UP 1999 URCS application.

11. Loss and Damage (Item 18)

In its opening evidence, WPL argued that no cost should be included for loss and damage (L&D) because it had filed no claims between 1997 and 1999. UP included URCS system-average cost for L&D, noting that WPL had filed three claims in 1996. WPL then revised its L&D estimate to $0.03 per ton, the average L&D cost for the period 1996-2000. We accept WPL's 5-year average as representative estimate of L&D.[116]

12. Indexing

The final step in determining the variable costs is to index the 1999 URCS costs to the first two quarters of 2000.[117] To establish the 1999 base-year fuel, crew wage and other expense indices, WPL averaged the indices for each quarter of 1999, while UP relied on the annual 1999 indices. UP's annual approach is more appropriate because it reflects end-of-year adjustments not included in the quarterly indices.[118]

With respect to the fuel index, WPL claims that UP's update procedures do not reflect the impact of its fuel hedging. We agree with UP, however, that any impact of fuel hedging on fuel prices would already be reflected in the AAR fuel index used by the parties, which reflects actual fuel costs for 1999. In addition, we accept UP's indexing procedure for "other expenses" because,

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[116] Actual L&D data has often been substituted for system-average L&D. *See San Antonio; Dayton Power and Light Co. v. Louisville and N.R.R.*, No.38025S (ICC served Apr. 11, 1984); *W.R. Grace & Co., Agricultural Chemicals Group v. Seaboard Coast Line R.R.*, Docket No. 38059 (ICC served Feb. 23, 1983).

[117] *See Explanation of Rail Cost Update Procedures*, ICC Statement IE3-80 (April 1980), as supplemented in *Complaints Filed Under Section 229 of the Staggers Rail Act of 1980*, 365 I.C.C. 507 (1980) (*Section 229 Complaints*).

[118] Here, unlike *FMC*, we do not need to make quarterly variable cost determinations for the base year, as none of the issue traffic moved until 2000.

by using the Producers Price Index (PPI), UP followed the appropriate *Section 229 Complaints* procedures.[119]

Our index restatement for the various expense categories are presented in *Table A-8.*

Table A-8
STB Indexes

Category	1st Quarter	2nd Quarter
Composite (less fuel)	1.03047	1.0361
Fuel	1.36976	1.50395
Crew Wages	1.05543	1.05543

APPENDIX B — EWRR CONFIGURATION

WPL designed the EWRR to replicate the existing UP route extending from the Powder River Basin (PRB) mines in Wyoming eastward to West Chicago, IL. From West Chicago, the EWRR, like UP, would use trackage rights over the Elgin, Joliet and Eastern Railroad (EJE) to reach Upton, IL.[120] From Upton, the EWRR would follow the UP lines northward to WPL's Edgewater power plant in Sheboygan, WI. Because the EWRR would serve the Wisconsin Electric Power Oak Creek power plant, it would include a branch line (replicating a UP line) from St. Francis to Oak Creek, WI.

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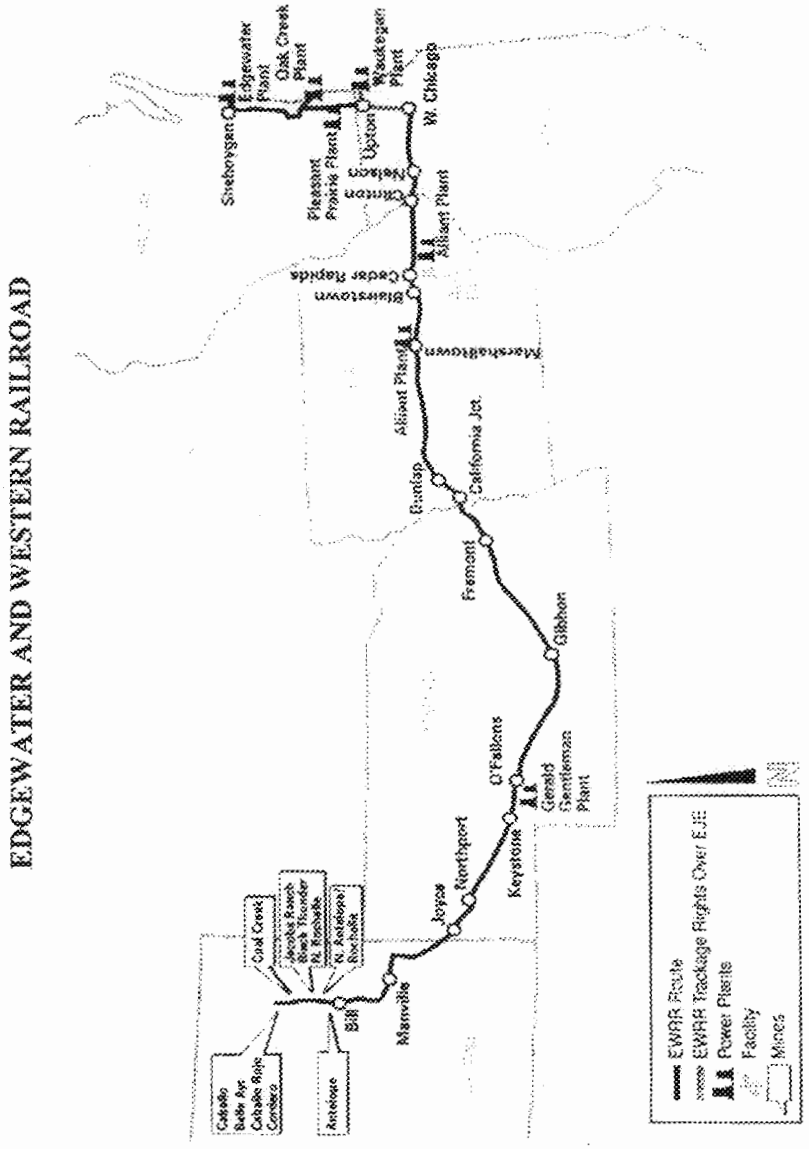
[119] We have made minor modifications to several of UP's index values. UP mistakenly used 225.4, instead of 226.4, for the materials and supplies category for the 2nd Quarter of 2000. Also, it miscalculated the PPI quarterly indexes for the 1st and 2nd Quarters of 2000 at 129.7 and 131.9, respectively. Our calculations show the values should be 129.6 and 132.0, respectively. Finally, on review of the UP crew wage workpapers, we ascertained that UP's 1st and 2nd Quarter crew wage indexes were slightly overstated. UP shows the index for the two quarters to be 1.05565; however, based on the values presented in the workpapers, the correct figure should be 1.05543.

[120] Like UP, the EWRR would also use 6.6 miles of the EJE trackage rights from Upton to Waukegan to serve the Midwest Generation Waukegan plant.


EDGEWATER AND WESTERN RAILROAD
Sheboygan
Edgewater Plant
Oak Creek Plant
Pleasant Prairie Plant
Union
Kenosha
Racine
Racine Plant
W. Chicago
Clinton
Fulton
Bluffs
Cedar Rapids
Alliant Plant
Alliant Plant
Marshalltown
Bondurant
California Jct.
Fremont
Gibbon
O'Fallons
Grand Gentleman Plant
Keystone
Northport
Joyce
Coal Creek
Jacobs Ranch
Black Thunder
N. Rochelle
N. Antelope Rochelle
Bill
Marville
Caballo
Belle Ayr
Caballo Rojo
Cordero
Antelope
EWRR Route
EWRR Trackage Rights Over BJE
Power Plants
Facility
Mines
N

The EWRR would transport only coal traffic originating from mines in the PRB, mines in the Hanna Basin of southern Wyoming, and mines in Colorado and Utah. Coal from mines not located in the PRB would be received as interchange traffic at O'Fallons, NE. PRB coal coming from northern mines that are served exclusively by BNSF would be received by the EWRR as interchange traffic at Northport, NE. Coal movements not terminating on the EWRR would be handed off to other carriers at various interchange points.

UP contends that additional investment beyond that proposed by WPL in its opening evidence would be needed to handle the volume of traffic that it maintains would be available to the EWRR. UP further argues that, if we accept WPL's even higher traffic forecasts, still additional main line capacity would be needed in future years.[121] On rebuttal, WPL added additional investment that it asserts would ensure that the EWRR would have more than enough capacity to handle the peak volume that it projects. Even with this additional investment, the system that WPL proposes would be approximately 80 track miles smaller than what UP claims would be necessary; half of that difference is in yard tracks.

The parties' estimates of main line route-miles and passing, yard, set-out, maintenance-of-way (MOW) and other miscellaneous track that would be necessary to serve the EWRR traffic group, and our restatement, are shown below in *Table B-1*.

Table B-1
EWRR Route and Track Miles

Miles of Track	WPL*	UP**	STB
EWRR Route-Miles	1,242.3	1,243.3	1,242.3
EJE Route-Miles (used by EWRR)	43.8	43.8	43.8
Total Route-Miles	**1,286.1**	**1,287.1**	**1,286.1**
Passing Sidings	445.0	452.1	452.1
Yards	89.1	131.1	98.5
Bad-order Set-Out Tracks	3.1	5.2	5.2
Maintenance-of-Way Track***	0.0	17.1	3.1
Additional Operating Tracks	9.9	24.3	18.1
Total EWRR Track Miles	**1,789.4**	**1,873.1**	**1,819.3**

* WPL Reb. e-W.P. Pattison, ewrr_maintqty_r.
** UP Reply e-W.P. McDonald/Clark, TRACK QTY & SHIPPING$.
*** In our restatement of EWRR investment, the 3.1 miles of MOW track in yards are included as yard investment, bringing the total yard track miles to 101.6.

[121] UP has not specified what further investment would be needed.

A. MAIN LINE ROUTE — MILES

The only difference in the parties' estimates of main line route-miles is a 0.96-mile connector that UP has and claims the EWRR would need to link Chicago Junction and KC Junction, IA. WPL disputes the need to construct this track. We see no reason why the EWRR would need this track, as it would serve no shippers along this track. Thus, our restatement includes only the cost to construct and maintain a switch connection to the UP line, so that traffic could be interchanged at KC Junction.

B. PASSING TRACK

UP argues that the EWRR would need approximately 6 more miles of passing siding (mainly west of Gibbon, NE) than WPL included. In developing the need for, and placement of, passing sidings, WPL presented only a rudimentary analysis of track capacity. UP's evidence is more detailed and includes a "grid analysis" from CANAC, a track capacity consultant. WPL's evidence is not detailed enough to allow us to ascertain whether it would provide sufficient passing sidings for the EWRR's operations. Therefore, we apply UP's more detailed evidence.

C. YARD TRACKS

The EWRR would have yards at the locations shown in *Table B-2*. The yards at Bill and Joyce, WY, and at Manville, NE, would be used as staging areas. The other eight yards are at interchange points where traffic not terminating on the EWRR would be handed off to other carriers and empty return cars would be received.

Table B-2
Miles of Yard Track

Yard	WPL	UP	STB
West Chicago, IL	7.01	7.40	7.01
Nelson, IL	6.93	7.20	6.93
KC Junction, IA	6.93	7.20	6.93
California Junction, IA	6.93	7.20	6.93
Fremont, NE	6.93	7.20	6.93
Gibbon, NE	16.29	33.80	25.72
O'Fallons, NE	6.93	7.20	6.93
Northport, NE	6.93	7.20	6.93
Joyce, NE	3.52	7.20	3.52
Manville, WY	8.02	24.20	8.02
Bill, WY	12.61	15.30	12.61
Total	**89.10**	**131.10**	**98.50**

WPL and UP had only slightly different estimates for the amount of track that would be needed at the West Chicago, Nelson, KC Junction, California Junction, Fremont, O'Fallons, Northport, Joyce, and Bill yards. UP did not address WPL's evidence for these yards, other than to add approximately 1,500 feet of track at each yard.[122] Absent any evidence from UP that WPL's configuration of these yards would not be sufficient, we accept WPL's track miles for these yards.

