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PUBLIC

BEFORE THE
SURFACE TRANSPORTATION BOARD

INTERMOUNTAIN POWER AGENCY	)	
Complainant,	)	
v.	)	Docket No. 42136
UNION PACIFIC RAILROAD COMPANY	)	
Defendant.	)	

REBUTTAL EVIDENCE OF COMPLAINANT INTERMOUNTAIN POWER AGENCY

NARRATIVE

INTERMOUNTAIN POWER AGENCY

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Dated: July 3, 2013

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ACRONYMS

The following acronyms are used:

AAR	Association of American Railroads
AEI	Automatic Equipment Identifier
AEO	2013 Annual Energy Outlook Update Forecast
AII-LF	All-Inclusive Less Fuel Index, published by AAR
ATC	Average Total Cost
ATF	Across-the-Fence
BNSF	BNSF Railway Company and Predecessors
CAPM	Capital Asset Pricing Model
CMM	Coal Marketing Module
CMP	Constrained Market Pricing
COC	Cost of Capital
COD	Cost of Debt
COE	Cost of Equity
CTC	Centralized Traffic Control
CWR	Continuous Welded Rail
DCF	Discounted Cash Flow
DP	Distributed Power Configuration
DTL	Direct To Locomotive
EIA	Energy Information Administration
FED	Failed Equipment Detector
FRA	Federal Railroad Administration
GTM	Gross Ton-Mile
GWR	Gross Weight on Rail
HDF	On-Highway Diesel Fuel Index
IGS	Intermountain Generating Station
IPA	Intermountain Power Agency
IPP	Intermountain Power Project
IRR	Intermountain Railroad
KCS	Kansas City Southern Railway
LADWP	Los Angeles Department of Water and Power
MGT	Million Gross Tons
MITA	Master Intermodal Transportation Agreement
MMM	Maximum Markup Methodology
MOW	Maintenance of Way
MSDCF	Multi-Stage Discounted Cash Flow
NEMS	National Energy Modeling System
PPI	Producer Price Index
PRB	Powder River Basin
PTC	Positive Train Control

RCAF-A	Rail Cost Adjustment Factor, adjusted for productivity
RCAF-U	Rail Cost Adjustment Factor, unadjusted for productivity
ROW	Right of Way
RSIA	Rail Safety Improvement Act of 2008
R/VC	Revenue-to-Variable Cost
RTC	Rail Traffic Controller Model
SAC	Stand-Alone Cost
SARR	Stand-Alone Railroad
STEO	Short-Term Energy Outlook
T&E	Train & Engine
UP	Union Pacific Railroad Company
URC	Utah Railway Co.
URCS	Uniform Railroad Costing System
USDA	United States Department of Agriculture

CASE GLOSSARY

The following short form case citations are used:

AEPCO 2011	*Ariz. Elec. Power Coop., Inc. v. BNSF Ry. & Union Pac. R.R.*, NOR 42113 (STB served Nov. 22, 2011)
AEP Texas	*AEP Tex. N. Co. v. BNSF Ry.*, NOR 41191 (Sub-No. 1) (STB served Sept. 10, 2007).
APS	*Ariz. Pub. Serv. Co. & Pacificorp. v. The Atchison, Topeka & Santa Fe Ry.*, 2 S.T.B. 367 (1997)
Carolina P&L	*Carolina Power & Light Co. v. Norfolk S. Ry.*, 7 S.T.B. 235 (2003)
Coal Rate Guidelines or Guidelines	*Coal Rate Guidelines, Nationwide*, 1 I.C.C.2d 520 (1985), *aff'd sub nom. Consolidated Rail Corp. v. United States*, 812 F.2d 1444 (3rd Cir. 1987)
Coal Trading	*Coal Trading Corp. v. The Baltimore & Ohio R.R., et al.*, 6 I.C.C.2d 361 (1990)
Duke/CSXT	*Duke Energy Corp. v. CSX Transp. Inc.*, 7 S.T.B. 402 (2004)
Duke/NS	*Duke Energy Corp. v. Norfolk S. Ry.*, 7 S.T.B. 89 (2003)
FMC	*FMC Wyo. Corp. v. Union Pac. R.R.*, 4 S.T.B. 699 (2000)
KCP&L	*Kansas City Power & Light Co. v. Union Pac. R.R.*, NOR 42095 (STB served May 19, 2008)
Major Issues	*Major Issues in Rail Rate Cases*, EP 657 (Sub-No. 1) (STB served Oct. 30, 2006)
Nevada Power II	*Bituminous Coal - Hiawatha, Utah to Moapa, Nevada,* 10 I.C.C.2d 259 (1994)
OG&E	*Oklahoma Gas & Elec. Co. v. Union Pac. R.R.*, NOR 42111 (STB served July 24, 2009)
Otter Tail	*Otter Tail Power Co. v. BNSF Ry.*, NOR 42071 (STB served Jan. 27, 2006)

Xcel I	*Pub. Serv. Co. of Colorado d/b/a Xcel Energy v. Burlington N. & Santa Fe Ry.*, 7 S.T.B. 589 (2004)
Xcel II	*Pub. Serv. Co. of Colorado d/b/a Xcel Energy v. Burlington N. & Santa Fe Ry.*, NOR 42057 (STB served Jan. 19, 2005).
TMPA	*Texas Mun. Power Agency v. Burlington N. & Santa Fe Ry.*, 6 S.T.B. 573 (2003)
Seminole	*Seminole Elec. Coop., Inc. v. CSX Transp., Inc.*, NOR 42210 (Complaint filed Oct. 3, 2006)
WFA I	*Western Fuels Ass'n, Inc. & Basin Elec. Power Coop. v. BNSF Ry.*, NOR 42088 (STB served Sept. 10, 2007)
WFA II	*Western Fuels Ass'n, Inc. & Basin Elec. Power Coop. v. BNSF Ry.*, NOR 42088 (STB served Feb. 18, 2009)
Wisconsin P&L	*Wisconsin Power & Light Co. v. Union Pac. R.R.*, 5 S.T.B. 955 (2001)
West Texas Utilities	*West Tex. Utils. Co. v. Burlington N. R.R.*, 1 S.T.B. 638 (1996), *aff'd sub nom. Burlington N. R.R. v. STB*, 114 F.3d 206 (D.C. Cir. 1997)

II. MARKET DOMINANCE

A. QUANTITATIVE EVIDENCE

On Opening, IPA presented the traffic and operating characteristics for the movements to which the challenged rates apply in Table II-A-1. Op. at II-3. It set forth its calculations of the variable costs for the movements to which the challenged rates apply and the revenue to variable cost ratios for the challenged rates in Table II-A-2. *Id.* at II-4. For convenient reference, IPA sets forth below Table II-A-1 and Table II-A-2 from its Opening Evidence:

TABLE II-A-1

Summary of Traffic & Operating Parameters

Movement Parameters	Provo, UT to Lynndyl, UT			
	286,000 GWR	286,000 GWR	263,000 GWR	263,000 GWR
(1)	(2)	(3)	(4)	(5)
1. Railroad	UP	UP	UP	UP
2. Miles	97.0	97.0	97.0	97.0
3. Shipment Type	Received & Terminated	Received & Terminated	Received & Terminated	Received & Terminated
4. Cars per Train	104	104	104	104
5. Car Type	General Service Hopper	Special Service Hopper	General Service Hopper	Special Service Hopper
6. Car Ownership	Private	Private	Private	Private
7. Tons per Car	116.0	116.0	104.1	104.1
8. Commodity	Coal	Coal	Coal	Coal
9. Movement Type	Unit Train	Unit Train	Unit Train	Unit Train

TABLE II-A-2
Variable Cost and Revenue/Variable Cost Ratios

Item	Provo, UT to Lynndyl, UT 286,000 GWR	286,000 GWR	263,000 GWR	263,000 GWR
(1)	(2)	(3)	(4)	(5)
1. Phase III Cost Base Year 2011 1/	$1.81	$1.78	$1.94	$1.91
4Q12				
2. Index to 4Q12	1.03248	1.03248	1.03248	1.03248
3. Phase III Cost 4Q12 2/	$1.87	$1.84	$2.01	$1.97
4. Jurisdictional Threshold 3/	$3.37	$3.31	$3.62	$3.55
5. Rate Per Ton in Private Cars 4Q12	$7.46 4/	$7.46 4/	$7.64 5/	$7.64 5/
6. Rate to Variable Cost Ratio 4Q12 6/	3.99	4.06	3.80	3.88

1/ STB 2011 UP URCS formula.
2/ Line 1 x Line 2
3/ Line 3 x 1.80
4/ Rate of $7.13 per ton from UP Tariff 4222 plus an average 4Q12 fuel surcharge ("FSC") of $0.33 per ton.
FSC based on UP Circular 6602-C (Colorado and Utah), Item 690. UP 4Q12 Average FSC of $0.40 per car-mile based on Oct, Nov, and Dec 2012 fuel surcharges of $0.38, $0.41, $0.40 per car-mile, respectively. FSC = $0.40 per car-mile x 97 miles ÷ 116.0 tons per car.
5/ Rate of $7.27 per ton from UP Tariff 4222 plus an average 4Q12 FSC of $0.37 per ton.
FSC based on UP Circular 6602-C (Colorado and Utah), Item 690. UP 4Q12 Average FSC of $0.40 per car-mile based on Oct, Nov, and Dec 2012 fuel surcharges of $0.38, $0.41, $0.40 per car-mile, respectively. FSC = $0.40 per car-mile x 97 miles ÷ 104.1 tons per car.
6/ Line 5 ÷ Line 3

On Reply, UP has agreed with the traffic and operating characteristics, the variable cost calculations, and the revenue to variable cost ratios as presented by IPA in its Opening Evidence and set forth above. Reply at II-1.

B. QUALITATIVE EVIDENCE

In Part II-B of its Opening filing, IPA presented evidence on qualitative market dominance and noted that UP had admitted that it could not prevail on this issue. Op. at II-4-11. UP has acknowledged on Reply that it does not dispute that it has market dominance over the transportation to which the challenged rates apply. Reply at II-1.

III-A Stand-Alone
Traffic Group

III. A. <u>STAND-ALONE TRAFFIC GROUP</u>

On Opening, IPA determined the maximum lawful rates for UP's transportation of coal to IPA's Intermountain Generating Station ("IGS") utilizing the stand-alone cost ("SAC") constraint of the *Coal Rate Guidelines*. IPA created the Intermountain Railroad ("IRR") as its hypothetical least-cost, most-efficient stand-alone railroad ("SARR") for SAC purposes. The IRR is a 174.96-route mile system that replicates a portion of UP's system from Provo, UT on the northeast to Milford, UT on the southwest. The IRR transports 22.1 million tons of coal and non-coal traffic in its first year of operations with the majority of that traffic moving in interline service. Approximately 41% of the IRR's first-year traffic is coal traffic.

UP's Improper ATC Modifications

The most significant Part III-A issue in dispute between the parties is UP's improper manipulation of the Board's Modified Average Total Cost ("ATC" or "MATC") methodology for allocating revenues on cross-over traffic. As IPA demonstrates in Part I of this Rebuttal, UP's attack on the ATC methodology stems directly from UP's position that the Board should prohibit all cross-over traffic in SAC cases. *See* Opening Comments of Union Pacific Railroad Company at 2, *Rate Regulation Reforms* (filed Oct. 23, 2012) ("UP 715 Comments") ("The Board never should have allowed the use of cross-over traffic in rate cases."); *see also* Reply at I-23 ("[T]he Board should entirely prohibit the use of cross-over traffic in SAC cases."). UP's proposed adjustments to ATC attempt to substantially eliminate any economic benefit to the SARR from carrying cross-over traffic. Stated differently, UP's various ATC-related arguments seek to achieve indirectly the same result as a direct and outright ban on cross-over traffic. Reply at I-16 ("[T]he use of cross-over traffic and ATC is a form of manipulation that produces results that fail to approximate the outcome of a SAC analysis performed on a true stand-alone railroad.").

UP's divisions approach violates the Board's URCS Phase III costing procedures. Specifically, UP modifies the ATC divisions for the on-SARR segments of interline movements by assuming that certain shipments move in carload or multicar service while on the residual UP but move as trainload shipments for their short trip over the IRR. There is no basis for this modification. By costing the on-SARR segments as trainload service, UP reduces the URCS Phase III costs for these segments. Specifically, by overriding the Costed Movement Type for such traffic, UP removes the make-whole adjustment and the inter- and intratrain ("I&I") switching costs that URCS Phase III attributes to carload and multicar traffic. By lowering the costs of the on-SARR segment relative to the off-SARR segments, UP rigs the ATC divisions process to reduce IRR revenues. UP fails to offer any legitimate support for this outcome-driven modification, which is factually inconsistent and illogical.

UP's approach has the additional defect of being "identity-sensitive" with respect to the costing of an individual segment of a given cross-over movement. As IPA shows below, UP's methodology is biased and improper because it calculates different costs (and thus different ATC divisions) for the same line segment and service based solely on the question of whether the SARR or the residual incumbent provides that service. Accordingly, UP's approach is arbitrary and biased and cannot be accepted.

Adding insult to injury, UP also assumes that the cost reduction amount associated with treating the on-SARR segment as trainload service will be added to the off-SARR URCS Phase III costs as a further means of depriving the SARR of an appropriate division. *Id.* at I-21-22 ("Under UP's approach . . . the difference between costing the on-SARR portion of the movement as carload versus trainload traffic *is simply assigned to the off-SARR portion of the movement*, where the more costly service is provided.") (emphasis added).[1] To reiterate, UP's only purported justification for this reassignment of costs is that it adds more cost to the segments "where the more costly service is provided." *Id.* UP, however, fails to offer any hint of an explanation (much less proof) that the

[1] In practice, UP's calculation procedure is to determine the on-SARR variable cost percentage for a given shipment by dividing its new, reduced on-SARR costs by the total movement costs calculated in the absence of the on-SARR cost reduction. For example, assume a cross-over movement where the SARR provides bridge-carrier service. Variable costs calculated using the Modified ATC methodology are assumed to be $11 per ton for each off-SARR segment and $5 per ton for the on-SARR segment (*i.e.*, a total of $27 per ton in variable costs and an on-SARR variable cost percentage of 18.5%). UP's divisions method improperly reduces the on-SARR variable costs from $5 to $3, and then UP calculates the SARR's variable cost percentage based on the ratio of $3 to $27 (11.1%).

Board's existing URCS methodology fails to assign sufficient costs to the off-SARR segments or any explanation as to how UP's linehaul service is any "more costly" than the IRR's linehaul service.[2]

Significantly, UP's real argument is not with the Board's ATC methodology – which UP concedes is "facially neutral" – but instead, with the *Coal Rate Guidelines* themselves. In that regard, UP objects to a rate regulation system in which shippers are permitted to design a stand-alone railroad. *See* Reply at I-17 (claiming that a "facially neutral" revenue allocation system such as ATC nevertheless introduces bias because shippers control the "SARR design and traffic selection process"). Reduced to its essence, UP's Reply therefore constitutes a request that the Board adopt a "non-neutral" divisions methodology in order to compensate UP for the fact that the *Coal Rate Guidelines* give shippers the initiative (and the corresponding obligation) to design SARRs. There is no basis for using such a "non-neutral" divisions approach to undercut the fundamental premise of the *Guidelines*. *Id.*, 1 I.C.C.2d at 543 (parties will have "broad flexibility to develop the least costly, most efficient plant"); *id.* at 544 ("The ability to group traffic of different shippers is essential to [the] theory of contestability.").

[2] UP claims that its cost-reassignment process allows it to steer clear of the Board's prohibition on making "piecemeal" adjustments to URCS (*id.* at I-21), but it is evident that UP's shifting of on-SARR costs to off-SARR segments constitutes a blatant, outcome-driven attempt to further contort the Board's divisions calculations in a manner that always biases the results in favor of UP.

UP's proposed approach also runs counter to UP's own position in the Board's *Rate Regulation Reforms* proceeding. In particular, UP argued in EP 715 that "there is no economically valid way to allocate cross-over revenue between the incumbent carrier and the SARR," and UP opposed any effort to make changes to the Board's URCS system as a means of refining ATC divisions. *See* UP 715 Comments at 3-4; *see also* Rebuttal Comments of Union Pacific Railroad Company at 7, *Rate Regulation Reforms* (filed Jan. 7, 2013) ("UP 715 Rebuttal") ("UP also disagrees with the Coal Shippers' assertion that the Board's concerns should be addressed 'through modifications to the calculation of URCS variable costs used in ATC.'"). In this regard, UP insisted that making adjustments to ATC divisions could not possibly improve the revenue allocation on cross-over traffic because the Board would have no way of knowing if the adjustments improved the accuracy of the divisions:

> The Coal Shippers help underscore the arbitrary, unverifiable nature of the revenue allocation process by proposing three new allocation methods, which raises to ten the number of methods that have been considered or used by the Board.[] . . .*[A]dditional refinements to the revenue allocation process would leave the Board no more confident that the results would be any more accurate or reliable* . . . .

Reply Comments of Union Pacific Railroad Company at 6, *Rate Regulation Reforms* (filed Dec. 7, 2012) ("UP 715 Reply"). Essentially, UP argued that any conceivable approach to allocating revenues on cross-over traffic would be arbitrary and improper.

In the present case, however, UP asks the Board to impose such arbitrary adjustments to the "facially neutral" ATC system in order to substantially reduce the on-SARR revenue associated with cross-over traffic. UP's argument in the instant case contradicts UP's own EP 715 position, promotes a costing methodology that bears no logical relationship to the contemplated IRR/UP interline operations, and reflects a transparent attempt to deprive the IRR of any reasonable measure of revenue for its involvement in the transportation of cross-over traffic. As IPA demonstrates herein, the Board should reject UP's proposed modifications and should continue to rely on Modified ATC.[3]

1. Stand-Alone Railroad Traffic

a. Summary

In its Reply Evidence, UP reduces the annual traffic volume for the IRR by approximately six to ten percent as the result of: (i) reduced 2012 volumes (as compared with the Prophecy forecasts IPA had relied upon to generate 2012

[3] In its Opening Evidence, IPA presented additional maximum rate calculations based upon the "Alternative ATC" approach that the Board identified in *Rate Regulation Reforms* for possible use in "future" cases. Op. at III-A-21 (citing *Rate Regulation Reforms*, slip op. at 18); *see also* Op. at III-H-13-14. IPA presented these additional calculations in order to "demonstrate that the issue does not make a substantial difference in the outcome of this case." *Id.* at III-A-21. Notably, UP made no reference whatsoever to Alternative ATC in its Reply Evidence.

Nevertheless, in order to demonstrate once again that the Board's proposed Alternative ATC methodology would not materially impact the outcome of the present case, IPA also has included additional maximum rate calculations in this Rebuttal using Alternative ATC. These alternative case calculations again show that the use of Alternative ATC would not have a material impact.

volumes); (ii) updated EIA and USDA-based traffic forecasts for future time periods; and (iii) the elimination of two categories of IRR non-coal traffic (as described below):

Table III-A-1
IRR Total Annual Tonnages
IPA Opening vs. UP Reply
(thousands of tons)

Year	IPA Opening	UP Reply	Difference	Percentage Change
2012 (Nov-Dec)	3,891	3,502	-388	-10.00%
2013	22,567	21,102	-1,465	-6.49%
2014	23,224	21,350	-1,873	-8.07%
2015	23,642	21,667	-1,975	-8.35%
2016	24,047	21,717	-2,330	-9.69%
2017	24,479	22,531	-1,948	-7.96%
2018	24,687	22,991	-1,696	-6.87%
2019	24,971	23,236	-1,734	-6.95%
2020	25,587	23,554	-2,034	-7.95%
2021	25,734	23,841	-1,894	-7.36%
2022 (Jan-Oct)	21,618	20,151	-1,467	-6.79%

Source: Reply at III.A-16 (Table III.A.5)

Notably, UP reduces IPA's estimate of the IRR's revenues by much greater percentages. In fact, principally through its improper manipulation of the ATC divisions process, UP attempts to reduce the IRR's annual revenues by as much as twenty-five percent (25%):

Table III-A-2
Comparison of IPA's Opening IRR Revenues and UP's Reply IRR Revenues (in millions)

Year	IPA Opening	UP Reply	Difference	Percentage Change
2012 (Nov-Dec)	$18.0	$14.3	$3.7	-20.56%
2013	$107.7	$88.2	$19.5	-18.11%
2014	$116.2	$90.1	$26.1	-22.46%
2015	$121.9	$92.9	$29.0	-23.79%
2016	$126.7	$94.1	$32.6	-25.73%
2017	$132.7	$100.0	$32.7	-24.64%
2018	$137.2	$104.7	$32.5	-23.69%
2019	$142.2	$107.9	$34.3	-24.12%
2020	$150.9	$112.0	$38.8	-25.78%
2021	$155.0	$115.9	$39.1	-25.23%
2022 (Jan-Oct)	$132.6	$100.5	$32.2	-24.21%

Source: Reply at III.A-31 (Table III.A.11)

UP's most significant downward revisions to the IRR's annual revenues relate to non-coal traffic and reach levels of more than thirty-seven percent (37%):

Table III-A-3 **Comparison of IRR Non-Coal Volume and IRR Non-Coal Revenue Reductions (IPA Opening vs. UP Reply)**						
	Non-Coal Volume (in thousands of tons)			Non-Coal Revenue (in millions)		
	IPA Opening	UP Reply	Volume Reduction (%)	IPA Opening	UP Reply	Revenue Reduction (%)
2012 (Nov-Dec)	2,287	1,983	-13.29%	$8.2	$5.1	-37.80%
2013	13,187	11,932	-9.52%	$51.7	$33.7	-34.82%
2014	13,585	12,403	-8.70%	$57.6	$36.6	-36.46%
2015	13,984	12,754	-8.80%	$62.4	$39.2	-37.18%
2016	14,311	13,065	-8.71%	$66.1	$41.6	-37.07%
2017	14,566	13,398	-8.02%	$69.7	$44.2	-36.59%
2018	14,732	13,703	-6.98%	$73.0	$46.8	-35.89%
2019	14,973	14,032	-6.28%	$76.7	$49.7	-35.20%
2020	15,195	14,295	-5.92%	$80.3	$52.5	-34.62%
2021	15,450	14,550	-5.83%	$84.4	$55.3	-34.48%
2022 (Jan-Oct)	13,144	12,342	-6.10%	$73.8	$48.4	-34.42%
Source: Reply III.A-15, III.A-29, III.A-30 (Tables III.A.4, III.A.9, III.A.10)						

b. The Number of Traffic and Revenue Issues in Dispute is Relatively Small

With the exception of the major ATC divisions issues (which IPA discusses in Part III-A-3-c below), UP explains in its Reply that it has "fewer disagreements with IPA's methods of calculating volumes and revenues in this proceeding than in Docket No. 42127." Reply at III.A-1. In many instances, UP accepts IPA's Opening methodology for the determination of traffic or revenue levels, but UP updates IPA's figures to reflect more recently published volumes or forecast data. IPA, in turn, updates UP's forecasts with new information published after the date of UP's Reply. In addition, UP's Reply identifies several corrections or adjustments to IPA's Opening methodology which IPA accepts as noted herein.[4]

c. <u>UP's Cross-Subsidy Argument is Mistaken</u>

UP also uses its Part III-A Reply Evidence as an occasion to advance its misdirected internal cross-subsidy claims. The IRR traffic group includes the issue traffic and also includes a variety of non-issue traffic with movements that traverse both: (i) the same core UP facilities as the issue traffic; and (ii) certain other UP lines replicated by the IRR. In the terminology of the Board's *Otter Tail* decision, the IRR system therefore includes "Shipper 1" and "Shipper 2" traffic. *See Otter Tail*, slip op. at 9. There is no IRR traffic that operates solely over lines other than the UP lines used to move the issue traffic (*i.e.*, there is no "Shipper 3" traffic on the IRR). *Id.*, slip op. at 10.

UP, however, wrongly attempts in its Part III-A Reply to claim that the IRR's three-track line near the IGS plant should be treated as constituting two

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[4] UP's Reply Evidence includes one criticism of IPA's Evidence that UP appears to have retained inadvertently from its Reply in Docket No. 42127. Reply at III.A-3. Specifically, UP claims that IPA's categorization of IRR traffic into three main categories is "unnecessarily confusing." *Id.* UP made the exact same claim in Docket No. 42127 with respect to IPA's four categories of traffic. *See* Op. e-workpaper "Docket No. 42127 Reply.pdf" at III.A-3. In the instant case, however, UP divides traffic into exactly the same three categories as IPA. Consequently, there is no basis for this "residual" criticism left over from UP's Docket No. 42127 filing.

entirely separate facilities (*i.e.*, the main track and the two-track Lynndyl Yard). UP argues that the existence of these supposedly separate facilities supports UP's contention that the portion of the SARR extending from Lynndyl to Milford "does not carry any issue traffic." Reply at III.A-1. As IPA demonstrates in Part III-B-1-a and Part III-H-3 of this Rebuttal, UP's characterization of the IRR system is inaccurate and irrelevant. There is no Shipper 3 traffic that moves on the IRR and therefore there is no cross-subsidy on the IRR system.

2. <u>Volumes (Historical and Projected)</u>

The IRR moves both coal and non-coal traffic. IPA's Rebuttal e-workpaper "IPA Coal Traffic Forecast Rebuttal.xlsx" identifies projected coal volumes for the IRR for each year or partial year of the DCF period. Conversely, IPA's Rebuttal e-workpaper "Non-Coal Revenue Forecast Rebuttal.xlsx" identifies projected non-coal volumes for the IRR for each year or partial year of the DCF period.

The following Table shows the magnitude of the remaining disputes between the parties regarding IRR volumes. The disparities between the parties' volume estimates are the result of IPA's use of updated forecasts to determine the IRR's volumes and to UP's exclusion of two categories of IRR traffic (*i.e.*, Z-train and on-SARR local train shipments):

Table III-A-4 IRR Total Annual Tonnages UP Reply vs. IPA Rebuttal (thousands of tons)				
Year	**UP Reply**	**IPA Rebuttal**	**Difference**	**Percentage Change**
2012 (Nov-Dec)	3,502	3,663	161	4.6%
2013	21,102	22,116	1,014	4.8%
2014	21,350	22,412	1,062	5.0%
2015	21,667	22,774	1,107	5.1%
2016	21,717	22,852	1,135	5.2%
2017	22,531	23,695	1,164	5.2%
2018	22,991	24,178	1,187	5.2%
2019	23,236	24,449	1,213	5.2%
2020	23,554	24,789	1,235	5.2%
2021	23,841	25,095	1,254	5.3%
2022 (Jan-Oct)	20,151	21,216	1,065	5.3%
Source: Reply at III.A-16 (Table III.A.5); Rebuttal e-workpaper "IPA Coal Traffic Forecast Rebuttal.xlsx," Tab "IRR Revenue Forecast"; Rebuttal e-workpaper "Non-Coal Revenue Forecast Rebuttal.xlsx," tab "TDATA."				

a. <u>IGS Coal Traffic</u>

IPA based the IRR's coal volumes moving to IGS (including both issue and non-issue IPA coal movements) on IPA's internal forecast. Op. at III-A-7. On Reply, UP accepted IPA's projected volumes for the IGS coal traffic. Reply at III.A-3-4 and Reply e-workpaper "IPA Coal Traffic Forecast Reply.xlsx."

b. <u>Non-IPA Coal Traffic</u>

The IRR transports coal in interline service to eleven (11) destinations other than IPA. This traffic originates at Sharp, at UP-served points to the east of the IRR, or at locations beyond the eastern end of the UP system. The traffic terminates on UP-served lines to the west of the IRR system, or where UP delivers the coal in interchange to the terminating carrier.

On Reply, UP accepted IPA's methodology for determining the IRR's volumes of non-IPA coal traffic for all relevant time periods. Reply at III.A-5. UP updated those volumes with publicly reported data regarding its 4Q12 coal volumes and with the EIA's 2013 Early Release, which became available in December 2012. *Id.* EIA released the final version of its 2013 forecasts in May of 2013, and IPA relies upon those forecasts in this Rebuttal Evidence.

Accordingly, there are no disputes between the parties regarding the IRR's non-IPA coal traffic volumes.

c. <u>IRR Non-Coal Traffic</u>

The principal volume-related issues that UP raises in its Reply pertain to UP's effort to exclude two different categories of traffic from the IRR system: (i) Z-train traffic; and (ii) on-SARR traffic originated or terminated by local trains ("Local train traffic" or "On-SARR local train traffic"). In each case, UP argues that the Board should exclude such traffic from the IRR system. IPA retains each type of traffic.

Other than these two categories of traffic, there are no remaining disputes between the parties regarding the IRR's non-coal traffic volumes.

i. <u>The Inclusion of Z-Train Traffic is Appropriate</u>

UP argues that the Board should reject IPA's inclusion of premium intermodal "Z-train" traffic because the IRR's operating plan would not replicate the level of service the UP historically provided for such traffic. Reply at III.A-11-13. In particular, UP contends that the additional time associated with the hypothetical interchange of the Z-train traffic between UP and the IRR prevents the IRR from handling this traffic. Stated differently, UP argues that this overhead cross-over traffic should be excluded from the IRR's traffic group unless the SARR can beat the actual running time of the on-SARR movement by a sufficient margin to offset the time required for the interchanges.

As IPA explains in Part III-C-2-d below, UP's arguments are unavailing and the inclusion of the Z-train traffic is entirely appropriate. The fact that the average elapsed transit time between Milford and Lynndyl for the Z trains – including interchange time – is slightly higher (by only 30 minutes) when the IRR is inserted into a small portion of a route that is well over 1,000 miles in length does *not* mean that the relevant shippers' service requirements are not being met.

Although UP implies that the increased Z-train transit time resulting from the SARR's insertion in the route would prevent UP from competing with trucks and with BNSF's expedited service (Reply at III.C-21), UP has not provided any concrete evidence that this would occur. Nor did UP provide any evidence that any specific service requirements contained in its transportation contracts with the relevant shippers would not be met as a result of a modest increase in the overall average transit time from initial origin to final destination.[5]

ii. <u>On-SARR Local Train Traffic</u>

UP also objects to IPA's inclusion of certain on-SARR local train traffic. Reply at I-7-8, III.A-2, and III.A-13-15. This traffic consists of approximately 7,400 shipments of agricultural, ore, rock and general merchandise traffic.

In the real world, most of the shipments of this type originate[6] on UP's system at points located between Lynndyl and Milford and move in UP local train service south to UP's yard at Milford. *Id.* at I-7. At the Milford Yard, UP switches the cars from a southbound UP local train to a northbound UP through train which, in turn, moves the traffic through Lynndyl or Provo to its ultimate destination. *Id.*

In its Opening Evidence, IPA proposed an arrangement for this traffic under which the residual UP would serve the on-SARR local traffic by moving it south to the Milford Yard in exchange for a fee. *See* Op. e-workpaper "IPA_ATC_URCS_VARIABLE_COST_INPUTS_2011-121212.xlsx." The IRR would then transport this traffic in northbound through train service from Milford

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[5] *See* Part III-C-d-iii below calculating the percentage increase in transit time for Z trains traveling from Los Angeles to Denver.

[6] Certain of this traffic instead terminates in local UP service at points between Milford and Lynndyl. The issues remain the same regardless of whether a particular shipment originates or terminates on the IRR.

to Lynndyl (or Provo) using its own locomotives and crews, and finally, the IRR would interchange the through train back to the residual UP at that point (for regular UP revenue service to the shipment's ultimate destination). *See* Op. e-workpaper "ONSARR_NONCOAL_ORIGINAL_TERMINATED_BASE_PERIOD_TRAINS_v5.xlsx."

On Reply, however, UP argues that it was essential for the IRR to handle the southbound origination of this northbound traffic without any UP involvement whatsoever. Based upon this argument, UP removes each of these shipments (in both the southbound local train and northbound through train directions) from its model. *See*, *e.g.*, Reply at III.A-15 (UP concludes that it must "remove the traffic from the SARR traffic group").[7]

In support of its criticisms, UP repeatedly insists that IPA should not have used the residual UP in any manner whatsoever for the local on-SARR service for this traffic. *See*, *e.g.*, *id.* at III.A-2 ("IRR does not provide the required origination and termination service for this traffic."); *id.* at III.A-14 ("IPA cannot choose to include this on-SARR originated/terminated traffic and then provide only part of the on-SARR movement needed to serve this traffic.").

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[7] In its Reply Evidence, UP mistakenly groups approximately 300 shipments in this category. These shipments actually originate or terminate at three off-SARR locations that are east of the eastern terminus of the IRR line in Provo (denominated as Provo, Ironton, and Springville in UP's train/car movement data), and therefore should be treated in the same manner as any other cross-over traffic on the IRR.

Commenting upon the supposed purpose of cross-over traffic, UP alleges that IPA's approach was inappropriate where the IRR could have provided the service entirely on its own:

> IPA is trying to include a type of cross-over traffic that is completely inconsistent with the Board's justification for the use of cross-over traffic. The use of cross-over traffic is supposed to be a simplifying device that allows a complainant to avoid the burden of adding or extending lines on its SARR that would be needed to serve the origin and destination of cross-over traffic.[] But here, IPA built the necessary line, selected traffic originating or terminating on the line for the SARR traffic group, *and then refused to have IRR provide the required on-SARR origination or termination service for the traffic.*

Id. at III.A-14 (emphasis added); *accord id.* at 8 ("The Board has justified the use of cross-over traffic as a shortcut that allows a complainant to avoid the burden and complication of extending its SARR to serve the origination and destination of cross-over traffic.[] However, IPA's SARR already replicates the lines on which the traffic originates or terminates . . . .").

The *Coal Rate Guidelines* give shippers broad flexibility in the selection of traffic for their systems. *Id.*, 1 I.C.C.2d at 544 ("We see no need for any restrictions on the traffic that may potentially be included in a stand-alone group."). Although UP makes reference to precedent regarding the nature of cross-over traffic, UP fails to provide any support for the separate proposition that the availability of cross-over traffic in SAC cases means that a shipper's SARR must directly participate in the movement of all local traffic that a real-world carrier happens to move over the lines that the SARR replicates. IPA is not aware of any Board precedent mandating such a result. The "reverse-directional" nature of the subject real-world service further removes this situation from any established Board precedent.

Nevertheless, in order to remove this issue of apparent first impression from the case, IPA has accepted UP's position that the IRR cannot rely upon UP in any respect to service this on-SARR local traffic. As explained in Part III-C-2-c-xii, IPA is adding the necessary crews and locomotives to perform the full on-SARR service that UP actually performs for this traffic in the real world.[8] The change in the IRR's manner of handling this local service does not, of course, increase the volume of traffic that the IRR will handle. Instead, the effect of this adjustment is merely to eliminate UP's involvement in the on-SARR local service.

In *Duke Energy Corp. v. Norfolk S. Ry.*, 7 S.T.B. 89 (2003) ("*Duke/NS*"), the Board stated that a shipper may "refine its evidence to address issues raised by the railroad regarding its opening evidence." *Id.* at 101. Significantly, the Board added that "[w]here the railroad has identified flaws in the shipper's evidence *but has not provided evidence that can be used in the Board's SAC analysis* . . . the shipper may supply corrective evidence." *Id.* (emphasis added). In its Reply Evidence, UP alleges that there is a flaw in IPA's evidence,

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[8] IPA also has added an additional Marketing Manager to its G&A staffing on Rebuttal. One of this individual's responsibilities will be to interact with the customers served in on-SARR local service.

but UP fails to provide evidence that can be used in the Board's SAC analysis (*i.e.*, evidence regarding the revenues and costs associated with the on-SARR local service). There is no question that UP understands the nature and scope of the subject local service. Rather than provide such evidence, however, UP wrongly insists that its only option in the case was to exclude this traffic from the IRR traffic group.

Notably, UP attempts to construct a defense for its failure to provide such evidence by alleging that IPA's exclusion of any IRR local service was a "fundamental criteria" for the IRR (Reply at III.A-15), but UP's own evidence demonstrates an awareness that IPA had not excluded IRR local service in other respects. Specifically, UP states in its Reply that IPA included IRR through train traffic that originates or terminates some local shipments on the Lynndyl to Milford line. Reply at III.A-14 n.18 ("IRR has provided the on-SARR movement necessary to serve the traffic in the same way that UP does in the real world."); *id.* at III.A-18 n.24 (UP does not remove traffic from the IRR system where the "IRR provides the entire on-SARR service for this traffic, including origination or termination"); *id.* ("IPA replicates UP's service for these carloads on IRR.").

In addition, UP's allegation also is contrary to the fact that – by UP's own admission – IPA costed the on-SARR local train movements as originating on the IRR. *See* Reply at III.A-21 ("IPA did not cost the movements as SARR bridge movements . . . . Rather, IPA costed the SARR portion as originated or terminated . . . .") (citing Op. e-workpaper "IPA_ATC_URCS_VARIABLE_COST_

INPUTS_ 2011-121212.xlsx."). IPA selected the "Originate and Deliver" or "Receive and Terminate" movement type in URCS Phase III for this traffic, and IPA identified the full length of the on-SARR miles (in both the southbound and northbound directions) for this service.[9] Consequently, there is no basis for UP's allegation that it was justified in failing to provide evidence that the Board could use.

Instead, UP makes its allegation solely in an effort to circumvent the Board's *Duke/NS* precedent and to support the improper claim it was required to remove the associated through train traffic from the IRR system, rather than simply submitting evidence that would have been consistent with its argument that the IRR is required to provide on-SARR local service for the subject traffic without UP's involvement. There can be no question that UP possessed all the information necessary to present evidence regarding the revenues and expenses associated with this local service. Accordingly, IPA is justified in foregoing UP involvement in providing service for the IRR's existing traffic group in order to respond to UP's Reply criticisms.

As described in detail below, IPA has calculated divisions on this on-SARR local traffic using the Board's MATC methodology and has increased

[9] For example, IPA included 129 IRR miles in its divisions calculations for local shipments originating in Bloom, Utah. Those miles included the 40 southbound miles from Bloom to Milford and the 89 northbound miles from Milford to Lynndyl.

the SARR expenses to address the IRR's performance of on-SARR local service without UP's involvement.[10]

iii. Automotive Traffic Volumes

On Reply, UP accepted IPA's approach to forecasting automotive traffic. Reply at III.A-8-9. UP updated IPA's forecasts using the EIA's 2013 Annual Energy Outlook ("AEO") Early Release, and IPA further updates those forecasts with the final 2013 AEO.

iv. Agricultural Traffic Volumes

Subject to one correction, UP accepted IPA's approach to forecasting agricultural traffic on Reply. Reply at III.A-9-10. UP updated IPA's forecasts using the EIA's 2013 AEO Early Release, and IPA further updates those forecasts with the final 2013 AEO.

UP corrects IPA's methodology to account for the fact that the USDA forecasts are not calendar-year forecasts. *Id.* IPA accepts this correction and has calculated agricultural volumes accordingly in its Rebuttal Evidence. *See*

[10] UP's Reply Evidence sets forth UP's own calculation of the divisions that would exist if: (i) the residual UP were to perform on-SARR origination service for its own revenue account; (ii) IRR were to perform on-SARR through train service; and (iii) the residual UP were to perform off-SARR through train service. Reply at I-8-9 n.16 and III.A-21 n.35. As discussed in greater detail below, IPA's Rebuttal Evidence likewise includes an alternative calculation which assumes that the IRR would handle only the through train portion of this local on-SARR traffic. IPA calculates divisions for the IRR's overhead portion of such movements using the Board's MATC methodology.

IPA Rebuttal e-workpaper "EIA and USDA Forecast Rebuttal.xlsx," tab "Agriculture."

v. Intermodal, Industrial, and Other Non-Coal Volumes

On Reply, UP accepted IPA's approach to forecasting intermodal, industrial, and other non-coal traffic. Reply at III.A-10. UP updated IPA's forecasts using the EIA's 2013 AEO Early Release, and IPA further updates those forecasts with the final 2013 AEO.

d. Peak Year Traffic

The IRR's peak year is November 2, 2021 through November 1, 2022. As updated to incorporate the modifications identified in this Rebuttal, the peak year traffic for the IRR is as follows:

TABLE III-A-5
Summary of IRR Peak Year Traffic

Commodity	Carloads/Units	Net Tons
Coal	87,288	9,357,504
Automotive	12,500	231,718
Agricultural	13,658	1,440,754
Intermodal/Other	470,663	14,368,636

Source: Rebuttal e-workpapers "IPA Coal Traffic Forecast Rebuttal.xlsx," and "Non-Coal Revenue Forecast Rebuttal.xlsx."

3. Revenues (Historical and Projected)

IPA addresses the revenues for the IRR under the same four general headings it used on Opening.

a. Single Line

The only single-line traffic included within the IRR traffic group is non-issue coal traffic moving to IGS from the Sharp coal loadout.

b. Divisions – Existing Interchanges

The only traffic within this category is the issue traffic that originates from Utah Railway Company-served coal origins and is interchanged to the IRR at Provo for delivery to the plant.

c. Divisions – Cross-Over Traffic

In its Reply Evidence, UP seizes upon the Board's reference to a costing "disconnect" in *Rate Regulation Reforms* as an excuse to make improper and illogical adjustments to the Board's Modified ATC methodology for cross-over shipments of carload and multicar traffic. *See, e.g.*, Reply at I-9.[11] As the Board will note, UP's Reply includes very little actual support for UP's proposed adjustments. Instead, UP constructs its entire revised methodology on the basis of the Board's *AEPCO* decision and the language of *Rate Regulation Reforms*. UP also blatantly mischaracterizes its proposal by claiming that it "is the most limited

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[11] By way of reference, UP addresses the subject of ATC divisions in the following locations within its Reply: Part I at 9 and 16-24, and Part III.A at 16-17 and 18-20.

change to the Board's current approach to ATC and cross-over traffic that the Board could adopt while still doing something to mitigate the disconnect it acknowledged in *Rate Regulation Reforms*." Reply at I-9.

In calculating divisions on cross-over traffic, UP modifies the Board's MATC methodology in several improper respects. Specifically, UP makes the following adjustments to the URCS Phase III costing of the IRR's overhead non-coal traffic, all designed to cost the on-SARR portion of interline movements in a manner that will reduce the IRR's share of revenues:

(1) UP sets the URCS Costed Movement Type to Trainload, but UP does so only for the on-SARR portion of interline movements (Reply at III.A-20 n.32);

(2) UP uses the average train lengths for IRR general freight trains of 84 cars and the URCS trainload minimum of 50 cars for intermodal trains, again, only for the on-SARR portion of the movements (*Id.*);

(3) UP sets the empty return ratio to the system-average level by car type only for the on-SARR portion of the movements (*Id.* at III.A-20); and

(4) UP assigns the amount by which it has reduced on-SARR costs to its own off-SARR costs, claiming that this adjustment is necessary to ensure accurate total costs and because off-SARR service is "more costly" (*Id.* at I-21-22).

UP's adjustment are improper. IPA addresses each of UP's various ATC-related arguments in turn, below.

i. UP's Divisions Approach is Improper and Illogical

In Part I of its Reply, UP explains that it adjusts IPA's ATC divisions calculations "to mitigate the disconnect between IPA's assumptions used to calculate variable costs for the on-SARR portion of certain movements and IPA's handling of those movements under the SARR operating plan." Reply at I-9; *see also id.* at III.A-16-17. In particular, UP complains that IPA calculated the on-SARR variable costs for all non-coal traffic as though the traffic would move in carload or multi-car service even though "IPA's operating plan assumes that 99 percent of that traffic will move over the SARR as if it were in unit trains." *Id.* at I-9 (citing *AEPCO 2011* and *Rate Regulation Reforms*).[12]

UP summarizes the Board's observation of a "disconnect" in *Rate Regulation Reforms*, and UP asserts that this disconnect "plainly had an impact on IPA's SAC analysis." Reply at I-19-21 (noting that 374,000 of the IRR's 385,000 base year shipments are carload shipments that the IRR would receive from UP in trainloads at one end of the SARR and would transport intact in overhead movements for delivery to UP at the other end of the SARR). Significantly, however, the manner that the IRR would handle trainloads over the SARR has *no impact* on the ATC calculations.

The purpose of the MATC procedure is to allocate UP's revenue across UP's movement of the shipment over off-SARR and on-SARR segments.

[12] The Board's *AEPCO* decision pertained, of course, only to the adjustment of variable costs for MMM purposes, rather than for MATC purposes.

UP makes no reference whatsoever to the manner in which UP actually provides linehaul service for this traffic over the lines that the IRR replicates or to the manner in which the residual UP provides linehaul service for this traffic on its off-SARR segments as part of the cross-over traffic at issue in this case. (UP's service is, of course, the same as the IRR's service for most of the distance the cars will travel.) Instead, UP seeks to convey the impression that there is something nefarious about the IRR's movement of these shipments that runs counter to UP's own on- and off-SARR service.

In any event, UP suggests that its evidence mitigates the disconnect that the Board recognized in *Rate Regulation Reforms* by adjusting "the on-SARR variable costs of non-coal carload and multi-carload traffic to reflect the URCS costs of handling the traffic in trainload service." Reply at I-21. UP adds that "[t]his means that when revenues are allocated to facilities replicated by the SARR, the allocations for this traffic reflect what the Board correctly described as 'the more efficient, lower cost trainload movements' IPA assumes for the SARR.'" *Id.* (citing *Rate Regulation Reforms*, slip op. at 16). Stated differently, UP's improper on-SARR costing adjustment will remove a substantial share of the already modest revenues that Modified ATC otherwise provides to the IRR.

UP next acknowledges that the Board refuses to accept movement-specific adjustment to URCS Phase III costing, but UP claims that those concerns "do not apply here." Reply at I-21 (citing *Major Issues*, slip op. at 50).

There are several major theoretical and factual problems with UP's approach.

(a) The Board Considers Only the Operations of the Defendant Carrier When Calculating Divisions

First, UP is wrong to focus on the operations of the SARR when evaluating ATC divisions calculations. UP's focus in this regard violates the Board's established rule that divisions on cross-over traffic are to be derived based upon the operations of the incumbent carrier using system-average costs. *See* Opening Submission of Coal Shippers at 22-26 and Crowley/Fapp V.S. at 42-44, *Rate Regulation Reforms* (filed Oct. 23, 2012) (explaining the defect in the Board's EP 715 focus on SARR operations). UP's Reply does not acknowledge the Board's established rule, nor does it provide any sort of reasoned explanation for departing from the underlying principles.

In *WFA I*, the Board specifically rejected shipper efforts to have ATC reflect the SARR's switching activity at its hypothetical interchanges with the residual incumbent and made clear that it would rely on system-average costs of the incumbent over the SARR segment:

> BNSF contends that WFA improperly allocated a larger share of the revenues to the SARR by developing variable cost information that included fictional interchanges costs between the SARR and the residual railroad. We agree. The purpose of the ATC revenue allocation is to determine *how much of the revenue that the defendant carrier collects* for the total movement should be allocated to each segment of the movement based on the costs that need to be recovered

> on each segment and the amount of other traffic on each segment available to share the joint and common costs. *See Major Issues* at 25 ("*By focusing on the ratio of actual costs incurred by the carrier*, the revenue allocation method should maintain, to the extent possible, the relationship between revenues and costs that would exist in a full SAC analysis); *id.* at 31 ("ATC is a suitable methodology that meets the Board's stated goals *of reflecting, to the extent practical, the carrier's relative average costs* of providing service over the two segments."); *id.* at 35 ("the ATC method . . . is keyed to *the defendant carrier's relative costs* of providing service . . . ."). Accordingly, we use BNSF's variable cost evidence.

WFA I, slip op. at 12 (emphasis altered). The Board similarly explained in the *AEP Texas* decision served the same day:

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

AEP Texas, slip op. at 13 (emphasis added).

Furthermore, in *WFA II*, the Board agreed with BNSF that the ATC calculation should reflect the real-world densities of the incumbent, and not the lower densities of the SARR. The Board explained that "the objective of ATC is to reflect the defendant carrier's relative costs of providing service over the relevant segments of its network," and that using the SARR's densities would create a mismatch with the incumbent's variable costs, especially as the SARR need not be a railroad at all. *Id.*, slip op. at 13-14. Consequently, there is no basis for UP to argue that the operations of the IRR somehow mandate a change in the Board's ATC methodology.

As noted above, however, even if the Board were to consider the nature of the IRR operations over its lines for the subject shipments, with the exception of the UP-to-IRR and the IRR-to-UP interchanges, the IRR's transportation of shipments over its lines is consistent with UP's real-world movement of those same shipments over the replicated lines. The IRR does not ignore any classification or switching activities that the UP trains actually perform for the movements in the IRR traffic group over the replicated lines. Moreover, UP's line-haul operations over the residual lines used in cross-over service similarly reflect the transportation of "intact trainloads."

(b) The Board Does Not Allow Movement-Specific Adjustments to URCS

Second, UP's proposed adjustment to the ATC methodology is inappropriate because, as UP concedes in its filing (*see* Reply at I-21), the Board does not allow movement-specific adjustments to URCS Phase III costing. *See Major Issues*, slip op. at 47-61. Specifically, the Board found that the expense and complexity of making movement-specific adjustments are not justified. *Id.*, slip op. at 50. Even more importantly, the Board concluded that the use of movement-specific adjustments does not "lead[] to a more accurate result than using the URCS system-wide average." *Id.*, slip op. at 51.

In particular, the Board observed that "URCS itself is already a complex costing model, adopted and refined through rulemakings, *that is based on sophisticated econometric analysis and elaborate cost information* filed with the agency by the carriers and audited on an annual basis." *Id.*, slip op. at 59 (emphasis added). The sophisticated econometric analysis that the agency relied upon in adopting URCS stands in sharp contrast to the complete dearth of support for the claim that URCS and ATC fail to accurately develop costs for cross-over bridge traffic involving carload or multicar traffic.

Notably, the Board did not reach its conclusion to preclude movement-specific adjustments lightly, acknowledging that it represented a reversal of position, but explaining that "it is only after years of analyzing movement-specific adjustments that we have gained enough experience to determine that their inclusion in URCS variable costing analysis . . . may bias the entire variable cost calculation." *Id.*, slip op. at 60.

The Board added that "[t]he variable costs used in rate reasonableness proceedings will be the system-average variable costs generated by URCS, using the nine movement-specific factors inputted into the Phase III of URCS" and that "[t]he only adjustments allowed to the URCS Phase III program would be those adopted in Ex Parte No. 431 (Sub-No. 2)." *Id.* The Board went on to state specifically that "[t]he inputs will not be refined further by using the

URCS 'detailed parameters.'" *Id.* UP's suggested change to the empty/load ratio is a change made using the URCS detailed parameters that is expressly prohibited by the Board.

UP's effort to override the URCS inputs for costing calculations is prohibited by the Board and certainly would bias the MATC results, particularly given the fact that UP makes its URCS modifications only for the on-SARR segment, notwithstanding the fact that it performs off-SARR service in the same "intact" manner.

(c) There is No Basis for Costing On-SARR Service Differently than Off-SARR Service

Third, there is no basis for UP's insistence that the Board should cost the IRR's intact movement of trains containing carload shipments over the SARR track any differently than UP's intact movement of those same trains over its residual lines. Nevertheless, this disparity is the key driver in UP's improper effort to manipulate the ATC methodology to deprive the IRR of revenues.

For an interline movement traveling from Southern California to Chicago (and using the IRR as a bridge carrier), UP's costing approach assumes that UP provides single car service for the shipment from California to Milford, UT, then UP assumes that the shipment transforms into trainload service from Milford to Lynndyl, then UP assumes that the shipment reverts back to single car service from Lynndyl to Chicago. There is no basis for these illogical and faulty assumptions.

In any event, the linehaul service that UP provides on such movements is entirely consistent with the service that the IRR provides. Linehaul service in intact trains is certainly more efficient than service involving a high degree of switching or train-building. But even in situations in which a carrier such as UP must engage in substantial switching at origin to build a train, that carrier still benefits from the efficiency advantages of moving the train intact over the substantial distance between a California origin and a Midwest destination. Stated differently, IPA has not introduced a completely novel concept of "intact trainloads" into the movement of cross-over traffic; UP benefits greatly from the ability to use its lengthy main lines to move shipments across most of the country in intact service.

(d) URCS and MATC Already Afford a Substantial Cost Premium to Originating and Terminating Carriers on Interline Movements

Fourth, URCS Phase III and MATC afford a substantial cost premium to originating and terminating carriers. In fact, when calculating URCS Phase III variable costs for an interline movement of carload traffic, URCS Phase III already includes the costs for the originating carrier to build a train and URCS Phase III already includes the costs for the terminating carrier's work at destination. Thus, URCS Phase III – and MATC – already perform the costing function that UP claims is necessary by assigning higher costs to the originating and terminating segments of cross-over movements of carload and multicar traffic.

Using the URCS Phase III model, it is possible to calculate variable costs for interline movements. As the following hypothetical examples demonstrate, URCS calculates higher costs for originating and terminating carriers than it does for bridge carriers. The existing MATC methodology further increases that premium (relative to the URCS Phase III variable costs calculated for a bridge carrier) because it disallows the crediting of interchange costs for interchanges either to or from the SARR. UP's approach of costing the SARR portion of a movement as "Unit Train" service goes even further to increase this disparity, however, even though UP has presented no evidence to support the contention that the existing MATC methodology fails to properly determine costs for bridge service.

In each example presented below, the hypothetical movement is a three-segment carload movement of general freight traffic. Each segment of the movement is 100 miles in length.

Table III-A-6

SUMMARY OF VARIABLE COSTS FOR HYPOTHETICAL 3-SEGMENT GENERAL MERCHANDISE MOVEMENT*

	URCS Phase III		**MATC**		**UP Approach**	
Item	($/ton)	(% Total)	($/ton)	(% Total)	($/ton)	(% Total)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. Originating RR	$6.50	36.5%	$5.23	40.9%	$5.70	44.6%
2. Bridge RR	$4.82	27.0%	$2.33	18.2%	$1.39	10.8%
3. Terminating RR	$6.50	36.5%	$5.23	40.9%	$5.70	44.6%
4. Total	$17.83	100.0%	$12.80	100.0%	$12.80	100.0%

* The URCS Phase III variable costs are based on a hypothetical 3-segment general merchandise movement with each segment having a distance of 100 miles, private hopper open top cars, and each car carrying 98 tons per car.

As the foregoing table demonstrates, URCS Phase III affords a substantial cost premium to originating and terminating carriers when developing costs for a three-segment interline movement. Specifically, for the movement analyzed, URCS assigns 36.5% of the variable costs to the origin segment, 27.0% percent of the variable costs to the bridge segment, and 36.5% of the costs to the destination segment.

The Board's existing MATC methodology (which IPA uses in its evidence) further tilts the variable cost divisions in favor of the originating and terminating segments because of the SAC case requirement that costs associated with hypothetical interchanges be removed. *See WFA I*, slip op. at 12. MATC excludes those interchange costs because it is designed to reflect the relative costs incurred by the incumbent over the three segments, and the incumbent does not incur real-world interchange costs at the hypothetical on-SARR and off-SARR points. Applying that cost relationship to the hypothetical results shown above yields a SARR segment cost share of 18.2% under MATC.