The difference between the parties' estimates is more substantial for the Gibbon and Manville yards. UP claims that what WPL has provided for would be "too small and would cause unacceptable delays, and otherwise fail to meet customer requirements."[123] Using a model developed to calculate the number of yard tracks that would be needed to avoid severe delays, UP argues for substantial additional track at the Gibbon and Manville yards.

1. Gibbon Yard

At the Gibbon yard, UP would include additional investment for coal car storage, a balloon track and a staging track.

a. Coal Car Storage

WPL included a coal car storage yard at Gibbon consisting of ten 1,500-foot tracks. UP notes that its coal car storage yard, located at North Platte, consists of eighteen 3,600-foot tracks capable of holding a total of 1,200 cars. UP notes that the EWRR would serve virtually the same group of coal customers that UP serves today, most of whom supply private cars. This diverse car fleet, UP argues, could not be accommodated by WPL's proposed yard, which would have capacity for only 300 cars.

WPL contends that the EWRR would not need a larger yard because its inspection and interchange procedures would differ from those currently employed by UP. WPL asserts that, of the empty trains arriving at Gibbon, only those of the EWRR (37% of the total) would need a 1,000-mile inspection, because all other empty trains would receive a 1,000-mile inspection from the interchanging carrier (UP) prior to interchange at Gibbon. Thus, WPL claims, the EWRR would need room for only 37% of the total spare car fleet of its customers.

We do not agree. The EWRR would be responsible for storing cars not in use and filling out its customers' trains with operable cars. We cannot simply assume that EWRR customers' train sets would stay in continuous service, never requiring storage or repairs. In addition, all loaded coal cars arriving at Gibbon would need a 1,000-mile inspection and some of those could fail inspection, thus needing to be separated, repaired, and stored. Accordingly, the Gibbon yard could require significantly more than 37% of the capacity of UP's North Platte facility. Thus, we find WPL's plan for coal car storage inadequate and we use UP's specifications as the better evidence of record.

b. Balloon Track and Staging Track

UP contends that the yard at Gibbon would require one additional staging track for inspecting trains and a balloon track the same size as the one that UP operates at North Platte for repositioning cars. However, UP never stated, and we cannot determine from the record, exactly how much

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[122] While it is not clear from UP's evidence, the additional 1,500 feet of yard track may be the maintenance-of-way (MOW) track UP would include in each yard. If so, then our restatement is consistent with UP's evidence for many of the yards, because we include MOW track in each yard. *See* Section E, *infra*.

[123] UP Reply V.S. Wheeler, at 22.

additional track it considers necessary for the staging and balloon tracks.[124] Furthermore, UP did not provide any justification why the EWRR would require the same size balloon track as UP currently has at its North Platte Yard.[125]

In response to UP's argument, WPL provided for two additional 10,000-foot inspection tracks, three crossovers between the main tracks, a second switch connection with UP for improving interchange/train inspections activities, and a "wye" track to reposition cars. WPL has explained how these additions would improve operations at the Gibbon yard and we accept WPL's amended evidence.[126] In the absence of specific evidence from UP on the amount of track that would be needed, we assume that WPL's modifications would be sufficient to avoid any operational deficiencies at the Gibbon Yard.

2. Manville Yard

WPL originally included 7.12 miles of yard track at Manville.[127] UP claims that two additional tracks would be needed for staging trains. On rebuttal, WPL agreed with UP on the need for additional capacity at Manville and increased its yard capacity to 8.02 miles.[128]

UP's proposed Manville Yard track configuration evidence suffers from the same infirmities as its Gibbon Yard evidence. While UP called for two additional yard tracks at Manville, it never stated exactly how long these additional tracks needed to be or explained how the yard should be configured.[129] Other than a total yard size of 24.2 miles consisting of 15 tracks, as reflected in UP's electronic spreadsheet and workpapers,[130] we cannot determine what UP claims is needed. WPL has adequately explained how its additions would improve operations at the Manville yard.[131] Therefore, we accept WPL's Manville Yard track configuration in our restatement.

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[124] UP's witness Wheeler referred to Exhibit DRW-8 for his estimates of yard capacity. UP Reply V.S. Wheeler, at 22. While there is an exhibit DRW-8A and DRW-8B, there is no DRW-8. UP increased the number of tracks WPL proposed on opening from 22 to 30, but this increase appears to only include the 8 additional coal car storage tracks that we have discussed above.

[125] We note that UP's use of multiple witnesses to make various capacity recommendations made it difficult to follow its presentation. Our instructions in *SAC Procedures*, calling for a consolidated discussion of an issue, should avoid such confusion in future cases.

[126] WPL Reb. V.S. McDonald, at 54-58.

[127] WPL Open. V.S. Pattison Exh. RPK-1.10 provides a diagram showing the layout of the yard.

[128] WPL relocated one of the four northerly yard tracks to the south side of the main tracks and lengthened it to 2 miles. WPL suggests that this track would serve as an additional running track for eastbound trains. WPL also added two new eastbound locomotive ready tracks between the southerly main track and the new running track, which would enable the EWRR to exchange two eastbound trains simultaneously. WPL Reb. V.S. McDonald Exh. RHM-4, at 11.

[129] UP's evidence refers to nonexistent Exhibit DRW-8. UP Reply V.S. Wheeler, at 22.

[130] UP Reply e-W.P. McDonald/Clark, Yard Track and Turnouts.xls and W.P. GM/JC-0000065.

[131] WPL Reb. V.S. McDonald, at 58-61.

D. BAD-ORDER SET-OUT TRACK

There is a 2-mile difference in the bad-order set-out tracks that UP and WPL would provide for the EWRR.[132] As discussed in *Appendix D*, we use UP's evidence on the placement and number of defective equipment detectors (DEDs), which in turn dictates the number of bad-order set-out tracks that would be required by the EWRR. Therefore we use UP's 5.2-mile figure for bad-order set-out tracks.

E. MAINTENANCE-OF-WAY TRACK

WPL did not provide for separate MOW track. UP claims that the EWRR would need 49 MOW sidings, each 1,500 feet long (for a total of 17.1 miles of MOW track), to allow maintenance crews to efficiently move MOW equipment off the main line so as not to impede coal train operations. In addition, UP argues that one 1,500-foot track would be needed at each yard to unload maintenance materials and store MOW equipment.

WPL disputes the need for separate MOW tracks. WPL claims the set-out tracks located along the EWRR could be used to store maintenance equipment. WPL claims that using the set-out tracks for this purpose would not interfere with the placement of defective cars and represents a much more efficient solution than forcing the EWRR to build MOW tracks that would rarely be used.

We agree with WPL that MOW crews could often use the bad-order set-out tracks to move MOW equipment off the main line to accommodate coal trains. The bad-order set-out tracks we use (discussed in Section D, *supra*) consist of 91 separate tracks spread out along the EWRR network. This should provide ample space and opportunity for MOW crews to vacate the main line when necessary to allow coal trains to pass. UP has not shown that separate 1,500-foot-long MOW tracks would be needed.

WPL has not addressed UP's other argument — that MOW storage tracks would be needed within the EWRR yards. Because UP's argument for this additional track is reasonable, we include 1,500 feet of MOW tracks in each yard.

F. ADDITIONAL OPERATING TRACK

As shown in *Table B-3*, reflecting the remaining miscellaneous operating track to be included, there are several remaining differences in the parties' track mileage figures.

[132] UP would have the EWRR install 91 set-out tracks; WPL provided for 55 set-out tracks.

Table B-3
Additional Operating Track

Segment	WPL	UP	STB
Sheboygan	0.8	1.52	1.52
WEPCO-Oak Creek	1.52	3.47	3.47
WEPCO-Pleasant Prairie	1.52	3.9	3.9
Midwest-Waukegan	0	6.25	0
Clinton	3.03	0	3.03
Cedar Rapids	1.52	1.52	1.52
Alliant-Marshalltown	1.52	1.52	1.52
KC Junction	0	3.09	3.09
Keystone	0	3.09	0
Total	**9.91**	**24.36**	**18.05**

1. Sheboygan

UP argues that the EWRR would require 1.52 miles of additional track to properly perform switching at the Alliant Edgewater plant in Sheboygan. On rebuttal, WPL agreed that a siding would be needed to serve the Edgewater plant, but WPL included only 0.8 miles of additional siding.

WPL has not explained how 0.8 miles of additional siding would be sufficient to serve the Edgewater plant. Therefore, we use UP's 1.52-mile figure in our restatement.

2. WEPCO-Oak Creek

UP claims that to accommodate multiple trains the EWRR would need two additional staging tracks adjacent to the main line near the connection to the private trackage of Wisconsin Electric Power Company (WEPCO) at WEPCO's Oak Creek plant. On rebuttal, WPL proposed to move a 1.52-mile passing track from milepost 79.0, near St. Francis, WI, to milepost 49.5, near the WEPCO Pleasant Prairie plant. It claims that this track could then serve as a staging track for both Oak Creek and Pleasant Prairie. WPL further contends that, on the rare occasions when two loaded trains would need to be staged, there are several locations at which a dispatcher could hold the second loaded train until the empty trains clear.

We do not agree with WPL that passing sidings could be used for staging loaded trains destined for Pleasant Prairie and Oak Creek without blocking other traffic. Passing sidings must be available at strategically located points along the main line to accommodate train meets. Ifthe passing sidings were not needed to accommodate train meets, they would not have been included in the EWRR network configuration in the first place. WPL has not identified any other locations where track capacity would be available to stage these trains. Therefore, we use UP's track configuration for handling WEPCO's Oak Creek plant.

3. WEPCO-Pleasant Prairie

UP argues that the EWRR would need to build two sidings (totaling 3.9-miles) to serve WEPCO's Pleasant Prairie plant. UP argues that, although 90% of the time one loaded train could be held on a staging track at Pleasant Prairie while another unloads, on occasion a third train would arrive, requiring the use of another staging track.

WPL agrees that additional staging track would be needed at Pleasant Prairie, but WPL argues that 0.52 miles of additional track would be sufficient. In lieu of a second siding, as discussed above, WPL would relocate a passing siding (originally planned 30 miles north of the Pleasant Prairie plant) to make it adjacent to the Pleasant Prairie plant to be used as a staging track. WPL claims that loaded Pleasant Prairie trains could also be staged on the passing tracks at Upton and West Chicago. WPL further argues that there would only be three loaded and three empty trains per day north of Upton and that with proper planning by the dispatchers, there would be ample capacity for holding trains destined to Pleasant Prairie.

As discussed above, we do not agree with WPL that relocating passing sidings is the solution. Therefore, we include all of the 3.9 miles of staging track suggested by UP.

4. Midwest-Waukegan Plant

UP suggests that, because its trackage rights arrangement with EJE is generally restricted to overhead movements the EWRR could not directly serve the Midwest plant at Waukegan. However, as WPL notes, UP currently serves the plant using EJE tracks and we should assume, for purposes of our SAC analysis, that the EWRR could perform the same service that UP currently performs (so long as it pays the same fees to EJE).

We agree with WPL that it is reasonable to assume that the EWRR could serve the plant under a similar trackage rights arrangement. Therefore, we do not include any additional track investment for the EWRR to serve the Midwest Waukegan plant.

5. Clinton

WPL included two 8,000-foot passing sidings at Clinton to support the interchange of traffic with I&M Rail Link. UP agrees that interchange track would be needed at Clinton and has not argued that additional track would be needed. Consequently, we use WPL's evidence on the amount of track at that location.

6. KC Junction

UP argues that two staging tracks (totaling 3.09 miles) would be needed at KC Junction to hold EWRR trains awaiting interchange with either UP or the Cedar Rapids and Iowa City Railway (CR&IC) or awaiting delivery to the Alliant Marshalltown and Archer Daniels Midland plants. UP argues that those plants lack room to accommodate more than one train. WPL asserts that the EWRR would already have sufficient staging capacity at Cedar Rapids — the lead track to CR&IC's Wilson Yard and the runaround track adjacent to the EWRR — as well as a staging track at Marshalltown and yard tracks at KC Junction.