Unsatisfied with that existing STB costing treatment, however, UP insists that the Board must modify its SAC divisions approach to further reduce the costs of bridge service by treating the SARR's portion of the movement (and only the SARR's portion of the movement) as trainload service for URCS costing purposes. As applied to the hypothetical example shown above, UP's methodology results in drastic reductions in the costs calculated for on-SARR service (*i.e.*, from 18.2% down to 10.8% in the foregoing example). Stated differently, UP's approach reduces the variable costs for performing bridge service of a carload shipment by over 40% relative to the variable cost share determined under the Board's established MATC methodology.[13]

By way of summary, it is evident that the Board's existing URCS-based MATC methodology already recognizes the fact that origination and termination service for carload movements is more costly than line-haul service.

[13] Notably, UP claims that its proposal is the "most limited change" that it possibly could make to the Board's current divisions approach. Reply at I-9. UP's claim is patently wrong. While no evidence exists to support its use, IPA respectfully submits that a modification that changed the movement type from carload to trainload for the entire length of a given linehaul movement would be more "limited" than what UP proposed.

UP bears a heavy burden to demonstrate that the additional profound reduction in costs (and associated revenues) is appropriate. As described below, UP has not met – and cannot meet – that burden.

(e) There is No Evidence of Any Defect in Modified ATC or of Any Improved Accuracy with UP's Approach

Fifth, UP has not provided any evidence whatsoever to support the argument that Modified ATC costing of interline movements of carload and multicar traffic fails to match actual costs. UP never claims in its evidence that it has undertaken a study of costs associated with interline movements and that the results of its study show that URCS Phase III and/or the Board's Modified ATC methodology are defective. Likewise, UP never claims that any actual costing study demonstrates that its approach to calculating divisions on cross-over traffic is more accurate than URCS Phase III or MATC. In fact, UP's only reference to the concept of costing accuracy is the dubious and entirely unsupported claim that its approach "is simple and straightforward, *and it is more accurate* than IPA's use of [] unadjusted URCS costs." Reply at III.A-20 (emphasis added).

Significantly, UP has absolutely no basis on which to state that its adjusted costs are "more accurate" than system average URCS Phase III costs. Other than one witness who sponsors the evidence in Part III.A, III.B, and III.C regarding capacity and cycle times (Mr. Wheeler), the only UP witness who sponsors Part III.A and its assertion that UP's approach to costing is "more accurate" than unadjusted URCS Phase III is Mr. Robert Fisher. *See* Reply at Part

IV. Nothing in Part III.A or Part IV of UP's Reply indicates that Mr. Fisher has performed: (i) any study of the costs associated with the performance of interline rail service; (ii) any study of supposed defects in URCS's treatment of bridge carrier service; or (iii) any study showing an improved correlation between UP's divisions approach and any actual costing results for such interline service.

Instead, UP's argument and its claim of improved accuracy are based entirely on the view that any costing approach that takes revenue away from a SARR inherently must produce more accurate results. As the party seeking to deviate from the Board's existing divisions methodology, UP must demonstrate that the Board's current approach is defective and that UP's proposed alternative is superior. *Accord AEPCO 2011*, slip op. at 84 ("It is incumbent upon the proponent of a new cost to demonstrate that such a cost would need to be incurred by a SARR."). Rather than providing such a demonstration, UP instead argues essentially that lower SARR costs must be better costs. The Board cannot and should not modify its costing approach based on such a flimsy and unsupported argument.

(f) <u>UP's Methodology is Inherently Biased</u>

Finally, UP's approach is inherently biased and improper because it produces different costing results for an individual line segment depending on whether the SARR or the residual incumbent performs service over that segment. In fact, as the direct result of UP's illogical treatment of the on-SARR segment (and only the on-SARR segment) of a cross-over carload movement as being trainload service, the UP methodology costs the exact same segment of interline service differently based upon the identity of the carrier providing service over that segment. The Board's existing MATC approach does not suffer from this defect. The fact that UP's approach is "identity-sensitive" – even where all other aspects of the service in question are the same – makes it arbitrary, biased, and unusable in SAC proceedings.

The following example demonstrates the fallacy and bias of UP's approach. Assume a movement of carload traffic between Origin A and Destination E, with points B, C, and D intermediate along the route. Assume further that the SARR provides bridge service between points B and C (*i.e.*, Segment 2), and that the residual incumbent provides origination service from Point A to Point B (Segment 1) and destination service from Point C to Point E (Segments 3 and 4).

Scenario A Configuration

```
A ——— B - - - - - C ——— D ——— E
   (1)       (2)       (3)      (4)
```

Under the Board's existing MATC divisions procedure, terminal costs would be assigned to Segments 1 and 4, running costs would be assigned to each of the four segments, and I&I switching and make-whole costs would be assigned to each of the four segments as well. As shown below, those costs appear as $0.50 per ton in the "I&I Component" line for each segment of the movement or a total of $2.00 per ton in I&I Component costs for the four line segments combined.

Scenario A – Standard Non-Biased Costing

Variable Costs:	Segment 1	SARR Segment 2	Segment 3	Segment 4
Terminal Switching	$2.00	$0.00	$0.00	$2.00
Running Component	$1.50	$1.50	$1.50	$1.50
I&I Component	$0.50	$0.50	$0.50	$0.50
Total	$4.00	$2.00	$2.00	$4.00

UP, however, would eliminate the costs that URCS Phase III associates with carload traffic from Segment 2 in what amounts to a two-step process. First, by changing the URCS Phase III Costed Movement Type for Segment 2 from carload to trainload service, UP removes the I&I Component costs for that segment.[14] Second, UP attributes that $0.50 per ton cost amount to the three non-SARR segments on the movement. The I&I Component costs for Segments 1, 3, and 4 therefore each increase from $0.50 per ton to $0.67 per ton as the result of UP's manipulations. Total costs calculated for Segments 1 and 4 rise from $4.00 per ton to $4.17 per ton each. Total costs for Segment 2 fall from

[14] This example considers only the impact of the UP's change to the costed movement type. UP's other proposed changes to the unit train length and empty return ratio for on-SARR segments (and only for on-SARR segments) also bias the divisions results.

$2.00 per ton to $1.50 per ton. Significantly, total costs for Segment 3 (which is the critical segment in this discussion) rise from $2.00 per ton to $2.17 per ton.

Scenario A – UP's Biased Costing Approach

Variable Costs:	Segment 1	SARR Segment 2	Segment 3	Segment 4
Terminal Switching	$2.00	$0.00	$0.00	$2.00
Running Component	$1.50	$1.50	$1.50	$1.50
I&I Component	$0.67	$0.00	$0.67	$0.67
Total	$4.17	$1.50	**$2.17**	$4.17

IPA has explained these UP manipulations in the preceding sections of this Part III-A.

The additional and fatal bias associated with UP's divisions proposal can be seen through a second hypothetical involving the same Point A to Point E movement. In this second version of the hypothetical, the SARR provides bridge service over both Segment 2 and Segment 3, rather than only over Segment 2. The residual incumbent provides service over Segments 1 and 4.

Scenario B Configuration

A ——— B - - - - - C - - - - - D ——— E
(1) (2) (3) (4)

Once again, under the Board's existing MATC divisions procedure, terminal costs would be assigned to Segments 1 and 4, running costs would be assigned to each of the four segments, and I&I switching and make-whole costs would be assigned to each of the four segments as well. And again, those costs appear as $0.50 per ton in the "I&I Component" line for each segment of the movement or a total of $2.00 per ton in I&I Component costs for the four line segments combined.

Scenario B – Standard Non-Biased Costing

Variable Costs:	Segment 1	SARR Segment 2	SARR Segment 3	Segment 4
Terminal Switching	$2.00	$0.00	$0.00	$2.00
Running Component	$1.50	$1.50	$1.50	$1.50
I&I Component	$0.50	$0.50	$0.50	$0.50
Total	$4.00	$2.00	$2.00	$4.00

In this "extended-SARR" version of the hypothetical, UP would eliminate the costs that URCS Phase III associates with carload traffic from Segments 2 and 3. UP first would modify the URCS Phase III Costed Movement Type for Segments 2 and 3 from carload to trainload service. Second, UP would attribute that $1.00 per ton cost amount (*i.e.*, $0.50 per ton each for Segments 2 and 3) to the two remaining non-SARR segments on the movement. The I&I Component costs for Segments 1 and 4 therefore each increase to $1.00 per ton as the result of UP's manipulations. Total costs calculated for Segments 1 and 4 thus rise from $4.00 per ton to $4.50 per ton each. Costs for Segment 2 once again fall from $2.00 per ton to $1.50 per ton. Critically, there is a difference under UP's "identity-sensitive" methodology with respect to the variable costs calculated for Segment 3.

Scenario B – UP's Biased Costing Approach

Variable Costs:	Segment 1	SARR Segment 2	SARR Segment 3	Segment 4
Terminal Switching	$2.00	$0.00	$0.00	$2.00
Running Component	$1.50	$1.50	$1.50	$1.50
I&I Component	$1.00	$0.00	$0.00	$1.00
Total	$4.50	$1.50	**$1.50**	$4.50

Costs calculated for Segment 3 when it had been a residual carrier segment were $2.17. Costs calculated for this same Segment 3 when it is a SARR segment are $1.50.

Table III-A-7
Determination of Segment 3 Costs
Under UP's "Identity-Sensitive" Methodology

Operating Carrier	Incumbent	SARR
UP's Calculation of Variable Costs	$2.17 per ton	$1.50 per ton

There is absolutely no basis in fact to reduce the costs calculated for service over a given line segment depending upon the identity of the party providing that service. UP's divisions methodology, however, looks to the identity of the carrier providing service over a given cross-over traffic line segment in order to determine the costs that should apply to that segment. Moreover, UP's approach has the effect of increasing the penalty imposed upon SARRs that replicate larger portions of a defendant carrier's system. Accordingly, the Board should reject UP's approach outright, and should continue to rely on MATC to calculate divisions in this case.

ii. UP's Argument Regarding its Density Tables is Mistaken

In its Reply, UP also criticizes IPA's ATC calculations by claiming that IPA used unadjusted density tables to calculate fixed costs per ton, "even though IPA had elsewhere identified certain traffic for which certain routings in the density table were incorrect." Reply at III.A-19. UP adds that although IPA "corrected certain misrouted shipments . . . when selecting its SARR traffic, [] IPA failed to make the corresponding correction when calculating fixed costs for ATC revenue calculations." *Id.*; *see also id.* ("UP applies IPA's corrections consistently throughout and recalculates the fixed costs per ton.") (citing Reply e-workpaper "Updated_ BIDIRDENSITY_ FILE.xlsx").

Significantly, the errors that IPA identified appeared in a specific data set that UP produced to IPA in discovery (*i.e.*, UP's route records).[15] UP argues on Reply that IPA should have assumed that those same errors existed in a

[15] IPA created a SQL database named "IPA_2011" that contains tables of UP-produced route data named "dbo_zzACT-CSNLINK," "dbo_zzACT-EVENTLOCATIONPAIRS," and "dbo_zzACT-LINESEG," and UP-produced density data named "dbo_zzACT-BIDIRDENSITY."

separate database that UP produced in discovery (*i.e.*, UP's density records) and that IPA used as the source of density data for the ATC calculation.[16] UP, however, has failed to provide any support for the proposition that the same errors from the route records also exist in the density database, and those records certainly do not indicate on their face that they contain those same errors.[17] UP thus has failed to carry its burden of demonstrating that there were errors in the UP density records that IPA utilized. As the party in possession of all relevant information regarding the development of those records, it was incumbent upon UP to demonstrate that the errors in its traffic records also exist in its density records. Absent such proof, there is no basis for adjusting IPA's ATC calculations.

iii. IPA has Properly Calculated Divisions for the IRR's On-SARR Local Traffic

As noted above, the IRR's traffic group includes approximately 7,400 shipments of traffic that originate or terminate at on-SARR locations in local service and that UP handles in through train service moving in the opposite direction over that same line. IPA proposed on Opening that the IRR would

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[16] IPA noted on Opening that it confirmed the errors by evaluating the shipments in question in UP's separate "train event" data. *See* Op. e-workpaper "IPA_ATC_METHODOLOGY_IPAOPEN.xlsx (STEP#2). The UP train event data contained records that identified the correct routing for the shipments in question.

[17] Density data typically is developed from train event data and as a result, it is likely that the correct UP train event data was used to produce correct UP density data. UP has presented no evidence to indicate that this assumption is incorrect.

directly handle only the through train portion of this service, but has revised the IRR's handling of this traffic on Rebuttal to eliminate UP's involvement in the origination of this traffic.

On Rebuttal, IPA calculates divisions on this traffic using the MATC methodology.

As noted above, UP's principal argument on Reply is that the Board should remove this traffic from the IRR system. *See* Reply at III.A-15. Notably, however, UP's Reply Evidence also includes a calculation of IRR revenues for this traffic using UP's own approach to performing ATC calculations. *Id.* at III.A-21 n.35 ("UP's workpapers include calculations that follow an ATC-based approach to allocate revenues between UP and IRR for this traffic.") (citing UP Reply e-workpapers "IPA_ATC_URCS_VARIABLE_COST_INPUTS_ 2011_121212_ Reply.xlsx," "EXPANDED_WAYBILL_DATA_ATC_ PERCENTAGES_UP REPLY (With Lookups).xlsx;" *see also* "Non-Coal Revenue Forecast Reply.xlsx," tab "TDATA2," cell AX3; Reply at I-9 n.16 ("[I]f the Board does not agree that this new type of cross-over traffic should be removed from the SARR traffic group, UP's evidence also includes an alternative, ATC-based calculation of more appropriate SARR revenues for this traffic. *See* Section III.A.3.c."). Using this approach, UP calculates that the total share of 2013 revenues that the IRR would receive solely for through train service would be {   }.

Like UP in its Reply, IPA includes alternative revenue calculations (and associated maximum rate determinations) in this Rebuttal to demonstrate the impact of the IRR handling this traffic as a bridge carrier. *See* Rebuttal e-workpaper "Non-Coal Revenue Forecast Rebuttal (Alt. 2).xlsx."[18] IPA's Rebuttal divisions in this alternative calculation strictly follow the Board's MATC procedures and assume that the UP would provide the originating or terminating service for each of these local shipments. The annual IRR revenues that IPA determines for the on-SARR bridge service in 2013 are { }.

d. Projected Revenues

The parties are in agreement regarding the manner of forecasting base revenues and fuel surcharge revenues for the IRR.

i. Issue and Non-Issue Coal Traffic Moving to IGS

(a) Base Revenues

On Reply, UP accepted IPA's assumption that the IRR's base revenues for the IGS coal traffic would remain constant throughout the DCF period because the UP tariff governing that traffic does not contain a rate escalation provision. Reply at III.A-24.

[18] In addition to adjusting the IRR's traffic and revenue to exclude the local train portion of the movement, IPA also has adjusted its operating expenses to remove the impact of local train operations. *See* Rebuttal e-workpaper "IRR Operating Expense_2nd Alt.xlsx."

(b) Fuel Surcharge Revenues

For purposes of calculating the IRR's fuel surcharge revenues on IGS coal traffic, UP accepted IPA's use of a "hybrid" forecast to project future fuel prices. *Id.* UP updated IPA's forecasts using the April 2013 STEO, which extends through 2014, and using the 2013 AEO Early Release for 2015 through 2022. *Id.* at III.A-25.

IPA further updates UP's fuel price forecasts to reflect the final 2013 AEO and STEO issued in May 2013.

ii. Revenues from Third-Party Coal Traffic

UP accepted IPA's calculation of base revenues and fuel surcharge revenues from third-party coal traffic. Reply at III.A-25-26. UP updated IPA's rate adjustment estimates using Global Insight's December 2012 forecast, and UP updated IPA's use of the EIA's 2012 Coal Transportation Rate Escalator using the EIA's AEO 2013 Early Release.

IPA, in turn, has updated the UP revenue forecasts using the EIA's AEO 2013 Coal Transportation Escalator and Global Insight's March 2013 forecast.

iii. Revenues from Intermodal Traffic

UP made two modifications to the base revenues that IPA had calculated for intermodal traffic. First, UP utilized the most recent contract amendment for one customer (Reply at III.A-27), and second, UP corrected the expiration date for the contract of a second customer. *Id.* at III.A-28. IPA accepts each of these corrections.

With regard to fuel surcharge revenues for intermodal traffic, UP claims that IPA made an errant assumption in its calculation of the MITA fuel surcharge. *Id.* Specifically, UP asserts that IPA utilized the incorrect fuel weight for purposes of the fuel surcharge calculation. *Id.* ("For fuel weight, however, IPA relied upon the industry's fuel weight in the All Inclusive Index of Railroad Input Costs from the Board's recent RCAF decision (December 20, 2013), which was 22.5 percent" but "[t]he actual fuel weight that UP uses in the fuel surcharge calculation is 16.5 percent.") (citing Reply e-workpaper "FSC Percent Revenue History.xls"). IPA accepts UP's correction in this Rebuttal.

iv. Revenues from Automotive, Agricultural, and Other Non-Coal Traffic

UP proposes only minor modifications to IPA's determination of revenues from automotive, agricultural, and other non-coal traffic on Reply. Reply at III.A-29-30. These modifications involve the fuel surcharge basis for certain UP traffic. *Id.* at III.A-30 & n.55. IPA accepts UP's modifications in this Rebuttal.

4. UP's Improper Adjustments to Traffic and Revenues

Finally, UP's Reply Evidence includes alternative calculations based on a series of different assumptions regarding cross-over traffic, and alternative based upon the replacement of ATC with divisions calculated using the Efficient

Component Pricing Rule ("ECP"). Reply at III.A-31-32.[19] Specifically, UP presents traffic and volume estimates restricting the use of cross-over traffic "to movements (1) for which the SARR would either originate or terminate the rail portion of the movement, or (ii) where the entire service provided by the defendant railroad in the real world is in trainload service." *Id.* at III.A-31. In addition, in the course of its Reply Evidence, UP also faults IPA for declining to present alternative evidence under the Board's EP 715 proposals. *Id.* at I-23 ("Although it filed its opening evidence nearly five months after the Board advanced these [EP 715] proposals, IPA did not explain how it would have designed its SARR to incorporate those restrictions.").

Significantly, the Board stated in EP 715 that it was not proposing to apply its cross-over traffic limitations to pending cases. *Rate Regulation Reforms*, slip op. at 17 n.11 ("We do not propose to apply any new limitation retroactively to existing rate prescriptions that were premised on the use of cross-over traffic or to any pending rate dispute that was filed with the agency before this decision was served."); *id.* ("We do not believe it would be fair to those complainants, who relied on our prior precedent in litigating those cases."). Moreover, the Board

[19] The Board has rejected carrier efforts to introduce ECP divisions into SAC cases in the past. *See Major Issues*, slip op. at 37-39 ("ECP conflicts with [SAC] theory and was properly rejected in *Nevada Power*" because, among other reasons, "cross-over traffic could not provide any contribution to the threshold, joint and common costs" incurred by the SARR.); *id.* at 36 ("[ECP] would inject bias in favor of the railroads and render cross-over traffic ineffectual in simplifying the SAC analysis."); *accord Nevada Power II*, 10 I.C.C.2d at 267 ("[W]e cannot take account of any post-entry responses by incumbents.").

reaffirmed that any changes from Ex Parte No. 715 would not apply in the instant case. *IPA 2012*, slip op. at 3 ("We stated in *Rate Regulation Reforms* that we did not propose to apply new limitations adopted in Docket No. EP 715 to rate disputes already filed with the Board because of fairness concerns for parties that had relied on our prior precedent when bringing their complaint."). IPA hereby incorporates by reference the arguments that it and the other Coal Shippers made in EP 715 as to why the Board should not adopt its proposed limitations on the use of cross-over traffic. (IPA summarizes those arguments in Part I of this Rebuttal.)

UP's argument also ignores the fact that IPA designed its system under the set of rules currently governing the use of cross-over traffic. If IPA had been litigating this case under a different set of rules, it would have adopted a different SARR configuration and traffic group. It should come as no surprise to UP that evidence designed to pursue relief under one set of rules would not be optimized to obtain relief under an entirely different set of rules.

III-B Stand-Alone
Railroad System

III. B. STAND-ALONE RAILROAD SYSTEM

In its Reply Evidence, UP has accepted the basic system parameters proposed by IPA for its stand-alone railroad, the Intermountain Railroad or IRR. In particular, UP has accepted the IRR's route miles, yard locations and functions, interchange locations, track structure (136-pound rail, wood ties, turnout locations and sizes), and signal/communications system. In this Part of its rebuttal evidence, IPA responds to the few criticisms that UP leveled with respect to the IRR's configuration.[1]

1. Route and Mileage

UP has accepted the IRR's route, extending from Provo, UT on the northeast to Milford, UT on the southwest, and its total route mileage (174.96) as well as the mileage for its individual line segments. Reply at III.B-2-4.

a. Use of Mainline near Lynndyl

Notwithstanding its acceptance of the IRRs' route mileage, UP asserts that the route for the issue IPA coal traffic does not share any facilities with the IRR's Lynndyl-to-Milford line segment. Reply at I-12-13 (repeated in Reply at III.H-13). UP's apparent theory – which is presented by its counsel without any corroborating witness-sponsored evidence other than a footnote reference to the simulation of the IRR's operations using the RTC Model – is that the issue traffic uses the main line for the 1.55 miles between Lynndyl and the connection to the

[1] The evidence in this part of IPA's Rebuttal Evidence is sponsored by IPA's operating and engineering experts, Paul Reistrup and Harvey Stone.

IPP Industrial Lead (the spur extending to IGS), whereas cross-over traffic that the IRR handles in overhead service between the UP interchanges at Lynndyl and Milford, or vice versa (herein the "overhead traffic" or the "overhead trains"[2]) uses the Lynndyl Yard and does not use the main line.

This is a distinction without a difference; both the issue traffic and the overhead traffic use the same Lynndyl-Milford line segment regardless of which particular track(s) the trains happen to use. The first parallel track in the Lynndyl Yard is the same distance from the main track (15 feet) as any of the IRR's passing sidings, and in fact it is something of a misnomer to call two tracks used primarily for interchange a "yard" at all. IPA Witness Reistrup notes that the overhead train can be interchanged on the main line as easily as in the Lynndyl Yard, as the only activity that occurs for trains that do not set out or pick up cars at this location is a crew change.

Moreover, UP's assertions as to how overhead traffic moving between Milford and Lynndyl (or vice versa) flows through Lynndyl in IPA's Opening RTC Model simulation are factually inaccurate. While it is correct that in the southbound direction (from Lynndyl to Milford) IPA's experts programmed the RTC Model to move all overhead trains through the Lynndyl Yard, overhead

[2] UP clearly is not talking here about a different subset of overhead traffic that moves between Provo and Milford (or vice versa), and for present purposes that traffic is not included in the "overhead traffic" under discussion. IRR trains carrying Provo-Milford or Milford-Provo overhead traffic use both the main line through Lynndyl and the Lynndyl Yard tracks in both parties' RTC model simulations, depending on the specific train-conflict situation in the Lynndyl area.

trains moving in the northbound direction (from Milford to Lynndyl) were permitted to (and all but one[3] did) use the main track at Lynndyl. Thus UP's assertion that the overhead traffic moving both northbound and southbound uses only the Lynndyl Yard tracks (Reply at I-13-14) is incorrect. Even in IPA's Opening RTC simulation, northbound overhead traffic clearly shares the same main track with the issue traffic for 1.55 miles in the Lynndyl area.

To demonstrate that the overhead trains can use these 1.55 miles of main track regardless of direction, IPA's experts made a single revision to UP's Reply RTC simulation to allow the model to move the southbound and the northbound overhead trains on the main track through Lynndyl as an alternative to moving all of them through Lynndyl Yard.[4] They then re-ran UP's simulation without any other changes to UP's proposed track configuration or operating inputs. As would be true in the real world, the result was that all of the northbound overhead trains and some of the southbound overhead trains (in instances where there was no conflict with other trains moving in the opposite direction) stayed on the main line.[5] In addition, IPA ran the RTC Model the same way for purposes of its Rebuttal simulation – that is, the model was allowed to

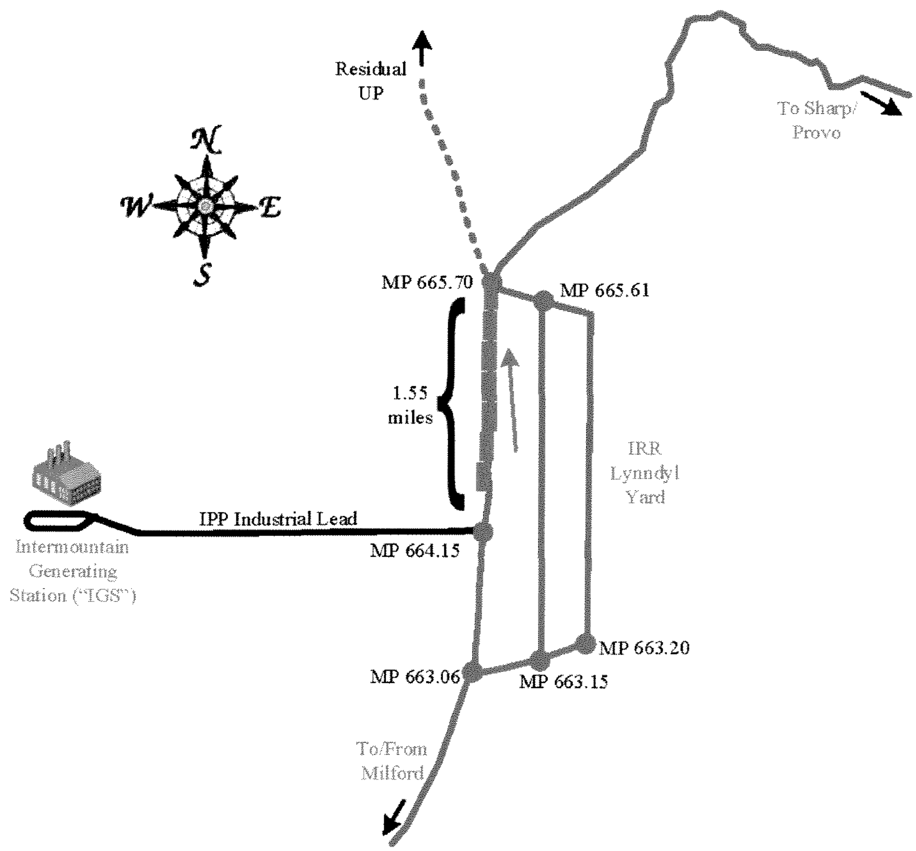
[3] The only exception was one northbound train that stopped at Lynndyl Yard to pick up cars.

[4] Specifically, to minimize possible interference with trains moving on the mainline between Milford or IGS and Provo or Sharp, the Model was instructed to use yard track #1 as the first alternative, yard track #2 as the second alternative, and the main track as the third alternative.

[5] *See* Rebuttal e-workpapers "Non-IPA trains using Lynndyl Mainline - Revised UP Reply.docx" and "UP Reply Revised.zip."

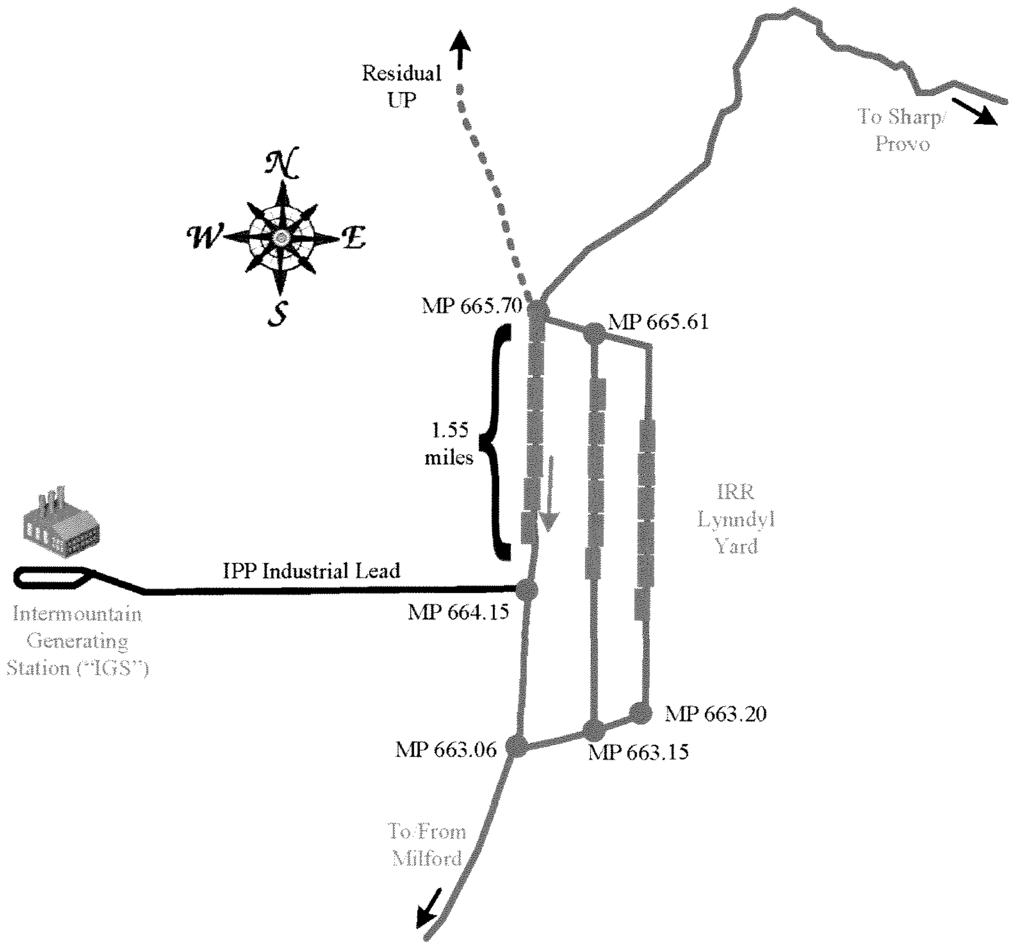
keep the southbound overhead trains (as well as the northbound overhead trains) on the main line at Lynndyl as an alternative to moving them through Lynndyl Yard. Again, in the Rebuttal simulation, all of the northbound trains except for the one referenced in footnote 3 on the preceding page and some of the southbound trains remained on the main track rather than using Lynndyl Yard.[6]

The following schematic shows how northbound overhead trains received from UP at Milford and delivered to UP at Lynndyl move through Lynndyl, in both IPA's Opening and Rebuttal RTC simulations. All of these trains but one use the same 1.55 miles of main track that the IPA coal trains use.



[6] *See* Rebuttal e-workpapers "Non-IPA trains using Lynndyl Mainline - IPA Rebuttal.docx" and "IPA_Base_Case_Final.zip."

The next schematic shows how southbound overhead trains received from UP at Lynndyl and delivered to UP at Milford move through Lynndyl in IPA's Rebuttal RTC simulation. Although most of these trains use one of the two Lynndyl yard tracks (to avoid conflicts with other trains), three southbound trains use the same 1.55 miles of main track that the issue traffic uses during the RTC simulation period.



These demonstrations confirm that UP counsel's argument that the overhead traffic moving between Milford and Lynndyl and vice versa do not share IRR facilities with the issue traffic is factually wrong, and a red herring from both an operational and a theoretical standpoint.

b. <u>Interchange Points</u>

UP accepts the three general locations where traffic is interchanged with the residual UP: Provo, Lynndyl and Milford. Likewise, UP accepts the IRR's interchange of traffic with the Utah Railway ("URC") at Provo. UP also accepts IPA's designation of several interchange locations for various kinds of trains in the Provo area, with one exception: UP asserts that empty coal trains interchanged from the IRR to UP for movements to coal loading facilities east of Provo, reached by UP's Provo Subdivision, would have to occur on the IRR's Coal Wye tracks (also known as the Ironton Crossover tracks) at Provo rather than the IPA car shop. Reply at III.B-3. As explained in detail in Part III-C-2-c below, IPA agrees that some (but not all) of these empty coal trains should indeed be interchanged on the Coal Wye tracks (already designated as one of the Provo area interchange locations). Mr. Reistrup has modified the IRR's operating plan to provide for this change, and it is also reflected in IPA's rebuttal RTC Model simulation of the IRR's operations.[7]

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[7] This change also necessitates the addition of a RIP (repair-in-place) track adjacent to the Coal Wye tracks. *See* Part III-B-2-b below.

c. Track Miles and Weight of Track

UP generally agrees with IPA's track miles for the IRR and accepts IPA's proposed weights of rail. Reply at III.B-4. However, UP proposes a few track additions in the Provo area as well as additional yard tracks for the Lynndyl and Milford Yards and additional FED setout tracks. These proposals are discussed below. The parties' positions with respect to the IRR's track miles are shown in Rebuttal Table III-B-1 below.

REBUTTAL TABLE III-B-1
IRR TRACK MILES

	IPA Opening	UP Reply	IPA Rebuttal
Main line track – Single first main track[1/]	174.96	174.96	174.96
– Other main track[2/]	24.02	26.73	24.02
Total main line track	198.98	201.69	198.98
Setout tracks	1.60	3.60	1.60
Yard tracks[3/]	12.50	15.25	12.73
Total track miles	**213.08**	**220.53**	**213.31**

[1/] Single first main track miles equal total constructed route miles.
[2/] Equals total miles for constructed second main tracks/passing sidings, including one of the two Coal Wye tracks at Provo.
[3/] Includes all tracks in yards and N. Springville locomotive maintenance facility. The IRR's MOW equipment storage track is part of Lynndyl Yard.

As can be seen from this table, the only change IPA has made from Opening is the addition of 0.23 miles of yard track (a 1,200-foot RIP track to accommodate bad order cars adjacent to the Coal Wye tracks at Provo). IPA rejects all of UP's other proposed additions, so the net difference between the parties as to the IRR's track miles is now 7.22 miles.

i. **Main Lines**

UP proposes two changes to the IRR's main-line track configuration, both in the Provo area. First, UP proposes to extend the southerly track of the two Coal Wye tracks 2.71 miles to the west, from Sharp Subdivision Milepost ("MP") 749.41 to MP 746.70. Second, UP proposes to add a second crossover between the extended track and the Sharp Subdivision main track at "MP 1.25" (actually Sharp Subdivision MP 750.19).[8]

UP's explanation for its proposed 2.71-mile main line track extension is that the extension would facilitate the interchange of trains at the three Provo area interchange locations and avoid possible interference with trains moving to/from IPA's car maintenance facility. Reply at III.B-5. However, Mr. Reistrup has already designed the IRR's trackage in the Provo area to facilitate the Provo area interchanges, and both the Opening and Rebuttal RTC Model simulations of the IRR's peak-period operations show that there are no conflicts between trains entering/exiting the car-shop trackage and other trains interchanged

[8] These additions are shown in green on page 1 of UP Reply Exhibit III-B-1. UP also proposes two other track additions in the Provo area, including a 3,000-foot extension of the southerly Coal Wye track eastward. These changes are discussed in the subsection below on the IRR's yards. In evaluating UP's proposed additions to the IRR's trackage in the Provo Area, it is important to keep in mind that the track configuration for this area proposed by IPA already reflects considerably more trackage than what UP has in the real world. This is readily ascertained from a comparison of the real-world tracks in the area, shown in IPA's Opening Exhibit III-B-3, with the IRR track configuration shown on the first page of Opening Exhibit III-B-1. In the real world the longest Coal Wye track connects with the Sharp Subdivision single-track mainline at MP 750.22 and there is no intermediate crossover between the two tracks; IPA has extended one of these tracks west to MP 749.41 and provided an intermediate crossover.

with UP or the URC east thereof (*i.e.*, at Sharp Subdivision MP 750.22 or on the Coal Wye tracks). Although it might be nice to extend the track as UP proposes to provide extra capacity, UP has not demonstrated that the extension is necessary to accommodate the IRR's traffic group efficiently.

With respect to the added crossover,[9] UP asserts that it is needed because some of the loaded coal trains received in interchange from the URC are too long to fit east of the crossover provided by Mr. Reistrup at MP 1.19 on the Coal Wye tracks (*see* page 1 of IPA Op. Exhibit III-B-1), which is used for the exchange of locomotives on loaded coal trains received in interchange from the URC. Reply at III.C-32 n.91. The additional crossover is not needed.

According to UP's train event data for the Base Year, the longest loaded coal train received from the URC has a total length of { } feet, or { } miles, including locomotives.[10] This train is too long to use UP's proposed new crossover, and the switch connecting the southerly Coal Wye track to the Sharp Subdivision mainline at MP 749.41 would have to be used for the exchange of locomotives on this train in any event. The second longest coal train received from the URC is considerably shorter, only { } total feet ({ } miles) in length including locomotives. The locomotives on this train can be exchanged

[9] The addition of this crossover does not affect the IRR's track miles, but it is appropriate to discuss it here because it involves a UP-proposed configuration change.

[10] This train does not move during the IRR's peak week covered by the RTC Model simulation. *See* Rebuttal e-workpaper "Peak Period Identification Rebuttal.xlsx," worksheet "Coal Trains," Excel row 1403.

using the existing crossover if it is moved 0.01 mile to the west, from MP 1.19 to MP 1.20 on the Coal Wye tracks.[11] This change has been made in IPA's rebuttal configuration for the IRR, and is shown on page 1 of Rebuttal Exhibit III-B-1.

ii. <u>Setout Tracks</u>

On Opening, IPA's experts proposed a total of seven Failed/ Dragging Equipment Detectors ("FEDs"), four on the Lynndyl Subdivision between Milford and Lynndyl and three on the Sharp Subdivision between Lynndyl and Provo. Setout tracks were placed on both sides of each FED on the Lynndyl Subdivision, but on only one side of each FED on the Sharp Subdivision due to the much lower frequency of train operations in that territory (an average of 1.6 trains per hour, total, in both directions). *See* IPA Op. at III-B-7-8 and Op. Exhibit III-B-1.

UP asserts that IPA has provided insufficient setout tracks, arguing that each FED on the Sharp Subdivision should have two setout tracks (one on either side of the FED) and that the IRR requires three more FEDs in addition to the seven proposed by IPA. Reply at III.B-6-8, 12. IPA disagrees that two setout tracks are needed for each of the FEDs on the Sharp Subdivision (and addresses the need for additional FEDs in the subsection below on Turnouts, FEDs and AEI Scanners).

[11] This would enable the entire train to fit between the turnouts at MP 0.03 and MP 1.20.

As IPA witness Reistrup noted on Opening, if a train occasionally has to reverse direction to reach a setout track on the low-density Sharp Subdivision, the impact on transit time would be minor and there is a very small probability that other trains would be delayed as a result. Op. at III-B-7. UP disagrees, arguing that the back-up operation required if a train passes the setout track before reaching a FED signaling a car problem[12] would be inefficient and unsafe. Reply at III.B-6-8. Although UP is correct that in "dark" territory a crew member would have to walk beside the rear end of the train during the back-up or shoving movement, this will not add materially to the time involved as the shoving movement would be at restricted speed in any event. The fact is that, in Mr. Reistrup's experience, back-up movements of this kind are common in dark territory in the real world.

It should also be noted that most defects caught by FEDs are determined by the train crew not to be defects that require a car to be set out at all. Once the train stops, a crew member walks back to the location of the car identified by the FED and checks for problems that would cause an unsafe condition if the car remains on the train. On many (if not most) occasions, there is no observable defect, the car is not set out, and the train continues on to the next terminal at restricted speed. Moreover, the number of FED-related train stoppages is likely to be minimal given that Provo is an inspection point for non-IPA loaded

[12] Only half the trains using the Sharp Subdivision would operate in the direction where they would pass the setout track before reaching the FED. The other half would pass the FED before reaching the setout track.

coal trains that move via the Sharp Subdivision. Mr. Reistrup estimates that, at most, one or two IRR trains per week would have to be stopped due to a problem detected by a FED.

By insisting on two setout tracks at all FEDs, UP is inappropriately proposing more track infrastructure than it has in the real world. A review of UP's track charts (condensed profiles) for the IRR-replicated portion of the Sharp Subdivision[13] reveals that UP has substantially fewer FED setout tracks than it proposes for the IRR. There is no setout track (or even a siding) within two miles on *either* side of the FEDs at Mileposts 671.35, 690.17 and 727.83, and a setout track (or siding) within two miles on only one side of the FEDs at MP 679.00, 609.03 and 743.70. In fact, *none* of the real-world Sharp Subdivision FEDs is accompanied by two setout tracks.

The situation is similar on the portion of UP's Lynndyl Subdivision between Milford and Lynndyl that the IRR replicates. Of the 11 total FEDs in this territory, six have no setout track or even a siding within two miles of the FED, four have a setout track or siding within two miles on only one side of the FED, and only one FED has a setout track or siding on each side.[14]

Thus, there is a complete mismatch between the added setout-track infrastructure UP proposes for the IRR and what UP has in the real world. To be

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[13] Opening e-workpaper folder "III-B-1\Track Charts."

[14] The fact that so many of UP's real-world FEDs are not accompanied by any setout tracks confirms that most trains which are flagged by an FED do not set out a car but continue on to their next terminal.

conservative, IPA continues to provide a setout track on one side of each FED on the Sharp Subdivision, and on both sides of each FED on the Lynndyl Subdivision.[15]

2. Yards – Miles and Weight of Yard Track

UP proposes to add a total of 2.75 miles of track to the IRR's yards. Reply at III.B-8-11. These include two 5,000-foot tracks (one for each of the IRR's Lynndyl and Milford Yards); a 1,500-foot inspection/RIP track near the IRR's North Springville locomotive shop at Provo; and a 3,000 foot lead track extending east from the Coal Wye Tracks at Provo.[16]

a. Lynndyl and Milford Yards

IPA rejects UP's proposal to add an additional 5,000-foot track to each of the Lynndyl and Milford yards, and has not included these tracks in its Rebuttal yard track miles.[17] According to UP, these tracks are needed because the switching of local cars from through trains at these yards "will take some time, and [the] IRR will need space to store the cars until a UP local crew picks them up." Reply at III.B-9. IPA's experts have allotted extra dwell time at Lynndyl and

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[15] UP also asserts that each setout tracks should be placed at least 10,000 feet from its FED. Reply at III.B-8. IPA accepts this change and provides for such spacing for the IRR's FEDs on Rebuttal. *See* Rebuttal Exhibit III-B-1.

[16] The lead track does not technically appear to be a yard track, but rather an eastward extension of the southerly of the two Coal Wye tracks. However, UP's Reply track-miles spreadsheet (e-workpaper "IRR Miles UP Reply.xlsx," tab "Yards, Loco Shop") includes the 3,000 foot lead track in the yard track quantity. Accordingly, IPA discusses this track in this subsection.

[17] *See* Rebuttal e-workpaper "IPA Rebuttal Route & Track Miles Summaries.xls."

Milford yards to accommodate the addition or removal of local cars from the through trains handled by the IRR. Op. at III.C-25-26. Both IPA's Opening and Rebuttal RTC Model simulations show that no interference with other trains results from these extra time allotments; thus no additional tracks are needed at either yard.

b. Yard tracks in the Provo Area

UP posits two additions to the IRR's yard tracks in the Provo area. First, UP proposes to add a 1,500-foot "inspection and RIP" track at the IRR's N. Springville locomotive maintenance facility for setting out bad-order cars resulting from train inspections on the Coal Wye tracks. Reply at III.B-11, III.C-42-43. As described further in Part III-C-3-c below, IPA agrees with UP that some coal trains require 1,500-mile inspections on the Coal Wye tracks at Provo, which means that a RIP track is needed for setting out cars that are bad-ordered during the inspection process. However, UP proposes to place this track in an absurd location, and it does not need to be 1,500 feet in length.

As shown on page 1 of Reply Exhibit III-B-1, UP has located the RIP track within the IRR locomotive shop complex, on the southeast side of the shop building. This means that the movement of cars to and from this track would likely interfere with the movement of locomotives to, from and within the shop area, as the cars would have to be moved through the shop lead tracks to reach the RIP track. A better location for the RIP track is adjacent to the southerly Coal Wye track, just east of the easterly turnout for the first locomotive shop track at

MP 0.38. This location is closer to the location where the cars will be inspected, and minimizes interference with other operations. Given the small number of coal trains requiring inspection on the Coal Wye tracks (a maximum of five per day during the peak week, and an average of 2.7 per day),[18] it is highly unlikely that the number of cars occupying the RIP track will ever exceed 15 at one time. A track 1,200 feet in length can easily accommodate 15 coal cars, so IPA has included a RIP track of that length at the location described above on Rebuttal. *See* page 1 of Rebuttal Exhibit III-B-1 and Rebuttal e-workpaper "Rebuttal Route & Track Miles Summaries.xls," tab "Rail Type By Subdivision."

Second, UP proposes to add a 3,000-foot lead track at the east end of the Coal Wye tracks, presumably extending eastward along UP's Provo Subdivision. Reply at III.B-4, 10-11. UP does not provide any explanation of why this track is needed, other than the brief statement that "IRR would need additional track and facilities adjacent to the Coal Wye tracks to support IRR's conduct of 1,000- or 1,500-mile inspections of some loaded coal trains received at Provo, as well as some of the empty trains." There is no discussion of why this lead track is needed in UP's Reply evidence on the IRR's operating plan (Part III.C). Moreover, UP's track charts show that the Coal Wye tracks actually connect to an existing UP/URC lead track on the Provo Subdivision.

As discussed above, IPA agrees that the IRR needs one additional track (the RIP track) to support coal-train inspections at Provo. IPA does not

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[18] *See* Rebuttal e-workpaper "IPA_Base_Case_Final ROUTE.xlsx."

agree that one of the Coal Wye tracks should be extended east by 3,000 feet, and UP has not provided any explanation of why this specific track extension is needed. IPA's rebuttal RTC simulation shows that all IRR trains operate unimpeded in the Provo area without such a lead track, so IPA has not included it in its Rebuttal track configuration or yard track quantities.

3. Other

a. Joint Facilities

UP accepts IPA's evidence that the IRR system includes one two-mile joint facility (constructed and owned by the IRR) in the Provo area over which the URC will operate to pick up empty coal trains at IPA's Springville railcar maintenance facility. Reply at III.B-11.

b. Signal/Communications System

"UP Accepts IPA's proposed signal/communications system for IRR" (Reply at III.B-11), which includes CTC for the Lynndyl Subdivision between Lynndyl and Milford and "dark" operations (controlled by the centralized dispatchers using track warrants) on the Sharp Subdivision between Provo and Lynndyl, with engineer-controlled remote switches on the Sharp Subdivision. UP goes on to state that "[a]s described in Section III.D below, the residual UP will incur additional costs due to the need to integrate its signal system with IRR's systems" (*id.*). However, there is no description of any such costs in Part III.D of UP's Reply evidence. UP may be referring here to its assertion on page III.F-72 of its Reply that one additional control point should be "installed to connect the

IRR with the UP on the Provo Subdivision track around MP 698.65." This assertion is puzzling, as UP's track charts for this portion of the Provo Subdivision show that UP already has a control point at approximately MP 698.60. There is no need for a second control point only 0.05 miles from the existing one. However, IPA agrees that the FAS-PAS installation provided on Opening at Milepost 0.03 on the Coal Wye tracks should be replaced and the turnout at that location (as well as the electric turnout that connects the IRR's southerly Coal Wye track to UP's Provo Subdivision at MP 698.50) should be connected with the existing UP control point. IPA has included the cost for this in its rebuttal road property investment costs.

Finally, UP proposes that rather than FAS-PAS switches controlled by the locomotive engineers, the IRR should have several dispatcher-controlled power switches on and in the vicinity of the Coal Wye tracks. Reply at III.F-71-72. UP asserts that the FAS-PAS system is "not the optimum system for control of these locations," and that remote control by the dispatcher would provide "the best operation." *Id.* at III.F-72. IPA witness Reistrup disagrees that dispatcher-controlled interlockings are needed in this area (except for the connection between the IRR and UP's Provo Subdivision, as described above). All T&E crews operating over this trackage will be trained to use the FAS-PAS system properly. A system with more bells and whistles obviously is "optimal" compared with any simpler system, but UP has not even claimed, much less proven, that the controlled interlockings it proposes for the Provo area are necessary to enable the

IRR to operate safely and efficiently commensurate with applicable rail service requirements.

c. Turnouts, FEDs and AEI Scanners

UP accepts IPA's proposed locations for turnouts[19] and AEI scanners, but argues that IPA did not include sufficient FEDs for the IRR and proposes to add three FEDs to the seven provided by IPA on Opening. Reply at III.B-12.[20] UP's reasoning for adding three FEDs is set forth at pages III.F-68-69 of its Reply. IPA disagrees that any additional FEDs are needed for several reasons.

First, IPA's experts spaced the IRR's FEDs at intervals of approximately 25 miles. This FED spacing has been routinely proposed, and

[19] IPA has added three turnouts on Rebuttal. These turnouts are located at points where the IRR mainline connects with private sidings or spurs where cars are picked up or dropped off by the IRR's local trains (MP 745.39 near Spanish Fork on the Sharp Subdivision, MP 661.14 at Cline on the Lynndyl Subdivision, and MP 577.18 on the Lynndyl Subdivision). These additional turnout locations are shown in Rebuttal Exhibit III-B-1.

[20] In Part III.B-1-c-ii above, IPA has responded to UP's specious claim that two setout tracks are needed at each FED on the Sharp Subdivision. With respect to the number of FEDs, the FED locations proposed by IPA for the Sharp and Lynndyl Subdivisions are exactly the same as those proposed for the SARR at issue in IPA's previous rate case, Docket No. 42127. UP accepted these proposed locations in its reply evidence in Docket No. 42127. *See* Reply Evidence and Argument of defendant Union Pacific Railroad at III.B-13, Docket No. 42127 (filed Nov. 10, 2011).

accepted by the defendants and the Board, in other SAC rate cases including, most recently, *AEPCO 2011*, slip op. at 115[21] and *WFA I*, slip op. at 25.

Second, UP states that "[b]ased on its experience with FED equipment performance and historic operating patterns, UP's actual detector spacing on the IPA line segment averages 18.98 miles." Reply at III.F-69. This number is based on the detectors designated as "HBD" in UP Reply e-workpaper "Existing UP Detector Mileposts.pdf." Although this appears to understate the number of real-world detectors that are comparable to the IRR's FEDs,[22] IPA submits that an average IRR detector spacing of 19 miles is not materially different from IPA's average spacing of 25 miles (notwithstanding the removal of the AREMA Manual's spacing "guidance" in 2007). Moreover, UP does not address how (if at all) it applied the factors, such as "Hazardous Materials Mix," it says should be considered at page III.F-69 of its Reply.

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[21] UP was a defendant in the *AEPCO 2011* rate case. As noted in the preceding footnote, UP also recently accepted 25-mile spacing for FEDs in exactly the same territory as that involved here in Docket No. 42127. UP's attempt to change the spacing for purposes of this case constitutes a late-contrived, made-for-litigation effort to increase the IRR's road property investment costs without justification.

[22] UP's average distance between detectors of 18.98 miles is based on the distance between the 10 "HBD" detectors shown in UP's workpaper. However, the seven additional detectors denoted as "Detector - Talk on Defect" have symbols on UP's track charts that are similar to those for the "HBD" detectors, and appear to be generally similar to the IRR's FEDs. If these seven detectors are added to the 10 cited by UP, the average distance between detectors is only 10.07 miles (*see* Rebuttal e-workpaper "UP FED Spacing.pdf") – which means that UP is not in fact following its real-world detector spacing for the IRR.

In short, UP has failed to present any credible evidence supporting the placement of the IRR's FEDs 19 miles apart, as opposed to the 25-mile average spacing proposed by IPA, accepted by the Board in prior SAC rate cases, and accepted by UP itself only 20 months ago in Docket No. 42127.

III. C. STAND-ALONE RAILROAD OPERATING PLAN

1. General Parameters

IPA's expert rail operations witness, Paul Reistrup, designed an operating plan for the IRR which enables the railroad to transport efficiently all of the issue coal traffic as well as non-issue coal and non-coal traffic that uses the UP lines replicated by the IRR. In this Part, IPA responds to UP's Reply Evidence on the operating plan. The evidence in this Part is sponsored by Mr. Reistrup and IPA witnesses Timothy D. Crowley and William Humphrey, who conducted the simulation of the IRR's peak-period operations using the Board-approved RTC Model.

As described in Part III-A above, IPA has revised the IRR's traffic volume in each year of the 10-year DCF period to reflect updated published actual traffic figures and traffic forecasts for the various categories of traffic handled by the IRR. The traffic changes require minor changes in the peak-period train list used for IPA's RTC Model simulation as presented in its Opening Evidence, for purposes of its Rebuttal RTC simulation. As described in Part III-B above, IPA has made minor adjustments to the IRR's track configuration in the Provo area, including the addition of a RIP track adjacent to the Coal Wye tracks to accommodate bad-order cars resulting from 1,000-mile and 1,500-mile inspections. The IRR's track and yard configuration as input into the RTC Model for the Opening simulation have not been altered for purposes of the Rebuttal simulation, except that three mainline turnouts have been added to connect the

IRR's track with industry tracks to be served by the IRR's local trains and a siding was added at Martmar.[1] The Rebuttal simulation also reflects a few minor changes in the operating inputs to the RTC Model made in response to UP's Reply Evidence, as described in Part III-C-2 below.

a. Traffic Flows and Interchange Points

The IRR's peak-year (November 2021 through October 2022, hereinafter "2022") traffic volume, as revised on Rebuttal, consists of 9.4 million tons of coal traffic, 5.6 million tons of intermodal traffic, and 10.4 million tons of other freight traffic. These volumes have been reduced from those reflected in IPA's Opening Evidence. There has also been a reduction in the number of cars and intermodal containers moving over the IRR in its peak volume year. Rebuttal Table III-C-1 below compares the positions of the parties with respect to car/container volumes by commodity group.

[1] This is a privately-owned siding used for local pickups and deliveries at the industry at Martmar, and thus is not part of the IRR's constructed facilities.

REBUTTAL TABLE III-C-1 IRR 2022 TRAFFIC VOLUME[1] (Cars/Containers)				
	IPA Opening	**UP Reply**	**IPA Rebuttal**	**Difference (Reb.-Reply)**
Coal				
Local	19,287	19,287	19,287	0
Interline Forwarded	3,996	5,617	5,617	0
Interline Received	25,001	25,001	25,001	0
Overhead	47,363	37,383	37,383	0
Subtotal[1]	95,647	87,288	87,288	0
Intermodal – Overhead	368,543	354,344	376,514	22,170
General Freight				
Interline Forwarded	1,036	730	1,110	380
Interline received[2]	1,039	1,066	1,085	19
Overhead	117,028	107,322	118,113	10,781
Total[3]	**583,263**	**550,750**	**584,110**	**33,360**

1/ Includes both revenue and non-revenue (empty) cars/intermodal units.

2/ Includes grain traffic terminating on the Sharp grain loop.

3/ Total may differ slightly from the sum of the individual items due to rounding.

The differences between UP's Reply and IPA's Rebuttal volumes shown above are due primarily to UP's exclusion of certain cars that the IRR handles on through trains between Lynndyl and Milford but that UP originates or terminates on-SARR with local trains, as well as UP's exclusion of the traffic carried by UP's intermodal Z trains. As explained above in Part III-A-1-c, IPA has accepted UP's position that the IRR cannot assume that UP will be involved in providing local on-SARR service for a fee, but should instead perform the local pickup and delivery of cars at on-SARR points using its own crews and locomotives. IPA therefore provides for such IRR local service in its Rebuttal operating plan. IPA also continues to include the traffic moving overhead between Milford and Lynndyl on Z trains, as insertion of the IRR into the route for these trains does not prevent applicable customer transportation requirements from being met.

The parties' positions with respect to the traffic densities on the IRR's line segments are summarized in Rebuttal Table III-C-2 below.

REBUTTAL TABLE III-C-2
IRR 2022 TRAFFIC DENSITY BY LINE SEGMENT
(Millions of Gross Tons Per Mile)

Line Segment[1/]	IPA Opening	UP Reply	IPA Rebuttal	Difference (Reb.-Reply)
Provo to Sharp	17.6	16.6	16.1	(0.5)
Sharp to Lynndyl	22.4	19.4	21.2	1.8
Lynndyl to IPP Industrial Lead[2]	50.3	N/A	49.3	N/A
IPP Industrial Lead to Milford	40.9	40.4	39.9	(0.5)

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

[2/] This segment represents 1.55 miles of the 89-mile total distance between Lynndyl and Milford. UP's density table (Reply at III.C-5) does not break out the gross tonnage for this small segment.

UP accepts IPA's designation of three general interchange locations between the IRR and UP or the URC (Provo, Lynndyl and Milford). However, UP changes the Provo area interchange location for some empty coal trains exchanged between the IRR and UP from IPA's Springville car repair facility to the Coal Wye tracks.[2] Mr. Reistrup concurs that some empty coal trains interchanged with UP at Provo should be interchanged on the Coal Wye tracks rather than at the IPA cars shop, and that some coal trains (both loaded and empty) interchanged with UP at Provo should also be inspected on the Coal Wye tracks. Mr. Reistrup has revised the IRR's operating plan accordingly.[3]

b. Track and Yard Facilities

The IRR's track and yard facilities have largely been accepted by UP. IPA has made a few very minor revisions on rebuttal as described in Part III-B above. None of these changes affects the RTC Model simulation of the IRR's operations.

UP asserts that IRR's operating plan calls for an inappropriately high maximum authorized train speed for loaded coal and grain unit trains and trains carrying TIH commodities. Reply at III.C-7, 25. Mr. Reistrup agrees that the maximum authorized speed for these train types should be reduced from 60 to 50 miles per hour, and has revised the IRRs' operating plan accordingly. The

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[2] IPA's revised operating plan provides three locations for the physical exchange of trains in the Provo area: (i) the Coal Wye tracks, which connect the IRR's Sharp Subdivision with UP/URC's Provo Subdivision; (ii) UP's Provo Yard which is reached via a connection between the IRR and UP tracks at Sharp Subdivision MP 750.22; and (iii) IPA's Springville car shop located west of Sharp Subdivision MP 750.12. These points are shown on page 1 of IPA's Rebuttal Exhibit III-B-1. UP accepts these interchange locations, as well as the basic locomotive-exchange procedure for interchanging loaded coal trains from URC to the IRR. Reply at III.C-5-6.

[3] This revision requires the addition of a 1,200-foot RIP track adjacent to the Coal Wye tracks, as described in Part III-B-2-b above. The trains that require inspection on the Coal Wye tracks are described in Part III-C-3-c below.

maximum authorized mainline speed for intermodal trains remains 70 miles per hour, and for all other trains (including empty coal and grain unit trains) remains 60 miles per hour, except in the "dark" territory on the Sharp Subdivision where the maximum authorized speed is 49 miles per hour for all trains.[4]

UP also asserts that the maximum authorized train speed on the IPP Industrial Lead (the 9.5-mile spur extending to IGS) should be 20 miles per hour – not 40 miles per hour per Mr. Reistrup's operating plan – because UP treats that track as siding and restricts train speeds on it to 20 miles per hour. Reply at III.C-8. However, the IRR does not need to follow UP's restrictive special instructions for sidings in designating a maximum train speed for the IPP Industrial Lead. Based on Mr. Reistrup's observation of the IPP Industrial Lead during his field trip in April of 2011, the track is in satisfactory condition for 40 mph maximum train speeds. Mr. Reistrup was subsequently advised by IPA's Van Stewart that IPA performed program maintenance on the IPP Industrial Lead (including a tie renewal and surfacing project) in 2012, and that the track is actually in better condition than it was when Mr. Reistrup saw it in the spring of 2011. Mr. Reistrup further notes that the June 2008 UP operating timetable for the Lynndyl

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[4] UP asserts that because the UP track on the IRR routes is all CTC in the real world, this permits higher maximum train speeds than the IRR can achieve. Reply at III.C-7. This assertion is puzzling. The IRR's maximum train speeds on the Lynndyl Subdivision {

}, and the maximum authorized train speed on the IRR's Sharp Subdivision (49 mph) is {

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Subdivision produced in discovery in Docket No. 42127 provided a maximum authorized speed of 40 miles per hour for the IPP Industrial Lead (the current timetable shows a 20 mph speed maximum, undoubtedly due to implementation of UP's restrictive special instruction for operations on sidings). For these reasons, Mr. Reistrup has instructed IPA's RTC Model experts to continue to use a maximum authorized train speed of 40 miles per hour.

c. **Trains and Equipment**

i. **Train Sizes**

UP has accepted IPA's assumptions regarding the IRR's train sizes and its methodology for adding "growth" trains to reflect anticipated traffic growth during the 10-year DCF period. Reply at III.C-8. IPA has also added two local trains operating in turn service, as described in more detail below.

ii. **Locomotives**

UP accepts IPA's designation of the GE ES44-AC locomotive model to power the IRR's road trains. Reply at III.C-8.[5] UP also accepts the locomotive spare margin and peaking factor developed by IPA. *Id.* at III.C-17. However, UP argues that the number of such locomotives required to handle the IRRs' peak-period traffic volume should be increased from 14 to 27 – or nearly double the number of locomotives proposed in IPA's operating plan. *Id.* at III.C-8-18. IPA

[5] Although the IRR will need to inspect some coal trains on the Coal Wye tracks at Provo, the number of trains to be inspected is small (an average of less than three per day) and the ES44-AC road locomotives will be used for any bad-order switching required. UP does not claim otherwise in its Reply.

disagrees that the number of road locomotives required to move the IRR's traffic needs to be increased from the 14 locomotives provided for in its Opening Evidence, as UP suggests. However, as discussed below, IPA adds one ES44-AC locomotive for rebalancing purposes, and also adds four SD40-2 locomotives for use on the IRR's local trains based at Milford and Provo.[6] This increases the IRR's total locomotive count to 19.

UP advances five reasons why the number of road locomotives needs to be increased. Those reasons, and IPA's response, are set forth below.

First, UP asserts that IPA based the IRR's road locomotive requirements on understated running and dwell times. Reply at III.C-9. Running and dwell times are a function of the RTC Model simulation of the IRR's operations. Train dwell times are discussed in Part III-C-2-c below, and revised running times have been developed from IPA's Rebuttal RTC simulation. The revised running times do not affect the number of road locomotives required by the IRR.

Second, UP asserts that the IRR needs a separate, dedicated pool of locomotives for the IPA trains (the trains carrying coal from Provo or the Sharp

[6] The IRR operates two local trains, one based at Milford and one based at Provo. These trains operate as needed (four-five days per week for the Milford-based local and two-three days per week for the Provo-based local). Both locals operate as turnaround trains, that is, they return to their respective bases after picking up and dropping off cars along their respective routes. Each train operates with two SD40-2 locomotives. No spare SD40-2s are needed; when one of these locomotives requires a 92-day inspection or has a mechanical problem requiring its temporary removal from service, one of the IRR's spare road locomotives is substituted as needed until the SD40-2 returns to service.

loadout to IGS). Reply at III.C-9-11. In this regard, UP notes that for a majority of the IRR's traffic, including all non-coal trains, the IRR will provide power to a run-through locomotive pool, which means that many IRR locomotives will spend a substantial amount of time on the residual UP as opposed to the IRR's own lines, and thus that IPA has incorrectly assumed that run-through units will be immediately available at Provo whenever an IPA train appears.

This is not the problem that UP makes it out to be. The run-through locomotive pool will include large numbers of UP-supplied locomotives, and those locomotives will also be available to the IRR when they reach the IRR system on run-through trains.[7] The run-through pool includes locomotives used on coal trains the IRR receives in interchange from UP at Provo, which will further enhance locomotive availability at Provo.

Moreover, the IRR will commence operations on day one with IPA coal trains that move from the URC interchange at Provo or from the Sharp loadout to IGS. The locomotives on these trains will effectively be dedicated to IPA service since they do not leave the IRR system (the URC removes its locomotives from the loaded trains at Provo and the IRR places its own locomotives on the train for movement to IGS; the reverse occurs when the empty trains arrive back at the URC interchange). When additional locomotives are

[7] Many of the IRR's "overhead" trains are received in interchange with more locomotives than are needed to power the trains. This provides a source of run-through "pool" locomotives that are available to the IRR.

needed due to the startup of a new train or the need for 184-day inspections,[8] which can be planned, locomotives (whether IRR locomotives or UP locomotives) will be available from the run-through pool since all run-through trains (a minimum of 12 per day during the RTC simulation period) move over at least part of the IRR system used by the IPA coal trains. In short, the IRR does not need a separate, dedicated pool of locomotives for the IPA trains.[9]

Third, UP asserts that the IPA coal trains should each be powered by four locomotives, rather than three, resulting in a total of nine locomotives (including one spare) dedicated to IPA service. Reply at III.C-13-14. IPA has already demonstrated that there is no need for a separate pool of locomotives dedicated to the IPA trains, which means that a separate spare locomotive is not needed just for these trains. With respect to the number of locomotives on each of these trains, there is no reason why four are needed rather than three as provided in IPA's operating plan.

The operating plan developed by Mr. Reistrup calls for the use of three locomotives in a 2x1 DP configuration for each of the IPA coal trains. Three

[8] As IPA noted in its Opening Evidence, the maximum interval between inspections for the locomotive model used by the IRR was increased from 92 days to 184 days effective June 8, 2012. Op. at III-D-5.

[9] In its Reply, UP alleges that IPA's calculations effectively provide for only 1.8 locomotives per train for coal trains, even though IPA's operating plan requires three locomotives per train. Reply at III.C-10-11. UP's argument assumes that the IRR needs a dedicated coal locomotive pool. As discussed above, there is no need for a dedicated pool of locomotives for coal trains; those trains are powered out of the road locomotive pool which is fully-supplied with all of the necessary locomotives.

locomotives clearly are sufficient for these trains, as the RTC Model simulation demonstrates. The basis for UP's claim that four locomotives are needed is that these trains often return empty to the Sharp loadout for loading, and then return to IGS before making another cycle either to Sharp or to Provo, and the trains have to reverse direction after loading at Sharp because there is no loop track at that location. While UP may use four locomotives on most of these trains in the real world for its operating convenience,[10] there is absolutely no need for the IRR to operate in such an inefficient manner for several reasons.

In the first place, there is no valid operational reason why a coal train cannot operate from the Sharp loadout to IGS with one lead locomotive and two rear locomotives (*i.e.*, a 1x2 DP configuration). There are no severe grades between Sharp and IGS. Mr. Reistrup has observed coal trains operating with a 1x2 DP configuration on many occasions, both in the East (in particular on CSXT) and in the West (most recently on the Powder River Basin Joint Line). IPA witness Scott Thomas, who is the current Transportation Coordinator for Intermountain Power Service Corporation ("IPSC"), reports that most trains arrived at IGS with only three locomotives prior to increasing the train length to 104 cars in 2011. Although four locomotives are the norm at present, Mr. Thomas notes that all four locomotives are usually on the front of the train, rather than two

[10] UP's train event data shows that approximately { } percent of the IPA Base-Year coal trains operated with four locomotives. Most of the remaining trains operated with either two or three locomotives.

on the front and two on the rear (thus refuting UP's claim that a 2x2 DP configuration is necessary).[11]

In short, UP simply has not shown that a 1x2 DP configuration is operationally infeasible for coal trains loaded at the Sharp loadout, regardless of how UP chooses to operate the IPA coal trains. Moreover, even if it were desirable to have two locomotives on the front of each train, the IPA trains will dwell at the Sharp loadout for six hours while the train is being loaded. This provides plenty of time for the IRR crew to move the lead locomotive on the inbound empty train to the rear of the train (which will become the front of the train when it departs loaded for IGS) and reconfigure the DP apparatus for continued 2x1 DP operation.[12] UP's claim that the 2x2 configuration "permits a more efficient operation" (Reply at III.C-13) is absurd since that configuration requires an additional, unneeded locomotive for every IPA coal train.

Fourth, UP asserts that IPA erroneously assumes the IRR would not incur ownership responsibility for locomotive units that would be isolated with throttles in the idle position while operating on the IRR. Reply at III.C-14-15. IPA's assumption is entirely proper. These locomotives are on the trains when

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[11] Mr. Thomas also advises that the 2x2 configuration is used mainly for trains that are loaded on the UP at Skyline Mine (located east of Provo), whereas the trains received from the URC at Provo (which also load at the Sharp loadout) normally have all four locomotives on the head end.

[12] The RTC model "default" is that trains in a 2x1 DP operation will remain in that mode after a turnaround unless specified otherwise. IPA's Opening and Rebuttal RTC simulations both assume 2x1 DP operations in both directions for coal trains loaded at the Sharp loadout.

received in interchange from UP (mostly westbound overhead trains received from UP at Lynndyl). The IRR does not need these locomotives, and could remove them from the trains when received in interchange from UP. The extra locomotives normally are on the trains for a reason (*e.g.*, to address the east-west imbalance in train movements cited later by UP), and the IRR is actually doing UP a favor (as well as contributing to the repositioning of locomotives) by leaving the locomotives on the trains at no charge to UP. The IRR should not be charged for a portion of the ownership cost of locomotives that it does not need (and that UP undoubtedly would not want returned to it at Lynndyl).

Fifth, UP asserts that IPA failed to include an appropriate factor to account for the imbalance in train and locomotive flows across its network (*i.e.*, between Lynndyl and Milford). Reply at III.C-15-17. As the table at Reply III.C-16 shows, more trains and locomotives flow westbound from Lynndyl to Milford than flow eastbound from Milford to Lynndyl.[13] However, the imbalance requires the IRR to contribute more locomotives to the run-through pool only to the extent that locomotives actually powering IRR trains are out of balance. As shown in Rebuttal e-workpaper "IRR Imbalance–Base Case.xlsx," a minimal number of locomotives need to be repositioned from Milford to Lynndyl and from Provo to Lynndyl to ensure sufficient power is available for trains moving from Lynndyl to

[13] UP does not address the cause of the imbalance of trains flowing over the Lynndyl Subdivision. The imbalance is probably due to the fact that UP has another high-density route (the Sunset Route via El Paso, TX) for transcontinental traffic moving between the Los Angeles Basin and the Midwest, which UP may favor for eastbound trains.

Milford. The IRR would reposition these locomotives by adding them to the locomotive consist of other trains moving between these points, with their throttles in the "idle" position to avoid incurring additional fuel expense. Locomotive ownership costs are included for this repositioning of locomotives, as required to power IRR trains while on its system. The net result is that the IRR must supply one additional ES44-AC locomotive to the locomotive pool.[14]

In summary, the number of road locomotives needed by the IRR has been increased by one ES44-AC unit for repositioning purposes. The Rebuttal revisions to the IRR's traffic group and train transit times otherwise do not warrant a different number than that provided in IPA's opening evidence. The Rebuttal simulation confirms that the IRR continues to require a total of 14 road locomotives including the spare margin and peaking factor accepted by UP (plus the addition of one unit to the locomotive pool for repositioning). As discussed in Part III-C-3-c below, the IRR also requires four SD40-2 locomotives for its two local trains. Thus the IRR's total locomotive count is 19.

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[14] As noted, this is essentially a cost issue, enabling the IRR to share in the cost of repositioning locomotives from east to west. In most instances the IRR does so by moving many extra, unneeded locomotives on the westbound overhead trains at no charge to UP, even though they are not needed on the IRR system itself. Most of the westbound non-coal IRR trains moving between Lynndyl and Milford have extra locomotives; the largest number on any such train according to UP's train movement records for the Base Year is seven – which is four more than the three actually required to power that train.

iii. Railcars

UP accepts IPA's summary of the IRR's ownership of railcars and intermodal units for each traffic type, except for intermodal flatcars. UP claims that IPA erroneously concludes that the intermodal flatcars used by the IRR are railroad-provided cars, whereas {

} based on a review of the car event data UP provided in discovery. Reply at III.C-18-19 and III.D-13. In fact, the data UP used to make this adjustment relate to intermodal containers and trailers, not the railroad flatcar – thus UP's adjustment is incorrect. UP did not provide any data on intermodal railcar (as opposed to container/trailer) ownerships. As discussed in Part III-D-2 below, IPA relies on data included in UP's 2011 R-1 Annual Report which shows that 70 percent of the intermodal flatcars moving on UP's system are railroad-provided and 30 percent are private. IPA uses these percentages to determine the ownership split for these cars.

2. Cycle Times and Capacity

a. Procedure Used to Determine the IRR's Configuration, Transit Times and Capacity

IPA developed the IRR's train cycle and transit times by using the Board-approved RTC Model to simulate the IRR's operations during the peak volume week of its peak traffic year (2022). The RTC Model was used to help develop the system (track and yard) configuration, and confirm its capacity to handle the IRR's peak-period traffic efficiently and in accordance with customer service requirements. The procedure used by IPA's experts, including the use of a nine-day RTC simulation period that encompasses the peak traffic week (March 7 to March 13, 2022), is described in detail in IPA's Opening Narrative at III-C-13-19.

In its Reply Evidence, UP criticizes several of IPA's inputs into the RTC Model, and it performs its own RTC simulation of the IRR's operations using its revised train counts (based on its reduced IRR traffic group), revised track configuration, and several "corrected" operating inputs. Reply at III.C-24-45. IPA responds below to UP's criticism of, and changes to, the inputs IPA used in its Opening RTC simulation.

b. Development of Peak Period Trains

UP accepts IPA's peak week (March 7-13, 2022) and use of a nine-day period for the RTC simulation, as well as the development of 208 trains for the peak period "as a starting point." Reply at III.C-21. However, UP adjusts the train count downward based on its reduction of the IRR's peak-year traffic volumes compared to those posited in IPA's Opening Evidence. *Id.*

After running its Reply RTC simulation, UP concluded that the IPA operating plan does not allow IRR to replicate the level of service UP provides on the "high-priority, service-sensitive intermodal Z trains that move on the Milford-Lynndyl segment" as part of these trains' eastbound movement from Southern California, and UP therefore removed the Z trains from the SARR analysis. Reply at III.C-21-23. IPA addresses the Z-train service issue in Part III-C-2-e-ii below, and demonstrates that when the overall service requirements of the customers involved are considered, including the total transit time for these trains from initial origin (Los Angeles) to final destination (Denver or Chicago), the IRR's insertion into the route does not materially affect the service provided to these shippers. Accordingly, IPA retains the Z trains and associated traffic in its Rebuttal RTC (and SAC) analysis.

c. Operating Inputs to the RTC Model

UP disputes several of IPA's operating inputs into the RTC Model, and presents revised inputs for its Reply RTC simulation. Each of UP's criticisms is discussed below, and IPA describes the Rebuttal revisions to the operating inputs that are warranted by the evidence presented by UP (as well as an additional operating input related to the IRR's provision of local train service based at Milford).[15]

i. Road Locomotive Consists

UP accepts IPA's road locomotive consists for the IRR except for the IPA coal trains, which UP insists should have four locomotives in a 2x2 DP configuration. Reply at III.C-24. UP also continues to assert that the IRR should have two separate locomotive pools. IPA has previously explained, in Part III-C-1-c-ii above, why there is no need for two separate locomotive pools or to add a fourth locomotive to the IPA coal trains.

[15] Based on the discussion in Part III-B above, there is no need to adjust the IRR's main and yard track configuration as input into the RTC Model in IPA's Opening RTC simulation.

IPA has also replaced UP's service for certain on-SARR local traffic with two IRR local trains. Each local train has a two-unit, SD40-2 locomotive consist, with both locomotives on the front of the train.

ii. Train Size and Weight

UP accepts IPA's assumptions regarding train size and weight, except that UP decreases the size of certain IRR through road trains by removing cars for which UP, rather than the IRR, would provide local pickup and delivery service. Reply at III.C-25. In Part III-A-2-c above, IPA has explained why inclusion of these cars in the IRR's traffic group is appropriate, and that the IRR will provide the local pickup and delivery service rather than relying on any UP involvement for this local service. Accordingly, IPA has not removed these cars from the road trains included in the rebuttal RTC simulation.

iii. Maximum Train Speeds

As discussed in Part III-C-1-b above, IPA has accepted UP's position (Reply at III.C-25) that the maximum speeds for some categories of the IRR's trains should be reduced. With the reductions, the parties now agree that the following maximum authorized speeds apply for movements on the IRR's Lynndyl Subdivision between Lynndyl and Milford:[16]

Intermodal trains: 70 miles per hour

[16] The maximum train speed on the Sharp Subdivision between Provo and Lynndyl remains 49 mph, and the maximum authorized speed on the IPP Industrial Lead remains 40 mph for the reasons set forth in Part III-C-1-b above. These maximum speeds continue to be used in IPA's rebuttal RTC simulation.

All other trains except loaded coal and grain trains
and trains carrying TIH commodities: 60 miles per hour

Loaded coal and grain trains and trains
carrying TIH commodities: 50 miles per hour.

These maximum train speeds have been input into the RTC Model for purposes of IPA's Rebuttal RTC simulation of the IRR's operations.

iv. Unloading Time at IGS

The parties disagree on the allotment of dwell time for IPA coal trains at IGS. On Opening, IPA used an average dwell time of 4.25 hours based on records, maintained by IPA in the ordinary course of business, of the time spent by all trains unloaded at IGS during the Base Year between arrival of the loaded train at IGS and the release of the empty train to UP after the completion of the unloading process. Op. at III-C-23-24. On Reply, UP asserts that the average train dwell time at IGS should be increased to 6.3 hours based on its records of train dwell time at IGS during the Base Year. Reply at III.C-26.

Based on a comparison of UP's Reply e-workpaper "IGS Average Dwell Times.xlsx" with IPA's Opening e-workpaper "IGS train time data.xlsx" (as explained in Op. Exhibit III-C-2), it appears UP has included the time between the release of the empty train to UP and the actual departure of the train from IGS in its dwell-time calculations. Inclusion of this additional time is inappropriate. According to IPA witness Scott Thomas, there is considerable variation in the time that elapses between notification to the UP train crew that the train is released and the train's actual departure, for no apparent reason.[17] Based on Mr. Reistrup's experience, this undoubtedly is due to "SAT" (stand-around time) for which unionized T&E employees of Class I railroads are notorious. Mr. Thomas concurs; based on his observations over a period of several years (and those of other IPA personnel involved in the train unloading operations), it is apparent that UP crews are simply choosing to waste time while at IGS, hoping that they will go "dead" under the hours of service law or otherwise incur overtime, thereby resulting in more earnings for the crew members. This conclusion is supported by an email from an IPSC Assistant Superintendent of Operations at IGS, prepared in the ordinary course of business, included as Rebuttal e-workpaper {

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In any event, under Mr. Reistrup's operating plan, IRR crews will be instructed to depart IGS immediately upon notification by IPA personnel that unloading of the train has been completed, and crews that violate this instruction without good cause will be disciplined. IRR supervisory operating personnel will be well-equipped to enforce this rule given the limited geographic area in which the IRR operates, compared with the far-flung nature of UP's operations.

In summary, both parties used data on actual train operations at IGS for the base year in calculating average dwell times, and UP has not disputed the

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[17] This is consistent with UP's statement that its experts "found numerous examples where the time IPA counted as the endpoint for its dwell time calculations significantly preceded the actual departure of the train." Reply at III.C-26.

accuracy of IPA's data. The difference between the parties is based on their different interpretations of when dwell time should be deemed to end. IPA submits that, given the way the non-unionized IRR (as opposed to UP) will deploy and instruct its train crews, as explained above, dwell time should end when IPA releases the empty train to the IRR. Thus, IPA continues to use 4.25 hours of train dwell time at IGS in its Rebuttal RTC simulation.

v. <u>Dwell Time at the Sharp Coal Loadout</u>

In its Opening Evidence, IPA used the median dwell time for coal trains at the Sharp loadout based on UP's train and car movement records for the Base Year, which removed the impact of a few outliers on the average dwell time. Op. at III-C-24. UP asserts that use of the median dwell time is inappropriate because "it fails to account fully for the actual loading times" and that use of the average dwell time is more appropriate. Reply at III-C-27.

IPA agrees that use of an average is preferable in this situation to use of a median.[18] However, when certain obvious problems with UP's train and car movement records are fixed, as explained below, the average train dwell time at the Sharp loadout in the Base Year is 6.0 hours – the same number IPA used on Opening.

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[18] The mean (average) and the median are both robust indicators of central tendency, and one should not assume the mean always provides a better indicator of central tendency than the median. Data that has a symmetric distribution will have similar mean and median values; however, when the data is distributed asymmetrically or has extreme values in the tails, the median provides a better estimate of location than does the mean. *See* http://www.itl.nist.gov/div898/handbook/eda/section3/eda351.html.

UP's train event data includes the arrival and departure times from stations along the train's route of movement. {

}[19] To correct for this anomaly, IPA adjusted the reported arrival times at the Sharp loadout to reflect arrival times after the departure times from Nephi, and calculated the dwell times at Sharp based on these corrected arrival times. The result is an average dwell time at Sharp of 6.0 hours.[20]

vi. <u>Dwell Time at the Sharp Grain Loop</u>

UP accepts IPA's 19 hours of train dwell time for grain trains on the Sharp grain loop. Reply at III.C-28.

[19] *See* Rebuttal e-workpaper "Sharp Coal Average Dwell Times(Rebuttal).xlsx."

[20] *Id.* at worksheet "Dwell Times." The specific methodology used to impute the correct arrival time at Sharp is shown in this workpaper.

vii. Dwell Time at Yards and Other Interchange Points

UP has accepted the following train dwell times at yards and interchange points, as reflected in Mr. Reistrup's operating plan for the IRR:

- 30 minutes at interchange locations where no activity occurs other than a crew change.

- 45 minutes at the Lynndyl Yard interchange for trains that change consists at that point.

- 2.5 hours at the Milford Yard interchange for trains that change consists at that point.

- 0.0 minutes at the Provo interchange for trains destined to/from UP-served points north of Provo (*e.g.*, Salt Lake City); these trains are interchanged off-SARR in UP's Provo Yard.

- 3.0 hours for coal trains inspected at Provo. (Note that IPA provided for inspection of empty coal trains only at the IPA car shop; UP proposes, and IPA accepts, that certain coal trains interchanged with UP be inspected on the IRR's Coal Wye tracks rather than at IPA's nearby car repair facility.[21] The trains involved are described in Part III-C-3-c below. The parties agree that the inspection dwell time for these trains is 3.0 hours.)

See Reply at III.C-28-30.

The only disagreement between the parties on dwell time at interchange points relates to the time allotment for the exchange of locomotives on

[21] IPA's acceptance of the Coal Wye tracks as the location for inspection of certain coal trains interchanged between IRR and UP reduces the number of trains to be inspected per day at the IPA railcar repair facility, and thus eliminates UP's argument that the IPA car shop cannot accommodate all the trains that would otherwise have been inspected there. Reply at III.C-35. Only empty IPA coal trains destined for interchange with the URC are now inspected at the IPA car shop, with a maximum of two such trains per day requiring inspection during the IRR's peak week. IPA explained on Opening that the shop has the capacity to inspect five trains per day. Op. at III-C-29.

loaded coal trains delivered to the IRR by the URC on the Coal Wye tracks at Provo. On Opening, IPA witness Reistrup allotted 75 minutes (1.25 hours) of dwell time at Provo for these trains. Op. at III-C-26-28 and Op. Exhibit III-C-2. On Reply, UP witness Murphy proposes to increase this dwell time to 130 minutes (2.17 hours). Reply at III.C-31-34. After reviewing UP's reply evidence on this issue, Mr. Reistrup has concluded that his initial dwell-time allotment of 75 minutes could appropriately be increased by 30 minutes, to 105 minutes (or 1.75 hours).

In his Reply discussion of the individual operations involved in the URC/IRR locomotive exchange process, UP witness Murphy makes several mistaken assumptions that result in overstatement of the time required by at least 55 minutes. Reply at III.C-32-34. First, Mr. Murphy assumes that when URC locomotives on the train are detached (which occurs twice, once for the mid-train units and again for the lead units), the hand brakes should be set on the first ten cars. He does not explain the basis for this assumption, and in fact only two cars need to have their hand brakes set. The applicable FRA regulation (49 C.F.R. § 232.103(n)) requires only that "[a] sufficient number of hand brakes shall be applied to hold the equipment." The Coal Wye tracks (where the locomotive exchange takes place) are level (*i.e*, not on a grade), which means that the hand brakes need to be set on no more than two cars to hold the remaining cars.[22] This

[22] UP has not provided any evidence that URC sets the hand brakes on more than two cars when it removes its locomotives from coal trains in delivering

alone reduces the time requirement by at least 15 minutes for each of the two instances where hand brakes need to be set and released (Mr. Murphy's Items 2 and 4 and corresponding subsequent hand brake releases), or a total of 30 minutes.

Second, Mr. Murphy proposes to have the URC crew cut the train in front of the URC's mid-train helpers, pull the front portion of the train forward (to the west), then separately move the mid-train helpers west to clear the switch to the other Coal Wye track, and then move them east back to UP/URC trackage (Item 2). It would be more efficient (and less time-consuming) to cut the train behind the mid-train helpers, and move the front portion of the train (including those helpers) west to clear the switch to the other Coal Wye track. The mid-train helpers could then be uncoupled and moved light back to UP/URC trackage. This would save at least ten minutes of dwell time.

Third, Mr. Murphy proposes that all four (actually three under Mr. Reistrup's operating plan) of the IRR's locomotives move to the east (rear) of the train to place the rear DP unit on the train, with the other locomotives then returning west to couple to the front of the train (Item 5). This movement can be eliminated entirely. After the URC lead locomotives depart, two IRR locomotives can couple to the front of the train and then pull it forward to clear the westerly switch to the locomotive shop and locomotive servicing area; the DP unit then can

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them to UP at Provo. In fact, Mr. Murphy's description of the individual operations involved in changing locomotives on these trains (Reply at III.C-32-34) appears to be based entirely on how he thinks the operations should be performed, not on what actually occurs in the real world.

be placed on the rear of the train by one of the contract (hostler) shop employees, who would also cut in the air and check the DP communication. This would net at least another 15 minutes in dwell-time savings.

Taking these three items into account, Mr. Murphy's proposed dwell time could be reduced by a total of 55 minutes (30+10+15), or from 130 minutes to 75 minutes – which is the dwell time allotted by Mr. Reistrup on Opening. However, to be conservative, and minimize the difference between the parties on this issue, Mr. Reistrup has reduced Mr. Murphy's dwell time by only 30 minutes (reflecting the reduced number of cars for which hand brakes have to be set and released), resulting in a total dwell time for the URC/IRR locomotive exchange process of 105 minutes. This dwell time, which represents an increase of 30 minutes from Opening, is used in IPA's Rebuttal RTC simulation.

With respect to the movement of empty IPA trains destined for loading on the URC, UP concurs with IPA that the URC picks up these trains after inspection at IPA's Springville car repair facility. Reply at III.C-35. UP correctly observes, however, that IPA did not include the light movement of URC locomotives over the IRR's tracks from the point of connection with UP/URC's Provo Subdivision to the car shop in its Opening RTC simulation. *Id.* IPA agrees that it inadvertently omitted these locomotive movements (as well as the subsequent movement of the empty train from the car shop to Provo), and has included them in its Rebuttal RTC simulation.

viii. Dwell Time at Intermediate Pickup and Setout Points

IPA's operating plan as presented on Opening included 30 minutes of dwell time for each pickup and delivery of cars by the IRR's non-coal through trains at intermediate points (Nephi, Martmar, Delta and Bloom). UP's witness Murphy proposes to increase the dwell time to 70 minutes for picking up cars and 90 minutes for setting out cars. Reply at III.C-37 and Reply e-workpaper "Pickup and Delivery Operations at Intermediate Points.docx." The dwell times proposed by Mr. Murphy are absurd given the fact that, during the RTC simulation period, a total of four IRR trains picked up or set out cars at intermediate points, and in each instance only one car was either picked up or set out.[23]

If a train is picking up one or more cars at a local point, the efficient way to perform the pickup operation is to place the car(s) immediately behind the lead locomotives. In the case of a set out, the car(s) are normally blocked by destination with the blocks placed closest to the lead locomotives. If a train is making only one setout of a single car (as is the case here), the car should also be placed immediately next to the lead locomotive.[24] This minimizes the distance the

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[23] Three trains picked up a car and one train set out a car, in all cases at Delta, UT. *See* Rebuttal e-workpaper "RTC List Rebuttal.xlsx." The maximum number of cars picked up or set out at an intermediate point by any IRR through train that operated during the Base Year was four (in each case, the four cars were picked up or set out at one industry).

[24] If cars are to be set out at several intermediate locations, the cars are normally blocked by location with the blocks placed at the front of the train in the order in which the setouts will occur.

locomotives and the cars to be set out must move backward. In Mr. Reistrup's experience, most railroads (including UP) operate in this manner to minimize the time (and back-up movement) required to pick up or set out cars at an intermediate point. UP witness Murphy's description of the movements required for intermediate pickups and setouts by the IRR completely ignores the proper placement of cars in the train making the pickup or setout.

Given the circumstances involved here, with no more than one car involved in either a pickup or setout, the 30 minutes of train dwell time allotted by Mr. Reistrup for purposes of the RTC simulation are more than ample for pickups, and a five-minute increase (to 35 minutes) is warranted for setouts. In this regard, Mr. Reistrup has analyzed each of the individual operations involved in setting out or picking up a car, as described in UP Reply e-workpaper "Pickup and Delivery Operations at Intermediate Points.docx," and has inserted his comments on the operations and the time required for each. *See* Rebuttal e-workpaper "Pickup and Delivery Operations at Intermediate Points.pdf." His comments demonstrate that UP has greatly exaggerated the time required for these operations in the circumstances presented here. Mr. Reistrup further notes that UP has not backed up its witness Murphy's outcome-driven description of the IRR's pickup and setout movements with any evidence as to the amount of time that UP's real-world intermediate switching operations take on the lines replicated by the IRR.

In summary, for the Rebuttal RTC simulation IPA's experts have included 30 minutes of dwell time at intermediate points for pickups and 35 minutes of dwell time at intermediate points for setouts.

ix. Crew-Change Locations/Time

UP has accepted the IRR's crew districts and assignments as reflected in Mr. Reistrup's Opening operating plan (as described in Op. at III-C-30-33), as well as the allotment of 15 minutes of dwell time for crew changes at non-interchange points where this is the only activity. Reply at III.C-37. UP has also accepted IPA's determination that 0.96 of the trains modeled in IPA's Opening RTC simulation require a re-crew under the Hours of Service law. *Id.*

UP goes on to assert that the IRR's low volumes and limited number of crew districts mean that trains will not always be available for turn crews to operate back to their home terminal, even after receiving their minimum rest as required under FRA rules. Reply at III.C-38. The availability of trains for turn crews operating between Lynndyl and Milford and return is reflected in IPA's Rebuttal RTC Model simulation, and any re-crewing required by train unavailability is reflected in the number of crew starts and thus the number of T&E employees reflected in IPA's Rebuttal Evidence.

On Rebuttal, Mr. Reistrup has added two, two-person local crew assignments based at Milford and Provo, respectively. The Milford-based crew operates a local train in turnaround service on the Lynndyl Subdivision from Milford to Cline (or a point short of Cline depending on the cars available for pickup or delivery at local industries) and return to Milford.[25] This train operates four to five days per week, depending on the number of cars to be picked up and delivered. The Provo-based crew operates a local train in turnaround service on the Sharp Subdivision from Provo to Lynndyl (or a point short of Lynndyl) and then returns to Provo. This train operates two to three days per week, again depending on the number of cars to be picked up and delivered. These trains are included in the Rebuttal RTC peak train list.

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

With respect to track inspections, UP disputes IPA's failure to allot any separate time for FRA-prescribed inspections, claiming that inspection vehicles and trains would not share the same block due to safety concerns and that IPA's assumption that trains and hi-rail inspection vehicles would travel on the same block is "inconsistent with industry practice." Other than its simple, declarative assertion, UP provides no evidence as to "industry practice" in this area. Moreover, UP accepted IPA's assumption that track inspection vehicles would operate behind the SARR's trains, on the same block, in its reply evidence in Docket No. 42127. *See* UP's Reply in Docket No. 42127 at III.C-37. No explanation is provided as to why UP has changed its position for purposes of the instant proceeding.

[25] When the train needs to drop off or pick up cars at Cline, it operates on to Lynndyl for purposes of repositioning the locomotives to the other end of the train for the return trip to Milford, as there is no siding at Cline.

In Mr. Reistrup's experience, track inspection vehicles routinely operate on the same block as a preceding train in the real world, and this practice was followed by CSXT when Mr. Reistrup was Vice President-Passenger Integration for that carrier from 1997 to 2003. In dark territory, a single track warrant is used for both movements – that is, the warrant specifically covers the inspection vehicle as well as the train so the train crew and the vehicle operator are aware of each other's presence at all times. Moreover, unlike outages for program maintenance, railroads routinely time and perform their track inspections around the prevailing traffic.

With respect to maintenance windows, on Opening, IPA did not provide maintenance windows for the IRR's peak traffic period, which occurs in mid-March. Although, again, UP accepted IPA's approach in Docket No. 42127,[26] UP now claims that it is "unrealistic" to assume no program maintenance would be performed during the IRR's peak week, and provides for "normalized" track-maintenance delays of 3.4 hours per day. Reply at III.C-39-40.

UP's assumption that maintenance windows should be provided in this case is erroneous for several reasons. First, the IRR's peak traffic period modeled in IPA's RTC simulation occurs in the winter (early March), when

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[26] *See* UP's Reply in Docket No. 42127 at III.C-37. UP has provided no explanation for its about-face in the instant proceeding, other than a reference to the Board's inclusion of maintenance windows in the RTC Model simulation in *AEPCO 2011*. As explained in the text, maintenance windows were accepted in *AEPCO 2011* because the carriers involved performed program track maintenance during the Base Year equivalent of the RTC simulation period – which is not the case here.

program maintenance normally is not scheduled in areas (like central Utah) that are subject to freezing and inclement weather. In this regard, UP's Reply e-workpaper "Maintenance Windows for RTC.xlsx" indicates that program maintenance will be performed on the IRR's lines 200 days per year, meaning there will be 165 days (including the winter months) when such maintenance will *not* occur. There is simply no basis for UP's unexplained assumption that the late-winter RTC simulation period would fall during the 200 days in which program maintenance occurs, rather than during the 165 days when it would not occur. Finally – unlike the situation in *AEPCO 2011* cited by UP – the information provided by UP in discovery in this case indicates that UP did not perform any program maintenance on the lines replicated by the IRR during the 2012 equivalent of the RTC simulation period[27] – a fact that UP does not dispute.

For these reasons, Mr. Reistrup has instructed IPA's RTC experts to continue to assume that track-inspection vehicles would operate on the same block or under the same warrant as a preceding train, and to continue to exclude time for program maintenance in the RTC simulation period.

xi. Time for Random Outages

UP has accepted IPA's inclusion of four random outage events affecting rail operations during the RTC simulation period, as well as the time allotment for each outage. Reply at III.C-40.

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[27] *See* Op. at III-C-34.

xii. Inputs Related to Operation of Local Trains Based at Milford

As described earlier, the IRR's operating plan has been revised on Rebuttal to accommodate UP's proposal that the IRR provide local service for certain cars that UP originates or terminates at intermediate points between Milford and Provo. The IRR has two local train/crew assignments, one based at Milford and one based at Provo, each with a two-person crew and two SD40-2 locomotives dedicated to the local service. The local trains operate in turn service picking up and dropping off IRR revenue cars (and corresponding empties) at various stations. The Milford-based local originates and terminates cars at Milford, Bloom, Delta and Cline (although not every station receives or originates traffic on all trains – that is, on some days the local may work only one or two of these stations).[28] The Provo-based local originates and terminates cars at Spanish Fork, Nephi, Sharp, Martmar and Lynndyl, but, again, the train does not serve each station on every trip (in fact, during the RTC modeling period, the Provo local only originates or terminates traffic at Sharp, Martmar and Lynndyl).[29]

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[28] The locomotives used for this train are fueled at Milford using contractor-provided DTL fueling from tanker trucks.

[29] During the RTC modeling period, the Milford local operates on seven of the nine days and the Provo local operates on two of the nine days. The start times on each day are based on the start times for the existing UP local trains whose service is replicated by the IRR. When the Milford local serves Cline, it operates on to Lynndyl for purposes of moving the locomotives to the other end of the train for the return trip to Milford.

d. Results of the RTC Simulation

i. UP's Reply RTC Simulation is Defective

UP states on Reply that it ran a "corrected" RTC Model simulation of the IRR's operations, using IPA's peak week for modeling purposes, but correcting IPA's Opening RTC simulation for the "errors" it identified. Reply at III.C-40-41, 45-46. In fact, however, UP failed to incorporate several of its purported "corrections" in its Reply RTC simulation. In particular:

- UP did not include the additional tracks near Provo (extension of one Coal Wye track westward to Sharp Subdivision MP 746.70, addition of lead track at east end of Coal Wye tracks) that it claims are required to facilitate interchange operations at Provo.
- UP failed to reduce the maximum train speed for multiple trains it claims should have a reduced speed limit (loaded coal and grain trains and trains carrying TIH commodities).
- UP failed to include additional interchange tracks at any location except the IRSC (IPA's Springville car repair facility), where UP appears (inexplicably) to have added an additional private track.

These failures require that the Board disregard UP's RTC simulation, regardless of whether it would otherwise be inclined to accept UP's input changes that IPA has not accepted for purposes of its Rebuttal RTC simulation.

While IPA does not accept UP's RTC simulation, IPA re-ran that simulation with one input change. UP programmed the RTC Model to instruct all overhead trains moving between the UP/IRR interchanges at Milford and Lynndyl (in both directions) to use Lynndyl Yard, and used this "fact" to argue that the Lynndyl-Milford line segment is not used by the issue coal traffic which stays on the mainline through Lynndyl. Reply at I-12-13. To demonstrate the fallacious nature of UP's argument, IPA modified this instruction to allow the model to move the overhead trains on the main line through Lynndyl as an alternative to moving all of them through Lynndyl Yard (the track configuration and all other inputs to UP's Reply RTC simulation were left unchanged). The result was that the model flowed all of the northbound overhead trains and some of the southbound overhead trains over the main track, rather than a Lynndyl Yard track.[30] This shows that the mainline and the Lynndyl Yard tracks are interchangeable parts of the Lynndyl-Milford line.

ii. Results of Rebuttal RTC Simulation

IPA witnesses Timothy Crowley and William Humphrey re-ran the RTC Model after making the input changes described in Part III-C-2-c above.[31] Mr. Reistrup observed the Rebuttal simulation, in which the RTC model ran successfully to a conclusion – thus confirming that the IRR's system configuration and operating plan, with the minor revisions made in response to UP's criticisms, are feasible. The Board should use IPA's Rebuttal RTC simulation in determining the IRR's feasibility, as the inputs used by IPA in the Rebuttal simulation constitute the best evidence of record.

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[30] *See* Rebuttal e-workpapers "Non-IPA trains using Lynndyl Mainline – Revised UP Reply.docx" and "UP Reply Revised.zip."

[31] IPA also ran an alternative RTC simulation in which the IRR's local trains were removed and the IRR carries the cars originated/terminated by those trains only in its through trains, as on Opening. *See* Rebuttal e-workpaper "IPA_2nd_Alt_Final.zip."

The outputs generated by the Rebuttal RTC simulation (including elapsed train running times over each of the IRR's line segments, and train cycle and transit times) were used to develop revised operating statistics used to calculate the IRR's Rebuttal annual operating expenses, in particular locomotive and car hours and train-crew counts. The electronic files showing the IRR's tracks as they appear in the model for the Rebuttal simulation, and containing the Rebuttal RTC runs, output and case files, are included in IPA's Part III-C Rebuttal e-workpaper folder "IPA_Base_Case_Final.zip." IPA's experts used the latest available version of the RTC model (Version RTC 2.70 L67T) for the Rebuttal simulation.[32]

The Rebuttal simulation produced slightly different average train transit times, and locomotive and car hours,[33] (as well as crew deadheads and taxi trips), compared with the Opening simulation. These inputs were provided to IPA witnesses Thomas Crowley and Philip Burris for use in developing revised annual operating costs for the IRR.

Similar to the approach used on Opening, IPA has compared the average train transit times produced by the Rebuttal RTC simulation with UP's average transit times for the corresponding trains that moved during the real-world

[32] IPA used an earlier version of the RTC model (Version RTC 2.70 L64K) for its opening simulation. UP did not identify which version of the model it used for its Reply simulation, but IPA's experts were able to confirm that it was not the same version that they used on Opening.

[33] The revised crew counts include the two local crews based at Milford and Provo.

peak week in the Base Year, based on train movement data produced in discovery.[34] The revised UP and IRR transit-time comparisons for the IRR's principal coal and non-coal traffic flows are shown in Rebuttal Exhibit III-C-1. Further details on a train-by-train basis are shown in Opening e-workpaper "UP Peak Period Coal Times and Comparison Summary (Final).xlsx" and Rebuttal e-workpaper "Rebuttal Transit Comparisons.xlsx."

The revised IRR transit times shown in Rebuttal Exhibit III-C-1 generally are comparable to those shown in Opening Exhibit III-C-4, and show that the IRR's 2022 peak-period cycle and transit times for each category of traffic are similar to or faster than the real-world UP transit times for the comparable trains moving over the same line segments during UP's peak week in the Base Year. The revised transit-time comparisons generally confirm that the IRR provides service commensurate with its customers' requirements. A further discussion of customer transportation requirements for the premium intermodal Z trains that move over part of the IRR system is provided below.

[34] UP notes that, contrary to statements in IPA's Opening Narrative, IPA's transit-time comparison, as presented in Op. Exhibit III-C-4, compared the IRR's transit times for its peak week (March 7-13, 2022) with UP's average real-world transit times for UP's peak traffic week in the Base Year (October 25-31, 2011), rather than the same week in the Base Year as the IRR's peak week (March 7-13, 2012). Reply at III.C-22. This is the correct comparison, since the most appropriate, apples-to-apples comparison is to compare transit times during the IRR's peak week with those during UP's peak week of the Base Year. Otherwise, IPA would be comparing the IRR's highest-volume week with a lower-volume UP week, during which UP's average transit times were lower than during its peak week.

iii. Z Train Service

As described in Part III-A-2, the IRR's traffic group includes premium intermodal traffic that moves on UP Z trains. These trains operate eastbound from Los Angeles to either Denver or Chicago, and use the IRR's route between Milford and Lynndyl. The IRR moves these trains in overhead service, receiving them from UP at Milford and delivering them back to UP at Lynndyl. Rebuttal Exhibit III-C-1 shows that the IRR operates these trains between Milford and Lynndyl as fast as UP does (including the interchange dwell time at Milford, which is an existing UP crew-change point for these trains). However, when the half-hour of interchange time at Lynndyl is included,[35] insertion of the IRR into the route yields a net average increase in transit time between Lynndyl and Milford of 30 minutes compared with UP's average transit time for these trains during its peak volume week in the Base Year. UP asserts that this kind of overall transit-time increase, standing alone, requires removal of the traffic carried by the Z trains because the IRR cannot "replicate the level of service UP provides for the

[35] As UP notes (Reply at III.C-22 n.57), the Z trains are actually delivered to the residual UP's tracks at Lynndyl in the IPA's RTC simulation, rather than being interchanged in the IRR's Lynndyl Yard, which is why the 30 minutes of interchange dwell time at Lynndyl are not shown in Rebuttal Exhibit III-C-1. It is customary practice in the railroad industry to deliver trains being interchanged from one carrier to another on the receiving carrier's tracks, unless otherwise agreed. UP's Lynndyl Subdivision division track charts show that UP has a two-track siding located just northeast of the IRR portion of the Lynndyl Sub where these trains can be placed if necessary. In any event, the interchange process takes 30 minutes regardless of exactly where it occurs.

high-priority, service-sensitive intermodal Z trains that move on the Milford-Lynndyl segment." Reply at III.C-21.

The fact that the average elapsed transit time between Milford and Lynndyl (including interchange time) for the Z trains is slightly higher when the IRR is inserted into the route does *not* mean that the relevant shippers' service requirements are not being met. The Board's precedents are somewhat vague in terms of the precise standard that a complainant must meet to show that its SARR would provide the level of service required by its customers. *See, e.g.*, *WFA I*, slip op. at 15 ("The operating plan must be able to meet the transportation needs of the traffic the SARR proposes to serve"); *Duke/CSX*, 7 S.T.B. at 414 ("[The operating] plan must be capable of providing, at a minimum, the level of service to which the shippers in the traffic group are accustomed."); *TMPA*, 6 S.T.B. at 589 ("[T]he SARR must meet the transportation needs of the traffic in the group by providing service that is equal to (or better than) the existing service for that traffic."); *Nevada Power II*, 10 I.C.C. 2d at 273 ("For traffic to be included in the SARR, the operating plan must be adequate to meet the needs of that traffic. . . . NPC has not persuaded us that its proposed operating plan could provide the same level of service as efficiently as the incumbent does or that a lower level of service would not likely result in the loss of much of this traffic to readily available competitive alternatives").

Prior SAC cases where RTC Model simulations have been used to compare the SARR's train cycle/transit times with the incumbent's real-world transit cycle/times have involved relatively long SARRs (or at least relatively long individual movements on the SARR system), and simple comparisons of average elapsed transit times over the lines replicated by the SARRs with those of the incumbent on the same line segments have shown that the SARR's transit times are sufficiently faster than the incumbent's that consideration of other factors relevant to shipper service requirements has been unnecessary. Thus, for example, neither the parties to those cases nor the Board has had to delve into overall (*i.e.*, origin to destination rather than just the SARR segment) transit-time comparisons for shippers of cross-over traffic, whose cars traverse other lines of the incumbent between initial origin and final destination. Yet that is the most relevant comparison in terms of whether a SARR's operating plan meets the "transportation needs" of such a shipper's traffic (*WFA I*, slip op. at 15; *AEPCO 2011*, slip op. at 28; *Nevada Power II*, 10 I.C.C. 2d at 273).

This case thus presents an issue of first impression that has never been directly addressed by the Board, namely, whether the overall level of service received by shippers whose traffic moves over a SARR for a relatively small portion of the total distance involved is materially affected by a very minor increase in average transit time on the SARR itself compared with the incumbent's overall real-world average transit time. Stated differently, the proper scope of analysis in this case requires consideration of the entire movement's transit time, rather than only the transit time on the small portion of the movement replicated by the SARR.

Most of the Z trains whose containers are included in the IRR's traffic group ({ } trains in the Base Year) operate between Los Angeles and Denver; a few ({ } trains in the Base Year) operate between Los Angeles and Chicago. The total rail distance between Los Angeles and Denver using the route that includes the IRR is 1,380 miles, and the total rail distance between Los Angeles and Chicago is 2,782 miles.[36] The distance these trains operate on the IRR is the 89 rail miles between Milford and Lynndyl. The distance traveled on the IRR represents only 6.4 percent of the total rail distance between Los Angeles and Denver, and 3.2 percent of the total rail distance between Los Angeles and Chicago. Thus, the IRR's operations between Lynndyl and Milford represent a minor portion of the overall route from origin to destination for the Z trains. It is a virtual certainty that none of the shippers involved would notice, much less care about, a small increase in average transit time over a small portion of the overall route.

Based on UP's train and car event data produced in discovery, the average Z-train transit time between Los Angeles and Denver during the Base Year was { } hours, and the average transit time between Los Angeles and Chicago varied from { } hours to { } hours, depending on the specific

[36] Source: PC*Miler|Rail 19. The route is Los Angeles-Barstow-Las Vegas-Milford-Lynndyl-Salt Lake City-Ogden-Speer (WY)-Denver (or -Speer-Cheyenne-North Platte-Chicago). The rail miles to Chicago are to UP's Global 1 intermodal terminal; the total miles differ slightly if the train terminates at a different UP Chicago-area intermodal terminal.

destination terminal involved (the median transit time was { } hours).[37] Thus the 30 minutes of increased transit time on the IRR's portion of the route equals { } percent of the total transit time from Los Angeles to Denver and { } percent of the total average transit time from Los Angeles to Chicago. Based on IPA witness Reistrup's experience (which includes service as Vice President Intermodal Services for the former Illinois Central Railroad and more recent experience integrating CSXT's new passenger operations resulting from its partial acquisition of Conrail with its intermodal and other freight operations in the same corridors), the increased transit time resulting from the IRR's insertion into the route for these Z trains is insignificant and would not have a material impact on the overall level of service provided to the shippers involved.

Intermodal shippers are more interested in container availability and gate hours (hours when containers are available for pickup) at destination than they are in rail transit time as such. Based on information from UP's website, the Denver and Global 1 (Chicago) intermodal terminals are open 24/7 in terms of gate hours. However, the "flip" hours (hours when containers may be removed from railcars onto truck chassis or the ground) at Denver are 0800 to 1700 Monday-Friday and 0800 to 1200 Saturday, and at Chicago (Global One) the flip hours are 0800 to 1730 Monday-Friday and 0700 to 1200 Saturday. Most of the Z trains that UP moved in the Base Year {

[37] *See* Rebuttal e-workpaper "Z Train Transit Time.xlsx."

}

There is also a time interval, which can be substantial, after train arrival before containers are unloaded from railcars and flipped either to customers' truck chassis or to the ground; the time varies depending on where in the train the container is located, and (in the case of double-stack trains) whether the container is on the top of the "stack" or on the bottom. In this regard, the car event data produced by UP in discovery included an event code named {

}. In the Base Year, {

}[39]

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[38] *See* Rebuttal e-workpaper "Z Train Transit Time.xlsx."