We do not agree with WPL's contention that the EWRR could stage trains awaiting interchange or final delivery on tracks intended for other purposes. WPL has not shown that other locations provide sufficient track for staging trains without interference with operations at those locations. For example, staging trains on the lead track to CR&IC's Wilson Yard would prevent the EWRR from using the lead track for its intended purpose, *i.e.*, serving CR&IC's Wilson Yard. Similarly, staging trains at the KC Junction yard would conflict with interchange operations at that location. As there is no evidence (as opposed to bare assertions) that the EWRR would have sufficient staging without this additional trackage, we include the 3.09 additional track miles in our restatement.

7. Keystone

While UP's workpapers include 3.09 miles of additional track at Keystone, nowhere in its evidence has UP explained why this track would be needed. In the absence of any explanation of a need for this track, we do not include it in our restatement.

APPENDIX C — EWRR OPERATING PLAN & EXPENSES

Based on the traffic group selected, the projected volumes of traffic, and the broader parameters of the EWRR network configuration, WPL developed an operating plan and estimated the operating expenses associated with moving the selected traffic over the EWRR. UP challenges WPL's operating plan and operating cost estimates in major respects. *Table C-1* summarizes the parties' differing estimates of the annual operating costs that the EWRR would incur, as well as the figures upon which we base our SAC analysis.

Table C-1
EWRR 2000 Operating Expenses

Item	WPL	UP	STB
1. Train & Engine Personnel	$54,890,655	$85,339,370	$76,578,639
2. Locomotive Lease	21,095,784	28,538,514	25,608,820
3. Locomotive Maintenance Expense	31,005,269	28,454,771	27,177,809
4. Locomotive Operating Expense	54,632,483	95,473,448	91,188,895
5. Railcar Lease	5,749,370	5,517,532	4,951,116
6. Railcar Maintenance Expense	0	4,770,511	4,611,164
7. Car Inspection and Repair	1,689,250	3,100,615	2,782,313
8. Materials & Supplies	390,265	791,214	709,990
9. Ad Valorem Tax	6,138,397	6,193,367	6,193,367
10. Operating Managers	5,404,883	10,991,700	10,991,700
11. General & Administrative	11,307,152	109,618,547	104,077,408
12. Trackage Rights - Variable Var	1,726,654	1,713,484	1,713,484
13. Trackage Rights - Fixed	896,351	889,514	889,514
14. Trackage Rights - Capital	3,472,557	3,471,481	3,471,481
15. Loss and Damage	539,776	593,217	539,776
16. Insurance	8,069,396	15,824,678	14,860,067
17. Maintenance-of-Way	24,754,320	53,221,472	53,221,472
Total	$231,762,562	$454,503,435	$429,567,014

As explained in this decision, we have not analyzed the parties' competing evidence of the operating plan and resulting operating expenses in detail. That is because no matter whose estimates we use, the ultimate outcome of our rate analysis would be unaffected — the SAC rate level would be less than the regulatory floor (180% of UP's variable cost of providing service to WPL). To show

that UP (as the losing party in this case) is not disadvantaged by our abbreviated approach toward the operating plan and operating expenses, we use UP's estimates of EWRR operating costs with only minor adjustments.[133]

This approach should not be viewed as an endorsement of all of the UP evidence that we use. To the contrary, it is clear from a preliminary review of the evidence that many of UP's costs are overstated and others unsupported. For example, UP used its current operations as the basis for developing the basic operating statistics and expenses for the EWRR, without attempting to take into account in any meaningful fashion that the EWRR would be a much different railroad with a significantly different traffic base.[134] We do not agree that the EWRR's operations must be patterned after UP's current operations.[135] In addition, we note that the workpapers supporting UP's calculations of the expenses associated with locomotives, railroad-owned cars and crew requirements are hand-written pages that are in many cases illegible, and even the calculations on the copies that can be read lack support.[136]

WPL's operations evidence also has flaws. For example, WPL did not seriously address "general and administrative" (G&A) expenses until its rebuttal filing, when it was too late for UP to have an opportunity to respond. In its case-in-chief, WPL merely asserted that all central office functions could be handled by 40 employees, without any evidence or workpapers to support that assertion. After being challenged on this issue by UP, WPL offered rebuttal testimony from a new group of witnesses, who presented a new G&A model for the EWRR. However, as we stated in *SAC Procedures* (at 445-46) the proponent of a SAC model cannot wait until rebuttal to develop its case-in-chief on an issue.

In sum, had we needed to conduct a detailed analysis of the evidence, we likely would have used a total operating expense estimate somewhere between the estimates offered by WPL and UP.

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[133] Because many of the operating expense categories (*Table C-1*, items 1-8 and 15) depend on the volume of traffic moving in any year, we adjust UP's operating expense estimates for these expense categories to reflect our findings as to the 2000 traffic levels. (In developing its operating expense estimates, UP used 2002 traffic levels.) We also adjust UP's estimate of the general and administrative expense because of UP's failure to amortize the cost of office equipment over the life of that equipment and for an arithmetic error in UP's development of annual information technology costs. Finally, our restatement of the insurance expense reflects UP's assumption that this expense would be 3.61% of the other operating expenses.

[134] The EWRR would be strictly a coal hauling railroad, whereas UP transports a wide array of traffic that significantly complicates its rail operations.

[135] Because the EWRR traffic base would be limited to 38 coal shippers moving traffic in unit trains, it could offer a more efficient service than UP, which provides a wide variety of diverse transportation services over much of the line the EWRR would replicate. Thus, UP's reliance on its own current cycle time — reflecting its train speed, times at origin, destination, interchange points and/or crew change points — seems unwarranted.

[136] *See* UP Reply W.P. Kent/Baronowski, CK-MB 00000039, 00000049-00000054, & 00000095.

APPENDIX D — EWRR ROAD PROPERTY INVESTMENT

This appendix examines the evidence and arguments of the parties concerning the costs of constructing the EWRR. *Table D-1* summarizes the estimates of the parties and the figures we use for the costs that would be associated with constructing the EWRR. For several investment categories, we have not evaluated the conflicting cost evidence, given that it would have no impact on our ultimate determination that the SAC rate is below the regulatory rate floor. Instead, for administrative convenience, we have used the higher cost estimate to show that UP is not disadvantaged by this abbreviated approach.[137] As ***Table D-1*** shows, we assume that it would cost approximately $2.9 billion to build the EWRR.

Table D-1
EWRR CONSTRUCTION COSTS
(millions of dollars)

	WPL	UP	STB
A. Land	$103.1	$204.1	$177.6
B. Earthworks	375.9	539.2	389.3
C. Track Construction	877.8	1196.9	1093
D. Bridges	269	308.2	306.6
E. Signal System	153.6	190	136.1
F. Buildings and Facilities	31.1	39.8	86.6
G. Public Improvements	25.7	227.7	220.7
H. Mobilization	14.0	60.2	58.5
I. Engineering Costs	156.0	268.5	223
J. Contingencies	152.2	283	251.2
TOTALS	**$2,158.2**	**$3,317.7**	**$2,940.6**

A. LAND

The amount of land that the EWRR would need depends on the length of the railroad and the width of the right-of-way (ROW), as well as the size of railroad yards, buildings and other facilities involved.[138] WPL estimates that 14,477 acres would be needed for the EWRR, whereas UP claims that 15,700 acres would be required. The difference in acreage is due mainly to UP's use of a wider ROW for some parts of the EWRR and larger yards. In addition, UP argues that the EWRR would need to purchase land that UP, or its predecessor, acquired by easement.

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[137] We use this abbreviated approach on a variety of issues to avoid difficulties associated with an under-developed record and/or to conserve our staff resources.

[138] The length of the EWRR and the size of its yards are discussed in *Appendix B*.

Both parties use a comparable sales approach to estimate the cost that would be incurred to acquire land for the EWRR. They both assume that the EWRR would acquire vacant, unimproved land in fee simple.

1. Right-of-Way Width

WPL asserts that a 100-foot ROW would be sufficient in rural areas and that a 75-foot ROW would be used in the developed areas around West Chicago, IL, and Milwaukee, WI.[139] However, WPL's land calculations assumed use of a 75-foot ROW in other areas as well. Indeed, over 166 miles (13.5%) of the EWRR's total route would be only 75 feet wide under WPL's calculations. UP objects to WPL's use of a 75-foot ROW in areas WPL has not discussed. On rebuttal, WPL acknowledged the inconsistency between its evidence and land calculations, but it argues that UP's acceptance of a 75-foot ROW around West Chicago and Milwaukee shows that a narrower ROW is feasible. UP has not had a chance to respond to that argument. Accordingly, we reject WPL's use of a 75-foot ROW in areas other than those discussed in its opening evidence.[140]

UP also argues that, while a 100-foot ROW would generally be adequate, a wider ROW would be needed in some areas from just west of Chicago to Sheboyan, WI. For those line segments, UP would increase the standard 100-foot ROW based on a grading model that it used to estimate the amount of earthwork that construction of the EWRR would entail. While the parties agreed to use the grading model to develop the amount of earth that would have to be moved, there is no agreement regarding its use to estimate the amount of land that would be needed and WPL claims that UP's model develops unrealistic ROW widths (up to 197 feet) for some sections.[141]

We agree with WPL. The grading model contains many assumptions that serve to maximize ROW width calculations. *See* "Grading — Joyce to Sheboygan," *infra*. Other evidence submitted by UP does not support the use of such extreme ROW widths. Indeed, the topographic maps supplied by UP indicate that the ROW width developed from the grading model is overstated.[142] Therefore, we use a standard ROW width of 100 feet (and 75 feet around West Chicago and Milwaukee) to estimate the amount of land the EWRR would need.[143]

2. Microwave Sites and Communications Centers

The parties agree that EWRR would need to acquire 144 acres of land for microwave sites and communications centers.

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[139] UP agrees with the use of a 75-foot ROW in West Chicago and Milwaukee.

[140] *See SAC Procedures*, at 443,445-46.

[141] For example, WPL points out that for valuation section CNW-2A-IL UP calculated that a ROW width of 185 feet would be needed. However, topographic maps of the area indicate that the area is characterized by only a modest grade (18 feet over a 3.9-mile portion of the EWRR route) — topography that would not require a ROW width in excess of 100 feet.

[142] UP Reply W.P. McDonald/Clark, GM/JC 595 and GM/JC 788.

[143] For administrative convenience, we have used UP's electronic spreadsheet as a basis for estimating land values. However, we have reduced the ROW width to either 75 or 100 feet, depending upon the location of the ROW.

3. Land Values

a. Generally

To develop land values, WPL relied on United States Geological Survey topographical maps, UP system maps, and aerial photos, whereas UP inspected the ROW from Sheboygan to the PRB and the properties abutting both sides of the ROW. UP claims that its appraisal is more detailed because it divided the ROW into 2,900 valuation units, whereas WPL used 91 segments. WPL claims that UP's evidence is flawed and skewed toward high-end property values. Because the largest difference in land values is in northeastern Illinois and Wisconsin, WPL critiqued UP's evidence for four counties in these two states. WPL inspected several existing line segments and reviewed the comparable sales used by UP to value these lines, and argues that UP's appraisal method is seriously flawed.

To resolve the dispute over land appraisals would require that we carefully examine a wealth of information on comparable land values, a task that would be very time consuming. Because the result of such an examination would not affect the ultimate outcome of our rate reasonableness review, we use UP's land values (adjusted to reflect a ROW width of 75 or 100 feet) to determine the total investment needed to construct the EWRR.

b. Easements

WPL removed 10.8 miles of easements from the specific valuation sections in UP's land appraisal on the ground that UP acquired the land at no cost.[144] WPL argues that any cost to purchase such land would constitute an impermissible barrier-to-entry cost. We agree. As we noted in *FMC* (at 797 n.160), historically railroads did not pay for easements, and under SAC theory a stand-alone railroad need not include any costs to acquire an easement property unless the defendant railroad demonstrates that it actually incurred such costs.[145] Because there is no evidence on this record that UP or its predecessors paid to acquire easements along the route that the EWRR would follow, we do not include the costs of easements.

c. Assemblage Factor

An assemblage factor is a premium paid (above comparable land prices) to reflect the cost of assembling a contiguous parcel of land required for a railroad ROW. The parties agreed to apply an assemblage factor for all land purchased in Wyoming and for that portion of land in Nebraska from the North Platte River to the Nebraska/Wyoming state line. WPL used an assemblage factor of 25%, based on an article in *Appraisal Journal* indicating that when a land corridor "connects points of little significance" the assemblage factor is low.[146] UP's witness contends that a 50% assemblage factor is more appropriate. Because WPL's assemblage factor is the only evidence on this issue with any support, we use WPL's evidence.

d. Yards and Facilities

WPL estimates that it would cost $2.5 million to acquire the land the EWRR would need for yards and facilities. UP argues that the cost would be $3.6 million. For convenience, we use UP's

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[144] Although WPL identified 39 miles of such easements by line segment, it deducted only 10.8 miles from UP's land total. Because the remaining easements are identified by line segment rather than valuation section, we are unable to make any additional adjustments for the easements not deducted by WPL.

[145] *McCarty*, 2 S.T.B. at 504.

[146] "*Value of Transportation/Communication Corridors*," Dolman & Seymour, *Appraisal Journal*, October 1978.

higher investment cost for yards and facilities, because the outcome of the proceeding is not affected.

B. EARTHWORK

To prepare the land for rail operations, a number of activities would be required. The land would first have to be cleared of vegetation, then the earth and rock materials would need to be graded into a suitable railroad ROW. Drainage and erosion control measures would also have to be taken to protect the track structure.

1. Clearing and Grubbing

Before grading could begin, the ROW would have to be cleared of trees and other vegetation. The parties agree on the cost of clearing and grubbing an acre of land,[147] but not on the amount of land that would require such work east of Joyce.[148]

The acreage east of Joyce that would require clearing and grubbing is based on the UP acreage that was recorded as cleared and grubbed in the ICC's Engineering Reports (*Engrg Rpts)*.[149] WPL multiplied the number of acres cleared and grubbed per route-mile that it obtained from *Engrg Rpts* by the number of EWRR route-miles east of Joyce. In contrast, UP adjusted for the difference in width between the original lines surveyed by the ICC (19 feet for single track and 31 feet for double track) and those proposed for the EWRR (34-38 feet for single track and 49-53 feet for double track). WPL disputes the need for such an adjustment; it reasons that the original railroad had more acres per mile than the EWRR would have, as more track miles are shown in each valuation section than the EWRR would have.

Although the rail lines surveyed by the ICC generally had more track miles per valuation section, the width of the ROW to accommodate those tracks was narrower than what is proposed for the EWRR. Thus, the existence of more track miles does not necessarily mean that more land was cleared. Accordingly, we use UP's adjusted clearing and grubbing acreage as the better evidence of record.

2. Grading

a. Caballo Jct. to Shawnee Jct. (Orin Line)

For the portion of the EWRR that would replicate the Orin Line into the PRB, both parties agree that the amount of grading required would be the same as that specified in the actual grading contract for construction of the Orin Line.

b. Shawnee Jct. to Joyce (WRPI Line)

UP accepts WPL's evidence that 10 million cubic yards of earth were moved when Western Rail Properties, Inc. (WRPI) built its line to connect to the PRB (valuation section CNW-22-WY). However, UP argues that the WRPI construction was actually an upgrade to an existing line (valuation section CNW-1-WY) and that the excavation work associated with construction of the

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[147] WPL accepts UP's unit costs, taken from the R.S. Means Manual (*Means*).

[148] UP's estimate for clearing and grubbing was slightly higher than WPL's for the EWRR route west of Joyce due to UP's inclusion of an additional valuation section (CNW-1-WY). However, we have rejected the inclusion of this valuation section. *See* "Grading — Shawnee Jct. to Joyce," *infra*.

[149] These reports were prepared by the ICC's Bureau of Valuation in the early 1900's, when a physical survey was conducted of all existing rail lines.

original line should also be included. Accordingly, UP included valuation section CNW-1-WY in its grading calculations, to account for the excavation work undertaken when the original line was built. WPL maintains that valuation section CNW-22-WY was a new ROW and that, while it crosses valuation section CNW-1-WY in a few places, it does not use the cuts or fills of the old rail line.

UP has provided no evidence to back up its claim that valuation sections CNW-1-WY and CNW-22-WY are one and the same, or even to show that CNW-22-WY significantly overlaps CNW-1-WY. Therefore, we do not include the grading associated with construction of valuation section CNW-1-WY.

c. Joyce to Sheboygan

To determine the amount of grading that was undertaken when this long-existing rail corridor was originally constructed, the parties used grading data from the *Engrg Rpts*. However, the *Engrg Rpts* only contain total (rail lines and yards) grading quantities. The parties assumed that grading in rail yards involved the movement of 43,560 cubic feet of earth per acre of land, and that the remainder of the grading was associated with line construction. The amount of grading associated with rail lines was then adjusted by a grading model[150] to reflect differences between the specifications for the early 1900's railroad and for EWRR. The parties differ regarding the quantity of earthwork needed for EWRR because they disagree on the specifications for the EWRR's side slopes, drainage ditches, and yard fill.

i. Side Slopes — WPL used standard side slopes of 1.5:1 for EWRR, whereas UP used differing side slopes (ranging from 1.5:1 to 2.5:1) depending upon the type of soil in each segment of the route, resulting in a gentler average side slope of 1.95:1. UP determined the type of soil using aerial photos, maps, and a geotechnical analysis based on data of the Soil Conservation Service (SCS). UP states that *AREMA*[151] specifies side slopes of 2:1 or flatter for all railroad embankments unless a soil stability analysis confirms that the fill is composed of highly stable granular material.[152]

WPL faults UP's geotechnical analysis for failure to include critical information about strata thickness, soil compaction and soil water content. WPL claims that any geotechnical analysis would have to be performed by a geotechnical engineer. WPL states that SCS data, which are intended for farmers interested in only the top foot of soil, are not appropriate for use in planning construction of a railroad. Finally, WPL points out that the grading model used by both parties assumes that the original side slopes of these lines were 1.5:1.

We agree with WPL that the SCS data does not include all of the information that would be relevant in constructing a railroad. Additionally, *AREMA* supports the proposition that a slide slope

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[150] The model uses a series of assumptions to determine the original height of the trapezoidal roadbed for each valuation section. The calculated height of the surveyed roadbed used in conjunction with the specifications for the EWRR's grading trapezoid determined the amount of earth that would need to be moved to grade the EWRR ROW. The parties assumed that originally the line had: 1 foot of fill in yards; side slopes of 1.5:1; 16-foot wide roadbeds for single track; and multiple sets of tracks spaced 12 feet apart.

[151] *The American Railway Engineering and Maintenance-of-Way Association Manual*, 2000 edition.

[152] *AREMA*, § 1.2.3.4, at 1-1-24.

of 1.5:1 is generally adequate.[153] Indeed, UP considers it appropriate to assume that the rail lines surveyed in *Engrg Rpts* were built with 1.5:1 side slopes, and the soil types along the ROW have not changed since then. Because the average original height of the grading depended on the side slope of the roadbed, we agree with WPL that changing the side slope specification for the EWRR from that assumed for the original roadbed would inappropriately increase the grading quantities and the construction costs for EWRR. Accordingly, we use slopes of 1.5:1 for EWRR.

ii. Yard Fill — WPL assumed that yards would be in flat areas and therefore only 1 foot of soil (43,560 cubic feet per acre) would be graded, whereas UP determined grading for each railroad yard based on topographical maps and UP's track profiles. Again, in 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. Therefore, we use WPL's evidence on this issue.

d. Grading Costs

The *Engrg Rpts* classify earthwork as: common excavation, loose rock, solid rock or borrow (material moved to the construction site). UP further subdivided common excavation into sand, common earth, or clay.

For common excavation,[154] WPL used the unit cost for common earth excavation from *Means*, because it is the midpoint of the separate costs for sand, common earth, and clay. UP, on the other hand, used separate unit costs by soil type. But, as pointed out above, UP's soil analysis is applicable only to the top 1 foot of soil, which would not necessarily reflect the soil condition that would be encountered in constructing the EWRR. Therefore, we use WPL's unit cost for common earth.

For loose rock, WPL used the *Means* cost for excavating soft trap rock in ideal conditions. Without commenting on WPL's assumption, UP instead used an average of the *Means* costs for removing medium hard trap rock in ideal and adverse conditions. Because UP has not provided evidence that EWRR would encounter adverse conditions east of Joyce, we use WPL's unit cost.

For solid rock, WPL developed a cost for drilling, blasting, extracting, and hauling. WPL applied a 15% additive to the extracting component for loading the rock into trucks. It then calculated the average of this cost and the costs it developed for excavating loose rock, arguing that much of the work classified as solid rock in the *Engrg Rpts* would now be removable using modern equipment without blasting. UP adopted WPL's methodology, except that UP applied the 15% additive to the hauling cost as well as to the extracting cost. UP has not explained, however, why an additive should be applied to the hauling cost. Therefore, we use WPL's unit cost for excavating solid rock.

For borrow, the parties agreed on the unit cost for front-end loader and hauling services. However, UP applied a 15% additive to the hauling cost for loading the material into trucks. We reject UP's 15% additive because, as WPL points out, WPL's front-end loader cost already included "loading and/or spreading."

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[153] *AREMA*, § 1.2.3.2e, at I-1-21.

[154] All excavation west of Joyce is classified as common excavation.

3. Drainage Ditches

Drainage ditches parallel to the roadbed channel water and runoff away from the tracks. The parties agree on the unit cost for installing drainage ditches. However, WPL proposed 2-foot-wide trapezoidal ditches, whereas UP would have the EWRR use 3-foot-wide trapezoidal ditches based on the general *AREMA* recommendation for new construction. WPL has provided evidence that active rail lines use 2-foot-wide ditches, including a nearby CSX main line. Because WPL has shown that major railroads currently operate lines with similar size ditches, we use WPL's specification of 2-foot-wide ditches.

4. Yard Drainage

WPL would install drainage pipes at the Gibbon yard, the major car inspection location. UP would also have the EWRR install drainage pipes at the Bill and Manville yards. The parties agree on the unit cost for drainage pipe. They also agree that drainage in smaller yards could be addressed by proper grading and the placement of high quality subgrade and subballast.

Because we accept WPL's smaller yard size for the Bill and Manville yards (see ***Appendix B***) and the parties agree that drainage in smaller yards could be addressed through proper grading, we include drainage pipes only at the Gibbon yard.

5. Culverts

Culverts allow water to pass under the track structure by means of metal or concrete pipes. The parties used a listing of UP's existing culverts along the route that the EWRR would replicate to estimate EWRR culvert costs. Where the actual length of a culvert was not known, WPL assumed that EWRR culverts passing under single track would be 34 feet in length, while culverts under double track would be 48 feet long. In contrast, UP used the average length of its existing culverts to estimate culvert length for the EWRR.

WPL has not explained why its culvert lengths (20 feet plus 14 feet for each set of tracks under which the culvert would pass) would be sufficient. A 34-foot culvert would be just long enough to pass under a single track roadbed, assuming that the culvert were perpendicular to the tracks and were only slightly below the level of the tracks.[155] But UP's evidence indicates that many existing culverts are over 100 feet in length. Because WPL's culvert proposal does not appear to be feasible for many locations, we use UP's evidence.[156]

WPL and UP also disagree on the amount of erosion control (riprap, wing walls, and aprons) that should be incorporated into culvert construction.[157] UP would have the EWRR add riprap at both ends of steel culverts and add concrete wing walls and aprons at both ends of concrete box culverts. WPL argues that erosion treatment would be needed at only 50% of the culvert locations, and it has submitted photos (showing culverts without riprap) of four of the approximately 3,000 culvert locations along UP's ROW.