[39] *See* Rebuttal e-workpaper "Z Trains Car Activity After Arrival At Destination V06.xlsx."

As part of their review of UP's intermodal car/container event data, IPA's expert also discovered that approximately { } units that moved on Z trains { }.[40]

The facts summarized in the preceding paragraphs demonstrate that other factors besides rail transit time play a large role in determining the overall transportation service provided to customers whose containers move on Z trains. These factors dwarf the gain or loss of half an hour in overall rail transit time resulting from insertion of the IRR into the route for the Los Angeles-to-Denver and Los Angeles-to-Chicago Z trains.

Although UP implies that the increased Z-train transit time resulting from the IRR's participation in the movement of these trains would prevent UP from competing with trucks and with BNSF's "expedited service" (Reply at III.C-21), UP has not provided any concrete evidence that this would occur. Nor did UP provide any evidence that the specific service requirements contained in its exempt transportation contracts with the relevant shippers would not be met as a

[40] The UP data also shows that of the { } containers on Z trains moving in the Base Year that had a { }. *See* Rebuttal e-workpaper "Z Trains Car Activity After Arrival At Destination V06.xlsx."

result of an average 30-minute increase in overall average transit time from initial origin to final destination.

With respect to truck competition, even premium intermodal rail service such as UP's Z-train service cannot match trucks for either transit time or predictability of arrival time at destination. Long-haul rail transportation of containers is considerably cheaper than truck transportation due to lower employee costs (one train crew for the equivalent of more than 100 truck drivers) and much lower fuel costs per unit.[41] A 30-minute increase in rail transit time over a total distance of 1,380 miles or more would not tip the balance in favor of trucking.

With respect to contractual service requirements, UP did not provide sufficient information in discovery to enable a definitive assessment of whether a 30-minute increase in overall train transit time, standing alone, would raise any concerns about complying with any such requirements. IPA has identified {

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[41] *See, e.g.*, http://www.trinitylogistics.com/freight-services/intermodal ("Intermodal shipping is almost always less expensive than truckload shipping. Of course, there are exceptions, but generally, rates will be lower. The primary reason for this is the huge difference in fuel consumption – since trains can move freight using thousands of tons less fuel, these monetary savings are passed along to you, creating a distinct cost advantage with rail shipments"); *see also* Rebuttal e-workpaper "Morgan Stanley Intermodal Article.pdf" (chart on first page shows that intermodal rates (excluding fuel) generally are discounted by approximately 16 percent compared with truckload rates). Pacer's website also contains a tool (http://www.pacer.com/Customers/SmootherMovesCalculator/IntermodalCalculatorNew.aspx) allowing a user to input origin city, destination city, commodity, and number of shipments (containers), and then provides intermodal savings versus truck costs as well as intermodal versus truck transit times. Using this tool, a shipment of consumer products from Los Angeles to Chicago (for example) would cost $1,015 less using intermodal rather than truckload service. However, the intermodal transit time is six days, versus four days for truck transit.

} whose containers were carried, at least in part, on the Z trains moving over the IRR route between Milford and Lynndyl in the Base Year: { } Pursuant to IPA's discovery requests, UP produced contract information for these shippers sufficient to identify the rates paid, escalation terms, and any annual volume requirements. However, the contract information produced { }.

For example, the current contract between UP and {

[42] Bates No. UP-IPA2-000004969-5018, reproduced in Rebuttal e-workpaper "UP Intermodal Contracts.pdf."

}

Similarly, the current contract between UP and {

} MITA (UP's Master Intermodal Transportation Agreement), which appears on UP's website, does not contain any specific intermodal rail service standards – in fact, UP disavows any performance standards in MITA.[44]

The contracts with { } that UP provided in discovery[45] {

[43] Bates No. UP-IPA-000036650-51, reproduced in Rebuttal e-workpaper "UP Intermodal Contracts.pdf."

[44] MITA General Rules, Rule Q ("UPRR does not guarantee any particular transit time or availability of shipments for pickup.")

[45] *See*, *e.g.*, Bates No. UP-IPA-000037551-576, reproduced in Rebuttal e-workpaper "UP Intermodal Contracts.pdf."

} As noted earlier, MITA disavows any specific performance standards. The principal contract between UP and {

} It is inconceivable that an increase in overall average rail transit time of 30 minutes for movements between Los Angeles and Denver or Chicago would result in {

}.

With respect to UP's contract with { }, UP produced {

---

[46] {

}

[47] *See*, *e.g.*, { }, Bates No. UP-IPA-00032268, reproduced in Rebuttal e-workpaper "UP Intermodal Contracts.pdf.

}

The foregoing discussion indicates either that UP did not provide sufficient information to determine whether an increase in overall rail transit time of 30 minutes would cause a {

}. In these circumstances, and given the other, non-contract factors described earlier with respect to the Z-train movements in issue, the Board should conclude that the IRR's service "meets the transportation needs" of the Z-train traffic and the minor increase in transit time caused by the IRR's insertion into the route would not have a material adverse impact on those needs for the shippers involved.

3. Other

a. Rerouted Traffic

UP has accepted IPA's position that the IRR traffic group does not include any traffic that has been rerouted from its real-world route of movement. Reply at III.C-41.

b. Fueling of Locomotives

UP generally accepts IPA's plan for fueling the IRR's road locomotives, *i.e.*, "DTL" fueling by a contractor using tanker trucks. However, UP asserts that the IRR failed to fuel the locomotives on certain coal trains that UP fuels in the loaded direction at Provo. Reply at III.C-41-42. IPA witness Reistrup concurs that the locomotives on loaded coal trains originating at mines or loadouts east of Provo that the IRR receives from UP at Provo, and that move to destinations in California, would have to be fueled by the IRR. Mr. Reistrup also concurs with UP that DTL fueling of these locomotives occurs on the Coal Wye tracks (where the trains are received in interchange from UP). The fueling can be performed during the three-hour period during which these train undergo 1,500-mile inspections while on the Coal Wye tracks. Thus no additional time allotment for fueling these trains is required in the RTC Model simulation.

The SD40-2 locomotives used for the local trains based at Milford are DTL-fueled at Milford by a contractor. The SD40-2 locomotives used for the local trains based at Lynndyl are DTL-fueled at the IRR's Springville locomotive maintenance facility.

c. Car Inspections

UP accepts IPA's description of the inspection procedures the IRR would follow and the three-hour allotment of dwell time for inspections. Reply at III.C-43. However, UP goes on to assert,[48] and on Rebuttal IPA concurs, that non-IPA coal trains interchanged with UP at Provo and destined to or from UP-served mines or loadouts in Utah and Colorado reached via UP's Provo Subdivision require inspection by the IRR, and that it would be inefficient to have these inspections performed by IPA personnel at IPA's Springville car repair facility.

[48] Reply at III.C-29-30, 42-43.

Accordingly, on Rebuttal Mr. Reistrup has revised the IRR's operating plan to provide for inspection of the following coal trains interchanged with UP at Provo:

> Loaded trains: All loaded trains moving from origins in Colorado and Utah to destinations in California (*i.e.*, { }, as shown in Reply Exhibit III.C-3).
>
> Empty trains: All empty coal trains moving from points in California and Nevada to coal mines/loadouts in Colorado and Utah. This includes empty trains moving from { }.[49]

Mr. Reistrup instructed IPA's RTC experts to provide three hours of dwell time on the IRR's Coal Wye tracks at Provo for inspection of any of these trains that move during the RTC simulation period. This is the same inspection dwell time that UP assumed. Reply at III.C-30.

d. Train Control and Communications

UP has accepted IPA's proposed train control and communications system for the IRR, including the use of CTC between Lynndyl and Milford and dispatching by train order with engineer-controlled switches in the dark territory between Provo and Lynndyl, as well as a single dispatching district with one 24/7 dispatcher position. Reply at III.C-43-44. UP repeats its assertion in Reply Part

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[49] The { } trains do not require inspection in the loaded direction, because the round-trip distance from Provo to the furthest-distant mine at Somerset, CO is less than 1,500 miles {

} Mileage sources are UP Reply Exhibit III.C-3 for the distance east of Provo, and PC*Miler|Rail 19 for the distance west of Provo.

III.B.1.e.iv that IPA did not provide sufficient FEDs or related setout tracks for the IRR. *Id.* IPA addressed UP's erroneous FED/setout track contentions in detail in Part III-B-1-c-ii above and will not repeat that discussion here.

e. <u>PTC Implementation Under RSIA</u>

UP concurs with IPA that the IRR's road locomotives must be equipped for UP-compatible Positive Train Control ("PTC") operations, but asserts that IPA failed to account properly for "the cost of retrofitting its locomotives with such PTC equipment." Reply at III.C-45. The IRR will not be "retrofitting" its road locomotives for PTC operations, but in any event IPA addresses the PTC equipment-cost issue in Part III-D-1 below.

IPA further notes that there is now a very real prospect that the current December 31, 2015 deadline for compliance with the PTC requirements of the Rail Safety and Improvement Act of 2008 will be extended by Congress. *See, e.g.*, Ted Mann, *Rail Safety and the Value of a Life*, Wall St. J., June 17, 2013, http://online.wsj.com/article_email/SB10001424127887323582904578485061024790402-lMyQjAxMTAzMDEwODExNDgyWj.html?mod=wsj_valettop_email. Most of the Class I railroads will not be able to meet the current deadline,[50] and UP itself has publicly stated it cannot meet the deadline. *See* Rebuttal e-workpaper "UP PTC Compliance.pdf." At a Senate Commerce Committee hearing on the subject held

[50] *See* Jeff Stagl, *Progress with positive train control gauged at NTSB forum*, Progressive Railroading, March 2013, http://www.progressiverailroading.com/ptc/article/Progress-with-positive-train-control-gauged-at-NTSB-forum--35441.

June 19, 2013, AAR President Hamberger requested that the deadline be extended by at least three years,[51] and Senator John Thune indicated that he expected to introduce legislation to extend the compliance deadline shortly. However, given the law as it currently stands, IPA continues to include costs for equipping its road locomotives for PTC compliance.

[51] *See PTC compliance deadline should be extended at least three years, AAR's Hamberger says*, Progressive Railroading, June 20, 2013, http://www.progressiverailroading.com/ptc/article/PTC-deadline-should-be-extended-at-least three-years-AARs Hamberger-says--36557.

III-D Operating
Expenses

III. D. OPERATING EXPENSES

The IRR's annual operating expenses are in large measure a product of its operating plan and the operating statistics from the RTC Model simulation of the IRR's peak-period operations. To the extent UP has inappropriately changed the operating plan proposed by IPA and conducted its own RTC simulation using inappropriate or incorrect inputs, as described in Part III-C-2 above, UP's Reply development of the IRR's operating expenses is invalid. In addition, UP's proposed Operating, General & Administrative ("G&A") and Maintenance-of-Way ("MOW") staffing is inflated beyond what is required to operate the IRR safely and efficiently.

In this section of its Rebuttal Evidence, IPA responds in detail to UP's Reply Evidence on operating expenses, and explains the changes from its Opening development of the IRR's annual operating expenses that are warranted given the Rebuttal revisions to the operating plan and RTC simulation, and its consideration of UP's contentions with respect to the IRR's personnel and equipment requirements. The expert witnesses responsible for this evidence include Paul Reistrup (locomotive requirements and Operating and G&A personnel/equipment), assisted by the Rebuttal RTC Model simulation performed by Timothy Crowley and William Humphrey; Joseph Kruzich (information technology requirements/costs); Philip Burris (operating statistics, crew requirements, locomotive and freight car requirements, fuel costs, employee compensation, equipment lease/maintenance costs and operating unit costs, loss and damage, insurance and ad valorem tax costs); and Gene Davis, Richard McDonald and Victor Grappone (MOW costs).

Rebuttal Table III-D-1 below contains a comparison of the parties' calculations of the IRR's annual operating expenses at 4Q12 levels.

REBUTTAL TABLE III-D-1
IRR ANNUAL OPERATING EXPENSES (4Q12)
($ millions)

Position	IPA Opening	UP Reply[1/]	IPA Rebuttal[2/]	Difference (Reply–Reb.)
Locomotive Lease	{ }	{ }	$2.01	{ }
Locomotive Maintenance	{ }	{ }	$1.20	{ }
Locomotive Operations	$15.12	$18.15	$15.90	$2.25
Railcar Lease	$ 5.09	$ 7.50	$5.48	$2.02
Materials & Supply Operating	$ 0.22	$ 0.42	$0.26	$0.16
Train & Engine Personnel	$ 3.03	$ 5.33	$3.63	$1.70
Operating Managers	$ 2.98	$ 4.02	$3.43	$0.59
General & Administrative	$ 7.36	$ 8.81	$7.37	$1.44
Loss & Damage	$ 0.06	$ 0.06	$0.06	$0.00
Ad Valorem Tax	$ 0.93	$ 0.55	$1.20	$(0.65)
Maintenance-of-Way	$ 4.95	$ 8.05	$5.94	$2.11
Insurance	$ 1.64	$ 2.30	$1.88	$0.42
Startup and Training	$ 1.70	$ 2.38	$1.93	$0.45
Total[3/]	**$45.58**	**$62.16**	**$50.30**	**$11.86**

[1/] Source: Reply e-workpaper "IRR Operating Expense Reply.xlsx."

[2/] Source: Rebuttal e-workpaper "IRR Operating Expense_Rebuttal.xlsx."

[3/] Totals may differ slightly from the sums of the individual items due to rounding.

Of the $11.86 million total remaining difference between the parties' calculations of annual operating expenses, 80.3 percent is accounted for by five categories: Locomotive Operations ($2.25 million); Maintenance-of-Way ($2.11 million), Railcar Lease ($2.02 million), Train and Engine Personnel ($1.7 million), and General & Administrative ($1.44 million).

1. Locomotives

UP has accepted the single road locomotive model (the GE ES44-AC) reflected in IPA's operating plan, but develops a different road locomotive count than IPA did on Opening.[1] In addition to different train running and dwell times, the difference is due to (i) UP's proposal for two separate locomotive pools (one for the IPA trains and a second for run-through trains interchanged with UP), (ii) UP's proposal to equip each of the IPA coal trains with four locomotives instead of three, (iii) UP's correction of IPA's assumption that the IRR would not incur ownership responsibility for "isolated" run-through units that are not powering the IRR trains they are on, and (iv) the asserted need for the IRR to share in the cost of repositioning locomotives to offset imbalances in east-west and west-east traffic flows. Reply at III.D-2-3. IPA has previously responded to all four of these erroneous UP contentions in Part III-C-1-c-ii above, and will not repeat that discussion here. IPA responds below to UP's development of IRR locomotive lease, maintenance and operating costs.

a. Leasing (Acquisition) Costs

UP has accepted IPA's proposal to lease all of its locomotives, as well as IPA's annual lease cost of {   } for each of the ES44-AC road locomotives for the base period. Reply at III.D-3. However, UP asserts that IPA understated the cost of equipping the IRR's locomotives with UP-compatible

[1] On Rebuttal, IPA has added four SD40-2 locomotives for use in local train service.

Positive Train Control ("PTC") equipment. On Rebuttal, IPA accepts UP's cost of ${ } per unit as the cost of equipping the IRR's GE road locomotives for PTC (assuming Congress does not extend the current December 31, 2015 deadline for PTC compliance).

The annual lease cost for the IRR's four SD40-2 locomotives used for local train service is $84,312. This cost is based on the average lease rate published in the June 2008 issue of *Railway Age* of $225 per day, indexed to 4Q12.

b. <u>Maintenance</u>

UP has accepted IPA's calculation of road locomotive maintenance unit costs (Reply at III.D-4), which IPA applies to its Rebuttal operations and locomotive count. However, UP asserts that the IRR would incur maintenance costs for run-through locomotives operating in idle, and "corrects" IPA's locomotive overhaul costs to reflect a larger fleet that would average fewer miles per month. Reply at III.D-4-5. IPA has previously shown in Part III-C-1-c above that the IRR is helping correct the imbalance in locomotive flows across UP's system by keeping unneeded locomotives on run-through trains, so it is inappropriate to include maintenance costs for these locomotives while on the IRR system.

Based on the increased number of locomotives included in UP's Reply, and the resulting reduction in utilization, UP adjusted the locomotive overhaul frequency from the six years used by IPA on Opening to eight years. As stated previously, IPA rejects UP's increase in the ES44-AC (road locomotive) fleet size from 14 to 27 locomotives, and includes 15 ES44-AC locomotives on Rebuttal. Based on this fleet size, IPA continues to include locomotive overhaul costs based on one every six years.

The annual maintenance costs for the four SD40-2 locomotives used in local train service equal $31,144. This cost is based on UP system average locomotive maintenance costs of $1.4192 per locomotive unit-mile, derived from UP's 2011 R-1 Annual Report and indexed to 4Q12.

c. <u>Servicing</u>

UP has generally accepted IPA's approach for estimating locomotive servicing expense (other than fueling), but asserts that IPA has included only direct servicing expenses and erroneously failed to include fringe benefits for operating personnel who perform such servicing (as well as failing to include servicing costs for all locomotive unit miles on the IRR including miles for run-through locomotives that the IRR operates in idle). Reply at III.D-6. On Rebuttal, IPA includes fringe benefits for operating personnel who are performing locomotive servicing.

Locomotive servicing costs for the IRR's four SD40-2 locomotives are included on the same basis used for the ES44-AC road locomotives, *i.e.*, IPA used a UP system average cost from UP's 2011 R-1 Annual Report.

d. <u>Fueling</u>

With respect to the IRR's fuel cost per gallon, UP has accepted IPA's use of the fuel price paid by UP at Provo, UT in 2011-2012, indexed to 4Q2012.

Reply at III.D-7.[2] However, UP has rejected the locomotive fuel consumption rate developed by IPA based on fuel consumption records produced by UP in discovery.

On Opening, IPA developed fuel consumption by using the actual consumption rates of locomotives on UP trains moving on the lines replicated by the IRR which had a locomotive consist composed of at least 75 percent ES44-AC locomotives (the only road locomotive type acquired by the IRR and the predominant locomotive type on the IRR's trains). UP asserts that the IRR's trains operate at higher speeds than the corresponding UP real-world trains, and as a result the IRR's locomotives spend a greater percentage of their time operating in higher throttle positions than the UP locomotives included in IPA's analysis. Reply at III.D-7. Based on this assertion, UP adjusts IPA's fuel consumption rate based on the percent of time trains moving in the RTC simulation are in higher throttle positions than UP's actual trains included in IPA's analysis.

UP's adjustment is inappropriate and must be rejected. One of the inputs to the RTC model is locomotive type, yet the model does not include an option for ES44-AC locomotives. Therefore, IPA selected AC4400 locomotives as a proxy for the ES44-AC locomotives in the simulation. The AC4400 is an older and less fuel-efficient GE locomotive model than the ES44-AC model. Moreover, throttle positions vary on locomotives; therefore a throttle position in the RTC

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[2] This price is also used to determine the fuel cost per gallon for the IRR's SD40-2 locomotives used in local service. The fuel consumption rate for SD40-2 locomotives is based on UP's system average fuel consumption rate of 2.24 gallons per locomotive unit mile as developed from UP's 2011 R-1 Annual Report.

simulation for an AC4400 may not be the same as the throttle position for an ES44-AC – nor is it likely to be the same as the throttle position for the actual locomotive consists operating UP's trains over the lines that comprise the IRR. It is therefore unreasonable to arbitrarily adjust UP's actual fuel consumption experience based on simulation throttle positions of a different type of locomotive.

UP also asserts that IPA argues that IRR coal trains and intermodal trains would have lower fuel consumption rates than UP system average rates per locomotive unit mile, stating that this is "wrong on its face." Reply at III.D-8. Likewise, UP argues that all IRR loaded coal trains operating from Provo to Sharp are traveling up hill. *Id.* UP's statements are unsupported and nonsensical in the face of its own data. The fact of the matter is that IPA's fuel consumption rates are based on UP's actual data and, according to UP's fuel consumption records, the actual UP loaded coal trains and intermodal trains moving over these lines do have lower fuel consumption rates than UP's system average rates. Moreover, in spite of UP's assertion, the line from Provo to Sharp is not all uphill; in fact, as shown in the RTC simulation elevation profile and UP's track charts, several up-hill and down-hill grades exist between Provo and Sharp.[3] The fuel consumption data provided in discovery show that UP's real-world trains have fuel consumption rates that reflect the actual track profile (including both uphill and downhill segments), and have lower fuel consumption rates than the UP system average.

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[3] *See* Rebuttal e-workpaper "IRR Track Profile from TPC graph.docx" and Op. e-workpaper "Sharp Track Profile (2011 Tonnage).pdf."

For these reasons, on Rebuttal IPA continues to rely on UP's actual fuel consumption data for trains moving over the IRR-replicated lines as the most reliable evidence of record.

2. Railcars

a. Leasing

UP has accepted IPA's railcar lease unit costs, but disputes IPA's calculation of lease costs for intermodal flatcars based on the argument that most of these cars are private cars rather than system (railroad-owned or leased) cars which have higher costs than system cars. Reply at III.D-12-13. UP's contention is erroneous. UP claims that the traffic (car event) data it provided in discovery shows that 79 percent of the intermodal flatcars are shipper-owned and 21 percent are railroad-provided, but the data field UP references in support of this contention actually relates to intermodal containers, not flatcars. UP references the ATC traffic data in IPA's Opening workpapers as the source for this information, *i.e.*, Op. e-workpaper "2011 ATC Traffic.xlsx," tab "Pivot-Car Ownership." The source for this information in this spreadsheet is the car event data provided by UP in discovery. Column "F" of the "DATA" tab of this spreadsheet provides the AAR car type for each car included in the ATC data base. This column shows that 98 percent of UP intermodal shipments move in AAR car type "U" or "Z." According to the UMLER file, AAR car types "U" and "Z" are containers or trailers; thus the car ownership data for intermodal shipments in this data base relates to containers and trailers, not railroad flatcars.

UP's car event data does not show intermodal flatcar ownerships, and the only information available on the subject is UP's R-1 Annual Reports to the STB. UP's 2011 R-1 shows that 70.0 percent of the intermodal flatcars moving on its system are railroad-provided and 30.0 percent are private cars. Accordingly, on Rebuttal IPA uses this split to determine the IRR's intermodal flatcar lease costs.

b. Maintenance

UP has accepted IPA's assumption that the lease payment amounts reflected full-service leases and thus that the IRR would not be responsible for any other maintenance costs. Reply at III.D-14. UP also accepted IPA's proposed expense for two End-of-Train Devices. *Id.*

c. Private Car Allowances

UP disputes IPA's calculation of private car allowance payments because of IPA's alleged miscalculation of equipment costs for intermodal flatcars. Reply at III.D-14. IPA demonstrated that UP's contention with respect to intermodal flatcar costs is wrong in the subsection above on railcar leasing. IPA's Rebuttal calculation of the IRR's 2013 freight car expense, which relies on UP's R-1 split of railroad-provided versus private equipment, is shown in Rebuttal e-workpaper "IRR Car Costs_Rebuttal.xlsx.

3. Personnel

IPA's development of the IRR's personnel requirements is set forth beginning at page III-D-12 of its Opening Narrative. The approach used by IPA's experts is consistent with the IRR's status as a new, non-unionized, startup Class II railroad that operates in only two connected corridors and that is free from the baggage of collective bargaining agreements including such agreements inherited from predecessor railroads, as well as merger-related employee protective conditions.

On Reply, UP propounds significantly higher employment levels than are necessary for a relatively small non-unionized startup railroad. Specifically, UP proposes a substantial increase in the IRR's total employee count, from 110 (IPA's Opening number) to 142, an increase of 29 percent. Excluding train crew members, UP proposes to increase the IRR's employee count from 80 to 107, an increase of nearly 34 percent.

IPA discusses the specific differences between the parties' personnel requirements for Operating and G&A employees below. MOW employees are discussed later, in Part III-D-4.

a. Operating

i. Staffing

(a) Train Crew Personnel

The IRR operates two-person road crews, and on Rebuttal IPA has added crews for the local trains based at Milford and Provo. The IRR does not have any yard switching or helper crew assignments. UP has accepted IPA's proposed crew districts and assignments, as well as IPA's procedure for applying those assignments to the corresponding number of trains traversing each district to determine the number of train crew personnel required. Reply at III.D-14.

UP goes on to assert that IPA improperly failed to account for the cost of repositioning road train crews, particularly from Milford to Lynndyl, due to the imbalances in non-coal train flows across its network (more trains move east to west than west to east). Reply at III.D-14-15. IPA's experts agree that some road crew repositioning is required, and on Rebuttal IPA has adjusted the IRR's crew costs to reflect this. Specifically, IPA repositions crews to ensure that sufficient crews are available to operate trains at each start location. Repositioning results in an increase of four T&E personnel for trains moving in the first year of the DCF model.

In determining the number of T&E personnel that must be repositioned, IPA maximizes the utilization of crews. For example, an imbalance exists in northbound and southbound trains moving between Lynndyl and Milford, with 1,943 trains moving southbound and only 1,217 trains moving northbound in the Base Year. However, a partially offsetting imbalance exists with north and southbound trains moving between Provo and Milford, with 177 trains moving southbound and 499 trains moving northbound in the Base Year. Thus, the excess southbound crews operating between Lynndyl and Milford are used to fill the need for extra crews operating from Milford to Provo. The remaining imbalance is resolved by repositioning the required crews from Provo to Lynndyl and from Milford to Lynndyl. To accommodate the repositioning, the IRR must employ an additional four T&E crew personnel. The crew imbalances and repositioning are shown graphically for the IPA system in Rebuttal e-workpaper "IRR Imbalance–Base Case.xlsx."

With respect to the IRR's two local trains, which effectively replace UP service for some of the IRR's traffic in accordance with UP's Reply recommendation, each train is manned by a two-person crew. The local train assignment based at Milford is scheduled to operate a maximum of five days per week, depending on the traffic available for local pickup and delivery and the local assignment based at Provo is scheduled to operate a maximum of three days per week. The Rebuttal crew counts and crew costs include the T&E personnel required to operate these trains.

(b) Non-Train Operating Personnel

UP proposes to increase the IRR's staffing for Operating personnel other than train crews and MOW personnel from the 21 employees proposed by IPA on Opening to 31 employees, or an increase of 10 employees. A comparison of the parties' non-train Operating personnel, by position, is set forth in Rebuttal Table III-D-2 below.

REBUTTAL TABLE III-D-2 IRR NON-TRAIN OPERATING PERSONNEL				
Position	**IPA Opening**	**UP Reply**[1/]	**IPA Rebuttal**	**Difference (Reply–Reb.)**
Vice President-Operations	1	1	1	0
Director of Operations Control	1	1	1	0
Managers of Train Operations	3	4	3	1
Manager of Locomotive Operations	1	1	1	0
Crew Callers	5	5	5	0
Dispatchers	5	5	5	0
Manager of Operating Rules, Safety and Training	1	1	1	0
Customer Service Managers	2	2	2	0
Chief Engineer	1	1	1	0
Manager of Mechanical Operations	1	1	1	0
Equipment Inspectors	0	9	5	4
Total	**21**	**31**	**26**	**5**

[1/] Source: Reply e-workpaper "IRR Operating Expense Reply.xlsx."

As shown in this table, UP proposes to add one Manager of Train Operations ("MTO") position and nine Equipment Inspectors to the non-train Operating personnel proposed by IPA on Opening. IPA witness Reistrup disagrees that an additional MTO is needed, but agrees that the IRR needs one two-person inspection crew to perform 1,000 and 1,500-mile inspections of certain coal trains at Provo. However, Mr. Reistrup disagrees with UP that this crew needs to be a full-time/24-7 crew and thus has reduced the number of Equipment Inspector employees from nine to five.

MTO. On Opening, Mr. Reistrup provided one MTO position requiring three employees to man it on a 24/7 basis, with each employee working a 12-hour shift. Op. at III-D-18. UP proposes to add a fourth MTO employee to lighten the "heavy schedule" entailed by 12-hour shifts and to "facilitate the administration of various field requirements, including a formal program for certifying conductors [as] recently required by law." Reply at III.D-17. A fourth MTO employee is unnecessary. It is common practice in the rail industry for MTO's or their Class I railroad equivalents (Trainmasters) to be on duty for 12-hour shifts, including at CSXT when Mr. Reistrup was Vice President-Passenger Integration from 1997 to 2003. UP has not provided any evidence showing that its own Trainmasters (or those of any other railroad) customarily work eight-hour shifts.

With respect to the need to "facilitate the administration of various field requirements," UP has not explained what this corporate double-speak means or what specific administrative work is required that cannot be performed by the IRR's Director of Operations Control. With respect to conductor certification, this task can be carried out by the IRR's Manager of Operating Rules, Safety and Training in coordination with the Manager of Locomotive Operations (since the IRR's Conductors are in training to become Locomotive Engineers).

Equipment Inspectors. Mr. Reistrup did not provide for any Equipment Inspectors on Opening, since his original operating plan contemplated that all of the 1,000 and 1,500-mile inspections would be performed either off-SARR or, with respect to empty coal trains, at IPA's Springville car repair facility near Provo. As described in Part III-C-3-c above, after reviewing UP's evidence on this issue (Reply at III.D-17-18), Mr. Reistrup concurs that some loaded and empty coal trains should be inspected by the IRR as part of the UP/IRR interchange process on the Coal Wye tracks at Provo, and has revised the IRR's operating plan accordingly on Rebuttal. The revised operating plan (like UP's Reply operating plan) provides for one two-person crew to conduct the inspections. The only remaining difference between the parties is the number of Equipment Inspector employees required to man the crew.

UP proposes a 24/7 inspection crew which requires a total of nine employees. Reply at III.D-19. However, there is no need for a 24/7 crew and only five employees are required to man the inspection crew. During the RTC Model simulation period an average of only 2.7 trains per day require inspection at Provo, and the number of trains to be inspected exceeds three on only two days (five trains require inspection on one day, and four trains require inspection on another day). Accordingly, the inspection crew does not need to be on duty full-time, but is "on call" – that is, available when needed. On the two days when more than three trains require inspection, a second two-person inspection crew can be called if necessary. It would be comprised of two more of the five total employees required for inspections, using a simple rotation (thus the infrequency with which this occurs would not interfere with vacations, *etc.*).

ii. Compensation

UP argues that IPA has understated the compensation for T&E (train) crews because the IRR's road crews work more shifts than most UP train crews but IPA used a salary figure that is 22 percent less than UP's average T&E crew compensation. Reply at III.D-20-21. On Opening, IPA relied on wage information for the highest paid T&E personnel working in Utah as reported by Salary.com. On Reply, UP does not dispute this data as being unsupported or unreliable, but instead argues that UP pays its T&E employees more than what is earned by the top 10 percent of T&E employees in Utah. However, by paying T&E crew salaries comparable to the top salaries paid to other T&E employees in Utah, the IRR is paying competitive salaries for the region and as a least cost, most-efficient competitor it would not pay T&E wages greater than these already-high T&E salaries.

UP also argues that it pays its T&E employees working 270 shifts per year an average of ${ }, and that the IRR would need to pay its employees a comparable wage. Examination of UP's workpapers shows UP's calculations are based on T&E employees working between { } shifts per year in 2012, and that these individuals worked an average of { } shifts that year.[4] UP's T&E wage data is not reliable for two reasons. First, it does not identify if the wages are for conductors or engineers, or for a mix of conductors and engineers. As engineers make a higher salary than conductors, if the wages represent engineers' salaries or a predominant mix of engineers, the wage information would not represent what UP pays it conductors.

Second, close examination of the data included in UP's spreadsheet shows that the wages paid are *not* dependent on the number of shifts worked. For

[4] *See* Reply e-workpaper "T&E Salary.xlsx."

example, analysis of this data shows that there are { } employees with an average salary less than ${ }. These employees worked { } shifts per year and earned an average wage of ${ } in 2012. The employee that worked the most shifts in this group ({ } shifts) made ${ } and the employee that worked the fewest shifts in this group ({ } shifts) made ${

}.

Moreover, the { } employees that earned more than ${ } annually worked an average of { } shifts per year, which is virtually the same as the { } shifts worked by employees earning less than ${ }. Clearly, factors in addition to the number of shifts worked influence compensation paid to UP's T&E employees.[5] For example, tenure is a significant factor in salaries paid to Class I railroad T&E employees, and it is very likely that years of service would cause two different groups of employees with the same number of shifts worked to have substantially different average wages.

UP incorrectly assumes that the number of shifts worked exclusively influences the salary paid. Without more complete information regarding the employees' specific positions and years of service, UP's T&E salary analysis is unreliable. IPA's evidence, which is based on wages actually paid to T&E employees in Utah, rather than wages paid throughout UP's 31,868-mile system in

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[5] Further, the employee that worked the most shifts in this group ({ } shifts) made ${ } and the employee that worked the fewest shifts in this group ({ }) made ${

}.

23 states, is more representative of the T&E wages that would be incurred by the IRR.

UP also asserts that the fringe benefit ratio of 41.3 percent used by IPA on Opening is inappropriate because it is lower than the recent experience of Class I railroads. UP proposes to increase the fringe benefit ratio to 44.0 percent which is the Class I average over the last three years. Reply at III.D-21-22.

IPA's Opening figure of 41.3 percent was "based on the average fringe benefit ratio for all Class I railroad employees in the United States in 2010 as reported by the AAR (2010 is the most current year reported on the AAR's website for this information)." Op. at III-D-21.[6] In contrast, UP's Reply figure is based on the Class I railroad average for the period 2009 through 2011.

The workpaper supporting UP's calculations[7] shows the fringe benefit ratio for each Class I carrier for each of the years 2005 through 2011. Review of this workpaper indicates that in every one of these years, the fringe benefit ratios for both BNSF and Kansas City Southern Railway ("KCS") were *below* the 41.3 percent ratio relied upon by IPA on Opening. In addition, the 2012 fringe benefit ratios for BNSF and KCS, which are now available, equaled 37.5 percent and 36.3 percent, respectively, and thus continue to be less than IPA's 41.3 percent ratio.[8] As a least-cost, most-efficient carrier, the IRR would certainly be able to pay fringe

[6] The AAR source document is referenced in Op. e-workpaper "III-D-Salaries.pdf."

[7] *See* Reply e-workpaper "Class I Railroad Fringe Benefits 2005-11.xlsx."

[8] *See* Rebuttal e-workpaper "III-D-3 Fringe Benefit ratios.xlsx."

benefits consistent with those of other best-in-class carriers. For these reasons, IPA continues to use its Opening 41.3 percent fringe benefit ratio on Rebuttal.[9]

b. <u>General and Administrative</u>

i. <u>Introduction</u>

There are relatively few disputes between the parties regarding G&A expenses for the IRR. The disputes that do exist relate to staffing, compensation, and outsourcing and amount to a total 2013 expense difference of $1.5 million as between Opening and Reply. *See* Reply at III.D-2.

As described in greater detail below, IPA has determined that two additional employees should be added to the IRR's G&A staffing on Rebuttal. IPA is maintaining its position with respect to the IRR's executive compensation, including the fringe-benefit ratio. In the aggregate, the various changes reflected in this Rebuttal increase IPA's proposed G&A expense from $7.3 million to $7.4 million.

Comparison with Docket No. 42127

By way of background, on Opening, IPA proposed a G&A staffing level of 26 (including three outside directors). IPA's proposal reflected an increase of two individuals relative to the proposal that IPA had submitted in Docket No. 42127 despite the fact that the SARR in the instant case is substantially smaller and

[9] Were the Board to determine that an average fringe benefit ratio for all Class I carriers is appropriate for the IRR, a five-year average ratio that includes the most current data for 2012 should be used. This would yield a fringe benefit ratio of 42.8 percent. *See* Rebuttal e-workpaper "III-D-3 Fringe Benefit ratios.xlsx."

has lower revenues than the SARR in Docket No. 42127. Accordingly, IPA's G&A staffing evidence in this case reflected a conservative movement towards UP's prior position.

UP's Reply staffing takes the opposite approach. In particular, UP actually increased its staffing proposal for the IRR by two employees relative to its Reply Evidence in Docket No. 42127. *Compare* Reply III.D-28 (36 employees proposed) and e-workpaper "UP 42127 Part III.D-23.pdf" (34 employees proposed). UP's net increase results from its proposed changes in IT staffing:

REBUTTAL TABLE III-D-3 COMPARISON OF UP'S IRR STAFFING EVIDENCE DOCKET NO. 42127/DOCKET NO. 42136			
Position	**UP Reply Docket 42127**	**UP Reply Docket 42136**	**Difference**
Outside Directors (non-employees)	3	3	0
President and CEO	1	1	0
Administrative Assistants	3	3	0
Marketing Managers	2	2	0
Vice President - Finance & Accounting	1	1	0
Treasurer	1	1	0
Controller	1	1	0
Asst. Controller	1	1	0
Revenue Managers	3	3	0
Accounts Payable Manager	1	1	0
Manager - Budget and Purchasing	1	1	0
Director Financial Reporting	1	0	(1)
Vice President - Law and Admin.	1	1	0
General Attorney	1	1	0
Manager of Safety and Claims	1	1	0
Director of Human Resources	1	1	0
Manager of Training	1	1	0
Director of Security*	0	1	1
Director of Information Technology	1	1	0
IT Specialists	9	6	(3)
IT and Operations Support Technicians	0	5	5
Total	**34**	**36**	**2**

* IPA first proposed the inclusion of the Director of Security in its Opening Evidence in Docket No. 42136.

In its Reply Evidence in the instant case, UP fails even to acknowledge – let alone offer any purported justification for – its proposed staffing increase relative to its own evidence from Docket No. 42127.

Docket No. 42136

In the instant case, UP argues that 2013 G&A expenses for the IRR should be increased to $8.8 million, an increase of $1.5 million (or approximately

20 percent) over IPA's Opening estimate. Reply at III.D-2. The $1.5 million disparity between the parties' estimates amounts to about 9 percent of the total $16.4 million operating cost difference between the parties' Opening and Reply evidence.

ii. <u>Staffing</u>

As a result of IPA's upward adjustment of its G&A staffing on Rebuttal, the current staffing difference between the parties involves a total of eight employees; *i.e.*, five IT employees, two Finance employees, and one Administrative Assistant. The IT staffing dispute is the single largest G&A-related expense difference between the parties, amounting to $397,533 in 2013 base salary and $567,577 with the inclusion of fringe benefits (*i.e.*, more than one-third of the total disparity in G&A expenses).

Rebuttal table III-D-4 below compares the parties' proposed G&A staffing levels.

REBUTTAL TABLE III-D-4 IRR G&A STAFFING LEVELS				
Position	**IPA Opening**	**UP Reply**	**IPA Rebuttal**	**Difference (Reply–Reb.)**
Outside Directors (non-employees)	3	3	3	0
President and CEO	1	1	1	0
Administrative Assistants	2	3	2	1
Marketing Managers	1	2	2	0
Vice President - Finance & Accounting/Treasurer	1	1	1	0
Treasurer	0	1	0	1
Controller	1	1	1	0
Asst. Controller	0	1	0	1
Revenue Managers	2	3	3	0
Accounts Payable Manager	1	1	1	0
Manager - Budget and Purchasing	1	1	1	0
Vice President - Law and Administration/General Counsel	1	1	1	0
General Attorney	1	1	1	0
Manager of Safety and Claims	1	1	1	0
Director of Human Resources	1	1	1	0
Manager of Training	1	1	1	0
Director of Security	1	1	1	0
Director of Information Technology	1	1	1	0
IT Specialists	6	6	6	0
IT and Operations Support Technicians	0	5	0	5
Total	**26**	**36**	**28**	**8**

The difference in the parties' evidence regarding "non-IT" staffing levels relates to UP's inclusion of five additional employees beyond the number included in IPA's Opening Evidence: one additional Administrative Assistant, a separate Treasurer, an Assistant Controller, one additional Revenue Manager, and one additional Marketing Manager. IPA accepts two of these proposed additions on

Rebuttal (*i.e.*, one additional Revenue Manager and one additional Marketing Manager).[10] IPA addresses each of the staffing disputes in turn.

(a) <u>Administrative Assistant</u>

On Opening, IPA proposed that the IRR would employ two Administrative Assistants as part of its Executive Department. Op. at III-D-31-32. IPA observed that these assistants would be "available to serve the administrative and secretarial needs of the President and the IRR's three Vice Presidents (the Vice President-Operations, the Vice President-Finance & Accounting, and the Vice President-Law & Administration)." *Id.* at III-D-32.

On Reply, UP argues that the IRR should employ one additional Administrative Assistant. *See* Reply at III.D-29-30. UP's argument is self-contradictory and unavailing. The Board should find that IPA's proposed staffing of this function is appropriate.

First, UP candidly concedes that the staffing that IPA proposed actually could handle even more work than IPA had suggested would be necessary. After recounting IPA's statement that the two Administrative Assistants would support the President and the three Vice Presidents, UP admits that it "believes the Administrative Assistants could support the entire Headquarters staff, not just these officers as IPA proposed." UP Reply at III.D-29.

[10] The addition of a second Marketing Manager is appropriate to facilitate interaction with the IRR's various coal and non-coal customers, including the on-SARR customers served by the IRR's local trains.

Next, however, UP reverses course and claims that an additional Administrative Assistant is needed because UP has proposed a larger G&A staff than IPA had proposed: "Because Mr. Brown has concluded that the G&A staff must be *larger* than IPA has assumed in order to meet all of IRR's needs, UP has provided for three Administrative Assistants, rather than two." *Id.* (emphasis added). UP suggests that this third individual "would have primary responsibility for supporting the Finance and Accounting Staff." *Id.* UP's argument in this regard is somewhat ambiguous, but UP's implication appears to be that the additional Administrative Assistant would be needed to support the additional staff members that UP had proposed and that had not been part of IPA's Opening Evidence (even though UP conceded that IPA's two Administrative Assistants could serve the secretarial needs of the President and three Vice Presidents). Stated differently, UP appears to suggest that its proposed inclusion of excess middle management (*e.g.*, a separate Treasurer and an Assistant Controller) drives the need for greater secretarial assistance; *i.e.*, more G&A staff requiring more administrative support.

Nevertheless, UP again reverses course in its Reply and argues that the third Administrative Assistant is necessary because IPA's Finance and Accounting Staff actually is too lean: "IRR's Finance and Accounting Staff is *leaner* than the Finance and Accounting staff in *WFA I* and thus would need the added support that a dedicated Administrative Assistant could provide." *Id.* at

III.D-29 n.75 (emphasis added). In this regard, UP appears to argue that a smaller G&A staff requires more secretarial assistance.

Thus, UP first concedes that IPA's proposed staffing of Administrative Assistants could support far more individuals than IPA had proposed. Next, UP claims that an additional Assistant is necessary because UP has proposed to expand the total G&A staff with non-executive staff who will require greater secretarial assistance. And finally, UP claims that the additional Assistant is necessary because the IRR's Finance & Accounting staff is too small and therefore will require greater secretarial assistance. UP's contradictory arguments fail to demonstrate that IPA's proposed staffing of this function is inadequate.

Finally, UP also argues that its version of the IRR "would hire experienced Administrative Assistants who would be able to handle functions beyond ordinary secretarial duties . . . ." *Id.* at III.D-29-30 (explaining that the IRR's Administrative Assistants would be able to perform functions related to "Corporate Communications & Public Relations," "Investor Relations," "Expense Account Management," and a "Compliance/Ethics Hot Line"). Significantly, however, UP proposes to pay the IRR's "experienced" Administrative Assistants the exact same $46,657 salary that IPA has proposed for this position. *See* IPA Op. at III-D-48 and UP Reply at III.D-49. Consequently, there is no basis for assuming that UP's proposed Administrative Assistants would have any greater capabilities than those that IPA has proposed. In fact, UP's suggestion supports IPA's overall staffing for the IRR since the IRR's Administrative Assistants would be experienced and would have capabilities that go "beyond ordinary secretarial duties . . . ."

(b) Treasurer

On Opening, IPA proposed to staff the IRR's Finance and Accounting function with six individuals, including the Vice President Accounting/Treasurer, the Controller, two Revenue Managers, the Manager of Budgets and Purchasing, and the Accounts Payable Manager. Op. at III-D-35-40. IPA explained that the Vice President was "responsible for serving as the IRR's Treasurer and for overseeing the other finance and accounting functions of the railroad." *Id.* at III-D-37. IPA added that "[a]s a privately-held Class II railroad with limited revenues and accounting/financial reporting needs, the IRR does not need the large treasury and accounting staffs that are typical of Class I railroads." *Id.*

IPA cited STB precedent in support of its position that the Vice President of Finance & Accounting would be capable of serving as the IRR's Treasurer. *Id.* ("The Board previously has accepted G&A staffing for SARRs in which a single individual served as both the Vice President of Finance & Accounting and the Treasurer of the SARR."). In particular, IPA relied upon both *AEP Texas* and *TMPA* in support of its point. *Id.* at III-D-37-38. Each case supports G&A staffing without a separate Treasurer. *See AEP Texas*, slip op. at 51-52, 55, and *TMPA*, 6 S.T.B. at 681-83.

On Reply, UP proposes a staff of nine for the Finance & Accounting function, which would include each of the individuals that IPA proposed plus a separate Treasurer, an Assistant Controller, and a third Revenue Manager. Reply at III.D-33-43. (As noted above, IPA is adding a third Revenue Manager to its Finance & Accounting staff on Rebuttal, raising the total staffing for the function to seven.)

With respect to the separate Treasurer position, UP argues that such an individual would be necessary to "cover the cash management and credit function" and UP focuses on supposed timing issues regarding the IRR's revenue stream. *Id.* at III.D-35. Specifically, UP suggests that cash management "is a critical function that must be managed on a daily basis" and UP claims that this is "particularly true here because IRR will have daily cash needs, but IPA has provided that much of IRR's revenue will come through ISS settlement, which involves monthly transfer of funds, rather than payments spread throughout the month." *Id.* at III.D-34.

According to UP, the IRR relies on ISS for "about $67 million of its monthly revenue" and that based on "industry averages," the IRR would receive this revenue about 51 days after the original waybill date. *Id.* (citing UP Reply e-workpapers "IPA Rev Summary.xlsx" and "ISS Average Days to Cash Transfer 0113.xlsx"). UP's timing-related argument does not mandate the inclusion of a separate Treasurer. It is certainly not unusual for a business to experience some delay in the receipt of its revenues. Moreover, even after the reduction of the IRR's revenues to match its revenue requirements (through the MMM process), the IRR's earnings still will exceed its costs by a sufficient margin to provide for a return on investment. UP's suggestion that the IRR will require additional staffing due to the "time lag" associated with ISS settlements (*id.*) is mistaken. In addition, as UP concedes, the IRR itself will hold a substantial volume of revenue until settlement. Reply at III.D-34.[11] In any event, UP has failed to demonstrate that the IRR's Vice President of Finance & Accounting/Treasurer will not be able to handle any cash management difficulties either individually or with the benefit and support of the IRR's existing staff. Stated differently, the IRR will not lack a Treasurer to handle the functions that UP has identified. Instead, the IRR's Treasurer will perform these tasks and also will have some supervisory responsibility over a small Finance & Accounting Staff.

As IPA explained in its Opening Evidence, the IRR's small G&A staff will not resemble the management of a large, Class I railroad. The inclusion of excess middle management in that type of streamlined, efficient organization would be counterproductive:

> It is important to recognize that the G&A staffing for the IRR will not even remotely resemble the typical large office building-based staffing for a Class I railroad in which the railroad's executives rarely interact with

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[11] The workpaper on which UP bases its ISS-related argument contains a number of errors. *See* UP Reply at III.D-34 n.81 and n.83 (citing UP Reply workpaper "IPA Rev Summary.xlsx"). UP's workpaper bears the incorrect heading of "IRR Revenue Breakdown, 2011" (*i.e.*, a year not included within the IRR's life) and the individual revenue figures set forth in the spreadsheet do not match any of the figures set forth in Part III-A of UP's Reply Narrative.

Another workpaper that UP cites in support of this argument (*i.e.*, "IPA Monthly Volumes.pdf") is absent from UP's electronic workpapers. *See* UP Reply at III.D-34 n.84.

> non-executive members of the G&A staff. In that type of large corporate structure, the executives of the company often are housed on a separate floor from many of the company's middle managers and bottom-layer staff members, and may rarely, if ever, have any personal interaction with that staff. Conversely, the IRR's G&A staff easily could be housed on a single floor of an office building all within a matter of 50 to 100 feet of each other. The positions identified in IPA's G&A evidence will be filled by a President and employees who know each other well and will be accustomed to working together. *The notion of introducing excessive middle management into that type of close working environment would be antithetical to good business practices.*

Op. at III-D-25-26 (emphasis added).

IPA explained on Opening that the Controller would be the only direct report to the Vice President of Finance & Accounting/Treasurer. *Id.* at III-D-36. The Controller, in turn, would oversee the work of the IRR's Revenue Managers, its Manager of Budgets and Purchasing, and its Accounts Payable Manager. With limited supervisory responsibility, the IRR's Vice President/Treasurer would have sufficient time to handle the various cash management tasks for the IRR.

UP also attempts to distinguish the STB precedent that IPA cited in its Opening Evidence. In particular, UP claims that the *AEP Texas* case does not support IPA's position – despite the absence of a separate Treasurer in that G&A staff – because the SARR's Vice President of Finance and Accounting received support from "a manager of administration, an administrative assistant, and a secretary." UP Reply at III.D-35 n.85 (citing *AEP Texas*, slip op. at 55). The presence of these additional individuals, however, does not validate UP's argument. Neither the administrative assistant nor the secretary (nor even the manager of administration) in the *AEP Texas* case would have performed the duties of a Treasurer, and in any event, the IRR staffing includes two Administrative Assistants to support the President and Vice Presidents as necessary. Moreover, the five different managers working in support of the IRR's Vice President/Treasurer and Controller would be equally able to provide the same support as the manager of administration in *AEP Texas*.

UP's attempt to distinguish the *TMPA* case is likewise unavailing. Specifically, UP argues that *TMPA* does not support IPA's proposal because the defendant in that case (*i.e.*, BNSF) had not litigated the issue effectively:

> *TMPA* also does not support IPA's proposal. *There, BNSF merely cited BNSF's own operations without showing TMPA's proposal was inadequate*. *TMPA*, 6 S.T.B. at 683. The Board therefore accepted TMPA's proposal as the best evidence of record.

Reply at III.D-35 n.85 (emphasis added). UP is wrong to contend that what it regards as BNSF's poor litigation tactics somehow diminish the relevance of the Board's finding in *TMPA* that the SARR did not need a separate Treasurer. In fact, UP's argument improperly invites the Board to eliminate the value of precedent in SAC cases. If precedent can be disrgarded as non-supportive simply because the defendant in the prior case did not prevail on the issue in question, then the ability of litigants to rely upon Board decisions would be seriously undermined. *See also* Reply at III.D-23 n.68 (UP contends that *WFA II* "is not an appropriate reference point" for the instant case because "BNSF did not contest G&A staffing in *WFA II*").

In any event, it is evident that the *AEP Texas* and *TMPA* decisions fully support IPA's exclusion of a separate and redundant Treasurer position for a railroad the size of the IRR. The SARR in *AEP Texas* earned revenues ranging from $711 million to over $1 billion per year. *See AEP Texas*, slip op. at 112; *see also id.*, slip op. at 25 (the SARR's system was approximately 1,200 miles long). Similarly, the SARR in *TMPA* earned revenues of $1 billion per year or more and included over 1,600 route miles. *See TMPA*, 6 S.T.B. at 604, 645 n.106. These figures are vastly higher than those of the IRR. The total staffing for the Finance & Accounting function for *TMPA* SARR was 10 (not including an Administrative Assistant or IT staffing). *Id.*, 6 S.T.B. at 682. IPA has staffed the IRR's Finance & Accounting function with seven individuals despite the fact that the IRR has roughly ten percent of the revenues (and route miles) of the *TMPA* SARR.

UP's citation of *Xcel I* and *WFA I* similarly fail to support UP's position regarding the inclusion of a separate Treasurer. Each of those two cases involved SARRs with much higher revenue levels than the IRR. *See Xcel I*, 7 S.T.B. at 640 (up to almost $600 million in annual revenues); *WFA I*, slip op. at 31 (up to $330 million in annual revenues). Moreover, in *WFA I*, the parties actually had agreed upon the inclusion of a separate Treasurer. *WFA I*, slip op. at 43.

(c) Assistant Controller

UP next claims that the IRR staff must include an Assistant Controller but UP does not provide detailed argument or evidence in support of its claim. Reply at III.D-36 ("Mr. Brown has determined that an Assistant Controller and a third Revenue Manager would be needed to support the Controller.").[12]

Instead, UP suggests only that the Assistant Controller would be needed to supervise the IRR's revenue accounting staff, but UP does not explain why the Controller would be unable to provide such supervision. *Id.* ("UP proposes fully staffing revenue accounting under the supervision of the Assistant Controller" because doing so would "allow the Controller to focus on supervision of all other accounting functions and to handle all financial reporting functions. . . . These functions include payroll, accounts payable, taxes, and property accounting.").

UP's argument represents another instance of seeking to add excess middle management to the IRR staff. UP's proposed inclusion of an Assistant Controller would yield a Finance & Accounting staff with three individuals supervising five staff members. That top-heavy ratio is not necessary for a least-cost, most-efficient stand-alone railroad system. The Vice President/Treasurer and the Controller will be able to perform their functions and to supervise the five Managers reporting to them.

[12] As noted above, IPA has added a third Revenue Manager to its G&A staffing for the IRR.

(d) IT Staffing Differences

On Opening, IPA's IT witness, Mr. Joseph Kruzich, a former CIO of Kansas City Southern, provided a seven-person IT department. While UP accepts the basic structure of IPA's IT department, it nevertheless proposes to increase the total personnel by six positions. UP's additional positions are unwarranted.

Before turning to the individual staffing decisions, Mr. Kruzich notes that computer technology today is very user-friendly, automated, and self-sufficient. User interfaces have removed the need for large numbers of IT personnel, and manufacturers' customer service diminishes the need for in-house development and maintenance personnel. Moreover, historically, UP developed much of its own software and equipment as an integrated control strategy, which required more people, because very little tracking, modeling, dispatch, and finance software were available. However, the market for railroad-related applications has changed. Today there is an abundance of rail software programs and applications available to smaller railroads like the IRR. Thus, the IRR does not need anything remotely approaching the level of IT staffing that UP does for development of its own software.[13]

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[13] *See* Pat Foran, *How information technology helps connect the strategic dots at Union Pacific Railroad*, Progressive Railroading (June 2013), http://www.progressiverailroading.com/union_pacific/article/How-information-technology-helps-connect-the-strategic-dots-at-Union-Pacific--36415.