As we explained in *FMC* (at 805), these photographs of four minor culverts are insufficient to establish whether riprap could be excluded at many other culvert locations. Because WPL has not shown that the limited erosion control it proposes would be feasible, we include erosion control costs for all culverts.

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[155] Because of the sloping nature of the roadbed, the further below the track that a culvert is placed, the greater its length must be.

[156] As we found in *FMC* (at 805), the use of existing culvert lengths is a reasonable way to estimate culvert costs.

[157] The parties agree as to the unit cost for culverts, riprap, wing walls, and aprons.

The parties agree on the total number of culverts that would be needed. Because we use UP's evidence regarding culvert construction, we use UP's cost estimate for culverts.

6. Water for Compaction

The roadbed would have to be adequately compacted to withstand the stresses from the heavy coal trains that would traverse the EWRR. In arid areas, water must be added to the soil to ensure adequate compaction. The parties agree on the unit cost for water, but differ slightly on the total cost because UP assumed that the soil condition of valuation section CNW-1-WY (44.9 route-miles) would require the addition of water. Because the EWRR would not include this valuation section (*see* "Grading — Shawnee Jct. to Joyce," *supra*), we use WPL's evidence on this issue.

7. Topsoil and Seed

The spreading of topsoil and seed can be used to encourage revegetation of the ROW, thereby reducing erosion that could undermine the roadbed, foul ballast, and clog drainage ditches. The parties agree that topsoil would be used only on the ROW west of Joyce. They also agree on the amount of topsoil that would need to be spread.

UP included costs for seeding 8% of the ROW east of Joyce, as well as seeding all land on which topsoil was placed west of Joyce. WPL did not include separate costs for seeding. West of Joyce, WPL explains that the data it used to develop the cost of spreading topsoil included seeding costs. East of Joyce, WPL argues that no seeding costs should be included because there is no evidence that the original railroads seeded any of that land.

The only evidence that the original railroads incurred seeding costs east of Joyce is contained in the *Engrg Rpts*, which indicate that erosion control measures were taken on 58.9 acres (0.5%) of that ROW.[158] Accordingly, we include seeding costs for only 0.5% of the EWRR route east of Joyce.

West of Joyce, WPL assumed that topsoil placement would amount to $1.03 per cubic yard (cy), based on actual Orin Line costs for spreading topsoil, which included seeding costs.[159] UP, on the other hand, estimated the cost at a total of $18.49/cy, based on the cost to remove and stockpile topsoil ($0.61/cy), purchase and spread topsoil ($16.85/cy), and purchase seed ($834/acre).

We use WPL's evidence, which is based on actual costs for topsoil placement and seeding. We note that UP's estimate, by including costs both for removing and storing topsoil and for purchasing topsoil, is overstated. Clearly, it would not be necessary to purchase 100% of the topsoil, as some of what would be removed could be stored and reused.

8. Utility Relocation and Road Resurfacing

UP maintains that costs should be included for utility relocation, road construction for detours, and road resurfacing required to repair damage caused by construction. WPL accepted UP's cost figures for utility relocation and road construction and resurfacing west of Joyce, because the utilities and roads were already in place when the rail lines were built. But WPL argues that east of Joyce such costs should be excluded as barriers-to-entry, as UP has not shown that it incurred these costs. UP argues that these costs should nevertheless be included because WPL's construction plan for EWRR relies on the roads and electric power already being there.

UP's logic could just as readily be applied to land, as a line could not be built if the underlying land had not already been obtained. However, it is well-settled that the cost of land is excluded from

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[158] WPL Reb. V.S. Stedman, at 31.

[159] UP notes that the term "placing topsoil" on the Orin Line construction documents includes seeding. UP Reply V.S. McDonald/Clark, at 27.

our SAC analyses as a barrier-to-entry cost where the defendant carrier did not incur that cost. *See, e.g., McCarty*, 2 S.T.B. at 504. Similarly, in the absence of any proof that UP incurred the costs of utility relocation and road construction on lines east of Joyce, we exclude those costs from the SAC analysis as barrier-to-entry costs. However, we include the agreed-upon utility relocation, road construction and road resurfacing costs west of Joyce.

9. Yard Paving

WPL would pave only the major yard at Gibbon. UP argues that it would also be necessary to pave the Bill and Manville yards. Because we use WPL's specifications for the Bill and Manville yards (*see Appendix B*), we find that it would not be necessary to pave those smaller yards.

10. Environmental Compliance

The parties agree that $2 million would be needed for environmental mitigation west of Joyce. Neither party included environmental mitigation costs east of Joyce.

C. TRACK CONSTRUCTION

1. Geotextile Fabric

Geotextile fabric is a material that is placed between the earth and subballast to keep the subballast and ballast clean and to provide soil stability in areas of soft or fine-grained soils. WPL would install geotextile fabric only under turnouts and grade crossings. In contrast, UP determined the amount of geotextile used per track mile in the construction of the WRPI Line and assumed that the EWRR would install the same amount of geotextile on all its lines west of Joyce. In addition, UP would have the EWRR install geotextile under all but 250 miles of the EWRR route east of Joyce. WPL notes in response that there is no evidence that any existing railroad makes use of geotextile as extensively as what UP has proposed for EWRR. Indeed, WPL notes that the non-woven geotextile UP would have the EWRR install was first used in 1968, whereas the majority of the main line east of Joyce was constructed prior to that time. Thus, it is unlikely that UP incurred any cost for geotextile on that line. Finally, WPL asserts that geotextile was used on less than 3% of the WRPI Line from the PRB to Joyce.

East of Joyce, because there is no evidence that the existing lines have geotextile under the majority of the line, and because including a cost not incurred by the incumbent carrier constitutes a barrier to entry, we reject UP's evidence and use WPL's evidence (that includes geotextile only under turnouts and grade crossings). However, we use UP's evidence for the portion of the line west of Joyce, as UP's evidence demonstrates that geotextile was used extensively in the construction of lines accessing the PRB.[160]

2. Subballast

Subballast is the first layer of material placed on the graded roadbed to form the foundation for the track structure. The parties agree on the cubic yards of subballast that would be needed per mile. They each developed a unit cost for subballast (including installation) based on documented evidence as to the cost of procuring the material in each state through which the EWRR would pass. We use WPL's unit-cost evidence, because we assume that a stand-alone railroad would procure materials for the lowest price available.

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[160] WRPI installed geotextile fabric under the majority of the line connecting Joyce to the PRB. UP Reply W.P. McDonald/Clark GM/JC 0000559-73 and e-W.P. grading.wk4.

3. Ballast

Ballast is the upper layer of material that holds the ties in place. The parties agree on the cubic yards of ballast that would be needed per mile and the unit cost of ballast. They disagree on the transportation charges for ballast. WPL developed a cost for transporting ballast 42 miles,[161] based on UP's average rate for movements of track materials for third parties, and claims that the EWRR could find quarries within 42 miles of its construction sites. UP, on the other hand, calculated the cost to transport ballast from three specific quarries[162] to EWRR railheads at the same average rate.

WPL's assumption that suitable ballast could be acquired from quarries within 42 miles of the EWRR construction sites is not supported by its evidence. Although WPL agrees that granite ballast should be used,[163] the quarry map WPL relied on indicates that all quarries in Nebraska and Iowa and almost all quarries in Illinois produce only limestone ballast.[164] Thus, the quarry map demonstrates that granite ballast is not generally available within 42 miles of the EWRR's construction. Accordingly, we use the transportation rate (2.8 cents per ton mile) that UP charges to move track material for other railroads (*see* "Track Construction—Transportation of Track Material," *infra*).

4. Ties

The parties agree on the type of ties, number of ties per mile, and unit cost for the 6"x8"x8'6" ties that would be used in yards and for set-out tracks. But the parties disagree on the unit cost for the 7"x9"x8'6" and 7"x9"x9' ties that would be used on main line track. WPL developed its costs from *Means*.[165] UP notes that its system-average cost for 7"x9"x8'6" ties is $3 more than the price listed in *Means* and, therefore, argues that the ties specified in *Means* are not an appropriate grade for main line installation. WPL counters that the ties priced by *Means* are heavy duty, 7"x9"x8'6" pressure-treated wood ties, the exact type of tie UP would have the EWRR install on main line.

The heavy duty, pressure-treated wood 7"x9"x8'6" tie listed in *Means* appears to be identical to the type of tie specified by the parties. UP has not demonstrated any difference, other than price, between the ties that it uses and those priced in *Means*. We will not speculate as to why the *Means* cost is less than the UP system-average cost for the same tie. EWRR could avail itself of the lowest cost tie capable of meeting its specification. Therefore, we use the *Means* cost for 7"x9"x8'6" ties.

However, WPL's extrapolated price for 9-foot ties (developed from the *Means* price for 7"x9"x8'6" ties) is unsupported, as there is no evidence that the relationship between tie length and cost is linear. Accordingly, UP's system-average cost ($34.85) for ties of this size is the best

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[161] WPL subtracted the agreed upon cost of ballast at the quarry ($5.74/ton) from the UP cost for ballast delivered to the construction site ($7.13/ton) to impute a shipping cost ($1.39/ton). WPL divided the imputed shipping cost by UP's average tariff rate (3.3 cents per ton mile) to develop a distance from the quarry of 42 miles.

[162] UP would have the ballast shipped from Granite, WY, Sioux Falls, SD, and Rock Springs, WI. UP Reply W.P. McDonald/Clark, GM/JC-1075.

[163] WPL Reb. V.S. Pattison, at 24.

[164] *AREMA* indicates that limestone ballast has a life of only 70 MGT, compared to 750 MGT for granite. *See* WPL Reb. W.P. Pattison 4337-38 for quarry maps.

[165] Because *Means* does not list a price for 7"x9"x9' ties, WPL estimated the cost for those ties by extrapolating the *Means* cost for 7"x9"x8'6" ties.

evidence on the record.[166] We therefore restate the EWRR's tie cost using the UP system-average cost for 7"x9"x9' ties and WPL's *Means* cost for 7"x9"x8'6" ties.

5. Rail

a. Rail Cost

The parties agree that premium rail would be installed on all curves greater than 3 degrees. UP argues that the EWRR would also need to use premium rail on all track projected to handle at least 50 MGT of traffic annually, noting that we accepted this 50-MGT criterion in *FMC*. WPL claims that premium rail would not be necessary on curves of less than 3 degrees and on tangent (straight) track if adequate rail grinding is performed. WPL asserts that premium rail was not used on the Orin Line and that the Dakota, Minnesota & Eastern Railroad is planning to use premium rail only on curves greater than 2 degrees for its new line accessing the PRB coalfields. However, WPL has not provided any documentary support for its assertion that existing railroads do not install premium rail on high traffic density tangent track. Therefore, we rely on UP's evidence that premium rail should be installed on all track projected to handle 50 MGT of traffic annually.

The parties agree on the unit costs for all rail except 115-pound standard rail. For 115-pound rail, WPL relied on the UP rail price list furnished during discovery. UP objects to use of that price because UP no longer purchases this type of rail. Because the price for this rail was furnished to WPL during discovery, WPL reasonably relied on this information in developing its evidence. Furthermore, the price UP claims the EWRR would need to pay for 115-pound rail ($640.39 per ton) is suspect, as it exceeds the price UP claims the EWRR would pay for heavier, 136-pound rail ($551.03 per ton). Therefore, we use WPL's cost estimate for 115-pound rail.

b. Track-Laying

WPL asserts that, based on the experience of various railroads, it would cost $116,000 per mile to install track. UP contends this cost is unsupported, is lower than other track installation costs cited in WPL's evidence,[167] and is less than half of UP's own 1999 system-average cost of $237,500 per mile.[168] UP developed its estimate of the track installation costs for the EWRR ($169,699 per track mile) based on an average of the unadjusted costs from *Means* and *Dodge*. UP further argues that the ballast cost developed by the parties does not include installation costs and, therefore, those costs must be accounted for in track-laying costs. Finally, UP asserts that the cost for installing subballast is not included in the *Means* and *Dodge* unit costs for track installation and, therefore, WPL should not have deducted the cost for installation from the *Means* and *Dodge* costs. On rebuttal, WPL attempted to demonstrate the reasonableness of its estimate by adjusting the costs shown in a UP work order.[169]

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[166] Indeed, UP's figure is supported by WPL's evidence of a quote of $35.00 from Atlantic Track & Turnout Co. for 7"x9"x9' ties. WPL Open. W.P. Pattison 0225.

[167] WPL adjusted the track installation costs in *Means* ($178,992 per mile) and the *Dodge Unit Cost Book 1999* ($160,459 per mile) to exclude the cost of installing subballast and ballast. WPL's adjusted *Means* cost is $145,411 and its adjusted *Dodge* cost is $126,878. WPL Open. W.P. Pattison 240.

[168] UP Reply W.P. McDonald/Clark GM/JC-0001141 (copy of a work order showing UP's track-laying cost).

[169] Without explanation, WPL removed the labor allowances for installation of ties, rail, rail welds, other track material (OTM), and ballast, and reduced the 138% labor additive (internal profit) to 47.8%. WPL also reduced the 190% labor additive "WkTm" to 57.8%, based on the additive

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We agree with UP that WPL has not supported its $116,000 per track mile estimate. We also agree that the cost of installing ballast should not be deducted from the *Means* and *Dodge* cost estimates. There is no evidence that the parties' ballast costs include installation costs. Although the record indicates that installation costs were included in the subballast unit costs, their subtraction from track-laying costs is inappropriate because UP shows that subballast installation costs are not included in *Means* track-laying costs and WPL has failed to show that subballast installation costs are included in *Dodge* track-laying costs.[170] Finally, WPL's adjustments to UP's work order are unpersuasive. As we discuss in "Signals," *infra*, WPL's adjustment for contractor overhead and profit is inappropriate and its other adjustments are unsupported. Accordingly, we use UP's track-laying estimate, which is 29% below UP's own actual system-average cost.

c. Field Welds and Plant Welds

i. Field Welds — The parties agree that track installation at the construction site would require eight welds per track-mile. UP based its cost estimate on its own system-average prices for field welds on 115-pound and 136-pound rail. Because WPL does not contest UP's unit costs, which result in a lower cost than what WPL had initially estimated, we use UP's evidence on the cost of field welds.

ii. Plant Welds — The parties also agree on the unit cost for, and number of, plant welds that would be needed per mile for new continuous-welded rail. They disagree on the need to include any costs for plant welding of 115-pound second-hand rail. However, WPL has not explained why used rail would not require plant welds, when it agrees that the same length new rail would require plant welds. Therefore, we include costs for welding both new and used rail.

6. Other Track Material

a. Rail Anchors

The parties agree on the unit cost for rail anchors. They also agree that box anchors would need to be used on every other tie (48 anchors per 39-foot section of track), except in yards. In yards, WPL would use 16 anchors per 39-foot section of track, based on *AREMA* guidelines for light density lines,[171] whereas UP argues that the EWRR would need to use approximately 29 anchors per 39-foot segment.

WPL's specifications are supported by *AREMA*, whereas UP has offered no support for its inclusion of additional anchors in yards. Therefore, we use WPL's figures.

b. Tie Plates

The parties agree on the type, unit cost and number of tie plates that would need to be installed on the EWRR.

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[169](...continued)
shown in *Means* for contractor overhead and profit for 35 skilled trades, and reduced the work order costs by 10% based on its witness' assertion that there would be economies to be gained by installing approximately 1,700 miles of track. *See* WPL Reb. W.P. Pattison 4369.

[170] UP Reply W.P. McDonald/Clark GM/JC 1142.

[171] *AREMA*, § 5.4.2.3.

c. Spikes and Screws

The parties agree that the EWRR would use four spikes or screws to secure each tie plate except in yards, where two spikes per plate would be used. The parties also agree on the unit costs for spikes and screws.

d. Insulated Joints

WPL included the cost for insulated joints in the OTM expense, whereas UP included it in signal costs. We account for insulated joint costs in signal costs.

7. Turnouts

Turnouts allow trains to move from one track to another. Each turnout consists of a switch, frog, closure rails, operating mechanism, and various special switch plates and appurtenances. The parties differ in their estimate of the number of turnouts that the EWRR would need. WPL included 402 turnouts (234 turnouts on the main line and 168 in yards), whereas UP would include 607 turnouts (226 turnouts on the main line, 59 on MOW tracks, 93 on set-out tracks, and 229 in yards).

Because we accept UP's configuration for main line, passing and set-out track, we use its turnout count for those parts of the EWRR. However, because we generally accept WPL's evidence on yard size, we use WPL's turnout count for yards, except that we include turnouts for the 11 additional MOW track in yards and we include additional turnouts in the Gibbon yard to accommodate the larger coal storage yard. Finally, we adjust the turnout count for the additional operating track that we include.

8. At-Grade Railroad Crossings

UP would include the cost for at-grade railroad crossings. WPL argues that these are barrier-to-entry costs that should be excluded from the SAC analysis. East of Joyce, WPL contends that UP was the first railroad line and that any crossing costs would have been paid by the second railroad. WPL notes that there are no crossings west of Joyce, because UP and BNSF share the same line.

We agree with WPL that the crossing costs east of Joyce should not be included in the SAC analysis, as there is no evidence that UP or it predecessors paid to install railroad crossings. The issue of whether to include crossings in the PRB is not as clear cut, where the EWRR would replicate a line that UP shares with another carrier. We need not resolve the issue here, however, because it would not affect the outcome of this case. Therefore, for administrative convenience, we include UP's costs for PRB at-grade crossings in our SAC analysis.

9. Railroad Overpasses

UP would include costs for four railroad overpasses east of Joyce where BNSF currently crosses the UP line. WPL claims that these are also barrier-to-entry costs because UP was the first railroad in this region. Because we have no evidence in the record that UP paid for the BNSF crossings, we do not include the costs for these overpasses.

10. Rail Lubricators

WPL would place rail lubricators at each curve greater than 3 degrees, for a total of 55 lubricators. The number and cost of these rail lubricators are not contested.

11. Transportation of Track Material

The parties used different methods to calculate transportation costs for track material. WPL increased the costs for ties, anchors, spikes, tie plates, turnouts, switch heaters, and rail lubricators by a 2% additive to account for transportation costs, resulting in transportation costs of $5.5 million. UP itemized the cost to transport ties, anchors, spikes, tie plates, and turnouts from seven suppliers

to EWRR's 13 railheads,[172] using a transportation rate of 3.3 cents per ton-mile (the weighted average of transportation costs charged by UP itself to third parties for movement of similar materials), for total transportation costs of $16.7 million. WPL has countered that UP charges only 2.8 cents per ton-mile to move materials for various railroads (Consolidated Rail Corporation; Denver, Rio Grande and Western Railroad; and Illinois Central Railroad).[173]

We cannot use WPL's unsupported 2% factor where there is better evidence. Therefore, we use a transportation rate of 2.8 cents per ton-mile (what UP charges to many railroads) for those materials to which UP's evidence applies. Because UP failed to address transportation charges for switch heaters and rail lubricators, we use WPL's 2% factor for those materials.

D. BRIDGES

During discovery, UP furnished WPL with an inventory of the existing bridges along the route the EWRR would follow, specifying the location, the geographical feature crossed (where recorded), the number of piers, the span length, the structure type, and the total length for each bridge. Although WPL identified 480 bridges along the EWRR's ROW,[174] WPL only included the cost of constructing 400 bridges.[175] UP objected that WPL had not explained why the EWRR would not need all of the existing bridges. On rebuttal WPL explained that, because UP or its predecessor was the first transportation artery in the region, the EWRR would not need to fund bridge construction over roads because UP had not incurred that cost. However, WPL acknowledged that many of the omitted bridges cross hydrological flow areas and agreed that the EWRR would need an additional 70 culverts to allow the EWRR to cross such areas.

WPL's evidence on this issue is contradictory and unsupported. By failing to provide its reasoning for excluding over 20% of the existing bridges in its opening evidence, WPL did not provide us with a basis upon which to accept that evidence when it was challenged. And we cannot accept WPL's rebuttal evidence that 70 bridges could be replaced with culverts, because UP has had no opportunity to respond to that new evidence. Therefore, we must assume that the EWRR would need to construct all the bridges on UP's bridge list.

To develop the cost of constructing bridges, the parties categorized bridges as Class I (shortest) through IV (longest). Unit costs (per linear foot) for single-track and double-track bridges of each class were then developed. UP agrees with WPL's unit cost for single-track Class II, III, and IV bridges.[176] For Class I bridges, UP points out that WPL's unit cost does not include the cost for any supporting piers. UP notes that the average Class I bridge on the route that the EWRR would follow

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[172] UP assumed that the EWRR would use suppliers located in Galesburg, IL, Pueblo, CO, Little Rock, AR, Cheyenne, WY, Atchison, KS, Tulsa, OK, and Chicago, IL. WPL claims there are other suppliers that could be used, but it has not indicated where such suppliers are located.

[173] UP Reply W.P. McDonald/Clark GM/JC-1152 (listing rates UP assesses railroads for transporting materials).

[174] WPL Open. V.S. Pattison, at 14; WPL Open. e-W.P. ewrr_bridges.xls (identifying 485 bridges). We note, however, that WPL Reb. e-W.P. rev_BRIDGE LIST.xlsand UP Reply e-W.P. BRIDGELIST.XLS indicate that UP has 512 bridges along the route the EWRR would follow.

[175] On rebuttal, WPL increased its bridge count to 401.

[176] For Class II single-track bridges, UP calculated a per-linear-foot cost of $4,423, which it rounded to $4,500. However, UP committed an arithmetic error; the actual total is $4,393, which would appropriately be rounded to $4,400. This corrected cost agrees with WPL's cost for Class II bridges.

has three spans and two piers. We use UP's unit costs for Class I bridges, because WPL's own evidence indicates that a large number of Class I bridges consist of multiple spans.[177]

WPL developed its unit cost for double-track Class I bridges by simply adding the cost for a second deck to the cost for a single-track substructure. This procedure understates the cost, however, because the addition of a second set of tracks would require a wider substructure, entailing greater cost.

For Class II and III double-track bridges, WPL excluded the cost of wing walls on the abutments and calculated the abutment cost by increasing the abutment cost for a single-track bridge by 33%. However, neither of these assumptions is supported. Generally, bridge abutments have wing walls to protect the abutment. Furthermore, UP has documented that abutment costs increase 43% when bridge size increases to accommodate a double set of tracks. Given these flaws in WPL's cost estimates, we use UP's unit cost for double-track Class I, II and III bridges.

For Class IV double-track bridges, WPL developed a unit cost of $8,239, which it rounded to $8,500. UP developed a unit cost for double-track Class IV bridges of $8,410 and without explanation rounded this estimate to $9,000. We use the $8,500 figure.

E. SIGNAL SYSTEM

The EWRR would be equipped with both "centralized traffic control" (CTC) and computer-assisted direct train control systems. The signal system would be comprised of the components discussed below.

1. Signals

Signals would comprise the largest single investment in the EWRR's signal system. WPL included 636 signal locations, compared to UP's 663 locations. Included in UP's count, but not WPL's, are 4 signals at railroad crossings on the main line east of Joyce, 16 signals at crossings of the PRB main line and mine leads, and an additional 7 signals at unidentified locations. WPL contends that the costs for the 20 signals at crossings that have been identified should be excluded as barrier-to-entry costs.