Mr. Kruzich also notes that as KCS's CIO, he employed close to 50 IT personnel that were able to handle all IT functions *in-house*; in other words, there was no outsourcing, such as RMI. KCS is a large railroad covering thousands of miles. The KCS also had a complicated mainframe and other systems that the IRR does not need. Moreover, the systems being managed were far more primitive than today's software and systems. In other words, Mr. Kruzich is well aware of functions that the IRR's IT staff would have to cover and how those requirements scale to a smaller railroad. Simply put, a small railroad with a relatively straightforward operation does not require a large IT staff.

Turning to the specific staffing issues, on Opening, IPA provided two programmers who are tasked with the job of supporting and integrating data from other systems that the IRR is purchasing, including operating and crew calling systems. Op. at III-D-45. UP suggests that most companies would employ a commercial program such as SAP or Oracle as a backend platform. Reply at III.D-44. Without such a system, UP argues that a third programmer is needed "in order to develop the additional system enhancements necessary to integrate the inputs and outputs of the various stand-alone systems." *Id.* UP's arguments are without merit.

First, UP does not explain why two programmers cannot fulfill the specified functions. Indeed, IPA's computer systems are generally modest, as befits the small size of the railroad. In other words, there is no "mountain" of data that the programmers must work to integrate. Second, UP's suggestion that the absence of a SAP or Oracle product somehow requires that the IRR add more programming staff is spurious. While programs such as SAP or Oracle are useful tools, particularly when far-flung groups within a large company such as UP need to "mine" data, the programs do not automatically integrate data for all relevant systems. Instead, programmers are needed to manage such systems, which would require more staffing. Thus, instead of outsourcing such costs or purchasing an expensive product such as SAP or Oracle, Mr. Kruzich assigned two full-time programmers to such tasks. Given that IPA has relatively few computer systems, and no mainframes as a Class I would have, the integration requirements are not significant, and they can easily be addressed by two people in Mr. Kruzich's direct experience.

On Opening, IPA provided for one full time IT support specialist. The IT support specialist helps users with basic computer problems and provides support to specialized IT functions that are overseen by other support personnel such as the Lead RMI technician. The basic IT support function is staffed for normal business hours when most of the G&A staff are in the headquarters office (*i.e.*, an accounts payable clerk having trouble with Microsoft Word would call the IT support specialist). For after-hours assistance, Mr. Kruzich specified that the IRR's existing IT staff would be on-call – a simple rotation would suffice given that there are seven staff members. The senior IT staff can easily assist on a variety of computer issues, as the gateway to such positions usually starts with basic IT support experience.

Mr. Kruzich's IT staffing for the IRR is based on his direct experience. Indeed, when he was first promoted to Vice President Computer Operations at KCS, the railroad had no help desk and all problems were reported to an on-call IT specialist. However, shortly after he was promoted to Vice President Information Systems, he established a help desk function that operated during regular business hours – after hours issues were handled on an on-call basis. This improved handling of trouble calls, and proved to be sufficient for KCS – whose IT needs are significantly greater than those of the IRR.

On Reply, UP proposes to add four additional IT support positions so that an IT support specialist can be in the office on a 24/7 basis. Reply at III.D-46-47. UP's arguments in support of this additional staff are flawed. First, UP argues, in essence, that the IRR will come to a grinding halt anytime the smallest computer issue arises. *Id.* This is absurd. Trains can move even during a major IT outage. Indeed, manual track warrants can be issued for the few trains that might be impacted during an outage.

Second, UP's argument in favor of additional staffing seems to suggest that there will be no IT support during non-business hours. Again, this is incorrect. IPA has provided for on-call support. Thus, if an issue arises, the on-call IT staff member could respond to the issue, just as UP's night shift IT staffer would. UP also ignores that in today's computer environments, most IT troubleshooting is done remotely. Thus, the on-call IT support staffer could respond to the vast majority of IT issues without having to come to the office. And to the extent that an office visit is required, the town of Delta (the only town of any size near Lynndyl), where the IT staff is likely to live, is only a few minutes away.[14]

UP also argues that the additional IT staff is needed in order to perform non-IT staff functions during off-hours, namely waybilling, first/last mile functions, and operational issues such as updating train line ups. Reply at III.D-46-47. UP's arguments are puzzling, if not inexplicable. First, UP ignores that off-hours waybilling is a minor activity on the IRR because UP is preparing most of the waybills for trains moving during off-hours, and the occasional required correction can be handled by customer service during business hours.[15] Second, UP ignores that the first/last mile functions and other operational issues are already handled by the Manager of Train Operations, which is staffed 24/7, or by the dispatcher, which position is also staffed 24/7. IPA also notes that most of the first/last mile functions are confined to a limited time period.[16] As explained in Part III-C above, the IRR's local train service operates on a scheduled basis during normal business hours. Most importantly, UP provides no reasonable explanation as to why an IT support

[14] The Milford and Provo facilities have no significant IT structure, and only occasional visits from the IT staff would be necessary since most issues can be resolved remotely.

[15] UP suggest that hazardous materials waybilling issues, in particular, are likely to halt the movement of trains. Reply at III.D-46 and III.D-47 n.96. As the IRR is not originating or terminating any hazardous materials, any requirements for waybilling hazardous materials should have already been undertaken by UP.

[16] The traffic bound for IGS or originating at the Sharp coal loadout may originate or terminate during off-hours, but there are no complicated first mile/last mile activities for these coal unit trains that are not already handled by the Manager of Train Operations, the dispatcher, or the 24/7 crew caller.

specialist would be expected to know or understand how to perform this broad range of functions. After all, the purpose of the IT staff is to keep the computer systems running, not trouble-shoot railroad operational or basic accounting issues.

As IPA's Opening IT staffing is reasonable, well supported, and consistent with the IRR's needs, IPA has made no changes to its IT staffing on Rebuttal.

iii. Compensation

On Reply, UP accepts IPA's use of compensation levels paid by the Providence & Worcester Railroad ("P&W"), but UP argues that IPA's determination of executive compensation levels was improper. Reply at III.D-47-48. UP contends that "IPA used only the base salary information" from the P&W records but should have used the "*total compensation* column in that same [P&W] schedule to obtain more realistic comparison amounts for IRR executives." *Id.* (emphasis added).

Specifically, UP argues that IPA should have relied upon P&W "total compensation" figures that include fringe benefits:

> Total compensation includes the full package of compensation for executives (*including fringe benefits, stock options, and other forms of executive compensation*) and better represents the going market rate for individuals taking on these responsibilities. IRR would need to provide competitive compensation packages in order to attract and retain able executives. Turnover in a small senior management team would be especially disruptive to the efficient operations that IPA posits for IRR.

Id. at III.D-48 (emphasis added). UP's argument is wrong and would result in an impermissible double-count of costs.

IPA and UP calculate total compensation for the IRR executives (and all other IRR staff) by multiplying each individual's base salary figure by a fringe benefit ratio. *See* Part III-D-3-a-ii above. The use of a fringe benefit ratio is standard practice in SAC cases. *See, e.g.*, *AEP Texas*, slip op. at 60-61; *TMPA*, 6 S.T.B. at 686 n.165. By drawing its base compensation levels for executives from a P&W "total compensation" figure that already includes "fringe benefits," UP is double-counting those fringe benefits, thus leading to a significant overstatement of the IRR's executive compensation expenses.

In its evidence, IPA relies upon a 41.3% fringe benefit ratio equivalent to the Class I industry average fringe benefit ratio based on information from the AAR's website. *See* Part III-D-3-1-ii above and Op. e-workpaper "III-D-3 Salaries.pdf." As a Class II railroad located entirely in Utah, however, the IRR very likely could attract qualified employees even if it were to pay fringe benefits that were lower than the Class I industry average, both because of the IRR's smaller size and the fact that salaries (and the cost of living) typically are lower in Utah than in other locations in the United States.

In that regard, the most recent records available from the Bureau of Labor Statistics (May 2012) show that Utah's mean annual wage for all occupations was $41,840 whereas the national figure was $45,790. *See* Rebuttal e-workpapers "BLS May 2012 Average Wage Data_Utah.pdf" and "BLS May 2012 Average

Wage data_National.pdf." This Utah mean annual wage was only 91% of the national figure. *See also* IPA Op. at III-D-63 ("the mean wage for attorneys in Salt Lake City, UT is only 82% of the mean wages for attorneys in Washington, D.C.") (citing Rachel M. Zahorsky, "What America's Lawyers Earn," ABA Journal (March 1, 2011) (*see* Op. e-workpaper "Zahorsky.pdf")).

In addition, the IRR's fringe benefit ratio is substantially higher than that of several Class I carriers. For example, the IRR's 41.3% fringe benefit ratio exceeds the 2012 ratios of BNSF (37.52%), KCS (36.3%), and Grand Trunk Corporation (35.7%) by wide margins. *See* Rebuttal e-workpaper "III-D-3 Fringe Benefit ratios" (citing 2012 R-1 Reports for BNSF, KCS, and GTC).

Given the fact that the IRR already is paying generous fringe benefits for all of its employees, there is no basis for UP's suggestion that the IRR must pay executive base compensation figures that already include fringe benefits. *Accord AEP Texas*, slip op. at 59; *WFA I*, slip op. at 48-49. The Board should reject UP's argument in this regard and should accept IPA's compensation evidence.

iv. <u>Materials, Supplies, and Equipment</u>

IPA described the IRR's expenses for materials, supplies, and equipment in its Opening Evidence at page III-D-49 and provided details in support of its expense calculations in Op. e-workpaper "IRR Materials and Supplies.xls." *See also* Op. e-workpaper "IRR Operating Expense.xlsx."

UP addresses the subject of materials, supplies, and equipment on pages III.D-49-50 of its Reply and in its e-workpaper "IRR Operating Expense

Reply.xlsx." In its narrative, UP explains that it "accepts IPA's proposed unit costs for the materials and supplies to support IRR employees," but UP increases the expense totals to reflect its larger staffing for the IRR. *Id.*[17]

UP's Table III.D.14 ("IRR Materials and Supplies"), which UP presents on page III.D-50 of its Reply as a summary of the IRR's proposed expenditures, contains a number of errors:

First, the Table includes a "Total" figure that actually appears to represent the total G&A expense for the IRR, rather than merely the total "Materials and Supplies" expense.

Second, the Table incorrectly reports the difference between the parties' Outside Services expenses as a positive number (*i.e.*, $43,462) like each other expense category when, in fact, UP's estimate for Outside Services was lower than IPA's estimate.

Third, the $372,395 figure that UP reports for its own estimate of "IT System and communications Capital" does not match the $372,636 figure in UP's workpaper for this same expense category. *See* Reply e-workpaper "IRR Operating Expense Reply.xlsx," Tab "Summary," cell D256.

Fourth, UP likewise misstates the "IT System and communications Annual Operating Expense" figure from its workpapers. UP's workpapers indicate a figure of $2,123,782 for this item, but UP's narrative reports a figure of

[17] UP correctly identifies an error in the IPA spreadsheets regarding automobiles, which resulted in an understatement of the IRR's expense. *Id.* at III.D-50 n.98. IPA has corrected this error on Rebuttal.

$2,129,060 for this same expense. *See* Reply e-workpaper "IRR Operating Expense Reply.xlsx," tab "Summary," cell D257.

Fifth, UP incorrectly reports the difference in "IT System and communications Annual Operating Expense" as $21,441. UP appears to have copied this figure inadvertently from the cell relating to the IRR's IT capital (which also shows an expense category difference of $21,441). The actual difference figure for IT System and Communications Annual Operating Expense should be $15,374 (using the figures set forth in UP's Table III.D.14) or $10,096 (using the figure set forth in UP's spreadsheet).

Finally, UP incorrectly reports its total budget for Office Buildings, Materials, and Supplies in Table III.D.14. UP's table includes a total figure of $3,896,525, but UP's e-workpaper calculates a total figure of $3,776,263. *Cf.* Reply at III.D-50 and Reply e-workpaper "IRR Operating Expense Reply.xlsx," tab "Summary," cell D259. UP's "difference" figure therefore is mistaken as well. The difference between IPA's opening expense and UP's reply expense was $89,202, not the $209,464 in UP's Table.

IPA's Rebuttal e-workpaper "IRR Operating Expense_Rebuttal.xlsx" sets forth the best evidence of record concerning the IRR's Materials, Supplies, and Equipment costs because it is based on actual evidence rather than poorly-prepared worksheets.

v. **Other**

(a) **IT Systems**

UP generally accepts IPA's IT system selections and the associated costs. However, UP has proposed several additional items and costs on Reply. First, UP proposes to add three firewall appliances to be placed at the headquarters in Lynndyl, as well as the crew change location in Milford and the locomotive shop/crew change facility in Provo. Reply at III.D-51. Mr. Kruzich accepts these additions.

Second, UP adds four times the cost of the actual software to account for the Sage MAS 200 accounting system implementation (ignoring IPA's implementation costs). According to UP this additional cost is warranted because enterprise resource planning guideline literature supports such an additive. *Id.* UP's proposed additive is without merit.

First, Mr. Kruzich has never experienced an implementation cost that was even close to four times the product price. For example, when he was with the Atchison, Topeka & Santa Fe Railway in the early 1990's, Santa Fe developed a new transportation system called the Transportation Support System. The system cost just over $70 million, and Mr. Kruzich can say with absolute certainty that it did not cost anywhere near $280 million to implement.

Second, the literature cited by UP does not support its additive. Specifically, the ERP Implementation Study cited by UP does not specify which software is being implemented. It is common knowledge that some software packages are much less expensive to implement than others and the costs can vary drastically. According to Accounting Software Research, an appropriately targeted publication, "implementing a mid-market to high-end accounting software system will typically range from 1:1 to 2:1 compared to the cost of the software." *See* Rebuttal e-workpaper "Software Implementation cost.pdf," at 3. Likewise another publication, ERP Wisdom, states that implementation cost "can be as low as 50 percent of the TCO if the software is based on one-tier architecture and it can be reduced if the buyer has done prior preparation." *Id.* at 2. In other words, accounting software implementation should not incur anything remotely approaching a 4:1 cost versus the price of the software. Moreover, the RMI software used by the IRR includes hooks in the software architecture that make it easier to interface with commonly used accounting software such as MAS 200. Thus, Mr. Kruzich added one times the cost of the software for implementation.

UP proposes to add a vehicle for the IT staff's exclusive use. Reply at III.F-50. UP's additional vehicle is unnecessary. The Milford and Provo locations have only a few computers, and most maintenance would be performed remotely. Thus, on the rare occasions when an IT staff member would need to visit these locations, he or she could use one of the G&A staff vehicles.

Finally, UP adds redundant printers in Provo and Lynndyl. Reply at III.D-51-52. UP argues that if a printer were to experience difficulties, a backup printer would reduce delays for train crews. *Id.* The redundant printers are unnecessary. Printers rarely break down, and they are easily replaced – every office supply, computer, and electronics store sells printers. Thus, IPA has excluded these additional, albeit minor, costs from its Rebuttal IT total.

(b) Outsourcing

The principal dispute between the parties regarding outsourcing relates to outside legal expenses. An additional dispute relates to outsourced equipment inspection.[18]

(i) Outsourced Legal Expenses

The parties agree on the general approach to calculating outside legal expenditures. First, they determine total legal expenses as a percentage of SARR revenue using 0.675% as the benchmark. *See* Op. at III-D-62-66; Reply at III.D-52-53. Next, they subtract the IRR's internal legal expenses in order to calculate an assumed outside legal budget. *Id.*

The parties disagree, however, on two aspects of this calculation. First, the parties disagree on the IRR's annual revenues (which IPA addresses in Part III-A above). Second, the parties disagree on the proper calculation of the IRR's total internal legal expenditures. The Board should accept IPA's calculation of the IRR's internal legal expenditures because UP's approach to this calculation is illogical and contrary to UP's own approach in Docket No. 42127.

In its Reply Evidence in Docket No. 42127, when originally submitting evidence regarding the use of a "percentage-of-revenue" benchmark for

[18] IPA corrects its evidence to include costs for the Employee Assistance Program ("EAP"). *See* Reply at III.D-52 (citing IPA Op. e-workpaper "IRR Outsourcing.xls").

calculating total legal expenses, UP calculated its estimate of internal IRR legal expenditures by adding the salary and fringe benefits for the IRR's Vice President-Law/General Counsel and its General Attorney. *See* Op. e-workpaper "UP 42127 Part III.D.pdf" at III.D-43-44 ("IRR's VP Law and one general attorney represent the in house legal spend for the IRR . . . ."); *see also* Op. e-workpaper "IRR Operating Expense Reply.xlsx," tabs "Outsourcing" and "G&A." UP calculated an in-house legal expense for the IRR of $401,878 based upon the total compensation received by the IRR's two attorneys (*i.e.*, ($189,683 + $102,592) x 1.375 = $401,878). Subtracting the internal legal expense from its proposed total expense, UP calculated a proposed outside legal expense for the IRR of $530,000. *See* e-workpaper "UP 42127 III.D.pdf" at III.D-44.

On Opening in the instant case, IPA utilized a similar benchmark analysis to calculate outside legal expenses. IPA adjusted the percentage of revenue figure that UP had relied upon in Docket No. 42127, however, and instead utilized a 0.675% figure to reflect the particular circumstances of the IRR. Op. at III-D-60-64.[19]

In addition, when developing the total internal legal budget, IPA explained that it was appropriate to include not only the compensation for the Vice President of Law and Administration/General Counsel and the General Attorney,

[19] UP accepted that 0.675% figure in its Reply Evidence in this case. Reply at III.D-52 ("UP accepts the benchmark IPA provides."); *see also* Reply e-workpaper "IRR Operating Expense_Reply.xlsx," tab "Outsourced Services," cell E32 (utilizing the 0.675% percentage of revenue benchmark).

but also the compensation of certain other individuals involved with the internal legal function:

> UP has utilized an improper figure for the IRR's total internal legal expense. In particular, UP's internal cost estimate accounts only for the salaries of the IRR's two full-time attorneys and their associated fringe benefits. UP ignores the travel costs for these two employees . . . . Even more importantly, UP ignores the expenses associated with the other IRR employees with at least some involvement in the legal function; namely, the Manager of Safety and Claims and the IRR's Administrative Assistants. While the duties of these employees would be broader than simply legal-related functions, it is improper to exclude consideration of their involvement entirely. (The base salaries for the attorneys in the present case also are higher than the base salaries of the attorneys in Docket No. 42127).
>
> IPA has assumed that 50% of the expense of the Manager of Safety and Claims should be treated as legal expense, and that one-fourth of the total Administrative Assistants' expense should be treated as legal. (There are two Administrative Assistants supporting a President and three Vice Presidents, so a one-fourth allocation of expenses is appropriate).

Op. at III-D-64-65.

IPA calculated a total internal legal expense of $535,749. *Id.* at III-D-65. Subtracting that figure from the $726,867 estimated total legal expense, IPA calculated an outside counsel expense of $191,118. *Id.* at III-D-66.

On Reply, however, UP has not only rejected IPA's proposed inclusion of additional internal legal staffing, but UP has also dramatically reduced its own prior estimate of the IRR's internal legal expense. Reply at III.D-52-53 and UP Reply e-workpaper "IRR Operating Expense_Reply.xlsx," tab "Outsourced

Services."[20] Specifically, UP argues that the vast majority of the expense associated with the internal legal function should not be treated as legal:

> [F]or the in-house legal function expense component, IPA errs in including all expenses of the Vice President Administration and 50 percent of the Claims Manager expense. The Vice President Administration has responsibility that extends to much more than the legal function. UP determines that only 25 percent of the Vice President's expenses should be attributed to the legal function. Claims management (like other IRR functions) is an internal client of IRR's law department and therefore should not be included in the legal costs. (Similarly, Marketing will need legal assistance in the preparation of contracts, but marketing costs should not be considered part of the in-house legal function expense. Only the compensation of the in-house lawyer who provides the legal expense should be counted for this purpose.) UP agrees that travel costs of in-house lawyers should be included in the internal legal spend component.

Reply at III.D-52-53. On the basis of these arguments, UP excludes from its internal legal budget calculation: (i) 75% of the compensation of the Vice President of Law & Administration/General Counsel; and (ii) 100% of the compensation of the Manager of Safety and Claims.[21]

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[20] On Reply, however, UP did accept IPA's inclusion of at least some Administrative Assistant expenses and the relevant individuals' travel expenses. *Id.*

[21] In addition, it appears that UP inadvertently erred in calculating the 25% share of the Administrative Assistants' compensation that IPA included in its Opening Evidence. UP never mentions the Administrative Assistant compensation in its Reply Narrative. In its spreadsheets, however, UP purports to include the 25% share of this compensation in its internal legal expense total, but UP fails to include the base salaries of both of the IRR's Administrative Assistants in its calculation. *See* Reply e-workpaper "IRR Operating Expense_Reply.xlsx," tab "Outsourcing," cells E25-E29.

Adding insult to injury, when calculating its 25% share of the compensation of the Vice President of Law & Administration/General Counsel, UP uses the lower salary figure that IPA had included for the position on Opening ($172,719), rather than the higher compensation figure – *i.e.*, salary plus fringe benefits, stock options, etc. ($193,988) – that UP insisted upon using in its Reply discussion of G&A compensation. *See* Reply at III.D-49; Reply e-workpaper "IRR Operating Expense_ Reply.xlsx," tab "Outsourcing," cell C26. Ultimately, UP calculates an internal legal budget of only $254,465 using this flawed methodology:[22]

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[22] UP's calculation of internal legal expenses for the IRR in Docket No. 42136 is substantially lower than UP's calculation of the same internal legal expense figure in Docket No. 42127 (*i.e.*, $254,465 as compared with $401,878). UP's new calculation would be lower than its Docket No. 42127 calculation by an even wider margin but for UP's use of a much higher fringe benefit ratio in the present case.

REBUTTAL TABLE III-D-5 COMPARISON OF INTERNAL LEGAL EXPENSE CALCULATIONS			
Employee	*IPA*	*UP*	*Difference*
VP Law & Admin./General Counsel			
Base	$172,719	$172,719	$0
Fringe (@41.3% IPA and 44% UP)	$71,333	$75,996	-$4,663
Travel	$10,475	$10,475	$0
Total	$254,527	$259,190	-$4,663
Attributed Share (100% IPA; 25% UP)	**$254,527**	**$64,798**	**$189,729**
General Attorney			
Base	$112,775	$112,775	$0
Fringe (@41.3% IPA and 44% UP)	$46,576	$49,621	-$3,045
Travel	$10,475	$10,475	$0
Total	$169,826	$172,871	-$3,045
Attributed Share (100% IPA; 100% UP)	**$169,826**	**$172,871**	**-$3,045**
Administrative Assistants			
Base (for staff of two IPA/one UP)	$93,314	$46,657	$46,657
Fringe (@41.3% IPA and 44% UP)	$38,539	$20,529	$18,010
Total	$131,853	$67,186	$64,667
Attributed Share (25% IPA; 25% UP)	**$32,963**	**$16,797**	**$16,167**
Manager of Safety and Claims			
Base	$103,601	$103,601	$0
Fringe (@41.3% IPA and 44% UP)	$42,787	$45,584	-$2,797
Total	$146,388	$149,185	-$2,797
Attributed Share (50% IPA; 0% UP)	**$73,194**	**$0**	**$73,194**
Total Internal Legal Expense	**$530,510**	**$254,465**	**$281,455**

Source: Rebuttal e-workpaper "IRR Internal Legal Spend.xlsx"; Reply e-workpaper "IRR Operating Expense_Reply.xlsx," tab "Outsourcing."

UP is wrong to treat only 25% of the compensation of the Vice President of Law & Administration/General Counsel as legal. As noted above, UP's only discussion of this point is to claim that "[t]he Vice President

Administration has responsibility that extends to much more than the legal function" and that "UP determines that only 25 percent of the Vice President's expenses should be attributed to the legal function." Reply at III.D-53. Moreover, as noted above, UP took the position in Docket No. 42127 that the full amount of the Vice President's compensation should be treated as legal. Other than now including a Director of Security under the supervision of the Vice President, the composition of the Law & Administration Department in the present case is identical to that in Docket No. 42127. UP therefore has no basis for deviating from its prior position in this regard.

UP also is wrong to exclude the full 25% share of the compensation of the IRR's two Administrative Assistants (to the extent that this omission was intentional). UP never mentions this issue in its Reply Narrative. The IRR's two Administrative Assistants support four individuals, one of whom is the Vice President of Law & Administration/General Counsel. Inclusion of 25% of the compensation of both of these Administrative Assistants therefore is consistent with the extent of these individuals' involvement in supporting the legal function. (Notably, UP elsewhere argues that the IRR staff should include three Administrative Assistants, further undermining the basis for any suggestion that only 25% of a single Assistant's compensation should be treated as legal.)

Finally, UP also is wrong to exclude the 50% share of the expense of the Manager of Safety and Claims. As IPA explained on Opening, the IRR's "Legal/Claims Function" is staffed, *inter alia*, by a "Manager of Safety and Claims, who supervises the out-sourced risk and claims management contractor and provides assistance in investigating claims." Op. at III-D-42. In addition, "[t]his position is also responsible for government safety reporting and representing the IRR in industry associations and forums." *Id.* These functions are essentially legal in nature and therefore are housed within the Law and Administration Department. IPA has followed a conservative approach in treating only 50% of the associated expenses as constituting internal legal expenses. UP's attempt to equate the Manager of Safety and Claims with an employee in marketing is unavailing.

It is evident that IPA's approach to determining the IRR's total internal legal expenses is conservative and appropriate. In fact, relevant industry literature suggests that when evaluating the key metric of total legal spending as a percentage of revenue, "[t]he goal is to include all the costs that the law department incurs, whether or not they are officially on the budget of the department." *See* Rees W. Morrison, *You Should Go By the Numbers*, Legal Times, Nov. 19, 2007, set forth in Op. e-workpaper "Legal Times.pdf." Morrison further explains that it is essential to develop a comprehensive total of legal spending in order to properly gauge costs as a share of company revenues, and goes so far as to suggest that legal departments include an imputed rent figure even if not directly charged such an amount:

> Calculated properly, total legal spending expressed as a percentage of the company's revenue should total everything spent by the law department – both its internal costs such as compensation and facilities as

> well as its external costs such as outside counsel and other service providers.
>
> Usually, little uncertainty arises from the revenue portion of the calculation. On the spending side, however, law departments include a variety of expenditures. For example, some law departments are not charged the equivalent of rent, *but all law departments should at least add in an imputed number*. To be comprehensive about [Total Legal Spending] and thus on the same footing as other law departments, a general counsel who does not control all outside counsel spending or manage all practicing lawyers in a company should add in the missing expenses.
>
> The total should not include settlements and judgments nor fees and costs of directors but it should include all incentive compensation charges as well as intellectual property fees and expenses.

See id. at 1 (emphasis added).

In light of this extremely broad standard of legal expense measurement as a percentage of revenue, the Board should accept IPA's comparably conservative calculation of internal legal expenses. The Board should reject UP's evidence, which as explained above, is inconsistent with its own evaluation of the IRR's legal department in Docket No. 42127.

In the aggregate, the total internal legal budget for the IRR in the present case is $530,510. Subtracting this internal budget from the $701,357 estimated total legal expense (*i.e.*, 2013 IRR revenues of $103,904,678 x 0.675%) yields a 2013 outside counsel expense for the IRR of $170,846. The combination of this outside counsel budget and the IRR's internal staffing level will be sufficient to cover the legal needs of a carrier as small as the IRR.

(ii) Equipment Inspection

On Opening, IPA included expenses for outsourced equipment inspection (IPA was to perform required 1,500-mile inspections on IPA and certain other coal trains on the IRR's behalf at IPA's Springville car maintenance facility near Provo). Consistent with UP's comments (Reply at III.D-53), the IRR's operating plan as revised on Rebuttal provides for the IRR to perform all required inspections of non-IPA coal trains at Provo. *See* Part III-C-3-c-iii above. Accordingly, IPA has removed the outsourced equipment inspection expense for these trains from its Rebuttal calculation of the IRR's operating expenses. IPA continues to include outsourced equipment inspection expense related to inspection of IPA's empty coal trains at IPA's Springville car maintenance facility.

(c) Startup and Training Cost

UP has accepted IPA's assumptions on startup and training costs and the process IPA used to estimate ongoing restaffing costs. Reply at III.D-54. However, UP does not accept the attrition rate used by IPA, claiming that IPA's Opening Narrative and workpapers show inconsistent rates. *Id.* IPA's Opening workpapers show an attrition rate of 1.8 percent based on a study performed by Dr. Robert Topel on behalf of the Class I carriers in a labor dispute. However, IPA's Opening Narrative indicated that IPA used an attrition rate of 3.0 percent based on data from the MODOC Railroad Academy. On Rebuttal IPA relies on the 3.0 percent attrition rate from MODOC Railroad Academy.

UP accepts the 3.0 percent attrition rate for employees in training; however, it uses higher attrition rates for ongoing restaffing expense based on the theory that the number of employees that need to be trained in the future will correspond to the number of employees that UP loses through attrition on an annual basis by category of employment.[23] UP uses attrition rates for ongoing training that range from { } percent to { } percent. These attrition rates are allegedly based on UP's actual experience and are supported by a one-page spreadsheet which contains no information related to UP's employee profiles or reasons for leaving the company, *e.g.*, retirement, voluntary separation or involuntary separation.

Class I railroads currently have an aging population, and a high percentage of employees are retiring. This is not reflective of the attrition rates that a new start-up regional railroad would experience. Stated differently, the IRR as a new railroad would not hire an employee base with a high percentage of employees that will be retiring within a few years of new employment with the IRR. To the extent that UP's attrition rates include a high percentage of retiring employees, they should not be used to determine the IRR's ongoing restaffing. As the data underlying UP's attrition rates provide no information showing the employee profiles or reasons for separation from UP, it is not possible to determine the extent to which UP's high attrition rates are due to its aging population, or to adjust the attrition rates to properly reflect those that would be representative of a new

[23] The categories include T&E, MOW, Mechanical, Union Clerical and Non-Agreement employees.

shortline railroad. For these reasons, on Rebuttal IPA relies on the 3.0 percent attrition rate described earlier.

IPA's Rebuttal training and restaffing costs are shown in Rebuttal e-workpaper "IRR Operating Expense_Rebuttal.xlsx," tab "training."

(d) **Travel Expense**

UP has accepted IPA's proposed travel expense calculation of $10,475 per employee for individuals at the manager level and higher, and for the three outside members of the IRR's Board of Directors. Reply at III.D-55-56. On Opening, IPA did not include travel expense for the Revenue Managers or for Accounts Payable Managers. On Reply, UP accepts exclusion of travel expense for these manager positions. Travel expense has been added for the Marketing Manager that IPA has added on Rebuttal.

4. Maintenance-of-Way

a. General Approach to Developing the MOW Plan

UP contends, through its witness David Hughes, that IPA's MOW plan for the IRR is inadequate and that IPA has understaffed the IRR's field MOW forces (UP accepts the general office MOW staffing proposed by IPA). IPA's principal MOW witness, Gene Davis, disagrees and believes that Mr. Hughes has approached the IRR's MOW personnel needs with a traditional layered, unionized railroad mentality. Moreover, as IPA shows below, Mr. Hughes's benchmark comparisons with other Board-approved SARR MOW staffing are inapposite and downplay one of the most important metrics for developing a railroad MOW plan: the number of gross tons per mile carried annually by the railroad.

b. <u>MOW Personnel</u>

The following table summarizes the parties' positions with respect to the appropriate level of staffing for the IRR's MOW function:

REBUTTAL TABLE III-D-6 IRR MOW PERSONNEL				
Position	**IPA Opening**	**UP Reply**	**IPA Rebuttal**	**Difference (Reply–Reb.)**
HQ Office/Supervisory (based at Lynndyl)	1	1	1	0
Track Engineer	1	1	1	0
Communications & Signals Engineer	1	1	1	0
Bridge Engineer	1	1	1	0
Engineer of Programs, Budgets, Safety & Training	1	1	1	0
Subtotal	4	4	4	0
Field				
Roadmaster	1	1	1	0
Assistant Roadmasters	3	3	3	0
Track Crew Foremen	2	3	2	1
Track Crew Members	4	6	4	2
Roadway Machine Operators	4	5[1/]	4	1[1/]
Swivel Dump Truck Driver	0	1	0	1
Welders/Helpers/Grinders	2	2	2	0
Roadway Equipment Mechanic	1	1	1	0
Smoothing Crew Foreman/Machine Operator	1	1	1	0
Smoothing Crew Member/Machine Operator	1	2	2	0
C&S Supervisor	1	1	1	0
Signal Maintainers	3	4[2/]	3	1
Signal Technician	0	1	0	1
Communications Technician	1	1	1	0
Communications Maintainer	1	1	1	0
B&B Supervisor/Inspector	1	1	1	0
B&B Machine Operator	1	1	1	0
B&B Foreman	1	1	1	0
B&B Carpenter	1	1	1	0
Subtotal	**29**	**36**	**30**	**6**
Total MOW	**33**	**40**	**34**	**6**

[1/] As described below in the text, the additional Roadway Machine Operator proposed by UP appears to be a misprint in UP's Reply MOW personnel tables III.D.16 and III.D.18. UP's Reply Evidence actually describes one addition to the IRR's machine operators – the Swivel Dump Truck Driver.

[2/] UP's Table III.D.16 shows a total of three Signal Maintainers in the "Reply No. of Employees" column, but UP's Table III.D.21 (and accompanying text at Reply III.D-67) shows a total of four Signal Maintainers in this column. The **Subtotal** for field MOW employees and the **Total MOW** employees shown in the "UP Reply" column above are from UP's Table III.D.16 and thus are not consistent with UP's actual evidence.

As Table III-D-6 shows, IPA has added one field MOW position on Rebuttal – a Smoothing Crew Member/Machine Operator.[24] The net difference between the parties' proposed field MOW employees is now six.

The total number of main-track miles per MOW employee posited by IPA is now 5.85 (198.98 main-track miles ÷ 34 employees). This represents fewer miles per employee than those approved by the Board in its most recent decision in a SAC rate case, *AEPCO 2011*, in which the Board approved SARR MOW staffing of 5.95 main-track miles per employee.[25]

UP attempts to denigrate any comparison with *AEPCO 2011* on the ground that the much longer SARR in that case enjoyed economies of scale that cannot be replicated by a small railroad like the IRR, and instead asserts that the best benchmark for comparison is *WFA I* where the Board approved MOW staffing of 4.02 main-track miles per employee. Reply at III.D-60-61. However, UP does not provide any details with respect to the claimed economies of scale it says existed in *AEPCO 2011*, and in fact none exist except in the general office staffing where supervision extends over the entire length of the SARR. The field staffing is a function primarily of the gross tons per mile traversing each line segment and the corresponding physical limitations on the territory that can reasonably be covered

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[24] This employee has the same annual salary as the other two Smoothing Crew members: ${ }. The parties agree on the salaries for all positions.

[25] *See AEPCO 2011*, slip op. at 32, 65 (3,326.24 mainline track miles ÷ 559 MOW employees = 5.95 miles per employee).

by each field function (track maintenance, signals &communications maintenance, and bridge & building maintenance).

Moreover, while the *WFA I* SARR was more comparable in size to the IRR (217.95 route miles versus 174.96 route miles for the IRR), it had far higher traffic volume and gross tonnage, and thus a far higher proportion of second main track/passing sidings than the IRR.[26] The Board recognized in *AEPCO 2011* that the gross tonnage moving over a SARR's lines in the peak year is the most significant factor in determining staffing for the track-maintenance function, in particular. *Id.*, slip op. at 66-68. UP acknowledges this in its Reply Evidence herein by stating that one of the main factors involved in determining the size of the IRR's field MOW organization is "the amount of rail traffic inflicting physical damage" on its assets. Reply at III.D-61. Yet UP virtually ignores this factor in touting *WFA I* as the best benchmark in terms of MOW staffing per main-track mile.

The *WFA I* SARR had a peak-year maximum density of 154.30 million gross tons ("MGT") per mile, which moved over nearly 60 percent of its

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[26] The *WFA I SARR* had a total of 386.17 main-track miles, compared with only 198.98 for the IRR. Thus the *WFA I* SARR's main-track miles were nearly double the IRR's, even though its route miles were less than 25 percent higher than the IRR's. Stated differently, approximately 77 percent of the *WFA I* SARR's route miles (386.17-217.95/217.95) had multiple main tracks, versus only 13 percent (198.98-174.96/174.96) of the IRR's route miles. This comparison demonstrates the importance of differences in both tonnage hauled and the supporting track mileage needed.

total route miles (between Donkey Creek and Orin Jct., WY).[27] In contrast, in its peak year the IRR will carry a maximum of only 39.9 MGT over the 89.0 route miles between Lynndyl and Milford, representing about 50 percent of its total route miles.[28] Thus the peak-year maximum density on the *WFA I* SARR was nearly four times greater than the peak-year density on the IRR, and the maximum density occurred over a larger percentage of the SARR system. For this reason, it is not surprising that the number of main-track miles per MOW employee was slightly lower in *WFA I* than it is in IPA's MOW plan for the IRR.[29]

UP has accepted most of the IRR's field MOW staffing proposed by IPA, including a single Roadmaster with three Assistant Roadmasters who perform FRA-mandated track inspections in addition to assisting the Roadmaster. Reply at III.D-63. However, UP disagrees that IPA's proposed staffing for two of the three sub-departments (Track and Signals & Communications) is adequate. IPA next

[27] *See* WFA's Opening Narrative (Public Version) at III-C-3 in *WFA I* (filed April 19, 2005). The STB accepted slightly lower peak-year tonnage for the SARR than that shown in WFA's opening evidence, but the impact on gross tonnages by line segment is minimal.

[28] *See* the density table on page III-C-4, *supra*. The IRR's density is higher for the 1.55 miles between Lynndyl and the connection with the IPP Industrial Lead, but the minimal distance involved renders this inconsequential.

[29] The SARR involved in *AEPCO 2011* had comparable density in the peak year to the SARR in *WFA I*, but it extended over only 22 percent of the SARR system (between Amarillo, TX and Defiance, NM). *See* the density table on page III-C-4 of AEPCO's Rebuttal Narrative (Public Version) in *AEPCO 2011* (filed July 1, 2010). The Board accepted AEPCO's Rebuttal first-year and peak year traffic volumes. *AEPCO 2011*, slip op. at 20-23.

addresses the differences between its proposed staffing and UP's proposed staffing for these sub-departments.

i. <u>Track Department</u>

UP proposes to add six employees to the IRR's Track Department, for a total of 26 compared with the 20 employees proposed in IPA's Opening MOW plan. The additions include three employees to staff a third track crew (a Foreman and two Crew Members), a Swivel Dump Truck Driver, one additional Roadway Machine Operator, and one additional Smoothing Crew Member/Machine Operator. UP Reply at III.D-62-66. IPA agrees that one Smoothing Crew Member/Machine Operator could be added to the two provided on Opening, but rejects UP's other additions to the Track Department.

<u>Track crews</u>. On Opening, IPA provided for two, three-person track crews to maintain the IRR's track, plus a backhoe and dump truck (with operators) assigned to each track crew's territory. Op. at III-D-73-81. UP agrees with the crew size and assignment of machinery to each track crew, but insists that a third track crew is needed. Reply at III.D-63-65. UP's proposal for a third track crew is inconsistent with modern railroad practice for a recently-built railroad constructed to modern standards.

UP argues that the main-track miles per track crew under IPA's proposal (99.5) are greater than the main-track miles approved by the Board in the *AEPCO 2011* and *WFA I* rate cases. Reply at III.D-65. As noted earlier, the SARR's involved in those cases (particularly *WFA I*) had significantly higher peak-year traffic density as measured in MGT than the IRR, so UP's general comparisons are not persuasive. Moreover, UP's proposal for three track crews means that the crews would maintain approximately only 80, 70 and 50 main-track miles, respectively. Reply at III.D-63-64. This is an inefficient use of manpower, especially given the IRR's moderate tonnages, the availability of a backhoe with operator for each track crew. IPA's plan for 99.5 track miles (on average) per track crew is consistent with real-world staffing for a comparable, newly-constructed railroad.

In prior rate SAC cases, the Board has acknowledged that a new railroad may experience fewer maintenance problems than older railroads, but noted that the complainant has the burden of quantifying the impact on MOW expenses of using newer, more durable materials. *Otter Tail*, slip op. at C-20-21; *see also AEP Texas*, slip op. at 68. IPA provides such quantification in the following testimony by Richard H. McDonald, who was in charge of maintaining and operating Chicago and North Western Railway ("CNW") subsidiary Western Railroad Properties, Inc. ("WRPI") after it constructed a new railroad line to access the Powder River Basin ("PRB") coal fields in the mid-1980's.[30]

[30] Mr. McDonald's qualifications are set forth at in Part IV below. He was a CNW Vice President for a number of years in the 1980's and early 1990's, including service as Vice President-WRPI from 1981 to 1984 during which period he had overall responsibility for WRPI's construction and designed WRPI's operating and MOW plans. Subsequently, as Vice President-Transportation for CNW, Mr. McDonald was responsible for the successful implementation of those plans.

WRPI constructed 107 route miles of new railroad line in 1983-84 between Shawnee Jct., WY and Joyce, NE. The new line connected the PRB "Joint Line" (then half-owned by Burlington Northern Inc. and half-owned by WRPI) with an existing UP line in western Nebraska, to be used to transport PRB coal in partnership with UP to power plants in the Midwest and South-central regions of the United States. WRPI was constructed to standards similar to those used for construction of the IRR, including new 136-pound welded rail, hardwood ties, and rock ballast on a newly-constructed and stable subgrade. WRPI was also equipped with a CTC system over its entire length. It had a total of 122 main-track miles, including five passing sidings, each three miles in length, that were covered by the CTC system.

WRPI's traffic volume was relatively small in its first year of operations (mid-August 1984 through mid-August 1985), but grew steadily and by WRPI's fifth year of operation had reached more than 40 million tons of coal, all of which moved in unit trains. Using a conversion factor of 1.8, which then was commonly used for western coal trains to convert net tons to gross tons, WRPI's gross tonnage (which was uniform over its entire 107-mile system) was more than 70 MGT by its fifth year of operations – or considerably higher than the IRR's peak-year tonnage over its busiest line segment between Lynndyl and Milford.

Because WRPI was a new railroad constructed using the most modern construction standards and specifications available, maintenance needs during its first five years of operations were primarily inspection, spot surfacing, and switch adjustments. The field track-maintenance forces assigned to WRPI consisted of the following:

- One Roadmaster
- One Assistant Roadmaster/Track Inspector
- One Maintenance Gang (track crew) consisting of a Foreman, a Machine Operator and a track worker
- One Welder and one Helper
- One Smoothing Gang consisting of a Foreman and two Machine Operators

All three of the Maintenance Gang members, as well as the Smoothing Gang members, were cross-trained to operate various pieces of equipment, including dump truck, hi-rail/crane truck, backhoe, dozer, excavator and tamper/liner. The Welder and Machine Operators were cross-trained as qualified mechanics on their equipment, so there was no need for a separate roadway mechanic to maintain the limited equipment required.

The real-world, field track-maintenance staffing described above demonstrates that one three-person track crew, supplemented by machine operators including a smoothing gang, can easily maintain more than 100 main-track miles of new railroad with gross tonnages greater than those of the IRR. Based on Mr. McDonald's real-world experience at CNW/WRPI as described above, the two track crews provided by IPA witness Davis for the IRR are clearly sufficient to maintain its track, with an average of less than 100 main-track miles per crew. Moreover, WRPI did not have separate Operators for backhoes, dump trucks or excavators. Its Track Gang members and Machine Operators were cross-trained to operate all of this equipment. Thus, WRPI employed an even greater level of cross-training than IPA's experts have proposed for the IRR.

Roadway Machine Operators. UP accepts IPA's staffing of the IRR's track crews with one backhoe for each crew, with the Machine Operator for the backhoe functioning as an additional crew member when required. Reply at III.D-65. IPA witness Davis's MOW plan also includes two additional Machine Operators, for a total of four, with the additional operators assigned primarily to an excavator and Prentice Loader. The excavator operator also operates a hi-rail three-way (rotary) dump truck and lowboy trailer. Op. at III-D-77-78.

UP proposes to add a separate Machine Operator dedicated to the rotary dump truck. Reply at III.D-65. UP appears to have inadvertently doubled-up on the Machine Operators, as Tables III.D.16 and III.D.18 on Reply pp. III.D-59 and 62 show an additional Machine Operator (for a total of five) in addition to the dedicated Swivel Dump Truck Driver. UP does not discuss the extra Machine Operator in its Rebuttal Narrative, so this added position should be disregarded by the Board.

IPA witnesses Davis and McDonald disagree that the IRR needs a separate driver dedicated to the rotary dump truck. UP's argument in support of adding this driver is that a dedicated operator is needed to make "safe and effective use" of this "expensive" piece of equipment, which "requires more care to operate safely than an ordinary dump truck." Reply at III.D-65. This kind of thinking is typical of the mentality of a unionized, regimented and overstaffed Class I railroad. The IRR has one Machine Operator dedicated to two pieces of equipment, the excavator and the rotary dump truck. Operation of these two machines is well within the capability of a single Operator who has been properly cross-trained on both pieces of equipment, and UP has not demonstrated otherwise with anything other than self-serving declarative statements. There is no reason why this Operator cannot operate both the rotary dump truck and the excavator safely and efficiently, just as the other two backhoe operators operate a backhoe, dump truck and lowboy. All of the IRR's Machine Operators are cross-trained to operate each other's equipment safely and efficiently, when necessary. Such cross-training was used effectively on WRPI and is increasingly common in the rail industry, particularly for non-unionized Class II railroads (the category in which the IRR falls).

Smoothing Crew Members. On Opening, IPA witness Davis staffed the IRR with a single smoothing crew consisting of a Foreman and a Smoothing Crew Member/Machine Operator. On Reply, UP accepts a single smoothing crew but states that a three-person crew is more in accord with industry practice. Reply at III.D-66. After further review, Mr. Davis concurs that a three-person smoothing crew can be more efficient and may be more appropriate, and thus on Rebuttal IPA accepts UP's proposal to add a second Smoothing Crew Member/Machine Operator. This will assist with keeping the gang productive during times of vacation for smoothing crew members.

ii. Communications & Signals Department

UP proposes to add two field positions to the seven reflected in IPA's MOW staffing for this department. They include one additional Signal Maintainer and a new Signal Technician position. Reply at III.D-66-67.

The number of Signal Maintainers needed by the IRR is a function of the total number of AAR signal units involved. UP asserts that the IRR has a total of 5,051 "AREMA" signal units, and that the workload on the three Signal Maintainers proposed by IPA – 1,684 units per maintainer – is unacceptably high and significantly more than the 1,250 units per maintainer that the Board accepted in *AEPCO 2011*. Reply at III.D-67. IPA's signals expert, Victor Grappone, PE, has re-calculated the number of AREMA (AAR) signal units based on the Rebuttal configuration for the IRR, and the correct number is 4,297. *See* Rebuttal e-workpaper "IPA Signals and Communications Rebuttal.xlsx," tab "CP & Signal Equip. Count."[31] Thus, with three Signal Maintainers, the average number of units per Maintainer is actually 1,432, which is higher than the number proposed on Opening (1,087) but substantially lower than the number claimed by UP (1,684).

While slightly higher than the number accepted by the Board in *AEPCO 2011* (1,250 units per Maintainer), 1,432 signal units are well-within the capability of each of the three IRR Signal Maintainers based on Mr. Grappone's real-world experience gained over his 20-year career as a Professional Engineer

[31] The primary reason for the increase over the Opening number is the addition of several turnouts, necessitating the addition of either CTC-controlled interlockings or FAS-PAS switch control installations.

specializing in signals and communications engineering at the Long Island Railroad. The IRR begins operations with brand-new signals and components, all of a uniform nature, and all of the same general type made by the same manufacturer. Real-world Class I railroads such as UP have much older signal equipment, which typically is not uniform by equipment type and which is made by various manufacturers. Such signal equipment requires more attention from Signal Maintainers than the brand-new and more uniform equipment installed on the IRR. Moreover, the IRR's Signal Maintainers will be centrally based at the Railroad's Lynndyl headquarters, and will not have to travel more than 89 miles to reach any point on the system. For these reasons Mr. Grappone is confident that each IRR Signal Maintainer realistically could be responsible for up to 1,500 AREMA signal units. Thus, there is no need to increase the number of IRR Signal maintainers over the three IPA proposed on Opening.

IPA witnesses Davis, McDonald and Grappone disagree with UP that a separate Signal Technician needs to be added to the IRR's field MOW forces. UP asserts that this position is needed for "more skilled testing and troubleshooting of electronic systems, and to assist the signal maintainers with tests that require two people to conduct." Reply at III.D-67.[32] UP does not describe the "skilled testing"

[32] UP notes that the Board accepted Signal Technician and Signal Inspector positions in *AEPCO 2011* and *WFA I*, but the SARRs in these cases were significantly different than the IRR. The *AEPCO 2011* SARR was a geographically far-flung system with 2,235 route miles, thus necessitating additional employees dedicated to signal inspection and testing. The *WFA I* SARR was closer in size to the IRR, but had CTC throughout and a much higher proportion of second main

that might be required, and in any event the IRR has three Signal Maintainers who are trained and qualified on all aspects of the railroad's electronic systems (this same approach was used on WRPI). Thus the Maintainers can handle all required signals testing. They, along with the Communications Technician and the Communications Maintainer, can assist each other with any tests that require two people. It is also common practice for the C&S Supervisor to assist the Signal Maintainers with such testing periodically. This practice enables the C&S Supervisor to perform safety checks on his/her employees as well as keeping the Supervisor aware of any maintenance issues that might be a recurring problem. For example, while he was with NS's track department, Mr. Davis routinely observed Signal Maintainers (on neighboring territories) working together to accomplish monthly tests and, when Signal Maintainers might have to rest due to the Hours of Service requirements, having the C&S Supervisor for the territory accompany them to reduce signal-related delays. In Mr. Davis's experience, many shortline railroads of similar corridor length to the IRR do not even have a designated C&S Supervisor. In short, there is simply no reason why a small, efficiently-run, non-unionized railroad like the IRR needs a separate Signal Technician.

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track and passing sidings with numerous intermediate crossovers that were control points. Again, the level of inspection and testing required was far greater than for the IRR, which has no CTC on half of its system, no double track with intermediate crossovers, and relatively few passing sidings.

iii. <u>Bridge & Building Department</u>

UP has accepted IPA's proposed staffing for the Bridge & Building Department. Reply at III.D-68.

iv. <u>Misc. Administrative/Support Personnel</u>

UP has also accepted IPA's proposal for supervisory and miscellaneous MOW administrative support personnel. Reply at III.D-68; *see also* Table III.D.16 on Reply p. III.D-59.

c. <u>Compensation for MOW Employees</u>

UP has accepted the compensation for each MOW employee proposed by IPA. Reply at III.D-68. Although IPA disagrees with the need for the two additional MOW field positions proposed by UP (the Swivel Dump Truck Driver and the Signal Technician), the salaries proposed by UP for these positions are acceptable.

d. <u>Non-Program MOW Work Performed by Contractors</u>

UP largely accepts IPA's plan to contract out certain non-program MOW work, including both planned and unplanned contract maintenance. Reply at III.D-68. However, UP disagrees with some contract-cost elements as developed by IPA on Opening. IPA addresses the disputed items below.

i. <u>Planned Contract Maintenance</u>

<u>Track geometry testing</u>. UP accepts IPA's unit cost for track geometry testing, but increases the annual track miles tested to "UP's 201.69 mile figure for system mileage." Reply at III.D-68. On Opening, IPA proposed annual

mileage to be tested based on gross tonnages, with 92.94 miles to be tested annually on the segment between Provo and Lynndyl and 104.58 miles to be tested twice annually on the segment between Lynndyl and Milford. *See* Op. at III.D-88-89 and Op. e-workpaper "MOW Costs.xlsx," tab "Annual MOW Expenses."

Basing the miles tested on annual gross tonnage, as IPA has, is standard procedure in the railroad industry. UP has provided no explanation for why the IRR should conduct track geometry testing at UP's system average mileage figure, rather than the gross tonnages actually moving over the IRR's two principal line segments. UP's system average density was 33.6 MGT in 2011 and 33.0 MGT in 2012. The IRR's system average density for the 10-year DCF period is considerably less (27.4 MGT).[33] It is more accurate to use the IRR's actual densities rather than UP's system-average figure, so IPA continues to base track geometry testing frequencies on the IRR's gross tonnages.

<u>Rail grinding</u>. UP accepts IPA's proposal to grind rail every 60 MGT for tangent track, and it also accepts IPA's rail grinding unit cost per track mile. Reply at III.D-69. However, UP asserts that there is an inconsistency in IPA's spreadsheets on rail grinding costs and that IPA did not include the gross tonnage for locomotives. *Id.* The inconsistency UP refers to apparently involves the track density figures shown in Op. Table III-C-2 (the source for which is Op. e-workpaper "IRR 2022 Gross tons.xls") and the different figures in IPA's Opening

[33] *See* Rebuttal e-workpaper "MOW Costs–Revised.xlsx," tab "Rail Grinding Cap. Costs."

MOW spreadsheet where rail grinding costs are calculated ("MOW Costs.xlsx," tab "rail grinding cap.cost"). The gross tons in the workpaper underlying Op. Table III-C-2 include the gross tons for locomotives. The correct gross tons, and those used on Rebuttal for calculating rail grinding costs, are shown in Rebuttal e-workpaper "First Year and Peak Year Tons by Segment.xlsx."

UP also claims that IPA improperly capitalizes rail grinding because this treatment is inconsistent both with Board precedent and (contrary to IPA's assertion) with UP's treatment of these costs as an operating expense. Reply at III.D-69-70. IPA's assertion was based on a 2009 document provided by UP in discovery stating that "{ }". *See* Op. e-workpaper "UP-IPA-00000231-232.pdf." As shown in UP's 2010 R-1, UP changed its treatment of rail grinding cost in 2010 from a capital item to an operating cost, stating that it has changed from an "acceptable accounting method" to a "preferred accounting method" for treating rail grinding costs.[34] Consistent with UP's historic treatment of rail grinding as a capital item, and its 2010 characterization of that treatment as an "acceptable accounting method," IPA continues to capitalize rail grinding costs on Rebuttal.[35]

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[34] *See* Rebuttal e-workpaper "UP Rail Grinding Description.pdf."

[35] This treatment is consistent with the approach used by other railroads. For example, Norfolk Southern Corporation's 2012 SEC Form 10-K (page K49) discusses how that railroad decides to treat maintenance-of-way costs as a capital expense versus an operating expense:

> We capitalize interest on major projects during the period of their construction. Expenditures, including those on leased assets, that

Ballast cleaning/undercutting. UP asserts that the IPA allowed inadequate time for mobilization/demobilization of equipment, and also increases the track miles cleaned annually from 10 to 22. Reply at III.D-70-72. With respect to equipment mobilization, the equipment could be scheduled by a contractor just after or just before performing similar work on an adjacent UP line. Additionally, should train traffic on the UP line become heavy (resulting in limited or no track time for an extended period), the contractor would certainly take advantage of the opportunity to perform ballast cleaning/undercutting on the nearby IRR instead of just sitting in the clear of passing trains. Or work could be performed on the IRR over the weekend when UP might not want to pay overtime for support personnel, but the ballast cleaning personnel might want to work due to being a substantial distance from their homes or headquarters. Thus, there are several possible scenarios that allow for shorter mobilization/demobilization to/from the IRR, with concomitant cost savings.