As discussed in "At-Grade Railroad Crossings," *supra*, we agree with WPL that the signal costs associated with crossings east of Joyce should be excluded from the SAC analysis and we exclude those 4 signals. We need not resolve whether signals at the other locations would be needed by the EWRR, as the answer would have no effect on the outcome of our rate analysis. Instead, we include the costs of those additional signals in our SAC analysis, for administrative convenience, without making any finding as to the appropriateness of their inclusion.

In its opening evidence, WPL merely listed, without explanation, a material cost and labor rate associated with installing signals.[178] UP separately estimated the cost for installing each type of signal, based on its own costs from actual work orders. On rebuttal, WPL attempted to support its original estimate by adjusting UP's work order costs. WPL reduced UP's labor additive from 138% of its direct labor cost to 57.8%, which is the *Means* allowance for contractor overhead and profit. In addition, without explanation, WPL removed state tax and materials store (inventory) expense. WPL then subtracted the cost of the switch machines and insulated joints, claiming that these costs are included in the cost of the electric turnouts and OTM, respectively.

Both WPL's initial signal costs and its adjustments to UP's work order costs are unsupported. WPL has not shown where the costs associated with electric switch machines are double counted

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[177] WPL Open. e-W.P. ewrr_bridges.xls.

[178] *See* WPL Open. W.P. Pattison, 0337.

and, because we do not include insulated joint costs in OTM expense, these expenses are appropriately considered here. We reject WPL's elimination of the sales tax, because it has provided no explanation why the for-profit EWRR could avoid paying this tax. We also reject WPL's elimination of the material storage costs, because WPL has not discussed why this adjustment is appropriate. Finally, we do not accept WPL's adjustment to UP's labor additive, because the *Means* labor additive is appropriate only for a base that includes fringe benefits and it is not evident that UP's base rate, to which WPL applied the 57.8% labor additive, included fringe benefits. Indeed, WPL's own evidence[179] shows that UP's base rate (before labor additive) is $156.60 per day, significantly lower than the *Means* rate (including fringes) of $224.40 per day.

2. Switch Circuit Controllers

Switch circuit controllers are used to isolate bad-order set-out tracks, to ensure that cars on these sidings do not accidentally move onto the main line. WPL included only 53 controllers, while UP argues that the EWRR would need 133. UP's total, however, includes circuit controllers for MOW tracks that we find would not be needed (*see Appendix B*). Because, as discussed in *Appendix B*, we use UP's evidence for the number of bad-order set-out tracks, we use UP's evidence on the number of controllers that would be needed for those tracks. However, we reduce UP's count for the controllers associated with MOW track connected to main line track.

UP's work orders indicate that it would cost $15,536 to install a switch circuit controller. WPL reduced this cost to $11,640 by eliminating materials store expense and sales tax and by reducing the UP's labor additive from 141% to 57.8% to reflect *Means* overhead and profit rate for skilled workers. For the reasons discussed in the previous section, we reject WPL's adjustments.

3. Regenerative Repeaters

Regenerative repeaters maintain the strength of the signals as they are transmitted throughout the system. The parties agree that it would cost $39,865 to install each of the 30 regenerative repeaters needed for the EWRR.

4. Data Radios

The EWRR signal system would be a microwave network requiring the installation of data radios. WPL would install 203 data radios, while UP argues that the EWRR would need to install 185. Because we use UP's main-line track configuration, we use UP's quantity of data radios.

WPL used a unit cost of $12,580 for procuring and installing radios, compared to UP's cost estimate of $16,051. WPL calculated its cost by adjusting UP's work order cost to eliminate materials store expense and sales tax and to reduce the labor additive. For the reasons discussed in "Signals," *supra*, we reject WPL's adjustments.

5. Defective Equipment Detectors

The parties agree on the unit costs for hot box and dragging equipment detectors (also known as defective equipment detectors or DEDs), but disagree as to the number of such detectors that would be needed. WPL included 30 DEDs, which it states would be placed at intervals of 20 to 30 miles. UP maintains that the EWRR would need 49 DEDs, spaced at 25-mile intervals. UP notes

[179] WPL Open. W.P. Pattison 4383.

that *AREMA* recommends that DEDs be spaced 20 to 25 miles apart,[180] as do UP's own guidelines.[181]

We use UP's evidence, because it comports with *AREMA* recommendations. We note that the number of detectors WPL included would result in spacing in excess of 40 miles apart (30 detectors over a roughly 1,200 system).

6. Electric Power

WPL estimated it would cost $1,000 to connect electricity to each signal location, which WPL notes is the same cost used in *FMC* and was derived from a UP work order. However, WPL did not provide for extending power to DEDs, regenerative repeaters, and railroad crossings. UP developed a cost of $4.7 million to run new electric feeder lines between meter poles on the ROW and the nearest electric transmission poles. This cost is based on estimates received from the four utilities serving the areas in which the EWRR would operate. UP's cost estimate equates to $6,368.75 per connection for each of the 732 locations that it claims would require power.

We use WPL's $1,000 unit cost figure, as it is based on actual UP work orders. But because we use UP's system configuration in the PRB, and because DEDs and regenerative repeaters would need power, we use UP's specification of the sites that would need electricity (excluding switches to the MOW track that we do not include, and also excluding the railroad at-grade crossings east of Joyce, the costs of which UP did not incur).

7. Series Shunt Switch Protection

This equipment detects whether turnouts are set for main-line or switching operations. UP asserts that WPL omitted the controllers and insulated joints needed to provide series shunt protection at each of seven hand-thrown switches on EWRR's second main line at Manville. While WPL claims that it accepted the inclusion of these additional items at Manville, we do not find where WPL included the appropriate costs. Therefore, we include the costs for series shunt protection at the seven switches at Manville using the UP work order costs.

8. Switch Heaters

Switch heaters are used on powered main line turnouts to prevent service disruptions due to frozen switches. WPL asserts that 220 switch heaters would be needed, but WPL has not provided any support for that assertion. UP argues that the EWRR would need 233 switch heaters at a total of 209 locations. However, as WPL notes, UP's workpapers[182] list only 195 power turnouts and UP placed some switch heaters under hand-thrown turnouts. Thus, each party's evidence lacks credible support. Because WPL failed to meet its burden of proof of establishing the feasibility of its proposal, we use UP's count of 233 switch heaters.

To develop the unit cost for switch heaters, WPL adjusted UP's work order cost to eliminate materials store expense and sales tax and reduce the labor additive. For the reasons discussed in "Signals," *supra,* we reject WPL's adjustments.

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[180] *AREMA*, § 5.3.1(j).

[181] *Hot Box & Dragging Equipment Detectors Guidelines and History*. *See* UP Reply W.P. McDonald/Clark, GM/JC-1525.

[182] UP Reply e-W.P. McDonald/Clark Turnout quantity.xls.

9. Dispatch Equipment

The parties agree that it would cost $760,782 to procure the computer equipment needed to operate signals, electric switch machines, and track circuits.[183]

F. BUILDINGS AND FACILITIES

The parties agree on the cost ($18 million) of constructing a locomotive repair and servicing facility at Manville. The parties disagree on the cost of crew and office buildings, MOW facilities, and car repair facilities.[184] The parties also disagree on the cost of constructing 75 microwave towers and the 4 offices that would be needed for the microwave communication system, as well as the cost of procuring 7 snow cats (vehicles used to access the microwave locations during periods of heavy snowfall) to service the microwave facilities.[185] For administrative convenience, we do not resolve these disputes, but use UP's higher investment cost for buildings and facilities, as there is no impact on the outcome of this proceeding.

G. PUBLIC IMPROVEMENTS

1. Road Crossings

a. Highway Overpasses

The parties agree on the unit cost for highway overpasses, but disagree as to the number of overpasses that the EWRR would need to build. UP included 16 overpasses west of Joyce and 105 overpasses east of Joyce.[186] WPL agrees on the costs of overpasses west of Joyce, but it argues that the costs of overpasses east of Joyce should be excluded because the existing railroad lines pre-date the highways. As UP points out, however, the *Engrg Rpts* indicate that the railroads incurred some costs associated with installing crossings east of Joyce. For that reason, UP argues that all costs associated with overpasses should be included in the SAC analysis.

While we agree that some costs for constructing overpasses east of Joyce should be included in the SAC analysis, as the existing railroad evidently paid for some of the original construction costs, the record does not indicate what share of the overpass costs UP incurred.[187] In the absence of an estimate as to what percentage of overpass costs were incurred by UP, or its predecessors, and because it does not affect the outcome of our rate analysis, we include all of the costs identified for overpasses using the agreed-upon unit cost.

b. At-Grade Road Crossings

The parties agree on the cost for at-grade road crossings west of Joyce. Again, WPL excluded all investment for crossings east of Joyce, as barrier-to-entry costs, because the UP line pre-dated the roads. Again, UP included the full cost for all crossings east of Joyce, arguing that the EWRR would depend on the network of roads for its construction and maintenance operations and that

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[183] WPL Reb. V.S. Pattison, Exhibit RKP 2.2; e-W.P. ewrr_mainqty_R.xls; UP Reply V.S. McDonald/Clark, at 76.

[184] The difference between the parties' estimates is $8.7 million.

[185] The difference between the parties' estimates on these items is $7.2 million.

[186] UP would exclude interstate highway overpasses under the assumption that they were paid for by the Federal government.

[187] We note that under current federal regulations (at 23 CFR 646.210(b)(3)) railroads are generally required to contribute 5% of the costs for constructing overpasses to eliminate at-grade crossings.

some costs for crossings along the EWRR route appear in the *Engrg Rpts*. WPL counters that third parties, such as government entities, frequently contributed to the costs of crossings, but that even so, when the cost sharing arrangement was not known, the railroad was credited with the full cost of the crossing in the *Engrg Rpts*.[188] WPL also notes that UP did not provide any evidence of the extent to which the railroad paid for crossings built subsequent to the ICC's original survey of rail lines.

In short, UP has provided some evidence that it incurred some (unquantified) costs for crossings east of Joyce, but the record does not indicate what percent of the costs were borne by the railroad. We need not resolve the issue of how much of these costs should be included in such a situation. Because the outcome of our rate analysis will not be affected, for administrative convenience we use UP's higher cost estimate in our SAC analysis.[189]

c. Crossing Protection

The parties agree on the cost for warning devices at crossings west of Joyce. Again, WPL contends that the EWRR should not incur the cost of such investment on the line east of Joyce because the existing railroad did not bear that cost.

Again, the *Engrg Rpts* indicate that UP's predecessors incurred some costs for warning devices at crossings east of Joyce, but there is no indication as to what percent of the costs the railroad was required to pay. Again, for administrative convenience, we do not resolve the issue, but instead use UP's higher cost estimate simply because doing so has no impact on the outcome of our rate analysis.

2. Fences

The parties agree on the unit cost for fencing but disagree on the amount of the ROW that would need to be fenced. WPL would fence 50% of the ROW west of Joyce. Although WPL admits that more was fenced at the time of construction, it argues that the additional fencing was done as an accommodation to adjacent landowners and that only 50% of the ROW needed to be fenced to comply with Wyoming law. UP argues that the EWRR would need to fence the same amount of ROW that was fenced when the existing lines were built: 70% of the WRPI Line and 100% of the Orin Line.

WPL has provided nothing more than an unsupported statement as to what would be needed to comply with Wyoming law and its witness' own opinion as to why more was actually fenced. We use UP's percentages — representing the amount of ROW that was actually fenced — as the best evidence of record.

East of Joyce, WPL would fence 31% of the ROW, stating that this is the percentage of the ROW acquired after enactment of state fencing statutes. UP contends that the EWRR would be required to fence significantly more, because current fencing requirements apply retroactively. UP argues that the EWRR would need to fence 91.4% of the ROW east of Joyce — the same amount of the UP ROW that is actually fenced now. We use UP's evidence as the best evidence of record.

3. Snow Fences

WPL's quantity and unit cost for snow fences west of Joyce is not contested. The parties agree that snow fences would not be built east of Joyce.