With respect to the number of track miles per year to be cleaned, UP erroneously asserts that IPA proposes to clean "only 5 percent of the track or 10 miles per year [], meaning that only 35 percent of the track would be cleaned in the DCF period." Reply at III.D-71. In fact, approximately 50 percent of the IRR's

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> extend an asset's useful life or increase its utility, are capitalized.... Costs related to repairs and maintenance activities that do not extend an asset's useful life or increase its utility, are expensed when such repairs are performed.

Rail grinding extends the useful life of a track asset, so it is appropriate to capitalize rail grinding costs under this standard.

track would be cleaned during the 10-year DCF period, which is consistent with (or exceeds) rail industry practice for lines with density similar to the IRR's lines.[36] For these reasons there is no need to change the approach used in IPA's Opening Evidence.

Yard cleaning. UP proposes to increase the number of working days per year required to clean the IRR's yards from three (as proposed by IPA) to five, due to the need for mobilization and demobilization of the yard cleaning operation. Reply at III.D-72. IPA witness Davis has no idea why two days of mobilization/ demobilization of unspecified equipment would be needed to clean the IRR's two small yards at Lynndyl and Milford (each consisting of only two relay tracks and one setout track) or the tracks at its small locomotive shop. Many yard cleaning machines can be trucked onto the property and then transferred between yards by truck, meaning that only small mobilization costs will be incurred. The total annual cost difference between the parties for this item is only $3,000 per year ($12,500 per UP and $9,500 per IPA), but UP has completely failed to justify its proposed increase and it should not be accepted by the Board.

ii. Large Magnitude Unplanned Maintenance

Derailments. UP asserts that IPA failed to include any expense for derailment damage, and that using UP's system-average cost of clearing wrecks per mile as a surrogate for derailment damage/cleanup costs is inappropriate. UP also

[36] 5% of 198.98 main-track miles = 9.95 miles per year x 10 years = 99.54 miles per year = 50.04% of the IRR's track.

disputes IPA's reliance on the FRA accident reporting database to estimate the cost of derailment-related expenses. Reply at III.D-74-77.

With respect to derailment costs, UP disputes Mr. Davis's statement on Opening that newly constructed track is less susceptible to derailments than well-maintained older track, and asserts that new subgrade, roadbed and track are likely to incur settlement and erosion problems. Reply at III.D-75. IPA witnesses Davis and McDonald strongly disagree with this assertion. A new railroad constructed with modern subgrade compaction techniques, including the use of sheepsfoot rollers, and properly-placed subballast and ballast, is much less likely to settle and incur erosion than older track. This was Mr. McDonald's personal experience at WRPI, which incurred no track- or subgrade-related derailments during its first ten years of operations.

While it is true that derailments can be caused by factors other than track and subgrade conditions, the fact remains that such derailments occur very infrequently on the UP lines in Utah. As IPA noted on Opening, UP incurred no derailment damage expense on any of its Utah lines during the twelve months preceding the filing of IPA's Opening Evidence. Op. at III-D-98-99. UP's speculative assertions as to what the IRR might experience in the way of derailments are no substitute for specific evidence of this kind.

Nonetheless, IPA has concluded that UP's approach (including the additional expenses omitted from the FRA data) is acceptable. However, UP made an error in its calculations by including only unit-train gross ton-miles in its calculation of system derailment expense. Correcting this error, and appropriately including UP's system gross ton-miles as the divisor reduces UP's annual derailment expense (including clearing wrecks) for the IRR from $211,865 to $94,747, which is the amount IPA uses on rebuttal. *See* Rebuttal e-workpaper "Rebuttal IRR Derailment and Clearing Wrecks.xlsx."

UP's calculation of expenses related to clearing wrecks contains the same error as does its calculation of derailment expense (as addressed above), *i.e.*, UP's divisor for system average expense is unit train gross ton-miles rather than system average gross ton-miles. Correcting UP's error results in annual expense for clearing wrecks of $94,118, which IPA includes on Rebuttal.

iii. <u>Environmental Cleanups</u>

UP disputes IPA's assumption that the IRR will not incur environmental cleanup costs, and includes $20,000 as the estimated annual expense for such cleanups. Reply at III.D-78-79. Although UP has not supported its proposed cost with any specific evidence, to minimize disputes IPA witness Davis accepts UP's proposed annual cost of environmental cleanups and has included it in his Rebuttal MOW contract costs.

e. <u>Contract Maintenance</u>

UP has accepted IPA's proposed contract maintenance costs except for bridge substructure/superstructure repairs. With respect to such repairs, UP asserts that IPA's workpapers show a different number of annual bridge repairs (three) than its Opening Narrative (two). UP accepts two bridge repairs per year, but argues that IPA's proposed annual repair cost of $4,000 per bridge ($8,000 for two bridges) is unrealistic and proposes to increase the total annual cost to $27,214 per year. Reply at III.D-79-81. Mr. Davis agrees that the correct number of annual bridge repairs is two, but most bridge maintenance work will be accomplished by the IRR's B&B crew. Nonetheless, some minor contract bridge work may occur and Mr. Davis accepts UP's total annual cost of $27,214.

f. Equipment

UP generally accepts IPA's calculation of MOW equipment-maintenance costs, but asserts that IPA improperly failed to include the capital cost of equipment ownership. Reply at III.D-81. UP is correct, and on Rebuttal IPA includes equipment capital costs calculated using the same method IPA has used for IT equipment.

UP also accepts the MOW vehicle types proposed by IPA, but disputes IPA's calculation of vehicle unit costs because it is not based on factual cost information provided by UP in discovery. Reply at III.D-81-82. However, where UP furnished specific equipment pricing information in discovery, those unit costs (indexed to 4Q12 levels) were utilized. For other equipment, IPA witness Davis developed the unit prices for many MOW equipment items, such as truck bodies, based on information from the Ford Motor Company website, adjusted for the type of equipment required. Mr. Davis also contacted utility body manufacturers, hi-rail equipment providers, hydraulic tool vendors, welding supply stores and other specific vendors to get up-to-date pricing information. In any event, IPA is not required to rely on UP's experience as long as its equipment prices are adequately supported, as they are here.

UP also posits additional MOW vehicles over and above those proposed by IPA on Opening, including one track-maintenance gang truck, two signal maintainer vehicles, and other equipment for the third track crew it proposes to add. Reply at III.D-82. For the reasons set forth in part III-D-4-b-i above, the IRR does not need a third track crew, and thus there is no need for an additional truck or equipment for that crew. With respect to signal maintainer vehicles, UP proposes the addition of one Signal Maintainer to the IRR's field Communications & Signals forces, but inexplicably adds two signal maintainer vehicles rather than the single vehicle needed for the one Signal Maintainer position it proposes to add. As described earlier, the IRR does not require an additional Signal Maintainer so no vehicle expense related to this additional position is required.

g. Scheduling of Maintenance

UP accepts IPA's position that the IRR's MOW crews would perform spot maintenance on a flexible basis, but asserts that programmed maintenance must be done in planned maintenance windows and that such windows should be provided in the IRR's peak traffic period covered by the RTC Model simulation of the IRR's operations. UP thus developed a "normalized figure for the time required for program maintenance" for inclusion in the RTC Model. Reply at III.D-82-83.

For the reasons set forth in Part III-C-2-c-x above, IPA disagrees with UP's assertion that program maintenance windows need to be provided during the

IRR's peak traffic period. Messrs. Davis and McDonald completely concur; no well-run railroad would schedule program maintenance during a peak traffic period, especially when (as here) that period occurs during the winter months in an area of the country subject to inclement winter weather. Moreover, Class I railroads now perform many program maintenance activities during brief "maintenance blitzes," lasting two weeks or less on specified line segments during periods of relatively low traffic density, rather than spreading it out over as much as 200 days per year. This minimizes disruptions to rail traffic except during the "blitz" period itself. Finally, the record shows that UP itself performed no program maintenance on the lines replicated by the IRR during the 2012 equivalent of the IRR's peak week.

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The IRR's annual MOW expenses, as revised on Rebuttal, are shown in Rebuttal e-workpaper "MOW Costs-Revised.xlsx."

5. **Leased Facilities**

UP has accepted IPA's assumption that the IRR has no leased track facilities. Reply at III.D-83.

6. **Loss and Damage**

UP has accepted IPA's approach for calculating loss and damage expense. Reply at III.D-83. IPA has revised its Opening calculation of loss and damage expense to reflect its Rebuttal traffic group revisions. The revised expense is shown in Rebuttal e-workpaper "IRR Loss and Damage_Rebuttal.xlsx."

7. **Insurance**

UP has accepted IPA's estimate of the IRR's insurance expense as 3.89 percent of other operating expenses. Reply at III.D-83. IPA has revised its Opening calculation of insurance expense by applying the 3.89 percent factor to the IRR's Rebuttal operating expenses. *See* Rebuttal e-workpaper "IRR Operating Expense_Rebuttal.xls."

8. **Ad Valorem Tax**

UP asserts that IPA's Opening calculation of the IRR's ad valorem taxes was incorrect because it failed to reflect the fact that the IRR has substantially higher net railway operating income per route-mile than UP does, and that the IRRs' higher income per route-mile would translate into a higher Utah income valuation and higher ad valorem taxes on a route-mile basis. Reply at III.D-84-86.

To calculate ad valorem taxes, IPA calculated the amount of tax that UP paid per route mile in Utah and applied this amount to the IRR's route miles. UP rejects IPA's methodology and instead uses the net income-based method for valuing railroad property for tax purposes. UP explains that Utah taxes railroad property as a function of a railroad's net operating income, and that to the extent the IRR is more profitable than UP, it will pay more taxes. UP therefore adjusts IPA's ad valorem tax calculations to account for the higher ad valorem taxes that it contends the IRR would incur through the use of a "unit value multiplier" approach. The unit value multiplier purportedly reflects the relationship of the net railway operating income ("NROI") per UP system-wide route-mile to the NROI of the

IRR per route-mile, thus measuring the extent to which the income value of the IRR would exceed the income value of UP on a per route-mile basis.

To apply the "Unit Value Multiplier," UP first determines the NROI of the IRR on a per route mile basis and makes the same calculation for the UP system. Second, UP divides the IRR's NROI per mile by the UP system NROI per mile to calculate a "Unit Value Modifier." Third, the Unit Value Modifier is multiplied by UP's existing ad valorem tax as allocated to the IRR using IPA's mileage prorate method to yield the ad valorem taxes that the IRR would pay as a result of its high profitability from the traffic it has selected to move on the IRR system.[37]

Assuming for the moment that UP's "Unit Value Modifier" methodology is appropriate, which it is not, UP's calculations are fatally flawed and must be rejected for two reasons. First, the calculations of the NROI for the IRR and for the UP system are not equivalent calculations. UP relies on the NROI for the UP system from its 2009 R-1 Annual Report, schedule 210, line 67. This calculation equals net operating revenues less taxes on ordinary income and provision for deferred income tax. Deferred taxes arise for U.S.-based companies that claim tax depreciation at an accelerated rate relative to accounting depreciation used in the preparation of accounting statements. In contrast, when calculating the NROI for the IRR, UP subtracts its determination of straight-line depreciation from

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[37] UP's calculations are shown in Reply e-workpaper "IRR Ad Valorem Tax_Reply.xlsx."

the IRR net income, not accelerated depreciation. By not allowing the IRR to benefit from accelerated depreciation in its calculations, UP overstates the IRR NROI vis-a-vis the UP system calculation. This "apples to oranges" calculation results in a Unit Value Multiplier that is significantly overstated and therefore is an unrealistic representation of the required increase in ad valorem taxes.

The second error in UP's calculation is the use of the STB's cost of capital as a divisor to determine the "value" of the IRR and the UP system for ad valorem tax purposes. It is appropriate to use the STB's cost of capital for STB regulatory calculations, but not for present purposes. UP states that it is attempting to represent the amount of ad valorem tax that would be paid by the UP and the IRR in Utah, which does not necessarily rely on the STB's cost of capital to determine the value of railroad assets. Therefore, UP's characterization of its "unit methodology" as a reflection of what Utah would charge in ad valorem taxes is unsupported and unrealistic.

IPA continues to prorate the actual ad valorem taxes paid by UP in Utah to the IRR as a method of calculating ad valorem taxes on Rebuttal. This methodology has been accepted time and again by the STB in previous stand-alone cost proceedings. Based on the significant flaws in UP's methodology, it is the best evidence of record in this proceeding.

It should be noted that on Opening, IPA prorated UP's 2010 ad valorem taxes to the IRR when, as UP pointed out, it should have prorated UP's 2011 ad valorem taxes. On Rebuttal, IPA corrects this error.

9. <u>Calculation of Annual Operating Expenses</u>

UP has accepted IPA's approach for calculating the operating statistics for the IRR's first year of operations, but modified the tonnage indices to reflect its Reply traffic group and also to "break out further and index separately two groups of coal trains" to reflect UP's proposal that the IRR have a separate dedicated pool of locomotives for the IPA coal trains. Reply at III.D-86. As detailed in Part III-C-1-c-ii above, the IRR does not need two separate locomotive pools and there thus is no need to index two groups of coal trains separately.

UP also asserts that IPA's use of net ton-miles to adjust the IRR's operating expenses in later years during the DCF period for changes in volumes is inappropriate, and that a better metric is the IRR's car-miles because different traffic types have different forecasted growth rates. Reply at III.D-87. As explained in detail in Part III-H-1-j below, it is proper to use ton-miles to adjust future operating expenses because this approach implicitly takes into consideration both changes in traffic mix and traffic volumes. The Board has also accepted the use of ton-miles to adjust operating expenses in prior SAC rate cases. For example, in *AEPCO 2011*, which is the Board's most recent SAC decision (in a case that also involved substantial volumes of intermodal traffic), the Board relied upon the ton-mile adjustment of operating expenses which had been proposed by AEPCO and accepted by BNSF and UP. *See*, *e.g.*, AEPCO's Rebuttal Narrative (Public Version) at III-H-17 in *AEPCO* 2011 (filed July 1, 2010). In *Xcel I*, the Board also relied upon ton-miles in calibrating increases in operating expenses "that vary in proportion to tonnage and distance. . . ." *Id.*, 7 S.T.B. at 618.

10. Impact of IRR Operations on the Residual UP

UP asserts that the insertion of the IRR into part of the UP system in Utah, with hypothetical interchanges with UP, would affect the residual UP's operations by causing UP to incur the costs of taxis to bring some UP train crews to the interchange at Lynndyl, which (alone among the IRR/UP interchange points) is not an existing UP crew-change location. Reply at III.D-87-88. UP claims these taxi costs should be added to the IRR's operating expenses "consistent with Board precedent," citing the Board's decisions in *Duke/NS* and *Carolina P&L.*

The Board's acceptance of certain costs that the residual incumbent (NS) would incur as a result of the SARR's presence in *Duke/NS* and *Carolina P&L* does not support the assignment of crew taxi expense to the IRR in this case. As IPA pointed out on Opening, the Board normally does not require a SARR to reimburse a residual incumbent for any such expenses except where they result from an external reroute. Op. at III-C-32-33 (no reroutes of any kind are involved in the instant case). The only exceptions are the two rate cases involving NS cited by UP, in which the SARR's inclusion required a large-scale change in the way locomotives were operated on numerous NS trains that carried cross-over traffic. The SARRs in those cases operated all trains with locomotives in a distributed power ("DP") configuration, involving the placement of locomotives on both the front and rear of the trains with their throttles linked via radio communication. At that time, NS did not use a DP locomotive configuration to any significant extent, so NS had to incur a substantial cost to retrofit a large number of its locomotives for DP operations in run-through service involving the SARR.

In its combined decision on reconsideration in *Duke/NS* and *Carolina P&L*, the Board described the use of DP locomotives in run-through service as a "significant feature" of the SARRs' operations in these cases, and concurred with NS that the cost for NS to retrofit its locomotives for DP operations should be borne by the SARRs. *Duke Energy Corp. v. Norfolk So. Ry., et al.*, 7 S.T.B. 862, 872-73 (2004). This is a far different situation than the assignment of a relatively small taxi expense to a SARR due to the inclusion of a single interchange point between the SARR and the residual incumbent that is not an existing crew-change point.

The Board has never required a SARR to reimburse the residual incumbent for this kind of minor expense, and it should not start doing so now. Otherwise, the Board may have to begin delving into a myriad of ways a SARR might affect the operations of the residual incumbent, given that a SARR is a replacement for the incumbent that usually does not carry all of the traffic carried by the incumbent over the replicated lines (which means the incumbent's replicated lines continue to exist in what has been characterized as a "parallel universe"). The Pandora's box thus opened might include consideration of factors such as whether there is room for both the SARR's track and the residual incumbent's track at certain geographic locations, such as along a river valley, thus requiring the SARR to incur additional road property investment (grading) costs. Such considerations are inconsistent with SAC theory as applied in numerous decided rate cases, and their acceptance by the Board could further increase the already-high cost of pursuing a SAC rate case – thus further discouraging the filing of otherwise-meritorious rate complaints.

III-E Non-Road
Property Investment

III. E. NON-ROAD PROPERTY INVESTMENT

IPA briefly addressed non-road property investment in Part III-E of its Opening Narrative, indicating that the IRR's non-road property investment costs were addressed elsewhere in its Opening Evidence. UP takes a similar approach on Reply.

III-F Road Property Investment

III. F. ROAD PROPERTY INVESTMENT

A comparison of the parties' proposed road property investment costs is set forth below.

REBUTTAL TABLE III-F-1
IRR ROAD PROPERTY INVESTMENT COSTS
(millions)

	Item	IPA Opening	UP Reply	IPA Rebuttal	Difference
1.	Land	$ 15.8	$ 18.5	$ 15.8	$ 2.8
2.	Roadbed Preparation	76.4	103.5	$76.5	27.0
3.	Track Construction	174.7	197.9	175.1	22.8
4.	Tunnels	-	-	-	-
5.	Bridges	13.0	26.6	13.0	13.6
6.	Signals & Communications	23.1	32.6	27.8	4.8
7.	Buildings & Facilities	8.3	28.9	9.3	19.6
8.	Public Improvements	4.1	5.1	4.1	1.0
9.	Winter Costs	0.0	9.8	0.0	9.8
10.	Subtotal	$ 319.6	$ 422.9	$321.6	$ 101.4
11.	Mobilization	$ 7.6	$ 10.5	$ 7.8	$ 2.8
12.	Engineering	29.9	40.4	30.6	9.9
13.	Contingencies	33.7	45.5	34.4	11.1
14.	**Total Road Property Investment Costs**	**$ 386.7**	**$ 519.5**	**$394.4**	**$125.1**

1. Land

On Opening, IPA's expert real estate witness, Stuart Smith, prepared an extensive report that developed the fee simple land values for the IRR's real estate needs. The total land costs were then reduced to take account of easements and land grants. UP accepts Mr. Smith's valuation with several caveats. First, UP added 1.9 acres of land to accommodate the IRR headquarters and MOW building in Lynndyl, as well as 0.2 acres to accommodate the IRR's crew change building in Milford. IPA accepts these minor additions ($1,043).

Second, UP rejects IPA's use of land grants. On Opening, IPA examined UP's valuation maps, easements and land grants that underlie the route being replicated by the IRR. The analysis showed that over 1,574 acres of the IRR's right-of-way were obtained through land grants or easements. Likewise, the land grants were shown to be reversionary based on data provided by UP, and historically land grants were given to railroads at no cost. *See* Op. e-workpaper "IRR Opening Land.xlsx," tab "100 ft ROW." Moreover, IPA noted that in *Nevada Power I*, the ICC held that land used for a right-of-way that reverts back to the original owner upon the owner's exit from the market is not a fungible asset owned by the incumbent, and that requiring the new entrant to pay for such property is a barrier to entry.[1] As the ICC explained:

> Land for right-of-way purposes can be separated into two distinct classes: (1) land owned in fee simple and convertible to other purposes; and (2) land not owned. The land owned by incumbents is a fungible asset, having an opportunity cost of its best alternative use. This cost is faced equally by both incumbents and entrant. Thus, its inclusion in SAC is proper. *Land over which a railroad operates, but does not own, is not a fungible asset. The incumbents encounter no opportunity cost on such land, since it is forfeited upon exit. Requiring a new entrant to purchase and earn an appropriate return thereon imposes an entry barrier.*

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[1] In *Nevada Power I*, the ICC required that the shipper purchase property that the railroad had acquired through a land grant, but it did not address whether such property was actually owned by the railroad or whether there was a reversionary interest.

Nevada Power I, 6 I.C.C. 2d at 54-55 (emphasis added). As IPA demonstrated that the US Land Grants at issue here meet the reversionary requirements of *Nevada Power I*, it excluded the cost to acquire such land. *See* Op. e-workpaper "DRGW-property-schedules.pdf."

UP correctly points out that IPA did not include the detailed land grant documents that it examined as workpapers. Reply at III.F-3. However, these land grants were derived from UP-produced workpapers, and UP admits that it reviewed the relevant discovery.[2] *Id.* In any event, UP ignores its own data and the *Nevada Power I* decision, and concludes that the land is labeled "No Title" and therefore that it is impossible to confirm that the properties represent land grants with revisionary interests. *Id.* UP's conclusions are incorrect.

The properties at issue are plainly land grants that revert. For example, {

} Thus, IPA has continued to exclude land

[2] IPA has included the relevant workpapers on Rebuttal. *See* Rebuttal e-workpaper folder "Land Grants."

acquisition costs for properties that UP and its predecessor acquired as free land grants.

	REBUTTAL TABLE III-F-2 Land Acquisition Costs (millions)				
	Property Type	**IPA Opening**	**UP Reply**	**IPA Rebuttal**	**Difference**
1.	ROW – Fee Simple	$ 15.4	$ 15.4	$ 15.4	$ 0
2.	Locomotive Shop and Other Facilities	3.2	3.2	3.2	0
3.	Microwave Towers	0.004	0.004	0.004	0
4.	Land Grants & Easements	(2.8)	0	(2.8)	2.8
5.	**TOTAL**	$15.8	$18.5	$15.8	2.8

2. Roadbed Preparation

IPA's Opening roadbed preparation costs and quantities were developed using the same methodologies and procedures that have been repeatedly accepted by the Board. Specifically, IPA's engineers developed grading quantities using the ICC Engineering Reports. The unit costs were then developed using the RS Means Handbook.

As has become de rigueur for defendants in SAC rate cases, UP has attempted to increase the IRR's roadbed preparation costs by repeating a variety of arguments that the Board has previously rejected, or concocting new arguments that are superficially plausible, but not in fact meritorious.

There are five main areas of disagreement between the parties:

1. Common Earthwork Unit Costs – Despite repeated demonstrations by Complainants in SAC cases that actual common earthwork costs for large projects are less than the Means Handbook costs, UP again argues that the Means Handbook costs should apply because it incorrectly asserts that common earthwork in Utah is dissimilar to common earthwork in Wyoming – the state from which IPA's project unit cost was derived.

2. **Borrow** – UP adds additional quantities for borrow, based on an incorrect interpretation of the "Team Overhaul" amounts shown on the ICC Engineering Reports. UP's additional quantities are a double-count of excavation quantities already included by both parties.

3. **Culverts** – UP almost triples IPA's Opening culvert costs. As discussed below, UP raises a variety of arguments to increase the costs, but those arguments are replete with errors and incorrect assumptions regarding IPA's methodology. Particularly problematic is UP's use of the incorrect formula for determining the capacity of the culverts. The details are addressed below.

4. **Water for Compaction** – UP increased the costs for water for compaction from $1.1 million to $8.4 million. As explained below, UP is incorrect that the Utah DOT cost per gallon of water is not applicable here. Far more critical, however, is UP's overstatement in costs by misapplying the Means Handbook costs. As explained below, IPA has retained its Utah DOT water unit cost.

5. **Lighting for Nighttime Work** – UP argues that IPA would need to spend almost $5 million on lights so that work could be performed at night. Such arguments have been rejected in previous SAC cases, and IPA

demonstrates below that no lights are required for the IRR contractors to perform their work.

UP raises other less-consequential arguments as well. These arguments are addressed in the relevant subsections. Rebuttal Table III-F-3 below summarizes the differences in the parties' roadbed preparation costs.

REBUTTAL TABLE III-F-3
COMPARISON OF ROADBED PREPARATION COSTS
($ in thousands)

	Item (1)	IPA Opening (2)	UP Reply (3)	IPA Rebuttal (4)	UP over/(under) IPA[1/] (5)
1.	Earthwork				
	a) Common	$7,210	9,863	7,203	(7)
	b) Stripping	0	2,373	0	2,373
	c) Wetland Excavation	0	381	15	15
	d) Loose Rock	749	887	749	0
	e) Solid Rock	518	863	518	0
	f) Borrow	65,342	70,917	65,342	0
	g) Total	73,819	85,284	73,827	8
2.	Clearing & Grubbing	52	288	52	0
3.	Lateral Drainage	0	0	0	0
4.	Culverts	1,344	3,768	1,436	2,332
5.	Retaining Walls	0	0	0	0
6.	Rip Rap	0	0	0	0
7.	Detour Road Surfacing	0	0	0	0
8.	Relocation of Utilities	3	3	3	0
9.	Topsoil Placement / Seeding	76	76	76	0
10.	Land for Waste Quantities	12	507	25	
11.	Environmental Compliance	4	4	4	0
12.	Water for Compaction	1,096	8,411	1,096	0
13.	Dust Control Work	0	300	0	300
14.	Lighting for Nighttime Work	0	4,866	0	4,866
15.	Total	$76,406	$103,507	76,519	26,988

1/ Column (3) - Column (4)

a. Clearing and Grubbing

i. Quantities of Clearing and Grubbing

UP accepted IPA's Opening methodology for developing clearing quantities based on the ICC Engineering Reports. Reply at III.F-5. The parties' slight difference in quantities is attributable to the minor differences in second main, siding and yard track miles. *See* Part III-B-4 above. The parties agree there are no grubbing requirements for the IRR.

ii. Clearing and Grubbing Unit Costs

On Opening, IPA used the Means Handbook cost for brush clearing. *See* Op. e-workpaper "IRR Grading Opening.xlsx," tab "Unit Costs." IPA's unit cost is based on 8 acres per day. *See* Op. e-workpaper "Means Unit Costs.pdf."

UP acknowledges this is the actual production rate from the Means Handbook because UP also uses this same unit cost as the basis for its brush clearing unit cost. Reply at III.F-5. However, UP then argues, as it did unsuccessfully in *AEPCO 2011*,[3] that the Means Handbook unit cost is incorrect because the dozer could really only clear brush at a rate of four acres per day due to the need for the machine to split its time between clearing on the one hand, and stockpiling and hauling away organic material on the other. Reply at III.F-5. UP also argues, as it did in *AEPCO 2011*, that a separate cost should also be included for hauling away the materials. Reply at III.F-5-6.

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[3] *See AEPCO 2011*, slip op. at 83-84.

UP provides no explanation for why the Means Handbook cost should be modified. IPA reiterates the same point that AEPCO successfully noted with respect to this adjustment: if the dozer would really be hindered by the need to remove such materials, presumably the Means Handbook would not include a production rate of 8 acres per day. Moreover, UP's suggestion that the Means Handbook cost for clearing does not adequately cover stockpiling is illogical. What purpose would a *clearing* unit cost serve if it did not actually *clear* the ground of organic material? UP has provided no evidence supporting its contention that the 8 acres per day rate is for clearing material only and not moving the material. Clearing means clearing, not cutting down and leaving in place. UP's doubling of the clearing cost must be rejected.

UP also adds an additional cost per acre to load and haul away the removed organic material. However, UP fails to explain why this additional cost is necessary nor has it justified its unit cost for this activity. The material being cleared is brush. As numerous photos of the territory show, the local vegetation is insubstantial.


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See also Op. e-workpaper folder "Field Photos and Logs." There is ample room on the IRR's 100-foot right right-of-way to simply place the material at the edge of the right-of-way, leaving only small piles of organic materials that will easily decompose. In other words, the IRR will not encounter large trees or other materials that could interfere with construction.

Furthermore, even assuming for the sake of argument that a second crew is needed, which IPA does not agree with, there is no way for UP to know the volume of material that it claims would need to be hauled away. The ICC Engineering Reports only identify the number of acres to be cleared, not the volume of material. UP accepted IPA's method for determining the number of acres to be cleared for the IRR and the unit cost *per acre* based on "medium brush to 4 in diameter" and only adjusted (erroneously) the production rate from 8 acres per day to 4 acres per day. In addition, UP's complement of equipment and personnel for the hauling task are also unsupported. UP presents no evidence as to how much material the added crew could move in a day. UP simply adds the daily cost for a crew, consisting of one backhoe, one backhoe operator, two 12-ton trucks, and two truck drivers, and assumes that this crew would only be able to handle the material cleared from 4 acres. Reply e-workpaper "Equipment Selection UP Reply.xlsx." Without knowing how much material there is to be moved *and* how much material UP's crew can move in a day, it is impossible to determine the crew requirements and, therefore, the associated cost.

Finally, IPA notes that UP's additional cost of ${ } per acre (prior to the application of indexing and the location factor), which reflects the doubling of the clearing cost plus the cost to load and haul away material, is overstated. UP's cost adjustment is based on the clearing cost of ${ } per acre from the *DuPont*[4] proceeding and not the $284.24 per acre used by IPA. *See* Reply e-workpaper "Equipment Selection UP Reply.xlsx."

Based on the above, IPA continues to use its Opening clearing unit cost.

[4] *E.I. DuPont de Nemours & Co. v. Norfolk S. Ry. Co.*, NOR 42125.

iii. **<u>Other</u>**

(a) **<u>Stripping</u>**

Consistent with Board precedent, IPA did not include stripping costs on Opening. Notwithstanding the substantial precedent to the contrary, UP tries to add such costs, as it has attempted to do unsuccessfully in the past. UP fails to support its additions.

UP repeats, almost verbatim, the same arguments it raised and lost in *AEPCO 2011* in favor of adding roadbed preparation for stripping. Briefly summarized, UP argues that stripping costs should be added because such activity is required when building an embankment due to the fact that the ground must be filled and compacted where vegetation is removed. Reply at III.F-6-7. UP also argues that the removed materials must be moved to waste pits. *Id.* UP's arguments, and the resulting additional costs are without merit.

UP has ignored Board precedent with regard to stripping, including an explicit rejection of the very arguments UP has raised here. In *AEPCO 2011* the Board held:

> It is incumbent upon the proponent of a new cost to demonstrate that such a cost would need to be incurred by a SARR. Defendants have failed to show that stripping would be needed in the areas that the ANR would traverse or that stripping costs were incurred during actual construction of the lines that would be replicated. Also, because the topsoil would be removed during clearing and grubbing, there would be no need for a separate charge for stripping. To the contrary, including such an additional cost would result in a double count. The additional work of stripping that

> defendants claim is needed for building an embankment would be included in clearing and grubbing activities, and would be done regardless of the type of grading, embankment or otherwise. Therefore, we accept AEPCO's stripping costs.

Id., slip op. at 84-85. *See also Xcel I*, 7 S.T.B. at 671 ("the top 6 inches of soil would be removed during excavation and because topsoil removal is included in waste costs, there would appear to be no need for a separate charge for stripping. To the contrary, including such an additional cost would result in a double count.").

In addition to ignoring Board precedent, UP's additional stripping cost is unnecessary. UP acts as though the original builders of the lines comprising the IRR had no concept of what was necessary to construct rail lines. Any work required to eliminate issues which would potentially "cause the embankment subgrade to compact and shift under pressure of train traffic" (including vegetation removal, elimination of soft spots, and areas requiring filling and compaction) would certainly have been addressed. UP has not identified any areas on the IRR where the roadbed has been replaced because these items were not accounted for in the initial construction of the UP lines replicated by the IRR. The ICC Engineering Reports' clearing and grubbing quantities include all clearing and grubbing necessary to construct the roadbed. This would presumably include all clearing and grubbing necessary prior to building embankments. UP has not demonstrated otherwise.

Likewise, the ICC Engineering Reports' earthwork quantities include all material moved to construct the roadbed. Excavation quantities in the ICC Engineering Reports are not labeled as being confined only to cut areas; they are simply the CY of earthwork excavated. These excavation quantities would presumably include the removal of unsuitable material to build an embankment, and UP has not demonstrated otherwise. As both parties assumed that 30 percent of excavation quantities are wasted, and included the land necessary for the placement of waste quantities, any unsuitable material removed from embankment areas would already be included as waste.

IPA also notes that UP's stripping quantity calculations are unreliable. The length of borrow (and the resulting calculation of quantities of excavation for stripping) is based on the miles of the entire valuation section and not the miles of the portion of the valuation section to be built by the IRR. *See* Reply e-workpaper "IRR Grading Opening UP Reply.xlsx," tab "Stripping," columns (C) through (M). Stated differently, UP's stripping quantities are based on 209 miles and not the IRR's 175 miles. This results in a significant overstatement of quantities.

(b) <u>Over-Excavation</u>

Consistent with *AEPCO 2011*, on Opening IPA did not include any costs for over-excavation. UP has rehashed the same argument it lost in *AEPCO 2011* by adding over-excavation costs for the same insufficient reasons it advanced in that case. Simply put, UP claims that 12 inches of over-excavation must occur in solid rock cuts and then be replaced with compacted select borrow material. Reply at III.F-8. UP apparently assumes, as it did in *AEPCO 2011*, that such excavation, if necessary, was not done when the lines were originally constructed. UP has not justified its additive.

In *AEPCO 2011*, complainant AEPCO explained that both it and the Defendants had included quantities for "backfill in rock cuts," from the ICC Engineering Reports, in their earthwork calculations, which represents over-excavation. *See* AEPCO's Rebuttal Narrative at III-F-14, *AEPCO 2011* (filed July 1, 2010). The Board, in accepting AEPCO's arguments, noted that any such quantities were already captured through use of the ICC Engineering Reports, and that to add over-excavation again would be a double-count. *AEPCO 2011*, slip op. at 87.

On the UP route replicated by the IRR, there is only one segment where solid rock excavation occurred, and only a small quantity was required. There is no separate entry in the ICC Engineering Reports for "backfill in rock cuts," which indicates that either no such activity was necessary or it was not separately identified. *See, e.g.*, ICC Engineering Reports for the valuation section SPLASL-18-UT from Op. e-workpaper "ICC Engineering Reports.pdf." It is possible that, if over-excavation was required, it was performed and the quantities were simply included in the solid rock quantities identified on the ICC Engineering Reports. Perhaps, no "backfill" was separately identified because the railroad simply used some of the already-identified excavation quantities as backfill. In any event, UP has provided no evidence demonstrating that the solid rock quantities on the ICC Engineering Reports do not include "over-excavation" where it may have been necessary. Moreover, UP has provided no evidence of instances where the original roadbed construction for the relevant segment had to be replaced because over-excavation was not performed during the original construction. Thus, IPA continues to exclude over-excavation costs in accordance with *AEPCO 2011*.[5]

IPA also notes that UP's over-excavation quantities are overstated. Like the error identified in UP's stripping quantity calculations, the length used to calculate the quantity of over-excavation is based on the miles of the valuation section (120 miles) instead of the miles of the portion of the valuation section to be built by the IRR (86 miles). *See* Reply e-workpaper "IRR Grading Opening UP Reply.xlsx," tab "Over Ex.," columns (D) through (P). This results in a significant overstatement of quantities.

[5] IPA also notes that UP provided no support for using borrow quantities as replacement for excavated rock. Most embankments on the IRR are constructed using excavated material, as evidenced by the fact that both parties have assumed that 70% of excavation is reused as embankment (and 30% is wasted). Thus, UP's application of its overstated solid rock excavation cost plus borrow cost to its unsupported over-excavation quantities is completely unnecessary and results in a double-count of both quantities and costs.

b. **Earthwork**

i. **Earthwork Quantities**

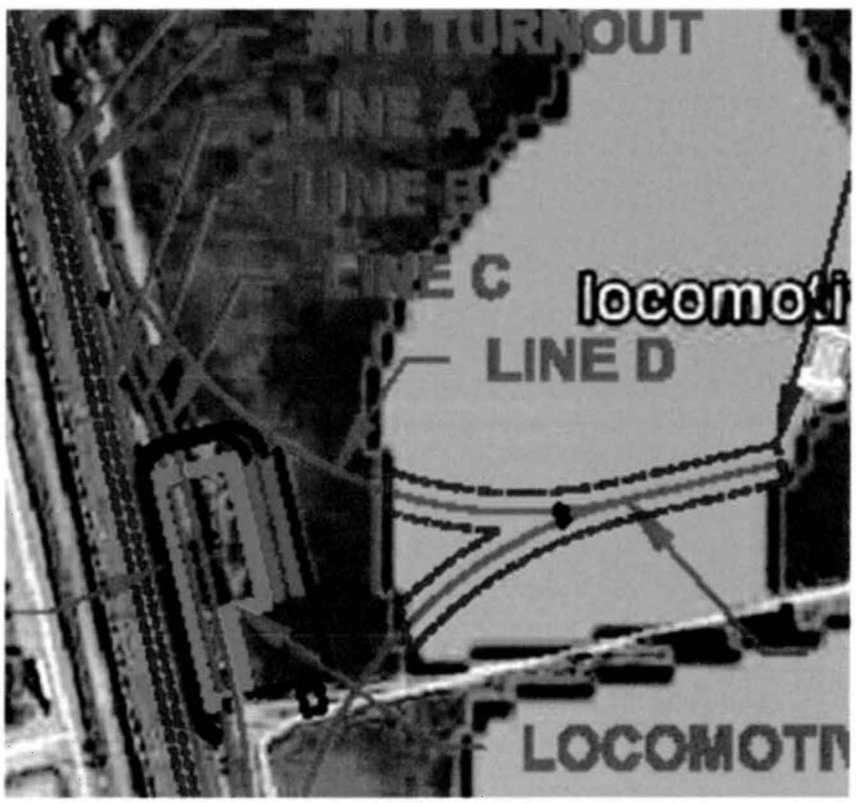
(a) **IRR Line Segments**

In its Reply Evidence, UP indicates that it accepts IPA's calculation of earthwork quantities for the IRR line segments. However, there are slight differences between the parties' calculations of earthwork quantities due to minor differences in the total track miles. As IPA has not modified its main-line facilities, it continues to use its Opening quantities.

(b) **IRR Yards**

UP accepted IPA's methodology for the calculation of earthwork quantities for the Lynndyl and Milford interchange yards, including the use of the one-foot depth of fill methodology. Reply at III.F-9. UP added a 5,000-foot track at each of the Lynndyl and Milford yards but, as discussed in Part III-B, IPA has not accepted these additional tracks. Furthermore, UP disagrees with both IPA's unit costs and track quantities for the locomotive shop in Provo. As discussed in Part III-B, IPA does not accept UP's track increases with the one exception that IPA has added a 1,200-foot RIP track, albeit at a different location than the locomotive shop as specified by UP. UP also argues that the locomotive shop, and associated track, is located on wetlands, that the earthwork there requires an excavator, not a scraper, and that any backfill should be with borrow and not common earthwork. Reply at III.F-9.

The locomotive shop does not sit on wetlands. UP's Reply e-workpaper "Locomotive yard Wetland Exhibit.pdf" shows wetlands *near* the locomotive shop, which is correct. However, the scale of the nearby wetlands is small and it will not hinder the construction of the locomotive shop. More importantly, the locomotive shop does *not* sit on the wetlands as shown in UP's map. Indeed, if UP had carefully compared the locomotive shop diagram from IPA's Opening e-workpaper "IRR Yard Layouts.pdf" – a diagram that UP specifically included in its wetlands e-workpaper – it would have noticed that the locomotive shop sits to the west of the wetlands area shown on UP's map. To illustrate the point, IPA's engineers superimposed IPA's car shop and track layout for the area over UP's Reply map.



As is evident from the map, the only portion of the locomotive shop area that even touches the wetlands shown on UP's map is a small portion of the wye track used for turning locomotives. IPA's engineers have determined that only 843 feet of the wye track traverse the wetlands shown on UP's map, or less than 7% of the locomotive shop-related excavation. *See* Rebuttal e-workpaper "Yard Track Wetland Percentage.pdf." However, for the 843 feet, IPA has accepted UP's wetland excavation cost, with the corrections discussed below.

UP assumes that fill material would have to be borrow. Reply at III.F-9. UP provides no explanation for why common excavation from surrounding areas could not be used. IPA does not accept UP's additional borrow quantities.

IPA makes three corrections to UP's wetlands excavation costs. First, citing the Means Handbook, UP proposes that a 50 percent additive be tacked on to its backhoe unit costs for wet excavation. *See* Reply e-workpaper "IRR Grading Opening UP Reply.xlsx," tab "Unit Costs." However, UP used a 100 percent additive rather than the 50 percent additive it cited. *Id.* On Rebuttal, IPA has used the 50 percent factor. Second, UP inflates its excavation cost by increasing the waste haul distance. As discussed below in the loose rock cost section, IPA does not accept UP's unsupported hauling distance increase. Third, UP increases its hauling costs for its shrink/swell adjustment. As discussed below in the common excavation cost section, IPA does not accept UP's shrink/swell adjustment.

In summary, IPA has increased its yard track quantities by 1,200 feet and accepted UP's wetlands excavation cost, as corrected, for 843 feet of the locomotive shop wye track.

(c) Total Earthwork Quantities

In its Reply, UP introduces a claim that had never before appeared in a stand-alone proceeding prior to the railroad's recent reply in the *SunBelt*[6] case. Specifically, UP adds 84,000 cubic yards of borrow, at a cost of over $2.3 million, to its earthwork quantity calculations by converting quantities listed as "Team Overhaul – 500' free haul" on the ICC Engineering Reports to borrow quantities. Reply at III.F-10. UP asserts that the "Team Overhaul" category represents materials that traveled, for a fee, between 500 and 5,000 feet. *Id.* UP also asserts that such quantities should be converted to borrow quantities and that the length of haul used to determine the amount of borrow should be an average of 2,750 feet. UP's additional quantities and costs are unnecessary, erroneous, and must be rejected.

In past stand-alone cost proceedings, both parties have agreed that "Team Overhaul" quantities, shown on the ICC Engineering Reports and reflecting material moved more than 5,000 feet, should be converted to borrow quantities because the unit costs used to calculate the SARR's earthwork costs usually did not include the costs for transporting material significant differences. This is not the case with "Team Overhaul" quantities.

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[6] *SunBelt Chlor Alkali P'ship v. Norfolk S. Ry*, NOR 42130.

First, IPA notes that UP's average haul of 2,750 feet is erroneous. The "Team Overhaul" quantities are hauled for an additional cost between 500 and 5,000 feet, or a maximum of 4,500 feet (5,000 ft. – 500 ft. as the first 500 ft. are free); therefore, the correct average is 2,250 feet. Next, IPA notes that the Means Handbook common earthwork unit cost that UP utilizes includes the cost to move the material 3,000 feet. *See* Reply e-workpaper "IRR Grading Opening UP Reply.xlsx," tab "Unit Costs," cell D12, "Loading into scraper 3000' haul, common earth." Thus, UP's unit cost already reflects the costs to move the material a greater distance than it was originally moved, on average. In other words, the "Team Overhaul" category simply reflects the transportation costs incurred during the original construction to move excavation quantities, which both parties have already accounted for, over short distances which are already accounted for in the unit cost used by UP. Converting these transportation quantities into borrow quantities results in a double-count of both quantities and costs. Thus, IPA has not included UP's additional borrow quantities on Rebuttal.

IPA's Rebuttal total earthwork quantities reflect the changes in the track configuration discussed in Part III-B of this Rebuttal. This results in a slight increase over Opening in the IRR's earthwork quantities. Rebuttal Table III-F-4 below compares the parties' earthwork quantities.

REBUTTAL TABLE III-F-4
IRR EARTHWORK QUANTITIES
BY TYPE OF MATERIAL MOVED

	Type of Earth Moved (1)	IPA Opening (2)	UP Reply (3)	IPA Rebuttal (4)	UP Reply Over / (Under) IPA Rebuttal (5)
1.	Common	1,793,514	2,223,993	1,794,182	429,811
2.	Loose Rock	63,396	64,331	63,396	935
3.	Solid Rock	33,519	43,521	33,519	10,002
4.	Borrow	2,498,801	2,684,000	2,498081	185,919
5.	Total	4,388,510	5,015,845	4,389,178	626,667

ii. Earthwork Unit Costs

UP's Reply discussion of earthwork unit costs begins with a recitation of the shrink and swell adjustments to earthwork quantities it made and lost in *AEPCO 2011*. *Id.*, slip op. at 92. Specifically, UP modified its Means Handbook earthwork unit costs for wetlands, loose rock and solid rock excavation to account for the alleged different volumes of material that must be handled depending on whether the material is still in place (bank-measure volume), loose or compacted.

IPA did not include shrink and swell adjustments to its Opening earthwork unit costs, and UP has failed to prove that its Reply additive is warranted. UP assumes that the ICC Engineering Reports show bank cubic yards ("BCY") while the Means Handbook uses loose cubic yards ("LCY") for hauling and spreading dumped material. In fact, the cubic yard quantities shown on the

ICC Engineering Reports are not labeled in any way other than as cubic yards. Without a definitive showing of what the cubic yards in the ICC Engineering Reports represent, which UP did not provide, any adjustment is speculative at best. UP's adjustment is simply another way to arbitrarily and unnecessarily inflate the IRR's earthwork costs.

Furthermore, contractors are paid on bank quantities as this is the state of the earth prior to construction and the basis for estimating quantities prior to construction. The contractor bases his bid on these bank quantities, and any additional hauling or spreading based on swell is factored into the bid price. IPA has already shown that actual project costs for a large-scale project such as the IRR would be lower than the Means Handbook costs. To take already-higher Means Handbook costs, and increase them to account for the estimated difference in bank and loose quantities, simply adds more costs where none would be warranted if the IRR project were actually bid out. As such, IPA urges the Board to reject this additive, as it did in *AEPCO 2011*.

UP's shrink/swell adjustment is not only unnecessary, it is also overstated. In particular, in today's construction world there is no loose rock category of costs; earthwork is either common (which encompasses loose rock) or solid rock. In fact, the source that UP relies upon for its adjustment factors does not have a loose rock category. Reply e-workpaper "Swell and Shrinkage – Ringwald, Means heavy Construction Handbook.pdf." Nevertheless, UP added 35 percent for loose rock earthwork versus 25 percent for common earthwork, which is completely unsupported. A rough split between common and solid rock is not sufficient to support a major additive of this kind. Should the Board accept UP's adjustment despite all its shortcomings, the adjustment for loose rock should be no higher than 25 percent.

(a) <u>Common Earthwork</u>

On Opening, IPA based its common earthwork unit cost on the Shawnee-Jireh expansion project undertaken by UP in Wyoming. IPA demonstrated that the Shawnee-Jireh project common earthwork costs were applicable to the IRR because the territories had similar characteristics with respect to the shallow excavation required to build a railroad.

On Reply, UP argues that the Shawnee-Jireh project costs are inappropriate and instead uses Means Handbook unit costs for common earthwork. Specifically, UP asserts that IPA has incorrectly assumed that the soil conditions on the IRR are sufficiently similar to allow the application of the Shawnee-Jireh unit cost. UP also asserts that the Shawnee-Jireh unit cost should be adjusted upward to account for additional mobilization. Reply at III.F-14-22. UP's arguments are without merit.

<u>Soil Analysis</u>

On Opening, IPA examined the USDA Shallow Excavation maps of the IRR territory and the Shawnee-Jireh territory, which maps are produced by the USDA National Cooperative Soil Survey. These maps demonstrated that much of the IPA territory was similar to the Shawnee-Jireh territory. To be sure, not all of the shallow excavation areas were identical, but that is hardly unexpected over the IRR's much greater area. Indeed, as one would expect on a railroad with a large quantity of borrow, and smaller quantities of loose rock and solid rock, the USDA Shallow Excavation would not be as uniform as one might find on a short segment, such as Shawnee-Jireh. The presence of larger quantities of borrow would suggest some poor soil in certain areas or a need for additional embankment to stabilize and compact the soil sufficiently.[7] However, with respect to *common earthwork* unit costs, IPA's engineers concluded that the "Somewhat Limited" soil type designations from the USDA maps were sufficiently present and similar in each territory that it was reasonable to use the Shawnee-Jireh unit cost for *common earthwork* – not all earthwork.

On Reply, UP has suggested that IPA's analysis is incorrect and unsupported. Moreover, UP purports to have done a "detailed spatial analysis" comparing the soils of the two projects. UP concludes that there are significant differences in soil characteristics between the two areas and that the Shawnee-Jireh unit costs are inapplicable. Reply at III.F-14-22. IPA disagrees for the reasons detailed below.

UP's so-called "detailed spatial analysis" is not superior to the analysis undertaken by IPA's engineers. Indeed, UP simply utilized a slightly different version of the same USDA Shallow Excavation maps that IPA used,

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[7] Given the large volume of borrow and based on IPA's inspection of the territory, much of the borrow is used for fills to maintain the grade of the railroad.

which UP then applied to a GIS system. UP then performed its own calculation of the total percentages in the territories of the three main soil types that the USDA Shallow Excavation map uses: "Not Limited," "Somewhat Limited," and "Very Limited."[8] While UP's GIS system may provide a different but not necessarily more accurate split of the territory into different soil types, the conclusions reached do not alter the basic analysis as explained below. In addition, UP did not utilize any other data or perform any soil analysis itself. Thus, both parties examined the USDA Shallow Excavation maps, and the parties reached opposite conclusions with respect to the similarity of the two territories. IPA continues to use its common earthwork unit cost from Opening for the reasons set forth below.

IPA readily concedes UP's factual statement that 400 miles separate the Shawnee-Jireh territory and the IRR territory. However, UP is incorrect that

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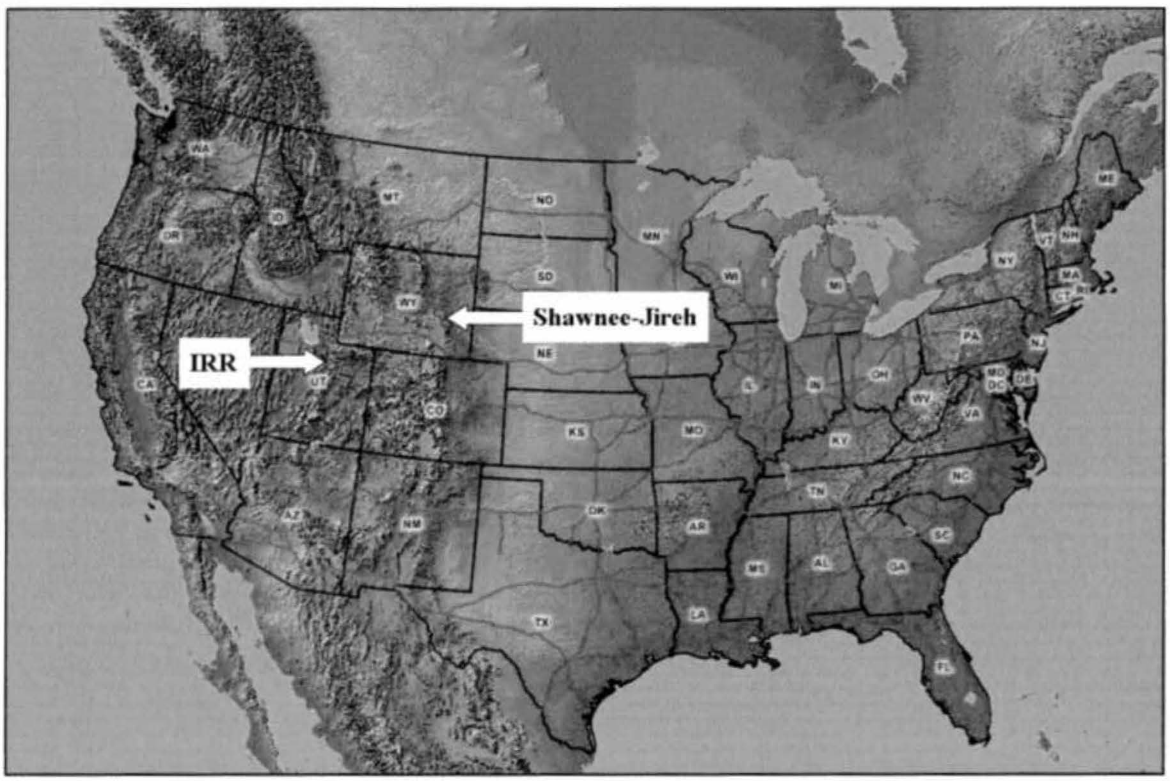
[8] For convenience, the definitions of the soil types are shown below.

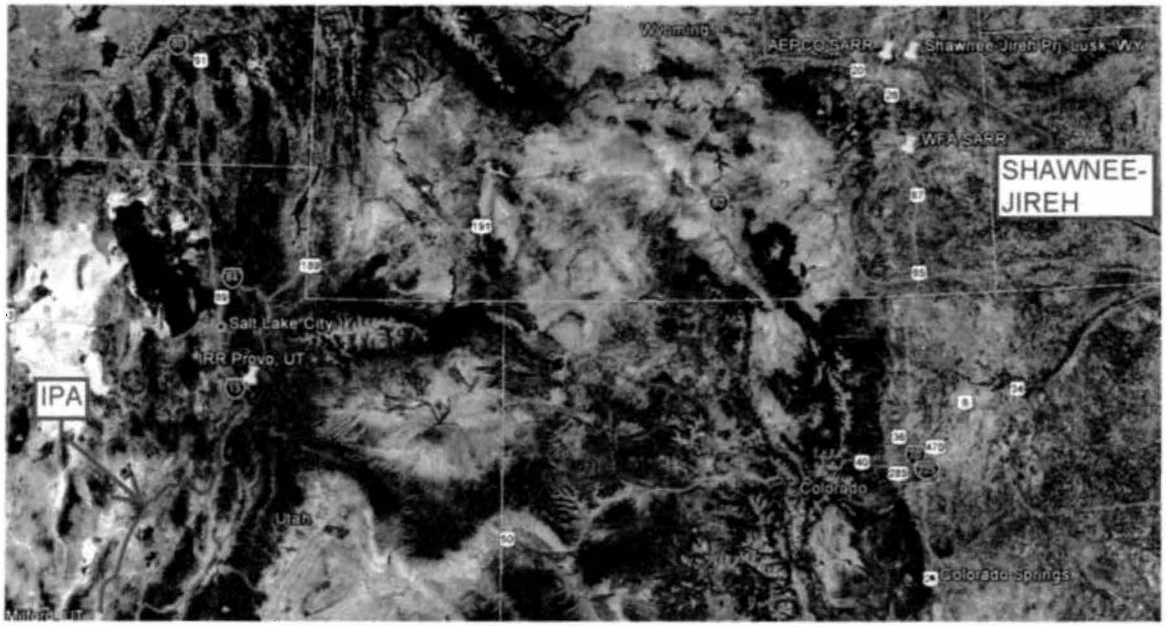
> Not Limited: indicates good performing, very favorable soil which is easily excavated and good material for embankment construction.
>
> Somewhat Limited: indicates soil which is moderately favorable due to properties such as high water table, shallow depth to restrictive soil layers such as cemented soil, and medium soil strength. This soil requires greater effort during excavation and construction operations.
>
> Very Limited: indicates soil which is not favorable due to such properties as a high water table, shallow depth to restrictive soil layers including cemented soil and bedrock, and poor soil strength. This soil requires significantly greater effort during excavation and construction operations. Major soil reclamation or even special design (subgrade preparation) may be required.

the distance alone is significant. Indeed, although the two projects are not in close proximity, they are in the same general geographic area as defined by the USDA and possess substantially the same soil characteristics when the classification of soils is shown on the USDA map. In fact, the USDA maps utilize a national soil rating system that is used by engineers and soil scientists to determine types of soils that exist in a given area. *See* Rebuttal e-workpaper "USDA National Standards.pdf." More importantly, the ratings provide an easy way to compare territories. Maps showing the relative topography of the two areas follow.