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[188] *See Texas Midland Railroad*, 75 I.C.C. 1, 116 (1918).

[189] The parties agree on the unit costs for the different types of crossings. These costs include costs for geotextile fabric under the crossings.

4. Roadway Signs

WPL accepts UP's estimate of the costs for installing signs to identify mileposts, yard limits, whistleposts, bridges, and no-trespassing areas.

H. MOBILIZATION

Mobilization involves the marshaling and movement of people, equipment, and supplies to the various construction sites. WPL included funds only for initial mobilization (1% of those construction costs that do not already include such costs). UP included a total of $60.2 million (2.4% of construction costs) to include costs for mobilization ($29.2 million), a performance bond ($16.6 million), and demobilization ($14.4 million).

1. Mobilization Costs

WPL applied a mobilization factor of 1% to those construction costs that it asserts do not already include such costs. WPL argues that, while contractor bids may list a higher mobilization cost, the mobilization costs are already reflected in *Means* unit costs for individual construction component costs. In contrast, UP relied on a consulting engineering guide to develop mobilization costs for the EWRR. UP estimated the mobilization costs that would be associated with a variety of the EWRR's construction activities (*e.g.*, field offices, earthwork equipment, rail and work trains, and bridge and culvert equipment). UP also included costs for building staging tracks for ballast unloading and the staging of work trains. To support its figures, UP submitted highway construction standards that include mobilization costs for several states (Illinois, Iowa, Nebraska, Missouri, and Wyoming). UP's mobilization cost estimate is approximately 1.2% of construction costs.[190]

WPL has provided no support for its 1% mobilization cost estimate, nor any evidence that mobilization costs are included in some of the individual unit costs, as WPL claims. Therefore, we use UP's mobilization costs, which are supported, as the best evidence of record.

2. Performance Bond

WPL did not include a performance bond, arguing that the WRPI Line bid sheets provided by UP did not include performance bonds. UP maintains that a performance bond is a standard requirement in all large, complex construction projects. UP argues that the EWRR costs should include a performance bond equal to 0.67% of construction costs, the midpoint of the *Means* range of percentages for highway and bridge construction. UP notes that performance bonds of 0.65% and 0.63% of construction costs were contained in the contract documents for construction of the WRPI Line.[191]

We find that the evidence supports the inclusion of funds for a performance bond. Therefore, we use UP's evidence on this cost.

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[190] UP notes that the actual mobilization costs for construction of portions of the WRPI lines were 5.2% and 3.0%. UP Reply W.P. McDonald/Clark, GM/JC 1701-04.

[191] UP Reply W.P. McDonald/Clark, GM/JC-1701.

3. Demobilization Costs

Demobilization includes the cost to dispose of equipment or remove temporary facilities used during construction.[192] UP estimated a demobilization cost for the EWRR of 50% of the mobilization cost. WPL did not calculate a separate demobilization cost, arguing that it is inconsistent to assume that the EWRR would not bear a cost for scarcity of equipment at the beginning of construction but would bear a cost for surplusage equipment at the completion of the project. Furthermore, because demobilization is not shown in the WRPI contract documents provided by UP, WPL concluded that this cost either was not incurred or was included in mobilization costs.

As we stated in *FMC* (at 821), it is reasonable to assume that some demobilization cost would be incurred and to include that cost, just as we include the mobilization cost of moving equipment to the site. We use UP's 50% demobilization factor because it is the only estimate submitted for this cost. We note that UP's combined estimate for mobilization, performance bond and demobilization (2.4% of construction costs) is less than the mobilization percentages actually experienced on the WRPI construction project.

I. ENGINEERING COSTS

Engineering costs are associated with planning, designing, and managing the construction project. The parties agree on the engineering costs associated with planning and designing the EWRR[193] but disagree on construction management and inspection costs.

1. Construction Management

Construction management includes scheduling materials delivery, coordinating the general contractors, and processing payment requests. WPL estimated that construction management would be equivalent to 1.5% of all other construction costs (except for land, engineering costs, and contingencies). It developed this estimate by extrapolating the *Means* percentages for $1 million projects (4.5% to 7.5%) and $5 million projects (2.5% to 4.0%). WPL reasoned that the construction management cost decreases, as a percent of total construction costs, as the size of the project increases, leveling off at 1.5% to 2.0% for projects exceeding $20 million.

UP disputes WPL's assumption that the percentage would continue to decrease for projects in excess of $5 million. UP claims that construction management costs would be equivalent to 4% of the costs of building the EWRR — the high end of the *Means* range for $5 million projects.

There clearly are economies associated with larger construction projects, as evidenced by the differences in percentages found in *Means* for $1 million and $5 million projects. However, WPL has presented no basis for extrapolating beyond any estimate in *Means*. Because the EWRR construction project would significantly exceed the $5 million level, we use the low point (2.5%) of the *Means* range for $5 million projects as the best evidence of record.[194]

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[192] The demobilization cost is partially offset by the salvage value of material used for railhead staging tracks.

[193] UP and WPL agree that mapping and subsurface investigation would be 1% of construction costs, design engineering would be 5%, and design services during construction would be 0.5%.

[194] In *FMC* (at 821 n.198), we used the midpoint of the 2.5% to 4.0% range, because the parties in that case did not argue that there were economies associated with the size of the construction project.

2. Inspection

Inspection involves the physical assessment of construction work and testing of materials to ensure that they meet design criteria and engineering standards. WPL cited a range of inspection costs (1% to 8%) but used the low end of this range to develop its inspection estimate. UP estimated that inspection costs would amount to $24.6 million, which is approximately 1% of its estimate for the relevant EWRR construction cost. Because both parties' evidence reflects a factor of 1% for inspection, we use that percentage.

J. CONTINGENCIES

A contingency account provides funds to address unforeseen costs that may arise during construction. WPL estimated differing contingency percentages for different components of construction,[195] resulting in an overall contingency factor of 8%. UP argues that the EWRR would need a contingency account equal to 10% of construction costs.

WPL argues that contingencies would be limited because the wealth of information that is available about the existing UP system decreases the uncertainty that would otherwise be associated with construction of the EWRR. We have previously rejected that argument.[196] As in prior cases, we find that an overall contingency factor of 10% is appropriate.

APPENDIX E — DISCOUNTED CASH FLOW COMPUTATION

In applying the SAC test, we compare the estimated revenues that the EWRR would earn over the 20-year analysis period to the estimated costs of constructing and operating the hypothetical rail system. As in prior cases, a discounted cash flow (DCF) analysis is used to discount the EWRR's 20-year stream of estimated revenues and costs to a common point in time. In this appendix, we discuss various issues affecting the DCF calculation not addressed elsewhere in this decision. The results of the DCF calculation are shown in Table E-1.

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[195] WPL estimated a contingency factor of 15% for bridges; 10% for grading, crossings, fences, signals, buildings and facilities; and 5% for culverts and tracks.

[196] *See McCarty* at 52; *FMC* at 823.

Table E-1
EWRR CASH FLOW
(millions of current dollars)

Year	Capital Costs & Taxes	Operating Expenses	Total Annual Expenses	EWRR Revenues	Over-payment	Rate Reduction
2000	$372.1	$426.5	$798.6	$933.0	$134.4	14.4%
2001	$376.7	$377.4	$754.1	$1,009.7	$255.6	25.3%
2002	$381.4	$399.8	$781.1	$1,046.6	$265.5	25.4%
2003	$386.1	$410.9	$797.1	$1,063.6	$266.5	25.1%
2004	$390.9	$425.8	$816.8	$1,083.2	$266.4	24.6%
2005	$395.8	$436.8	$832.6	$1,111.5	$278.9	25.1%
2006	$400.8	$450.6	$851.4	$1,132.8	$281.4	24.8%
2007	$405.9	$464.5	$870.4	$1,157.2	$286.8	24.8%
2008	$411.0	$479.0	$890.0	$1,181.7	$291.6	24.7%
2009	$416.2	$493.8	$910.1	$1,208.0	$298.0	24.7%
2010	$421.6	$508.9	$930.4	$1,232.0	$301.6	24.5%
2011	$427.0	$524.4	$951.4	$1,258.3	$306.9	24.4%
2012	$432.5	$539.8	$972.3	$1,271.0	$298.7	23.5%
2013	$438.1	$555.9	$993.9	$1,297.0	$303.0	23.4%
2014	$443.8	$572.4	$1,016.2	$1,323.3	$307.1	23.2%
2015	$449.6	$589.3	$1,038.9	$1,349.4	$310.5	23.0%
2016	$455.5	$606.8	$1,062.3	$1,376.9	$314.6	22.8%
2017	$461.5	$624.7	$1,086.2	$1,404.7	$318.5	22.7%
2018	$467.6	$643.2	$1,110.8	$1,433.2	$322.4	22.5%
2019	$473.8	$662.2	$1,136.1	$1,462.2	$326.1	22.3%

A. INFLATION INDICES

Inflation indices are used in the DCF model to account for changes in the value of the EWRR road property assets and operating costs over the 20-year analysis period.

1. Road Property Assets

The parties agree that road property assets should be indexed using the average rate of inflation experienced by the railroad industry from 1995 through 1999.

2. Operating Expenses

WPL inflated base-year operating expenses using a UP business forecast of expected cost increases for moving coal. The forecast predicted that UP's costs for transporting coal will increase by 1.5% annually through 2022. In contrast, UP used a 5-year rolling average of the RCAF-U to index operating expenses. Projecting future cost increases using the historic RCAF-U, UP assumed

that the EWRR's coal transportation costs would increase twice as fast as predicted by UP's own business forecast. UP explained that its business forecast assumes that UP will realize productivity increases associated with providing coal transportation. It argues that the EWRR could not expect such productivity gains because the EWRR is designed as a highly efficient railroad and, therefore, could not expect to improve its productivity further.

A forecast of future costs based on the RCAF-U — an historic index of costs for the entire rail industry — does not necessarily reflect the cost increases that a single carrier could expect to incur in providing service for a specific commodity. The inflation index in UP's business forecast, in contrast, relates specifically to coal movements in the EWRR traffic group and, therefore, should produce more reliable projections than the more broad-based RCAF-U. It is not unreasonable to expect that an efficient railroad built today would realize future productivity gains by utilizing new technology as it is developed.[197] Accordingly, we find that UP's business forecast is the best evidence of record for projecting future cost increases associated with the coal movements that would be handled by the EWRR.

B. EXPECTED LIFE OF RAIL ASSETS

WPL developed the service lives of various railroad assets from data in UP's 1999 R-1 report. UP accepts WPL's estimate of service lives for all assets except rail. For rail, UP would have us assume an average life of 14 years. However, UP provided no documentation to support its 14-year estimate, whereas WPL's estimate of rail life is based on UP's R-1 report. Without discussion, UP's calculations also assumed a 14-year life for a variety of other track materials.[198] We cannot accept UP's unsupported estimates. We use WPL's estimate of the life of rail, based on UP's R-1 report, as the best evidence of record.

C. CAPITAL FLOTATION COSTS

Finally, UP argues that we should increase the cost associated with financing the EWRR by 3% to cover the cost of raising new equity capital. However, the only support it offers for this equity flotation argument is a statement by a UP witness that "[a]n estimate of three percent of initial capital investment appears to be reasonable."[199] As UP has made no attempt to support either the need for such an adjustment or the level of any such adjustment,[200] we reject its suggestion.

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[197] For example, the parties assume that the EWRR would replace its information technology and communications systems every 5 years. The EWRR could be expected to purchase equipment that would allow for productivity improvements.

[198] UP used a 14-year life for spikes, tie plates, rail anchors and turnouts.

[199] UP Reply V.S. Burkhardt, at 82

[200] A serious argument that an equity flotation cost should be included for a stand-alone railroad would require a re-examination of the use of the general rail industry cost-of-capital rate in the DCF model. Because of the complexities associated with such an endeavor, the parties to SAC cases have found it preferable to use the rail industry's cost-of-capital rate as a surrogate for that of the stand-alone railroad.