The first map demonstrates the relative proximity and similarity on a geological basis vis-à-vis the balance of the continental United States.

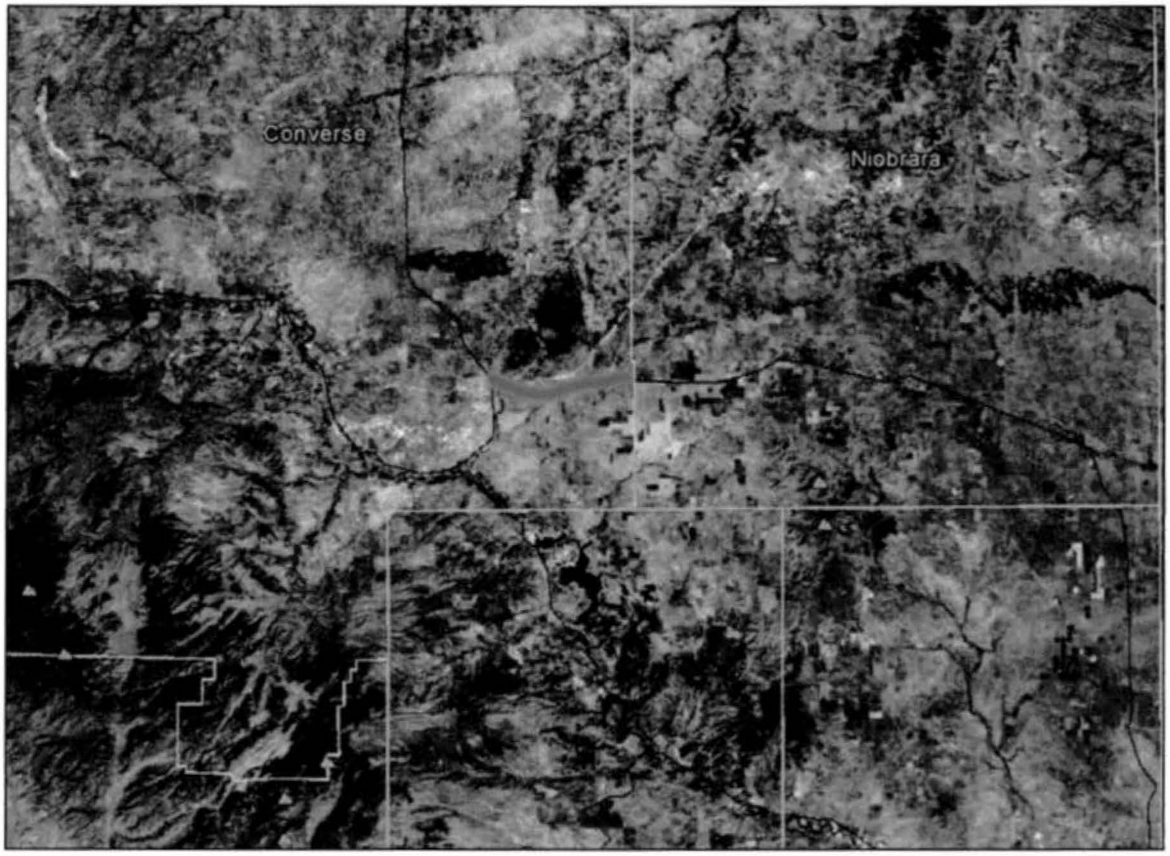


The second map, a satellite image, shows the similarity of the regions on an area-wide basis where both areas of track are shown.

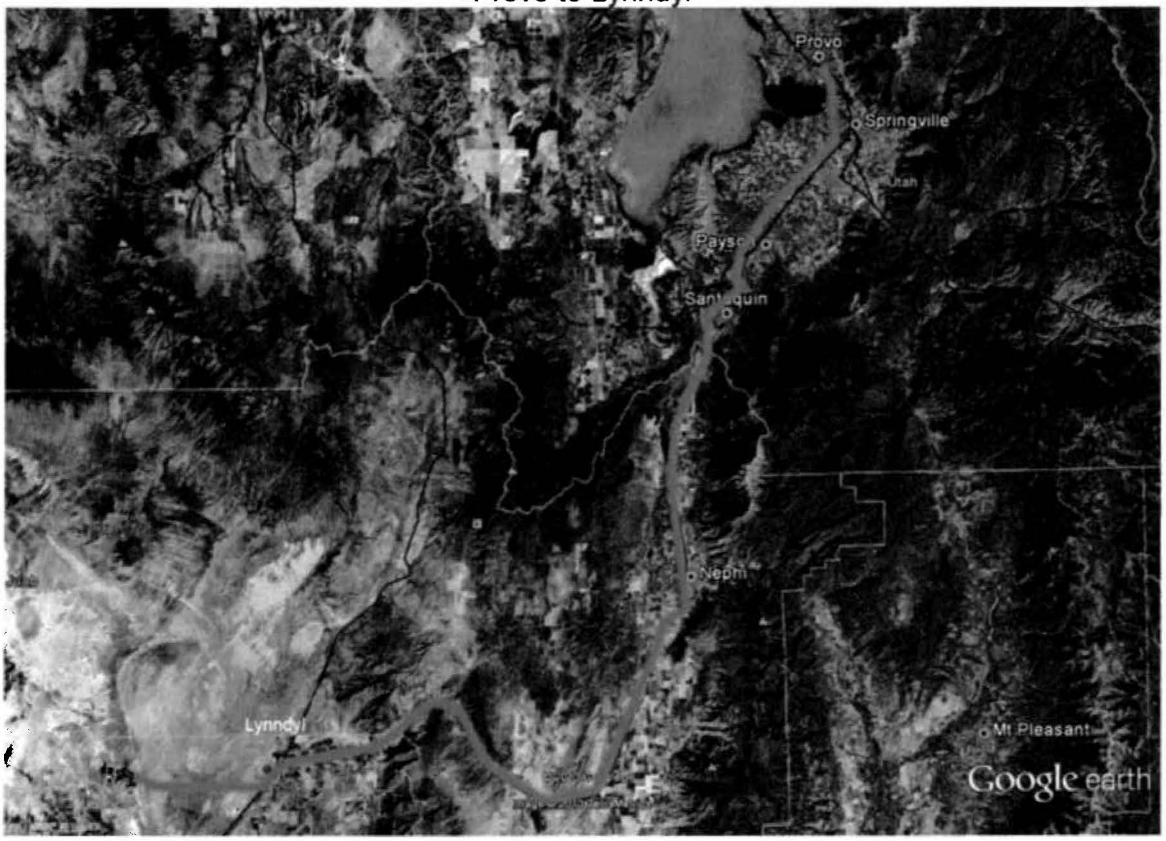


The balance of the maps show detailed satellite images for the Shawnee-Jireh area, the Provo to Lynndyl area and the Lynndyl to Milford.

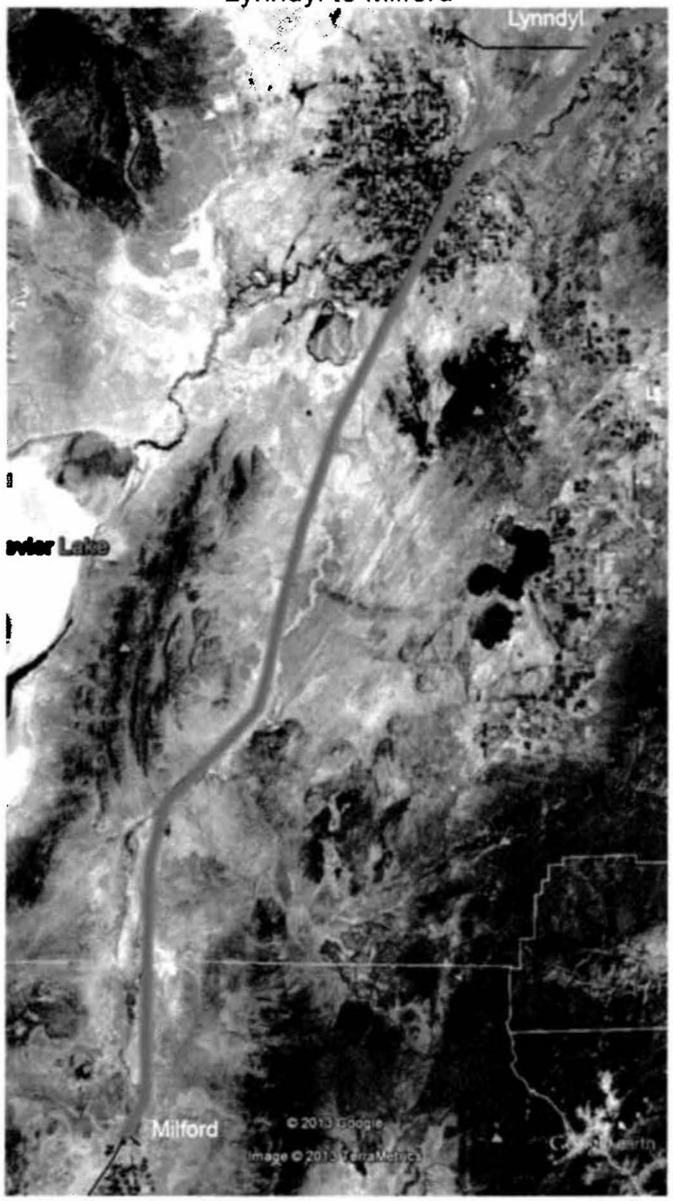
Shawnee to Jireh



Provo to Lynndyl



Lynndyl to Milford



The national rating system is evident in a comparison of the USDA soil types for the two territories. The description of types of soils for shallow excavations for both Converse County, WY (Shawnee-Jireh) and Beaver County, UT (part of the IRR) shows that they are, in fact, identical. *See* Rebuttal e-workpaper "Soils Supporting Documents.pdf," page 10 for Converse Co. and page 5 for Beaver Co. The description in both areas for "Somewhat Limited" states "soils that have features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design or installation." The description for "Very Limited" states "soil that has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures." *Id.*

Examining the Beaver Co., UT details on pages 3-4, of the six soil units described in that area as "Very Limited" all of them show "unstable excavation walls" as one of the reasons they are so classified. IPA's engineers also note that all of the "Somewhat Limited" soils list "unstable excavation walls" as the reason for being "Somewhat Limited." The other reasons the soils are listed as "Very limited" are either "ponding" or "depth to saturated zone." These are only included as reasons for two of the seven soil units listed as "Very Limited," which comprises just 0.3% of the entire mapped area in this section.

The majority of the soils along the route that the IRR will be building are in the "Somewhat Limited" category. UP asserts that the breakdown is 69% "Somewhat Limited" and 31% "Very Limited." IPA asserts that the breakdown is 75% "Somewhat Limited" and 25% is "Very Limited." The difference between the parties' figures is due to a variation in width of ROW measured. However, as explained below these differences do not alter the analysis of whether the Shawnee-Jireh unit cost should apply to common earthwork in this case.

The parties are in virtual agreement with respect to the Shawnee-Jireh soils. IPA calculated 97% "Somewhat Limited" and 2% "Very Limited" soils, and UP calculated 98% "Somewhat Limited" and 2% "Very Limited." Both parties agree that there is no soil that is classified as "Not Limited."

The only difference in difficulty of any note between the soils along the IRR and along the Shawnee-Jireh project are depth of saturated zone and ponding, but this applies to a very small percentage, less than 1%, of the "Very Limited" soils. A shallow depth of the saturated zone and ponding are mostly caused by the proximity of underlying rock.

For the "Somewhat Limited" and "Very Limited" soils in both the Shawnee-Jireh area and the IRR area, the USDA reports indicate "unstable excavation walls" as the main reason for the designation. In other words, when comparing the soils in the two territories using a national rating system, in this respect also they are very similar.

In its soil analysis discussion, UP focuses on the soil type "Very Limited" and how there is more of this type of soil on the IRR route than on the Shawnee-Jireh project. UP seems to be inferring that this difference in soil type somehow impacts the excavation unit cost. In fact, UP states: "The results of UP's analysis suggest that the soils encountered along much of the IRR, would require increased effort during excavation and construction operations to account for the unfavorable soil conditions described above." Reply at III.F-19. However, UP used a single common excavation cost for the entire IRR (with the exception of the "wetlands" around the locomotive shop) and made no cost adjustment for areas with "Very Limited" soil. Perhaps UP believes that the Means Handbook unit costs are better suited for "Very Limited" soils than the excavation cost from the Shawnee-Jireh project. However, there is nothing in the Means Handbook that would support this unstated theory, and UP certainly did not provide any support. UP's use of the "Very Limited" soil type as a reason for rejecting the Shawnee-Jireh unit cost is evidently intended to confuse the Board. If UP does not even believe that the "Very Limited" soil type requires increased excavation costs, it cannot be a basis for rejecting the Shawnee-Jireh cost.

IPA also notes that common earthwork quantities from the ICC Engineering Reports represent the simplest form of earthwork that the ICC cataloged a century ago. If the ground did not need blasting (solid rock), or if the ground could be excavated without a pick and bar (loose rock), it was classified as common excavation. In other words, common earthwork grading is easily performed by any modern earthwork equipment, and large scale projects such as the Shawnee-Jireh project typically incur lower unit costs than Means – a point that has borne out in recent cases. For example, in *WFA/Basin I* the Means Handbook unit cost for common excavation exceeded $4.00 per cubic yard, while the Walker-Shawnee unit cost, accepted by the Board and the defendant, was only $2.17 per cubic yard. *See Simplified Standards for Rail Rate Cases*, EP 646 (Sub-No. 1) (STB served Aug. 14, 2009), slip op. at 3. IPA's use of the lower Shawnee-Jireh unit cost is consistent with the soils analysis, consistent with recent practice in SAC cases, and UP has not provided any basis for adopting the higher Means Handbook unit costs.

<u>Other Common Earthwork Unit Cost Issues</u>

UP argues that a 38.1 percent mobilization additive should be applied to the Shawnee-Jireh unit costs that IPA is utilizing. According to UP, it incurred such an additive. Reply at III.F-22. UP's additive is overstated and inapplicable.

UP's Reply e-workpaper "Common Excavation Unit Cost Adjustment.xlsx" states that UP incurred a mobilization cost of { } on the Shawnee-Jireh project, which represented 38.1 percent of the grading subtotal of { }. UP then backed out the 3.5 percent in mobilization that IPA included and added 34.6 percent to the unit cost, which UP then indexed.

UP's approach is illogical when applied to the IRR. Mobilization costs represent the costs to move the equipment and personnel required for the project to and from the project site. The total quantities of excavation were far smaller on the Shawnee-Jireh project. Given that fact, one would expect mobilization to be a larger percentage of the project. Such a high percentage would also not be surprising in light of the fact that the Shawnee-Jireh project is not located near any major Wyoming cities, where supplies of equipment and personnel are readily available (*i.e.*, Gillette). Thus, UP should have made adjustments to scale the mobilization to the much larger quantities of earth the IRR will move, and it should have adjusted for the proximity of readily available equipment and personnel in areas such as Provo, Delta and Milford, UT. The burden lies with UP to support its additive and it has not done so.

Furthermore, IPA reviewed UP's workpapers and the material provided by UP in discovery and determined that UP's mobilization calculations are also mathematically incorrect. Specifically, UP overstated the mobilization amount and understated the project costs. UP's mobilization amount of { } is the "Unit Price" shown on an invoice from { } rather than the "Extended Price" of { } which was the amount actually charged on the invoice. *See* Rebuttal e-workpaper "83402 CAS.pdf," page 165 of 253. "83402 CAS.pdf" was provided by UP in discovery and contains the invoices for Work Order 83402 (the Shawnee-Jireh project). IPA reviewed all the invoices from { } contained in this file and identified a total of five (5) invoices containing mobilization costs totaling { }, approximately half the amount claimed by UP. *See* Rebuttal e-workpaper "Mobilization.xlsx," tab "{ } Invoices." IPA also summed the total charges from the { } invoices, less the mobilization charges, resulting in a total of { }. *Id.* { } divided by { } yields a mobilization factor of 4.02 percent. IPA also summed all of the mobilization charges contained in all of the invoices, compared it to the total charges, less mobilization and engineering charges, and calculated a mobilization factor of 3.84 percent. *See* Rebuttal e-workpaper "Mobilization.xlsx," tab "All Invoices."

Based on the above discussion, IPA's engineers submit that the 3.5 percent mobilization additive included in IPA's calculations is sufficient and no adjustment to the Shawnee-Jireh unit cost is necessary.

UP also rejects IPA's evidence that expansion projects are more expensive than new construction projects, and therefore the use of an expansion project unit cost is conservative. UP does acknowledge, however, that the *AEPCO 2011* decision held that expansion projects are not necessarily less expensive than new construction. IPA agrees that there are some benefits to a project being located along an active railroad, such as movement of track construction equipment to the site, but those costs are offset by the inconveniences and dangers of expanding a railroad (adding a parallel main track) under traffic conditions. In any event, UP's argument is irrelevant because UP does not demonstrate that expansion projects are *less* expensive than new construction, and IPA did not reduce the unit cost from the Shawnee-Jireh expansion project.

UP also adds fine grading costs to its common excavation costs. As discussed below, IPA rejects UP's addition of fine grading costs as unnecessary.

In light of the soil analysis and other points presented, IPA's engineers continue to use their Opening common excavation unit cost.

(b) Loose Rock Excavation

IPA has already noted that loose rock excavation is no longer a category of excavation in current projects, but to be conservative, IPA included a standard package of Means Handbook-based unit costs on Opening to cover this category of earthwork as it is shown on the ICC Engineering Reports. On Reply, UP makes three changes. UP adjusts the unit costs based on its shrink/swell arguments. IPA has already addressed UP's shrink/swell adjustment and does not accept it here. UP also increases the haul of material from ½ mile to one mile (roundtrip). UP argues that this distance is more realistic, matches the distance the scrapers move, and reduces the number of waste sites required. Reply at III.F-23. UP also adds fine grading costs to its common excavation costs. As discussed below, IPA rejects UP's addition of fine grading costs as unnecessary.

UP has not provided an adequate reason to depart from the loose rock unit costs and equipment approved by the Board in past cases. The additional ½ mile haul is unexplained, except to say that it matches the haulage distance of the scraper. UP has not provided any evidence that the distances implicit in the unit costs used by IPA are unreasonable. UP has provided no analysis of the original topography of the IRR route. There are no distances shown in the ICC Engineering Reports covering the lines replicated by the IRR with the exception of the Team Overhaul category, which IPA has already addressed. IPA has developed its unit costs for hauling based on the Means Handbook in the same manner and using the same cost items as used by complainants and defendants, and accepted by the STB, in past SAC proceedings. UP has raised this distance issue simply as a way to artificially increase the IRR's earthwork costs and IPA does not accept UP's hauling distance adjustment. Moreover, IPA does not agree with UP's revised waste site plans, as explained in the relevant section below. Thus, IPA continues to use its Opening loose rock excavation costs.

(c) <u>Solid Rock Excavation</u>

According to its Reply text, UP made three modifications to IPA's Opening solid rock excavation unit costs. UP adjusted its unit costs for shrink/swell, it increased the length of haul from ½ mile to one mile, and it added costs for moving boulders. Reply at III.F-23-24. UP also added costs for fine grading. Finally, UP substituted costs for "Drilling and blasting where blasting mats are required, over 1500 CY" for IPA's "Bulk drilling and blasting" even though UP makes no mention of this in its Reply testimony and does not even change the Means Handbook reference number or description contained in its Reply workpapers. IPA only noticed this change because UP's average blasting cost per cubic yard is { } compared to IPA's cost of { }. *See* Reply e-workpaper "IRR Grading Opening UP Reply.xlsx," tab "Unit Costs," row 58. When IPA compared UP's unit cost to the Means Handbook, it determined that UP substituted the costs for Means Handbook reference number 31-23-16.30-0250 "Drilling and blasting where blasting mats are required, over 1500 CY" for the costs for Means Handbook reference number 31-23-16.30-0300 "Bulk drilling and blasting." *Compare* Reply e-workpaper "IRR Grading Opening UP Reply.xlsx," tab "Unit Cost Modified," row 43, with Op. e-workpaper "Means Unit Costs.pdf," page 7 of 28. UP's five modifications are addressed below.

IPA has previously explained that there is no basis for the shrink/swell additive or the increase in length of haul. Furthermore, as discussed below, IPA rejects UP's addition of fine grading costs as unnecessary.

UP estimates that 10 percent of the solid rock excavation quantities shown on the ICC Engineering Reports for the valuation sections covering the IRR would be boulders. Reply e-workpaper "IRR Grading Opening UP Reply.xlsx," tab "Unit Costs." UP provides no support for its 10 percent. In fact, UP's argument is merely another rehash of the argument that the railroads have repeatedly lost, including in *AEPCO 2011,* slip op. at 90. *See also*, *AEP Texas,* slip op. at 82. UP has not provided any new evidence with respect to moving boulders. Indeed, UP's Reply relies on the same flimsy supporting materials from 2003 that its engineers collected for a prior STB proceeding and used in the *AEPCO 2011* proceeding and the 2005 *AEPCO* proceeding before that (Docket No. 42058) ("*AEPCO I*") as well.

IPA also notes that UP's cost for moving boulders repeats the same flaw that afflicted the railroads' evidence in *AEP Texas* and *AEPCO 2011* of using the unit cost to "Excavate and load boulders." The obvious problem with UP's approach is that it represents a cost to move boulders that have not been blasted. Not surprisingly, it is more expensive to excavate boulders that are in place rather than move rocks that have been blasted. Furthermore, UP continues to ignore the Board's most recent decision rejecting this same adjustment. As such, IPA submits that the Board should again reject this adjustment.

UP's surreptitious substitution of blasting costs should be dismissed because UP failed to discuss or even identify the substitution. UP has provided no evidence or reason justifying its unit cost change. On Opening, IPA developed solid rock excavation costs in the same manner as has been done in many prior cases and with which the Board has agreed. Blasting costs have been challenged several times and the Board has correctly rejected each challenge. UP's unsupported and stealthy modification should also be rejected.

The parties agree that the unit cost for solid rock excavation should be composed of a mixture of 50 percent solid rock costs and 50 percent loose rock costs.

(d) Embankment/Borrow

UP claims to have accepted IPA's unit cost for borrow. Reply at III.F-24. However, a review of UP's workpapers reveals that UP added fine grading costs to IPA's borrow unit cost. As discussed below, UP's fine grading costs are unnecessary. As such, IPA continues to use its Opening borrow unit cost.

(e) Fine Grading

On Opening, IPA did not include a separate cost for fine grading because the Shawnee-Jireh unit cost includes any necessary fine grading per UP's construction specifications. In addition, IPA noted that the bid tabulation and invoices for the project do not include any separate fine grading costs. Thus, it is inappropriate to include additional costs for fine grading. Op. at III-F-27.

However, as UP is using the Means Handbook unit cost for common earthwork, it has opted to apply such costs because, in its view, the Means Handbook common earthwork equipment cannot perform the final grade of the roadbed.

UP's fine grading additive is unnecessary. Fine grading has been rejected numerous times by the Board. *See*, *e.g.*, *AEPCO 2011*, slip op. at 88; *AEP Texas,* slip op. at 82-83; *Duke/NS*, 7 S.T.B. at 176; *Duke/CSXT*, 7 S.T.B. at 480; *CP&L*, 7 S.T.B. at 313-314. Furthermore, IPA has shown that the Shawnee-Jireh costs are applicable and include fine grading costs and, therefore, IPA has not included any separate fine grading costs.

IPA also notes that the $0.28 per CY additive that UP includes with each of its earthwork unit costs is based on erroneous calculations. UP's finish grading quantities used to calculate its cost per CY are significantly overstated. UP's calculations suffer from the same error identified in UP's stripping quantity calculations, *i.e.*, the length used to calculate the quantities of finish grading is based on the miles of the valuation section and not the miles of the portion of the valuation section to be built by the IRR. Reply e-workpaper "IRR Grading Opening UP Reply.xlsx," tab "Finish Grading," columns (C) through (F). Using the correct miles reduces UP's unnecessary cost from $0.28 per CY to $0.23 per CY.

(f) <u>**Land for Waste Excavation**</u>

On Opening, IPA included land to place wasted excavation, and it assumed a 30 percent waste ratio. UP generally accepts IPA's approach, but it has made several modifications.

First, UP added a 20 percent swell adjustment. As IPA has previously explained, the shrink/swell adjustment is unnecessary from a grading cost perspective because the contractor is paid on the embankment quantities. However, IPA recognizes that the land needed to hold the waste will need to account for the additional volume of the uncompacted earth. As such, IPA has accepted the 20 percent swell adjustment for this purpose only.

Second, UP included additional land at each waste site to accommodate the sloping of materials and additional space needed to allow the grading equipment to move around the site. Specifically, UP adds a buffer of 15 feet for the sloping of materials and a buffer of 20 feet to accommodate the movement of equipment. IPA accepts UP's added space but, as discussed below, IPA does not accept UP's placement and size of the waste sites and, therefore, does not accept UP's calculation of the additional land needed for this space. IPA has increased the land needed for waste quantities by a ratio of 1.7833. Rebuttal e-workpaper "IPA Rebuttal Land for Waste Quantities.pdf."

UP assumed a site would be located on each mile of the IRR route by assuming an even distribution along the IRR of waste quantities. UP's assumption of even quantities of waste excavation along the IRR requiring a waste pit evenly spaced every mile is unsupported and erroneous. UP has not shown that any waste sites would need to be located within the 14.41 miles near Provo. The 30 percent waste excavation figure is an average for the entire IRR. Certain locations may have little or no waste excavation, as all of the material will be suitable for reuse as embankment. Other locations may have more than 30 percent waste due to lesser embankment needs or the removal of unsuitable material. Simply siting one waste site each mile is contrary to good engineering practice, and it is an assumption that is completely unsupported. Furthermore, the IRR will contain the cut/fill areas to balance the quantities, as closely as possible, in order to minimize the number of waste sites.

Finally, UP increased the cost per acre from the $500 per acre for rural land to an average of {   } per acre by incorporating the appraised value of land at the north end of the IRR near Provo, UT. IPA rejects UP's increase in land costs. As noted above, the IRR's waste material dump sites are not evenly spaced. The majority of excavation will take place outside of urban areas as urban areas, with few exceptions, tend to be flatter. Furthermore, as noted above, a least-cost, most-efficient railroad such as the IRR will make a concerted effort to balance cut and fill quantities in urban areas. In addition, UP has not provided any evidence that the IRR will require waste quantity sites in urban areas. IPA also notes that, with the exception of the 14.41 miles near Provo (representing only 8 percent of the IRR's route miles), both IPA and UP valued the land at $500 per acre. *See* Op. e-workpaper "IRR Opening Land.xlsx," tab "IRR Miles" and Reply e-workpaper "IRR Opening Land UP Reply.xlsx," tab "IRR Miles." Finally, in several other SAC proceedings before the Board, both parties have used the rural land cost per acre, with costs as low as $300 per acre, including UP in *AEPCO 2011*. *See* Rebuttal e-workpaper "Rural land cost.pdf." IPA continues to use its Opening rural land value of $500 per acre for the land needed for waste excavation.

IPA also notes that UP increased the distance the waste is hauled as part of its modifications of the earthwork excavation costs. As discussed previously, UP has not supported the increased hauling distance and IPA has not accepted it.

IPA's total cost for land for waste excavation has been increased from $11,718 on Opening to $25,084 on Rebuttal to reflect IPA's acceptance of the 20 percent swell factor and the increased size of each location necessary to accommodate the side slope of the material and the movement of equipment.

c. Drainage

i. Lateral Drainage

The parties agree that there is no need for lateral drainage on the IRR. Reply at III.F-28.

ii. Yard Drainage

Yard drainage costs are addressed in Part III-F-7 below.

d. Culverts

On Opening, IPA developed culvert quantities and costs in a manner consistent with that used in prior SAC cases, including the replacement of certain bridges with culverts, as well as the standardizing of culvert types. On Reply, UP proposes to triple the cost of the IRR's culverts. As shown below, UP's changes to culvert sizes, unit costs and installation procedures are without merit.

i. Culvert Unit Costs

On Opening, IPA developed its unit costs through a combination of price quotes for the culvert materials and Means Handbook costs for excavation and other activities. *See* Op. e-workpaper "Culvert List 2012.xls." UP generally accepts IPA's unit costs, except for three items. First, UP adds transportation costs for culverts from Provo to various locations on the IRR. Reply at III.F-33-34. IPA accepts these additional costs, except that IPA determined that UP was using the incorrect weights for the various sized CMP. IPA has corrected this error. Second, UP adds additional costs to increase the amount of backfill placed in the trenches once the culvert pipe has been placed. *Id.* at III.F-34. As explained below UP's additional costs are unnecessary as the pipe are already adequately backfilled. Third, UP adds an additional cost item for silt fences, which are also unnecessary as explained below. *Id.* at III.F-34-35.

ii. Culvert Installation Plans

On Opening, IPA used industry standard assumptions in designing the installation plans for culverts. UP accepts all of IPA's plans with two exceptions. First, IPA assumed that each culvert would be covered one foot above the top of the pipe. UP changed the volume to two feet based on UP's construction specifications. Reply at III.F-34. UP's change is without merit. Under AREMA standards and the culvert manufacturer specifications, filling to one foot above the top of the pipe is sufficient. Specifically, AREMA measures the height of cover from the base of the cross tie to the top outside of the pipe. AREMA standards provide that 12 inches of cover be placed for CMP culverts up to 48 inches in diameter. *See* Rebuttal e-workpaper "AREMA Cover definition & Cover Tables.pdf." Thus, IPA uses 12 inches of cover on Rebuttal as it did on Opening for all but seven of its culverts.

Seven of the IRR's culverts exceed 48 inches in diameter. For pipes greater than 48 inches and less than 84 inches in diameter, AREMA requires 18 inches of cover, and for pipes greater than 84 inches in diameter, AREMA requires 24 inches of cover. IPA applied the required amount of cover for the seven pipes greater than 48 inches in diameter. Thus, IPA has not modified its backfill approach on Rebuttal.

UP's installation procedure is also unwarranted. UP proposes to fill the culvert site then excavate out to install the pipe, and then backfill. IPA proposes to only excavate out the bedding area, install the pipe, then backfill over the pipe. UP's approach is repetitive, and thus IPA has not adopted it.

UP also proposes that IPA should install silt fencing to provide culvert inlet protection prior to the "permanent stabilization of a disturbed project area." Reply at III.F-35. UP's arguments are inconsistent with good engineering practices. Silt fencing is not normally placed at culvert entrances. The standard practice is for a contractor to place diversion ditches uphill of the disturbed area to divert flows around the site. *See* Rebuttal e-workpaper "UDOT Erosion Control for Silt Fence and Diversion.pdf." To the extent silt fence is even necessary it is normally placed on the downhill side of the site to prevent sediment from leaving the construction site – not on the head end of the culvert. In other words, a silt fence might be placed on top of the embankment to prevent sediment from entering a stream, but it is never placed in drainage ways. In addition, UP has failed to show that such fences were used when the lines being replicated by the IRR were constructed. The silt fence used to prevent downstream materials from escaping is a form of environmental compliance that UP and its predecessors did not incur when the lines being replicated were constructed. As such, IPA has not included additional costs for silt fences.

iii. Culvert Quantities and Sizes

(a) Use of CMP Culverts as Replacements

On Opening, IPA used Corrugated Metal Pipe ("CMP") for most culvert locations along the IRR route. IPA's field investigation and its review of UP's culvert list showed that a hodgepodge of culvert types have been installed on the lines being replicated. *See* Op. e-workpapers "Culvert List 2012.xls," "Field Photos Lynndyl Sub.pdf," and "Field Photos Sharp Sub.pdf." Such assorted culvert types invite inefficiency in the construction of a new line, and IPA's engineers have standardized the culvert process by using CMP where possible. *See* Op. e-workpaper "Culvert List 2012.xls" for a list of such changes.

UP accepts IPA's approach to replacing various existing culverts with CMP culverts where possible. Reply at III.F-29. However, UP asserts that IPA erred in selecting the sizes of 70 replacement CMP culverts. UP argues that IPA incorrectly based its replacement culverts on one criterion, pipe area, and that it should have recognized and taken into account the existing flow capacity of each unique structure being replaced by a CMP. Reply at III.F-35-36. UP purports to have made such corrections to 50 CMP locations and 20 box culvert locations. As shown below, UP erred in its corrections, and IPA's culvert sizes are correct.

Before turning to the errors in UP's calculations, IPA notes that the actual culverts on the UP lines being replicated consist of a combination of concrete, cast iron and CMP pipe. If UP were truly concerned about different flows, UP could have installed pipes on the IRR that matched the originals, but it did not do so. *See* Rebuttal e-workpaper "IPA Analysis of UP Existing Pipes.xls."

UP's critical error is that it used the wrong formula to determine the size of the culvert to install at a given location. Specifically, UP used Manning's pipe flow formula which is used to determine pipe and open channel flows (per second) driven by gravity – one of its principal uses is in designing storm sewers and open trench drainage. *See*, *e.g.*, Rebuttal e-workpaper "Manning's Formula.pdf" (wherein the Connecticut DOT states: "The most widely used formula for determining the hydraulic capacity of storm drains for gravity and pressure flows is the Manning's formula.").[9] The formula is explained below.

$$Q = \frac{1.486}{n} A R^{\frac{2}{3}} S_o^{\frac{1}{2}}$$

Manning's formula determines the quantity ("Q") of water per second that can be moved through an area based on the velocity of the water ("V"). "V" is developed by using the above formula less the cross sectional area ("A"). The velocity calculation considers the hydraulic radius ("R"), the channel slope ("S") and the so-called roughness coefficient ("N"), which takes into account, for example, vegetation in a channel that would hinder flow. The velocity ("V") is then multiplied by the cross-sectional area ("A") to derive the quantity of water per second that can move through the channel. The picture and diagram below, from a Texas A&M engineering course presentation, show the typical circumstances in which the formula is used for open channels.[10]

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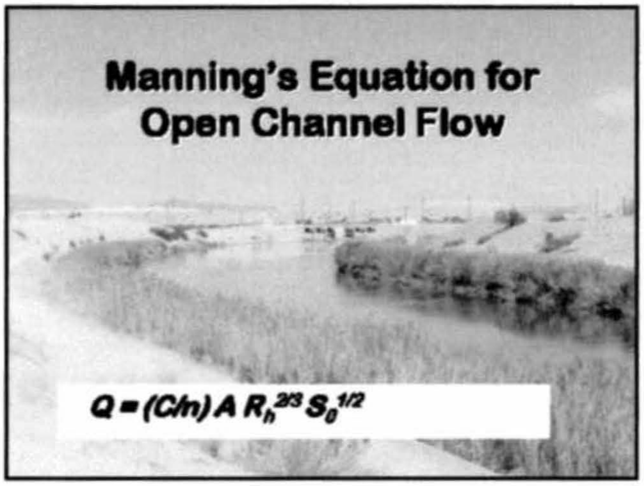
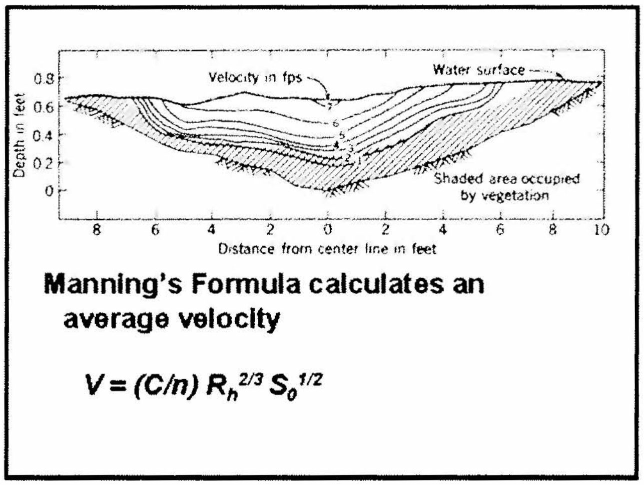
[9] According to one engineering website, the Manning Equation can be used for storm sewers because the storm water flows under gravity and thus is open channel flow, even though pipes are used. *See* http://www.brighthubengineering.com/ hydraulics-civil-engineering/64174-how-to-use-the-manning-equation-for-storm-sewer-calculations/.

[10] *See* http://gilley.tamu.edu/BAEN%20340%20Fluid%20Mechanics/ Lectures/Examples%20of%20uniform%20flow.pdf.





The problem with using Manning's formula to size culverts is that it does not properly take into account how culverts work. Specifically, culvert design requires the consideration of headwater pressure on the intake side of the culvert (which, unlike an open channel, allows for an increase in the speed of flow through the pipe), whether the intake, outlet or both will be submerged, headwater depth, the form of edge at the entrance to the culverts, as other factors that are appropriate for open channels such as length and slope.[11]

As it turns out, developing a methodology and formula for sizing culverts was a difficult engineering challenge for many years. To rectify the problem, the Bureau of Public Roads (now the Federal Highway Administration ("FHWA")), conducted extensive studies in the 1950s and 1960s that resulted in the publication of a series of nomographs that engineers utilize to determine how to a size a culvert for a particular application. The nomographs also included culvert-sizing formulas that the FHWA had developed as a result of its studies. An example nomograph is shown below, and it includes the relevant equation.

[11] Manning's formula is sometimes used to determine the potential loss of velocity through a culvert by employing the roughness coefficient (*i.e.*, will a given pipe surface affect velocity), but that is a complementary activity not an initial design activity.

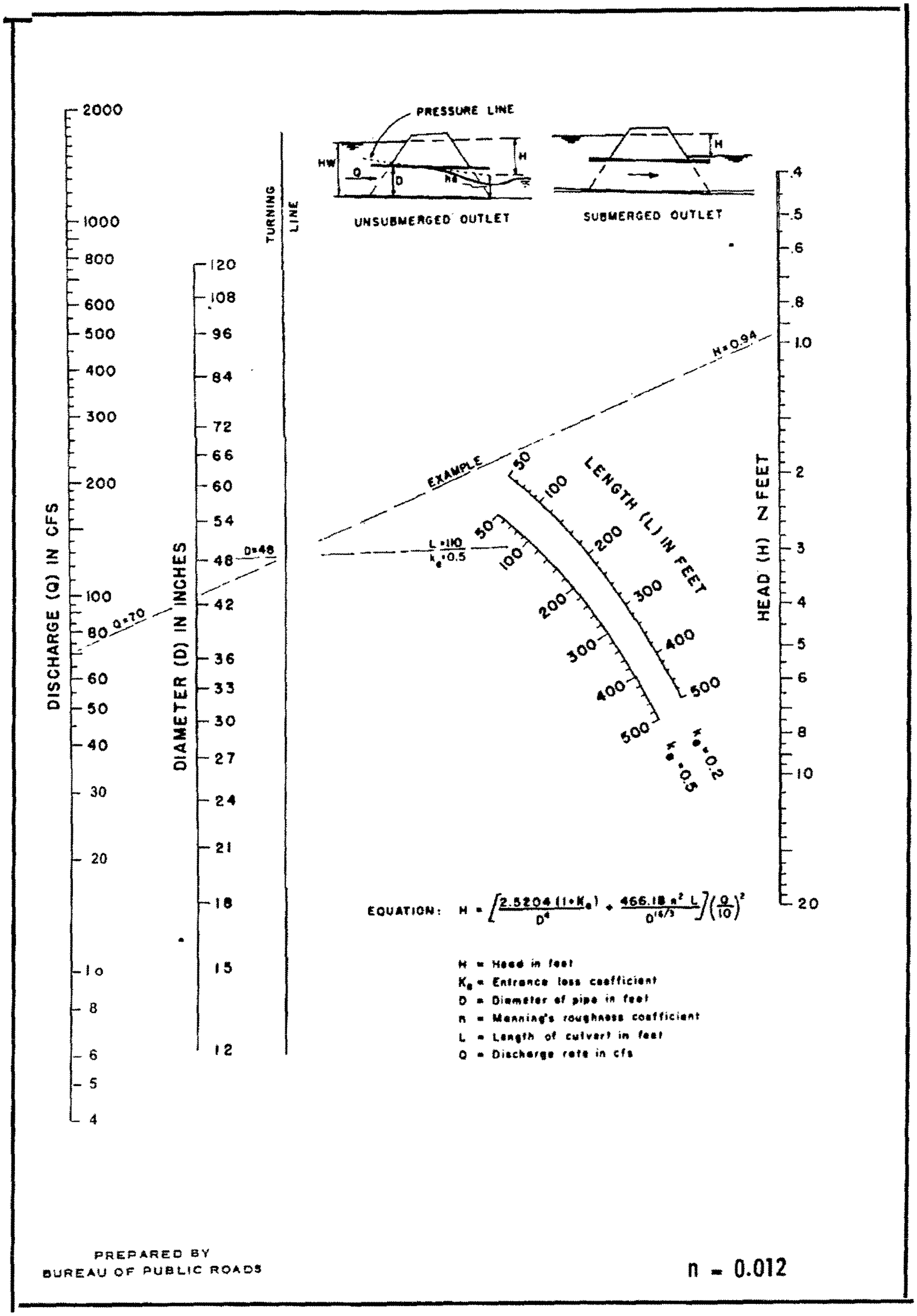


Figure B-11. Head for circular pipe culverts flowing full, n = 0.012.

As the nomograph demonstrates, the correct formula to use when calculating CMP culvert capacities is as follows.

$$H = \left[\frac{2.5204\,(1+K_e)}{D^4} + \frac{466.18\,n^2\,L}{D^{16/3}}\right]\left(\frac{Q}{10}\right)^2$$

In this formula, "H" represents Headwater, "K_e" equals the culvert entrance loss coefficient, "D" equals the diameter of the pipe, "n" equals the Manning roughness coefficient, "L" equals the length, and "Q" equals the discharge rate in cubic feet per second, and 2.5204, 4.66.18, and 10 are constants developed by FWHA.

Manuals providing instructions on how to design and size a culvert for a particular installation do not use Manning's formula. Instead, they generally advise engineers to apply the FHWA nomographs and then proceed with specific calculations that usually require some trial and error. For example, the Army Technical Manual, *Drainage for Areas Other than Airfields*, at B-23,[12] advises the engineer to collect known data such as the required discharge, approximate length of the culvert, the headwater depth, presumed type of culvert, slope of culvert, and any limits on outlet velocity. From there the Manual advises that the engineer refer to the FHWA nomographs to develop a trial size for the culvert. To aid in selecting the proper nomograph and following the related instructions, the Manual advises that the engineer should perform a preliminary calculation using the

[12] *See* Rebuttal e-workpaper "tm_5_820_4.pdf."

headwater depth and diameter of the pipe. Additional steps follow that refine the trial size selection process, but none of the steps employ the Manning formula.

In its Reply, UP mentions a specific instance of a culvert located at MP 733.10 (the correct milepost is actually 733.01) that IPA modified from a 3-foot diameter cast iron pipe to a 3-foot diameter CMP. UP converts IPA's culvert to a 3.5-foot diameter CMP arguing that the 3-foot CMP could not match the existing 23 cubic feet per second ("cfs") flow capacity of the original cast iron culvert. Reply at III.F-37. However, when IPA's engineers applied the correct formula, it shows that the actual flow capacity of the culvert is 38 cfs, which is greater than the capacity of the original culvert. *See* Rebuttal e-workpaper "MP 733_01 Culvert Calculations.pdf." IPA applied the same formula to test the examples that UP specifically listed in its workpapers[13] as well as a sample of the other culverts that UP modified in the general culvert list,[14] and in every case the proper application of the formula demonstrates that IPA properly sized the culverts. *See* Rebuttal e-workpaper "IPA Culvert Flow Comparison Calculations.pdf." IPA also restated UP's culvert sizing table to show the proper size of a culvert based on the FHWA formula. *See* Rebuttal e-workpaper "UP Culvert Table Amended.pdf."

For the foregoing reasons, IPA has retained its Opening culvert sizes.

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[13] *See* Reply e-workpaper "Bridge_to_CLVRT_hyro_Calcs.xlsx."

[14] *See* Reply e-workpaper "Culvert List 2012 UP Reply.xlsx."

(b) Replacement of Bridges with Culverts

On Opening, IPA proposed to replace 28 bridges with culverts. UP accepts IPA's substitution of culverts for bridges in 16 instances. Reply at III.F-29. For the remaining 12 instances, UP argues that IPA should not have replaced the bridges because it incorrectly assumed that the bridges no longer traversed active waterways. *Id.* at III.F-29-33. As IPA demonstrates below, its use of culverts was appropriate.

First, IPA notes that on Opening it only replaced 10 bridges with culverts due to those bridges no longer crossing active waterways, not 13 as UP suggests. The difference between the parties results from UP's mistaken assumption that the bridges located at Sharp Subdivision MPs 710.72 and 749.96 were converted due to the lack of an active waterway.[15] These bridges were converted to culverts because their total lengths were less than 20 feet, just as other, shorter bridges on the IRR were converted. While IPA's engineers did not intend to reduce the cross-section for these locations, IPA has noted two errors that it has corrected on Rebuttal. For the bridge at MP 710.72 which was converted to a culvert, there was already a culvert at that milepost, thus the costs for two culverts were inadvertently included at MP 710.72 when only one is needed. Indeed, based on closer inspection by IPA's engineers, they discovered that there is a small industrial track at this location which accounts for the second culvert at

[15] The final difference is due to a location where one large concrete culvert was replaced with a smaller CMP culvert.

the same milepost. As the IRR has no siding at this location, the cost of the smaller culvert is removed. The 16-foot long bridge at MP 678.84 is converted to a box culvert. Two sections of 4'x 8' box culvert are required to keep the same cross sectional area as the bridge, but only one section (barrel) was indicated in the proposed number of barrels column. IPA has corrected this error. Finally, UP's criticism of IPA's conversion of the bridge at MP 749.96 is unfounded since the proposed culvert provides the same cross sectional area as the bridge it replaced.

Second, on Opening, IPA's engineers demonstrated that certain bridges on the Lynndyl Subdivision through the Sevier Desert can be replaced with much smaller culverts because the features of this region have changed significantly due to damming of two rivers that previously flowed into this region and created ephemeral lakes. Specifically, the Beaver and Sevier Rivers were dammed upstream of the relevant bridges after the bridges were constructed. The Sevier River has had no water pass beyond the Gunnison Bend Dam since it was rebuilt in 1984, except for what is used for irrigation. *See* Rebuttal e-workpaper "Gunnison Bend Reservoir.pdf." The Minersville Dam was originally built in 1914, and over the years the outlet from the dam has been reduced. *See* Rebuttal e-workpaper "Minersville Dam.pdf." Today, water from that dam is only outlet for agricultural use, as part of a major water management program undertaken by the State of Utah. *Id.* Thus, the State installed small culverts on roads adjacent to the IRR lines to accommodate rain water that might still flow through the dry riverbed. In other words, if bridges were necessary to gap active rivers, the adjacent roadways would also have been built with bridges, but they were not. IPA provided photographic evidence in Op. e-workpaper "Delta to Milford Photos.pdf." An example is shown below:

A summary and list of photographs justifying each substitution was presented in Op. e-workpaper "Bridges & Culvert Substitution.xlsx." All bridges substituted with smaller culverts are highlighted in blue on the bridge inventory spreadsheet and accounted for in Op. e-workpaper "Culvert List 2012.xls," tab "Bridges to Culverts."

UP argues, in part, that the bridges cannot be replaced by culverts because railroad tracks are not designed to allow water to flow over the top of the rail at all, whereas roadways are designed to allow overtopping. Reply at III.F-30. UP also argues that the railroad embankments usually sit higher than a roadway, which restricts water flow and therefore requires a greater capacity drainage structure. *Id.* UP concludes from this that without additional drainage the railroad will eventually wash out causing disruption to train operations. *Id.* UP then notes that Utah DOT designs its drainage to only allow overtopping when flows exceed 100-year flood event levels.[16] UP's arguments are without merits.

First, IPA's engineers note that railroad culverts, just like the UDOT roadway culverts, are designed to accommodate flows up to a 100-year storm event. Thus, the track would only top over *after* the 100-year storm event – an obviously rare occurrence. Second, if UP's engineers had utilized the proper formula in testing IPA's culvert designs, UP's engineers would have realized that the railroad embankment has an additional two feet of headwater room versus a roadway, which will allow it to handle even more water flow than the roadway before overtopping would occur. In other words, the design of the embankment and culverts actually protects the railroad better than the roadway is protected. *See* Rebuttal e-workpaper "Embankments Comparison Detail.pdf."

UP also argues that IPA erred in its assumption that the flow in the dry riverbeds had been severely reduced due to damming of the Beaver and Sevier Rivers. While UP recognizes that the rivers have been dammed (Reply at III.F-

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[16] Reply e-workpaper "UDOT Overtopping Spec.pdf."

31), it argues that the dams have outflow mechanisms that would release some water through the dry riverbeds (although UP fails to demonstrate how much water is released or when it is released). UP then purports to have conducted a watershed analysis sufficient to show that the bridges should remain despite the smaller roadway culverts immediately adjacent to the rail lines. Again, UP's arguments are without merit.

IPA notes initially that UP's analysis is flawed because the last time any water flowed out of the Gunnison Bend reservoir was in 1983, after which the dam was rebuilt (in 1984). Op. e-workpaper "Sevier and Beaver River Dams.pdf" discusses water quality in the reservoirs in great detail precisely because there is no outlet and because that water is used for irrigation. Thus, to the extent UP's analysis incorporates water that is held by the Gunnison Bend reservoir, such an analysis is inaccurate.

In any event, to perform its analysis, UP utilized the USGS StreamStats "State Application." Reply at III.F-32. From that program it developed various watershed areas and peak flows during certain flood conditions (*e.g.*, a 100-year flood). UP then overlaid the data onto Google Earth maps. According to UP, the results from its analysis suggest that 12 of 13 locations would still require a bridge to accommodate flood flows during 100-year events. *Id.* at III.F-32-33. UP provides one example in its narrative where the existing 40 foot concrete bridge at UP milepost 592.26 has an estimated hydraulic capacity of 2085 cfs. In turn, UP suggests that it analysis shows that the area watershed, comprising a 234 square mile area, produces a peak flow of 1580 cfs during a 100-year flood event at the bridge located at milepost 592.26.[17] According to UP, the replacement structure proposed by IPA – three 1.5 foot diameter CMP culverts – would allow only approximately 16 cfs of water to pass through until reaching capacity. *Id.* at III.F-33. UP's analysis is flawed.

The USGS StreamStats "State Application" has specific limitations on its use and application, but UP simply ignores the stated limitations. As the title of the program implies, "stream statistics" are the heart of this application, but there are no stream statistics where there are no stream gauges, and there are no stream gauges in the middle of the Sevier Desert, which obviously impacts the analysis. Indeed, the StreamStats "State Application" program offers two choices for a watershed analysis. The first is based on stream gauges in or near the watershed to be analyzed. Not surprisingly, the program yields no results when this option is selected for the watersheds associated with the bridges that IPA converted to culverts. The second choice for the watershed analysis is to *interpolate* from data in similar locations where there are stream gauges. Here again, the program fails to provide meaningful results. Indeed the program indicates that the regression analysis it uses is only valid within given ranges, and the IRR site data is beyond the given ranges. In fact, a warning appears on every page of the Streamstats Ungauged Site Reports that UP generated, stating:

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[17] Reply workpaper "UP Bridge MP 592.26 Watershed Calc.pdf."

"Warning: Some parameters are outside the suggested range. Estimates will be extrapolation with unknown errors." *See* Reply e-workpaper "Watershed Analysis Detailed.pdf" (warning appears for every watershed analysis done in the Lynndyl Subdivision). For example, the valid range for the watershed analysis UP performed for the bridge at MP 592.26 is between 5.72 square miles and 66.5 square miles. Yet, UP's analysis relies on a 234 square mile area, very far outside the valid range.

IPA's engineers also note that the StreamStats "State Application" manual warns of the limitations that UP ignored. *See* Rebuttal e-workpaper "StreamStats limitations.pdf." Specifically, the manual, at 16-19, states as follows:

> "The regression equations are not valid for streams that are significantly affected by irrigation diversions or large dams that regulate streamflow."
>
> "The regression equations should not be used on streams where the basin characteristics are outside the range of those listed in Table 11." [This is the case for every analysis presented for the Lynndyl subdivision.]
>
> "Because intermittent and ephemeral streams were not used in the development of the regression equations in this report, caution should be used if a stream is suspected of being nonperenial. For these cases, the predicted streamflow is likely to be biased high." [All of the streams in the Sevier Desert are intermittent and or ephemeral.]

UP's analysis suffers from other deficiencies. For example, in a number of areas the watershed exists on both sides of the track. Thus, the track is elevated above the surrounding grade, thereby dividing a natural watershed into two halves when the track was built. This is particularly obvious for the watershed analysis of the bridge at MP 627.35. Obviously, the flow of water is unidirectional in normal culvert design.

In two instances, UP's watershed analysis attempted to determine the flow of an irrigation canal. An irrigation canal is the exact opposite of a stream; water is intended to flow away from the canal toward the fields to be irrigated. In fact, the graphical output for the watershed analysis at MP 641.01 demonstrates an obvious error as the watershed is not flowing toward the culvert opening. Likewise, the watershed analysis for the culvert at MP 710.72 is similarly flawed because that channel too is used for irrigation.

IPA's engineers determined that only one of UP's eleven analyses is valid (*i.e.*, it is not outside the valid range of the regression equation). Looking at the graphical output, it is quite clear the watershed involved is that of Spring Creek, where a bridge *is* being replicated at MP 749.67. However, UP was attempting to use this watershed analysis to size a nearby drainage culvert located at MP 749.96. StreamStats is for streams, not drainage locations. Regardless, the culvert proposed there has the same cross sectional area as the 14-foot long bridge it will replicate. Thus, the conversion to a culvert at this location had nothing to do with hydrology. Instead, IPA converted the shorter bridge to a culvert as it did at a number of other locations, which UP accepts.

Simply put, UP's workpapers provide impressive looking maps, and superimposing the maps on Google Earth 3- D imagery adds to the illusion. However, the flashy presentation also serves the purpose of pushing back the most critical information, the disclaimer – the fact that the analysis is invalid – to the rear pages of the report. Even more egregious, UP's watershed analysis summary workpaper fails to mention that the results are not valid.

In developing their watershed analysis, UP's engineers also incorrectly determined the amount of water flow that their bridges could handle, including the bridge at MP 592.26. Specifically, UP used Manning roughness coefficient factors (n) of 0.016, 0.017 and 0.02. However, the coefficients are too low. Such coefficients are only used for excavated or dredged channels which have been cleaned or have been recently completed. The actual channel ways are natural streams, which increases the coefficient considerably. When UP's calculations are modified to more realistic values in accordance with good engineering practices and UDOT recommendations, the flow rates are reduced by 50 to 90 percent. *See* Rebuttal e-workpaper "IPA Modified Bridge_to_CLVRT_hyrdo_Calcs.xlsx." The relevant UDOT standards are shown below.

TABLE 8-2 — Values of Manning's Roughness Coefficient n (Uniform Flow)

(UP)

(IPA)

Type of Channel and Description	Minimum	Normal	Maximum
EXCAVATED OR DREDGED			
1. Earth, straight and uniform			
a. Clean, recently completed	0.016	0.018	0.020
b. Clean, after weathering	0.018	0.022	0.025
c. Gravel, uniform section, clean	0.022	0.025	0.030
d. With short grass, few weeds	0.022	0.027	0.033
2. Earth, winding and sluggish			
a. No vegetation	0.023	0.025	0.030
b. Grass, some weeds	0.025	0.030	0.033
c. Dense weeds or aquatic plans in deep channels	0.030	0.035	0.040
d. Earth bottom and rubble sides	0.025	0.030	0.035
e. Stony bottom and weedy sides	0.025	0.035	0.045
f. Cobble bottom and clean sides	0.030	0.040	0.050
3. Dragline-excavated or dredged			
a. No vegetation	0.025	0.028	0.033
b. Light brush on banks	0.035	0.050	0.060
4. Rock cuts			
a. Smooth and uniform	0.025	0.035	0.040
b. Jagged and irregular	0.035	0.040	0.050
5. Channels not maintained, weeds and brush uncut			
a. Dense weeds, high as flow depth	0.050	0.080	0.120
b. Clean bottom, brush on sides	0.040	0.050	0.080
c. Same, highest stage of flow	0.045	0.070	0.110
d. Dense brush, high stage	0.080	0.100	0.140
NATURAL STREAMS			
1. Minor streams (top width at flood stage < 30 m)			
a. Streams on Plain			
1) Clean, straight, full stage, no rifts or deep pools	0.025	0.030	0.033
2) Same as above, but more stones/weeds	0.030	0.035	0.040
3) Clean, winding, some pools/shoals	0.033	0.040	0.045
4) Same as above, but some weeds/stones	0.035	0.045	0.050
5) Same as above, lower stages, more ineffective slopes and sections	0.040	0.048	0.055
6) Same as 4, but more stones	0.045	0.050	0.060
7) Sluggish reaches, weedy, deep pools	0.050	0.070	0.080
8) Very weedy reaches, deep pools, or floodways with heavy stand of timber and underbrush	0.075	0.100	0.150
b. Mountain streams, no vegetation in channel, banks usually steep, trees and brush along banks submerged at high stages			
1) Bottom: gravels, cobbles and few boulders	0.030	0.040	0.050
2) Bottom: cobbles with large boulders	0.040	0.050	0.070

UP's engineers also failed to consider freeboard, which is the clearance between the lowest point of the superstructure (bridge soffit or bottom of girder) and the water surface. It is standard practice to allow for freeboard when using Manning's formula in an open channel. Most bridge designs maintain a one-foot distance above the 100-year storm level for safety reasons, but 0 feet of freeboard is also allowed. Once 0 feet of freeboard is reached, a different formula must be used,[18] which UP's engineers did not do. UP's engineers also failed to account for the depth of ties, ballast and decking. Therefore IPA has adjusted the area, and the coefficient factor for each of the bridges. Examples of these revisions are shown in Rebuttal e-workpaper "Bridge Capacity Calculations.pdf." The calculations demonstrate that UP's current bridges would be unable to handle the water flows that UP itself has calculated in its Reply. In other words, its analysis is obviously incorrect.

Simply put, UP's watershed analysis is flawed. UP itself admits that the rivers have been dammed, and while it suggests that water is occasionally released, UP has provided no support for any flows of water that would require any culvert larger than those of the roadways adjacent to the IRR. Indeed, UP has not suggested that the Utah DOT was incompetent when it placed the culverts. As such, IPA's engineers have continued to replace the identified bridges with culverts.

iv. <u>Total Culvert Costs</u>

For the reasons described above, UP's tripling of IPA's culvert costs is unsupported and without merit. Thus, IPA's Opening culvert cost of $1.34

[18] *See* Rebuttal e-workpaper "FHWA Hydraulic Formula for Submerged Bridge.pdf."

million, as revised on Rebuttal, has been increased slightly to $1.44 million. *See* Rebuttal e-workpaper "Culvert List 2012.xls."

e. <u>Other</u>

i. <u>Sideslopes</u>

The parties agree on an average 1.5:1 sideslope. Reply at III.F-38.

ii. <u>Ditches</u>

The parties agree on the specifications for ditches. *Id.*

iii. <u>Retaining Walls</u>

The parties agree that there are no retaining walls on the IRR. *Id.*

iv. <u>Rip Rap</u>

UP accepts IPA's quantity of rip-rap. *Id.* The parties disagree as to the unit cost. On Opening, IPA developed its rip-rap unit cost from the Shawnee-Jireh project. UP has relied on the Means Handbook for its unit cost, arguing that the Shawnee-Jireh project has been discredited. *Id.* As discussed previously, UP's argument against IPA's use of the Shawnee-Jireh project's common earthwork costs is based primarily on UP's claim of different soil conditions. However, UP has provided no basis or argument as to why the Shawnee-Jireh project rip-rap costs, which have nothing to do with soil conditions, should be invalidated. Consequently, IPA's engineers continue to use their Opening rip-rap costs.

v. <u>Relocating and Protecting Utilities</u>

UP has accepted IPA's Opening costs for this activity. *Id.*

vi. **Seeding/Topsoil Placement**

UP has accepted IPA's Opening costs for this activity. *Id.*

vii. **Water for Compaction**

On Opening, IPA's engineers included an additional cost for water compaction but only for the borrow quantities. As explained on Opening, the Shawnee-Jireh project common earthwork cost includes any necessary water for compaction. Op. at III-F-36. Therefore, no additional water costs have been included for the excavation quantities reused for embankment. However, IPA's engineers did add water for compaction costs to the embankment associated with borrow because the Means Handbook costs for borrow do not include costs for water for compaction. The cost per gallon of water was based on a Utah DOT cost. *See* Op. e-workpapers "IRR Grading Opening.xlsx," tab "Other Cost," and "Water for Compaction – Utah DOT.pdf." The quantity of water required per cubic yard was based on the quantities used on the Orin Line in Wyoming, a state that borders Utah, where the IRR is located. IPA demonstrated that the IRR territory had rainfall amounts and climate conditions similar to the Orin Line. *See* Op. e-workpaper "IRR Route avg rainfall.xls." Thus, IPA used the Orin Line quantities of water per cubic yard.

UP raises several arguments against IPA's approach. None of the arguments have merit.

First, UP suggests that the cost per gallon of water from the Utah DOT cannot be used because it is a unit cost for water used for dust control, which

UP believes is a different operation with lower costs than water for compaction. Reply at III.F-39. UP is completely wrong. As stated clearly at the beginning of the Utah DOT Section 01572 "Dust Control and Watering," this section includes "Provide and apply water for dust control and prewetting, mixing or *compacting materials*." (Emphasis added) *See* Op. e-workpaper "Water for Compaction – Utah DOT.pdf" and Reply e-workpaper "UP Reply_Water for Compaction – Utah DOT.pdf." Clearly, the Opening unit cost used by IPA is applicable to "compacting materials." Moreover, the Utah DOT construction specifications require that the truck have a capacity of at least 1,000 gallons. *Id.* In other words, the equipment is adequate and the cost is plainly supported.

UP also makes a significant error in its proposed Reply water for compaction unit cost. UP misinterpreted the cost of water from the Means Handbook by ignoring the clarification in IPA's Opening workpapers, based on a conversation with RS Means personnel, an error which raises the cost of water by several million dollars. Specifically, the Means Handbook cost represents the cost per cubic yard of water, *not* the cost of the water required per cubic yard of embankment. *See* Op. e-workpaper "IPA Grading Opening.xls," tab "Unit Costs." This is the exact same mistake that UP made in the *AEPCO 2011* case. Apparently, UP continues to believe, based on the unit cost it included, that the cost for water per cubic yard of embankment is quite significant even though water is very inexpensive per gallon and only 20 or so gallons per cubic yard are needed in most areas. To put UP's { } cost per CY of excavation for water for compaction into perspective, IPA compared it to the cost of earthwork for the Shawnee-Jireh project and the cost of common excavation earthwork used by each party. UP's { } cost is { } of the Shawnee-Jireh 2008 cost of { } per CY for common excavation, { } of the Shawnee-Jireh 2012 indexed cost of { } per CY used by IPA and nearly { } of UP's 2012 Means Handbook-based cost of { } per CY. Based on these comparisons, this cost is not insignificant. However, most railroads specify that water for compaction costs are incidental to earthwork costs and not paid as a separate item, which indicates that water for compaction costs are not nearly as significant as UP would have the Board believe. IPA's position that water costs are relatively insignificant is also supported by the Shawnee-Jireh project where water for compaction costs were not separately identified.

UP's application of the Means Handbook unit cost is also inconsistent with its argument that differing levels of water might be needed in different areas. Reply at III.F-39-40. Even assuming arguendo that the Means Handbook cost is per CY of earthwork as UP advocates, which IPA disputes, by applying the Means Handbook unit cost, UP assumes a constant level of water regardless of the type of soil. IPA is the only party to estimate the gallons of water per CY needed for compaction. UP did not dispute IPA's estimate nor did it attempt to develop its own estimate. UP simply applied the Means Handbook cost, in an improper manner, without regard for the amount of water needed for proper compaction.

UP adds water for compaction to common earthwork because it relies on the Means Handbook unit cost for common earthwork, which does not include water as the Shawnee-Jireh project does. *Id.* at III.F-40. As IPA continues to use its Opening common earthwork costs, which does include the incidental cost for water for compaction, it has not added any separate costs for water for compaction to common earthwork reused as embankment. On Rebuttal, IPA continues to calculate the costs for water for compaction in the same manner as Opening.

viii. <u>Surfacing for Detour Roads</u>

UP has accepted IPA's Opening costs for this activity. *Id.*

ix. <u>Construction Site Access Roads</u>

UP did not address this issue in its Reply.

x. <u>Environmental Compliance</u>

UP accepted IPA's Opening costs for this activity. *Id.* However, UP added another category of environmental compliance costs that it described as Dust Control Work. This additional, unwarranted item is addressed below.

xi. <u>Lighting for Night Work</u>

UP has added $4.9 million in costs for lighting during the roadbed construction period, which runs from January 2012 through June 2012 (a six-month time period that UP continually refers to as a seven-month time period). Reply at III.F-40-41. UP's addition is completely unwarranted, and UP has failed to adequately support its position or distinguish it from past efforts to include such costs, which the Board has rejected. *See, e.g.*, *Otter Tail*, slip op. at D-18. First, UP's decision to staff the lighting crew 25 days a month and to locate a crews at 10-mile intervals is completely unsupported and unexplained. Moreover, it is exactly the same spacing and length of service proposed by the defendant railroad in *SunBelt*. Thus, it appears that UP's engineers gave little thought to this additive.

UP has also failed to explain why such lighting would be necessary at all given the fact that there is sufficient daylight available to construct the IRR. The U.S. Naval Observatory database containing sunrise and sunset times shows that on the shortest day during this time period, January 1, 2012, the time between sunrise and sunset was 9 hours and 26 minutes at Lynndyl (located in the middle of the IRR). In addition, on this same day, the time between the beginning and end of civil twilight (where the sun illuminates brightly enough for outdoor activities without the aid of light) is 10 hours and 26 minutes.[19] Obviously, this time is longer on every other day during the January-June construction period. Even on the shortest day, there is sufficient daylight for construction crews to do their work.

Finally, IPA notes that UP's lighting costs can also be classified as a barrier to entry. Under the theory of unconstrained resources, the IRR would be

[19] *See* Rebuttal e-workpapers "Daylight – IPA (Lynndyl).xlsx" and "Lynndyl Civil Twilight and Rise&Set – DATA.xlsx."

able to deploy more personnel, equipment and materials during the shorter days, if necessary, in order to maintain the IRR's construction schedule.

xii. Dust Control Work

UP proposes to add $300,000 for dust control work. UP's additional costs are plainly an impermissible form of environmental compliance. Indeed, in support of its inclusion of these costs UP cites to an EPA Storm Water Control document and a National Resources Conservation Service publication on dust control. Reply at III.F-41.[20] These additional environmental compliance costs represent a barrier to entry that UP and its predecessors did not incur, as the lines being replicated were built more than a century ago. As the burden rests with UP to show it incurred these costs, which it surely did not, IPA has excluded these costs from its Rebuttal roadbed preparation costs.

3. Track Construction

A comparison of the parties' proposed costs for track construction is set forth below.

[20] IPA notes that UP accepted IPA's costs for environmental compliance generally. UP Reply at III.F-40.

	REBUTTAL TABLE III-F-5 TRACK CONSTRUCTION COSTS (millions)				
	Item	**IPA Opening**	**UP Reply**	**IPA Rebuttal**	**Difference**
1.	Geotextile Fabric	$ 0.03	$ 0.04	$ 0.03	$0.01
2.	Subballast & Ballast	32.9	29.8	27.8	2.0
3.	Ties	30.8	31.4	30.4	1.0
4.	Rail	38.9	59.2	43.4	15.8
5.	Other Track Materials	8.8	9.7	9.4	0.3
6.	Turnouts	9.9	12.5	10.5	2.0
7.	Track Installation/Labor	53.4	55.2	53.5	1.7
8.	**Total**	$ 174.7	$ 197.9	$ 175.1	$ 22.8

a. Geotextile Fabric

On Opening, IPA's engineers placed geotextile fabric under turnouts and at-grade public crossings. However, in calculating the quantities of geotextile, IPA only included the amount needed for turnouts because IPA's unit cost for at-grade public crossings already included geotextile costs. IPA's unit cost for geotextile fabric was obtained from Utah DOT cost data. *See* Op. e-workpaper "UDOT 2009 Page 2 of 17.pdf."

On Reply, UP accepted IPA's unit costs for geotextile fabrics. Reply at III.F-42. However, UP disagreed with IPA's calculation of geotextile quantities under turnouts, and UP also suggested that IPA's at-grade crossing quantities were unsubstantiated. *Id.* at III.F-42-43. Thus, UP purports to have restated IPA's Opening quantities. *Id.* UP's revisions are without merit.

First, IPA engineers determined that UP overstated the quantities required under certain turnouts. As shown in Rebuttal e-workpaper "Geotextile Under Turnouts.pdf," UP placed the geotextile under the subballast, which is not an AREMA or an FRA requirement, thereby increasing the amount of geotextile fabric. Conversely, IPA placed geotextile fabric underneath the ballast and above the subballast, which is consistent with the approach used in past cases and AREMA standards. *See* Rebuttal e-workpaper "Geotextile_AREMA.pdf." In addition, UP's calculations were based on incorrect turnouts sizes. Specifically, UP developed its mainline turnout geotextile fabric quantities on No. 14 turnouts rather than the No. 15 turnouts that IPA specified. *See* Reply e-workpaper "Geotextiles Quantities.xls." The correct geotextile quantity is reflected in IPA's Rebuttal e-workpaper "Track Quantities - 2012.xls." The total quantity for turnouts was adjusted slightly to reflect IPA's addition of three No. 10 and two No. 15 turnouts on Rebuttal.

UP also argues that IPA failed to include geotextile fabric under at-grade crossings. UP is incorrect. IPA's Opening at-grade crossing costs included all necessary geotextile fabric. *See* Rebuttal e-workpaper "Duferco Crossing Specs.pdf." Thus, IPA has not added additional at-grade crossing geotextile quantities on Rebuttal.

b. Ballast and Subballast

i. Quantities

On Opening, IPA's engineers specified 20 inches of ballast and subballast, consisting of a 12-inch subballast layer and an 8-inch layer of clean rock ballast for all main tracks. IPA's engineers further specified six inches of subballast and six inches of ballast under yard tracks, origin and destination spurs, helper pocket tracks, set-out tracks, and interchange tracks. UP accepts IPA's specification. Reply at III.F-43.

To determine the necessary quantities of ballast and subballast per linear foot of track, IPA based its calculations on track cross sections it developed. *See* Op. e-workpaper "IRR Track Typicals.pdf." UP accepts IPA's calculations. Reply at III.F-43. However, UP correctly points out that IPA inadvertently double counted curved track, resulting in an overstatement of ballast and subballast quantities. Likewise, IPA overstated the quantity of ballast required per foot of yard track. *See* Reply e-workpaper "Ballast & subballast Worksheet 2012 UP Reply.xlsx," tab "Sharp." IPA has made the necessary corrections on Rebuttal. *See* Rebuttal e-workpaper "Ballast & subballast Worksheet 2012.xls," tab "Sharp." IPA has also adjusted its Rebuttal quantities to reflect IPA's changes to the IRR's configuration.

ii. <u>Unit Costs</u>

On Opening, IPA sourced its ballast from a quarry located just to the northwest of Milford, UT. IPA's subballast was sourced from the same quarry and from Staker & Parson, a company that has multiple subballast facilities in Utah. UP accepts IPA unit costs with certain exceptions discussed below. Reply at III.F-43-44.

On Opening, IPA explained that a small amount of so-called "bottom" ballast has to be trucked along the IRR right-of-way between Milford and Lynndyl (the point of entry for the rail) in order to skeletonize the track.

However, once the small quantity of ballast is placed and the track is skeletonized from Lynndyl to the Milford Quarry, the track construction contractor will then have ready access to the ballast. At that point, the contractor can utilize ballast cars as it finishes the track installation. UP generally accepts IPA's approach, but it argues that IPA needs 127,043 tons of ballast to skeletonize the track, and it also argues that the highway trucks delivering the ballast could not dump the material on the track. Reply at III.F-43-44. As such, UP argues that the ballast would have to be placed in hi-rail vehicles before the material can be placed. *Id.* at III.F-44. UP adds additional costs for this function, arguing the track contractor's pricing must not cover such activity because the contractor's quote does not cover building skeletonized track. *Id.* UP's additional costs are without merit.

UP's engineers have not properly described how skeletonized track is built, and thus they have added costs that are unnecessary. In addition, IPA's engineers note that track is normally skeletonized before the final layer of ballast is placed. Thus, the contractor's bid to build track necessarily includes this activity. Regardless, UP's additional ballast quantities and installation costs are unnecessary.

First, UP argues that the total quantity of ballast to be placed should be increased from roughly 50,000 tons to 127,043 tons because it believes that the entire crib area between the track and the ties (seven inches) must be filled. UP is incorrect. It is not necessary to fill the entire crib area when skeletonizing track. Indeed, filling the entire crib area is an activity undertaken during the final track construction phase. As shown in the photo below, skeletonized track sits more or less on top of a small layer of bottom ballast. The crib spaces are not filled.[21]

Clipping Rail to Ties

[21] IPA notes that the photos depict concrete ties rather than the wood ties that IPA is using, but the process is the same.

Skeletonized Track

Second, UP argues that using the highway trucks to dump the ballast is insufficient, and that the ballast must be transferred to a hi-rail vehicle first. UP's process is backwards. A small quantity of ballast will be dumped first, and the track will be skeletonized afterwards. In other words, a hi-rail vehicle would be of no use. In any event, the truck can simply drive on the subballast and dump ballast, as shown in the photo below.

Bottom Ballast

Once the bottom ballast is placed and the track skeletonized, the final ballast, which will fill the cribs, is placed, as shown in the photo below.

Placing Top Ballast

In light of the above discussion, IPA has not added additional costs to transport or dump the bottom ballast. IPA's Rebuttal ballast and subballast quantities reflect the corrections noted above and the minor changes to the IRR configuration discussed in Part III-B above. The details are shown in Rebuttal e-workpaper "Ballast & subballast Worksheet 2012.xls."

c. **Ties**

On Opening, IPA used tie spacing of 20.5 inches for main-line track, and 24 inches for all other track. The unit costs were derived from a UP project undertaken in Utah. UP accepts IPA's tie spacing and its unit cost. Reply at III.F-45. However, UP notes that IPA overstated the number of ties per mile for other track by utilizing the mainline spacing rather than the other track spacing, which also impacts the quantities of plates, spikes and anchors. Reply at III.F-45 and Reply e-workpaper "Track Quantities – 2012 UP Reply.xls." IPA has made the necessary correction on Rebuttal. *See* Rebuttal e-workpaper "Track Quantities - 2012.xls." The remaining differences between the parties' tie costs are attributable to their differences in the IRR's configuration (*i.e.*, miles of second main track, number of setout and yard tracks).

d. Track (Rail)

i. Main Track

On Opening, IPA's engineers and operating experts specified new 136-pound standard CWR for main track. IPA's Opening unit cost for 136-pound rail was based on information provided by UP in discovery. *See* Op. e-workpapers "Rail Worksheet - 2012.xls" and "WO 54409 – Page 11 of 22.pdf." IPA indexed the cost of the rail to 2012 values, but as explained below, it inadvertently used the wrong index. IPA then added transportation costs for the rail from a mill located at Pueblo, CO to railheads at Lynndyl and Provo. The rail contractor is responsible for handling the rail with its own rail train, as discussed further below.

On Reply, UP takes issue with IPA's unit cost, indexing value and transportation costs. UP then proposes to substitute its 2012 R-1 average 136-pound rail cost, to which it adds transportation. UP's application of its R-1 costs overstates the cost of rail. Likewise, UP incorrectly added transportation costs to the R-1 costs, and UP's transportation costs are also overstated. For the reasons explained below, IPA's Opening unit cost and its transportation additive are reasonable and supported, but IPA has corrected its indexing.

UP raises several arguments in support of its selection of a much higher unit cost (UP's 2012 R-1 without transportation exceeds even IPA's Rebuttal cost with transportation by more than $3.00 per linear foot). First, UP argues that the 2007 unit cost that IPA applied is out of date. Reply at III.F-45. UP suggests that other more recent unit costs show that UP paid more for rail than the unit cost that IPA selected. *Id.* at III.F-46. Second, UP argues that the cost of rail has increased dramatically in recent years, and that IPA has not accounted for this in its indexing. *Id.* Third, UP argues that IPA should not have "cherry-picked" when other, higher costs, were also available. *Id.* Each argument is addressed below.

IPA's unit cost is not out of date. The unit cost is derived from a UP discovery document that shows what UP actually paid for rail in 2007. Interestingly, the quantity involved was 1.5 miles of track. Given the small volume of track, one would expect that the unit cost is very conservative versus a far larger order such as the one the IRR would place. Like any unit cost, it can be indexed to a current cost using an appropriate index, which as explained below, IPA has done. That UP paid more for rail in recent years is not surprising because costs have risen, but that does not, as UP suggests, invalidate a properly indexed cost from an earlier period.

In its Reply, UP suggests IPA could have used various indexes to update its costs, citing in particular that its R-1 data shows that the price of rail has increased 28 percent between 2007 and 2012. Reply at III.F-46. UP is correct that there are a variety of indexes that could be used to index the costs, but the R-1 figure is not one of them. First, the R-1 is not an index. It is simply a record showing UP's rail and rail-related costs for a particular type of rail in a given year. Second, the R-1 includes more than the price of rail. Indeed, it includes the "the cost of loading at the point of purchase ready for shipment, the freight charges paid foreign lines, and the cost of handling rails in general supply and storage yards." *See* R-1 Instructions for Schedule 724. Thus, it is impossible to disaggregate the rail cost alone. In addition, UP's rail costs may vary for a variety of reasons, including quantities. In fact, in some years, UP did not even purchase 136-pound rail. Thus, even if one assumes the R-1 could be used as index, it is a poor one. But even if the R-1 change in price were valid, when applied to IPA's Opening unit cost the cost per linear foot increases from { } to { } – a figure much lower than UP proposes as its Reply unit cost. Indeed, UP is proposing to use its R-1 value of $23.55, to which it adds unnecessary transportation costs. UP has not explained why the lower unit cost could not be used here except to argue that is unfair cherry-picking. Reply at III.F-46.

In UP's Reply e-workpaper "Rail Prices.xlsx," UP demonstrates that when IPA's Opening unit cost is indexed using three actual indexes, the Means Handbook, the PPI for steel and iron products, and the AAR index for materials and supplies, the resulting cost is considerably less that the R-1 figure proposed by UP. Indeed, the PPI index, the index that most closely tracks the price of steel, shows that the 2007 prices should have been indexed by 15 percent, far less than even UP's theoretical R-1 index of 28 percent let alone UP's R-1 unit cost. Thus, UP's own workpaper demonstrates that the most accurate indexed cost should be { } per linear foot not $23.55 as UP proposes. As such, IPA has used the PPI index from UP's Reply workpaper to index its Opening 136-pound rail unit cost. *See* Rebuttal e-workpaper "Rail Worksheet - 2012.xls."

UP argues that it is unfair to cherry-pick a low price. Reply at III.F-46. Such arguments have been raised by defendant railroads before and rejected by the Board. Indeed, it is well established that the complainant shipper is entitled, under the *Coal Rate Guidelines*, to use the least cost option(s) provided it is feasible. *See, e.g.*, *Duke/CSXT*, 7 S.T.B. at 489 (shipper can use the lower of two prices for rail even if one supplier is smaller than another). A shipper's use of an actual price paid by the railroad is "fair." The SARR is entitled to enjoy the same benefits that the incumbent has enjoyed. And while the price of rail has certainly increased, indexing prices is an accepted practice. IPA has corrected its indexing on Rebuttal using UP's own calculations.

UP's use of the R-1 cost of rail is unnecessary here. When the R-1 has been used in other cases, such as in *Seminole*,[22] the parties agreed on its use

[22] *Seminole Elec. Coop., Inc. v. CSX Transp., Inc.*, NOR 42110.

because of the wide range of territory to which rail would be delivered. Thus, an average price, including delivery over foreign roads, was a simplifying device. However, it is not "unfair" to apply a lower, known unit cost to a particular circumstance, especially where, as here, the geographic spread is minimal. Thus, IPA correctly used a known unit cost to which it applied a transportation additive, rather than applying the R-1 cost.

UP also takes issue with IPA's transportation costs. UP accepts IPA's Opening transportation routes from Pueblo, CO to Lynndyl and Provo, including the mileages. Reply at III.F-47. However, UP argues that IPA's transportation additive of $0.035 per ton-mile, which is an inter-railroad courtesy rate, is outdated. While UP says it explained why that rate is outdated, in fact, UP's narrative contains no such discussion. *Id.* Regardless, UP ignores IPA's Opening demonstration of the why the additive remains relevant. Op. at III-F-48-49. Instead UP proposes an additive based on the carload rate to move rail and a variety of other steel and metal products on the UP from Pueblo to Lynndyl and Provo. UP's transportation additive is flawed.

First, UP's carload rates are not inter-railroad rates. Second, UP's rates are used for carloads of rail materials, not a dedicated rail train moving long strings of CWR. Indeed, an examination of the relevant public tariff that UP included in its workpapers contemplates the movement of a variety of steel materials, such as pipes, tie plates, and aluminum foil sheets. *See* Reply e-workpaper "UPRR Rates for Rail Shipping in Specialty Cars.pdf." And while the list does include rail, it does not suggest that the rate is applicable to a dedicated rail train – rail is also produced in 39-foot sections, which could be loaded into individual cars. Thus, UP attempts to shoehorn the IRR's rail strands into 28 carloads (*i.e.*, the number of consecutive cars that would be needed to move the rail). UP's approach is flawed. As a practical matter, a rail train that handles the 1,600-foot strings of CWR is a form of unit train. After all, the cars cannot be separated, the train is operated in dedicated service, and two sets of cars are often operated together (*e.g.*, 56 cars).[23] Thus, the transportation unit cost from the tariff is inapplicable. Finally, IPA notes that the URCS Phase III cost for a rail train move from Pueblo to Lynndyl is approximately $0.021 per ton-mile. *See* Rebuttal e-workpaper "Rail Train URCS Phase III.pdf." Thus, IPA has continued to use its Opening transportation additive of $0.035 per ton-mile.

UP also added transportation costs to its R-1 unit cost for 136-pound rail. Reply at III.F-47. Assuming *arguendo* that the R-1 costs are appropriate, the transportation additive is inappropriate. The R-1 cost already includes transportation over foreign roads. *See* R-1 Instructions for Schedule 724. As the IRR's rail moves over a foreign road (UP), the transportation additive is inapplicable. Indeed, in the *Seminole* case, transportation for rail was not added for the same reason. UP attempts to dodge the procedure used in cases like *Seminole* by arguing that most of its rail comes from Pueblo, which it serves

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[23] *See* https://www.youtube.com/watch?v=Bd_rR2DulkQ (a video of a rail unit train).

directly, and therefore UP's R-1 costs does not include any offline transportation costs. Reply at III.F-47. UP has not provided any evidence to support its claims. Thus, its unsupported additive should be rejected.

Finally, UP adds an additional cost for renting a rail train with an associated train supervisor. Reply at III.F-48. UP argues that the rental is necessary because equipment costs are not covered in the tariff it applied. *Id.* A separately rented rail train is not necessary. The track construction contractor is responsible for providing a rail train. Specifically, the rail contractor is obligated to distribute rail across the IRR under the quote provided from Ohio Track and accepted by UP. *See* Op. e-workpaper "Ohio Track Construction Cost.pdf" and Reply at III.F-51. As a practical matter, the contractor cannot perform this function without renting a train. Thus, IPA continues to exclude separate rail train rental costs.

ii. Yard and Other Tracks

The parties differ in the quantity of yard and other tracks as a result of their differing configurations for the IRR. Nevertheless, UP accepts IPA's base unit cost for 115-lb relay rail. However, UP modified the transportation costs to $0.010 per ton-mile based on the same flawed approach it used for 136-pound rail. UP also modified IPA's Means Historical index, 1.038, opting instead to use an AAR index of 1.04. *See* Reply e-workpaper "Rail Worksheet - 2012 UP Reply.xls." UP's modification to the index is unexplained, and its transportation additive inapplicable. Consequently, IPA continues to use it Opening unit cost for rail for yard and other tracks. IPA has adjusted its Rebuttal quantities to reflect the changes in its track configuration.

iii. Field Welds

The parties agree on the unit cost for field welds. As for the quantities, IPA specified 6 fields per turnout on Opening and UP specified 18. The difference arises because IPA provided for the welds needed to attach the turnout to the surrounding track, whereas UP provided for additional welds needed to assemble the four separately shipped parts of the turnout. IPA agrees with UP's correction, and it has modified its field weld counts accordingly.

iv. Insulated Joints

Insulated joints are addressed in Part III-F-6 below.

v. Switches (Turnouts)

IPA and UP agree on the unit cost for turnouts. Reply at III.F-49. The parties differ on the total cost due to differences in the configuration of the IRR. UP also noted that IPA's count of hand thrown switch stands was based on its main-line power switch quantities rather than its hand thrown switch quantities. *Id.* IPA has corrected this issue on Rebuttal.

e. Other

i. Rail Lubrication

The parties agree on the unit cost and quantities for rail lubricators, with one exception: UP adds $703.64 per rail lubricator for mats that are placed under the lubricator to prevent lubricator fluid from seeping into the ballast. *Id.* at

III.F-50. UP's addition is unwarranted. There are no AREMA or FRA standards requiring such mats, and any local conditions that might develop can be addressed through spot maintenance. IPA also notes that rail lubricator mats are not in wide use. In fact, based on IPA's inspection of the UP lines being replicated, none of the rail lubricators appeared to have mats, nor has UP shown it has installed such protection in the area. Thus, IPA has not included such costs on Rebuttal.

ii. Plates, Spikes and Anchors

UP accepts IPA's unit costs for plates, spikes and anchors. *Id.* The parties differ in their quantities as a result of their differing configurations of the IRR.

iii. Derails and Wheel Stops

UP accepts IPA's unit costs for derails and wheel stops. *Id.* The parties differ in their quantities as a result of their differing configurations of the IRR.

iv. Materials Transportation

Specific transportation costs associated with a given item are addressed in the relevant portions of this Subpart.

v. Track Labor and Equipment

UP accepts IPA's unit costs for track installation. *Id.* at III.F-51. Additional cost items that UP proposed, such as added ballast dumping costs and the rental of a rail train, are addressed in the relevant portions of this Subpart. The parties differ in their total track construction costs as a result of their differing configurations of the IRR.

4. Tunnels

There are no tunnels on the IRR system.

5. Bridges

The differences in the parties' calculation of the IRR's bridge costs are summarized below.

REBUTTAL TABLE III-F-6
BRIDGE COSTS
(millions)

	Item	IPA Opening	UP Reply	IPA Rebuttal	Difference
1.	IPA Railroad Bridges (UP Type 1)	$ 8.7	$ 11.4	$ 8.7	$2.7
2.	Type 2	0	0.6	0	0.6
3.	Type 3	0	1.2	0	1.2
4.	Access Bridges	0	5.0	0	5.0
5.	Highway Overpasses	4.3	8.3	4.3	0.3
6.	**Total**	$ 13.0	$ 26.5	$ 13.0	$ 13.5

On Opening, IPA's engineering witnesses developed bridge quantities and costs consistent with the IRR's needs, as well as real-world designs and costs. UP raises a myriad of arguments in favor of higher bridge costs. However, despite UP's various arguments, the major differences in costs between the parties are attributable to a relatively small number of items.

1. UP built access bridges for service vehicles in a number of locations. As explained below, these bridges are unnecessary because MOW vehicles can easily hi-rail over the railroad bridge, and UP's costs are spurious as

the access bridges cost more than the adjacent railroad bridges. The access bridges account for $5 million of UP's bridge cost increases.

2. UP changed the IRR's level of contribution on highway overpasses from IPA's Opening { } of the total cost for each bridge to 10 percent of the total cost. IPA's percentage was based on UP's actual contribution for a major highway overpass in the Provo area. Similar overpasses in the same general area were built around the same time, and IPA reasonably assumed that UP, as the senior entity, would not have paid more for these other overpasses than it did for the cited overpass. Moreover, IPA demonstrated that UP's usual contribution to such projects in Utah is 5 percent. UP simply defaults to the Board's 10 percent assumption for all but one bridge, notwithstanding IPA's evidence to the contrary. The highway overpasses account for $4.0 million of UP's bridge cost increases.

3. As noted in Part III-F-2-d above, IPA substituted culverts for bridges at a number of locations. UP continues to build those bridges. The additional bridges account for $1.5 million of UP's bridge cost increases.

UP also includes additional arguments, such as expanding the number of bridge types. As demonstrated below, UP's arguments are without merit.

a. <u>Bridge Inventory</u>

UP accepts IPA's Opening railroad bridge inventory with one exception. UP disagrees with IPA as to which bridges can be converted to culverts. Reply at III.F-52. The conversion of bridges to culverts is addressed in Part III-F-2-d above. As IPA continues to convert the same number of bridges to culverts as it did on Opening, IPA's Rebuttal inventory remains the same as its Opening inventory.

Before turning to UP's other bridge-related objections, IPA notes that UP's bridge list contains a significant error. Specifically, UP included a $729,677 bridge at MP 735.76 on the Sharp Subdivision. However, this bridge is not actually on the portion of UP's Sharp Subdivision lines being replicated by the IRR. Instead, this bridge is located on the Tintic Industrial Lead, a line the IRR is not replicating. Indeed, the Sharp Division track charts clearly label this bridge as an overhead structure. *See* Op. e-workpaper "Sharp Track Profile (2011 Tonnage).pdf," at UP-IPA2-000000149. As the photo below shows, the bridge passes over the IRR line.

Tintic Industrial Lead over IRR at MP 735.76
Also shown is replicated bridge at MP 735.78

Print Date: 06/24/2013
Image Date:04/22/2012
Level: Neighborhood

As this railroad bridge is part of UP's residual system, the onus is on UP to build it because the IRR's line is obviously the senior railroad. In addition, IPA's engineers viewed the Tintic Industrial Lead during their inspection of the area, and it appeared to be out of service. Thus, IPA's engineers did not include this bridge on Opening, and UP has not explained why it included it on Reply. Accordingly, IPA continues to exclude this bridge from its inventory.

UP raises two other bridge inventory-related arguments. First, UP argues that IPA did not include vehicular access bridges that run parallel to the railroad bridges. Second, UP argues that IPA selected the wrong bridge design at several locations. This disagreement is really one of design and not inventory, and IPA addresses the design issues below.

With respect to vehicle access bridges, UP argues that the bridges "provide[] access for railroad vehicles to the equipment and infrastructure in the most remote location on their system, including sections of the IRR route." Reply at III.F-53. UP then claims that IPA did not demonstrate that the IRR "could function without a similar degree of access." UP's argument is nonsensical.

First, IPA notes that the vehicle access bridges on the IRR all run directly parallel to the existing railroad bridges. Thus, these bridges do not provide any more *access* to the "remote" territory than the adjacent railroad bridges. Instead, they simply complement the railroad bridges. In other words, the access bridges are not a vital link to reaching the rail line as UP suggests because the MOW crew would still have to follow the railroad line in all of the locations where UP built access bridges. The only difference between IPA's and UP's approach is that under IPA's approach, the vehicle would need to use the railroad bridges rather than the access bridges in the limited areas where public roads could not be used. The photos below illustrate the above points.

Second, as the bridges do not actually link any remote area to a public road, they are simply a very expensive convenience. The "convenience" is that an MOW crew does not have to get permission from the dispatcher to hi-rail over the railroad bridge at river and stream crossings. UP's $5 million convenience is simply not needed. Any MOW crew that needs to perform work in the relevant territory will need permission to enter the track in the first place – crossing the railroad bridge would be incidental to such permission.

Third, 10 of the 13 railroad access bridges specified by UP are all located on a short stretch of the IRR located between MP 677.38 and MP 688.93 on the Sharp Subdivision. The Sharp Subdivision is not heavily trafficked, and a truck needs only a few minutes to hi-rail over all of the rail bridges in the area (assuming that were even necessary). On the Lynndyl Subdivision, two of the bridges are closely paralleled by SR-257 (*i.e.*, if an MOW crew could not get access to the railroad bridge due to traffic, it could travel a short distance on SR-257 to get around the bridge).

The final access bridge is located near Delta. At this location, the bridge again parallels the railroad bridge. And while no road is immediately adjacent to the railroad, the railroad is near U.S. Highway 6 on the south end of Delta and it rejoins U.S. 6 about 5 miles to the north. In other words, the MOW crew could simply drive on U.S. 6 for the 5 miles where the railroad does not parallel the road. In the event the MOW crew is working on the stretch of single line main track in between the indicated north and south points, it could drive over the railroad bridge because it would already need permission to access the track to perform any work in the area. Thus, the access bridges remain a convenience, not a necessity.

Fourth, UP's vehicle access bridge costs are unexplained and absurdly overstated. UP's unit cost for vehicle access bridges exceeds the cost per foot of the Type I *railroad* bridges by a factor of three. *See* Reply e-workpaper "IPA Bridge Costs UP Reply.xls," tab "Bridge Segments." Plainly it makes no sense that a very modest (judging by the pictures), small vehicle access bridge, that need only support the weight of truck as opposed to the railroad bridges that need to support the weight of trains, should exceed the cost per foot of the railroad bridge that it parallels by a factor of three.

Based on the foregoing, IPA has continued to use its Opening bridge inventory.

b. <u>Bridge Designs and Cost Overview</u>

On Opening, IPA's engineers noted that the bridge inventory being replicated by the IRR is very modest. Indeed, there are 50 bridge locations and the longest bridge is only 150 feet in length. Most are much shorter. Likewise the tallest bridge is only 26 feet high. Thus, IPA engineers determined that only one bridge type was necessary. While UP generally accepts IPA's approach, it does take issue with using IPA's standard bridge design at three locations. As a result, UP expands the number of bridge types, and increases the costs considerably for the relevant bridges. As explained below, UP's arguments are without merit.

i. **Bridge Design**

IPA's single bridge design was used in place of the hodgepodge of bridge structures that exist on the lines being replicated by the IRR. IPA's standard bridge is a concrete deck bridge support by steel piles that is based on an actual bridge that UP built on its Larkin Subdivision. IPA's bridges use the same length and height as the bridges being replicated. Likewise, IPA uses the same number of spans or fewer (if possible) than the original bridge being replicated in every instance but one, and that location was closely scrutinized. Thus, despite not having hydrological information for the bridge locations, IPA's use of the same (or fewer) spans than the original bridge ensured that the bridge would provide the same flow capacity as the existing structures whenever possible. As detailed above, the flow of many of the rivers has also decreased due to damming.

UP accepts IPA's design and costs, except for three bridges where it argues for more elaborate and expensive structures. These three bridges are located at MP 601.12 and MP 653.69 on the Sharp Subdivision and MP 742.55 on the Lynndyl Subdivision. Reply at III.F-53. UP arguments in favor of the larger bridges are similar for all three. Specifically, UP argues that IPA's standard bridge cannot be scaled to the current bridge spans of 90-, 60- or 80-feet, respectively, because the load carrying limits would be exceeded. *Id.* Thus, to accommodate the shorter spans, UP argues that piers would have to be added, which would reduce the potential flow of water under the bridge. *Id.* UP also argues that the abutments on the existing bridges allow more water flow than

IPA's proposed design because IPA's bridge design includes a spill front. *Id.* UP then expounds on how the lack of piers at the particular locations must indicate that a design with shorter spans and piers was not feasible due to the water flow requirements. *Id.* at III.F-55.

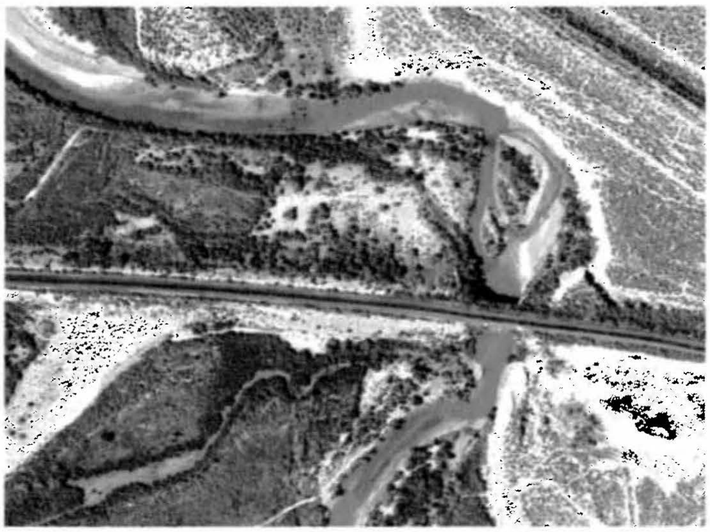
The dates these bridges were built are important, in that the three bridges UP takes issue with were built in 1911, 1917 and 1923, long before pre-cast spans were invented. In many instances, the length of the bridge is based on the gap to span, and hydrology considerations are of less importance. Thus, the type of construction used is largely dependent on the time period when these bridges were built and the favored construction of that era. Nevertheless, UP concludes that without a hydrological examination, IPA's bridge designs for these locations must be rejected. *Id.* UP's arguments are without merit.

Before turning to the individual bridges at issue, IPA notes that UP raised similar arguments in favor of expanding the number of bridge types in Docket No. 42127. Yet, UP did not argue at that time that the bridges it has identified here should have been modified. This curious and unexplained inconsistency suggests that UP's arguments here are not valid.

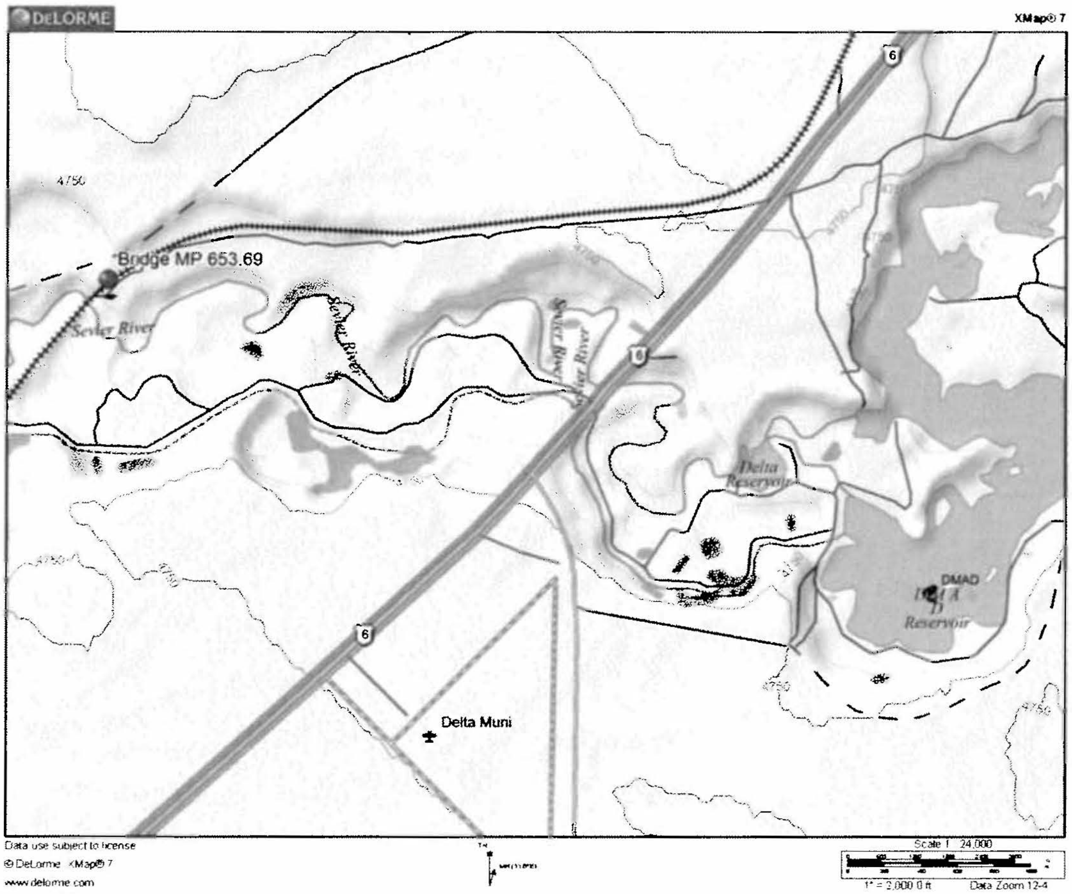
The bridge located at MP 601.12 on the Lynndyl Subdivision is one of the bridges that IPA converted to a culvert. The bridge now spans the dry wash of the former Beaver River. IPA converted this area to a culvert with seven corrugated pipes based on the adjacent highway design.

UP proposed replacing the bridge with its newly created Type 3 bridge. As explained in Part III-F-2-d above, the bridges in this area are no longer required. Not only is a bridge not necessary, but UP's Type 3 bridge exceeds the Type 1 cost (IPA design) by $388,403, even though a more expensive structure is wasteful given the lack of water flow. Thus, IPA's engineers continue to exclude this bridge from the IRR's bridge inventory.

The bridge at MP 653.69 was originally on the culvert list that UP provided in discovery, but IPA converted it to a bridge because it is currently a 60-foot stone arch culvert.



Thus, there is a reason the bridge has only one span and no piers on the inventory list: it is not really a bridge at all. Regardless, a stone arch takes up significant space in the waterway. Moreover, IPA's bridge provides a greater opening, even with one set of piers at mid span. The width of the opening decreases as the water level gets higher with an arch, but with a bridge, the width of the opening remains constant regardless of how high the water rises. Thus, UP's selection of a different bridge type is unwarranted. Finally, IPA notes that this bridge is located just downstream from the DMAD Dam and Reservoir, which was installed 1959, after the bridge was built.



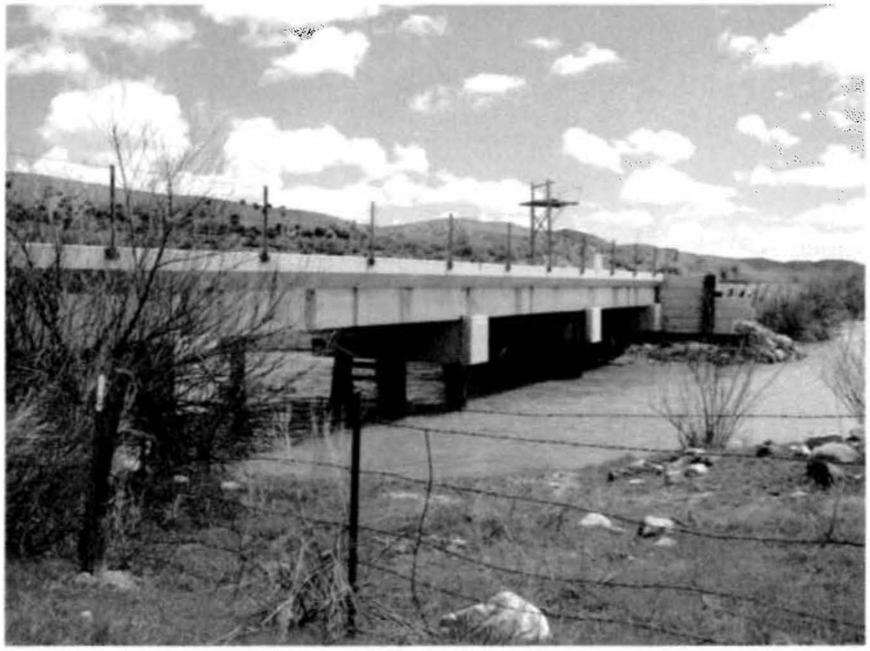
It is unlikely that a bridge this long is required to meet current hydrology requirements, but the railroad must span the ravine and that controls the length of the bridge.

Finally, UP argues that IPA's standard bridge cannot be used for the bridge that crosses the Spanish Fork River at MP 742.55 on the Sharp Subdivision. Reply at III.F-58-59. The bridge at MP 742.55 was inspected in the field and photographed, and careful consideration was given to hydrology before it was determined that the standard type bridge would be suitable for this location. The proposed bridge has a considerably greater opening for water flow than the bridge it replicates even with the two sets of piers added. The reason for this is because the existing bridge is a deck girder bridge meaning that the girders are under the bridge and the top surface of the girders serves as the bridge deck. The girder extends at least six feet below the track surface. The standard pre-cast deck design extends less than three feet below the track surface.

The three feet of additional clearance along the entire 80' span more than makes up for the cross-sectional area of two sets of piers. The deep "deck girder" provides less clearance for water flow under the bridge than precast girders that are not nearly as deep, as shown in the photo below.

Deck Girder (Less Water Flow)

The increased clearance under the entire length of IPA's bridge more than compensates for the reduced flow area caused by the additional piers. An example of IPA's design is shown in the photo below.



Precast Concrete
(Greater Clearance and More Water Flow,
even with an Additional Pier)

IPA has demonstrated that its bridge designs are feasible for all of the railroad bridges that the IRR must construct. Thus, IPA has continued to use the same single bridge design it utilized on Opening.

ii. Bridge Unit Costs

UP claims to have accepted IPA's unit cost per linear foot for its bridges (Type 1 as UP designated them). Reply at III.F-61. However, IPA has determined that, in UP's Reply e-workpaper "IPA Bridge Costs UP Reply.xls," UP made several undocumented changes to IPA's Opening cost formula. As UP has failed to explain its proposed changes, and those changes are, in any event, inconsistent with its Reply Narrative, IPA has continued to use its Opening unit cost per linear foot.

As for UP's Type 2 and Type 3 bridge costs, the costs UP proposes for these new bridge types are far in excess of the costs of similar bridges accepted in other SAC proceedings. The primary reason for this is that bridge costs in those other cases were based on recently-built railroad bridges, which are a far better indicator of railroad bridge costs than the Means Handbook costs that UP uses, especially since the Means Handbook does not differentiate between highway and railroad bridges.

UP's costs for per linear foot for its three non-Type 1 bridges are $7,010 (MP 601.12), $7,370 (MP 642.55) and $9,809 (MP 653.69). By way of comparison, a so-called Type 4 bridge (from *AEP Texas*), a more costly and complicated bridge, was constructed for only $3,500 per linear according to BNSF's own AREMA presentation. *See* Rebuttal e-workpaper "Type 4 Bridge Article.pdf." In other words, UP proposes bridge costs per foot that are more than double what BNSF paid for a very complicated bridge over a major river.

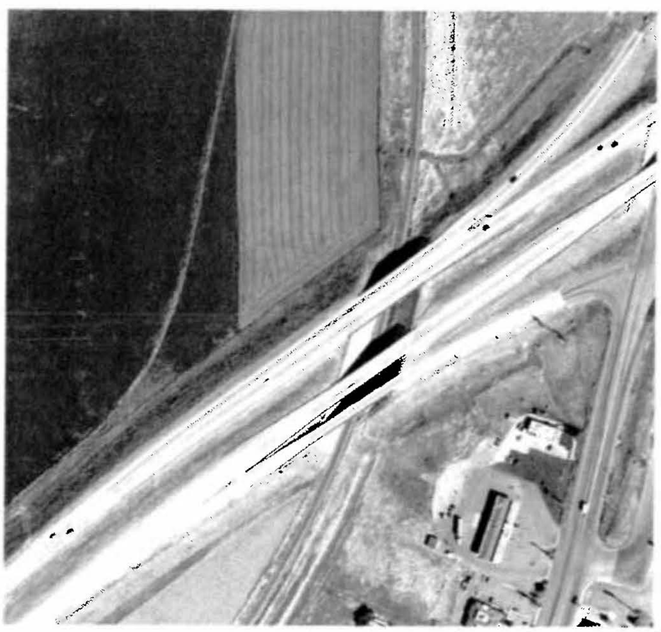
c. **<u>Highway Overpasses</u>**

On Opening, IPA developed its overhead highway bridges based on information provided by UP in discovery. Specifically, UP produced information regarding the highway overpass constructed on the Sharp Subdivision at MP 747.59. *See* Op. e-workpaper "WO 07379.pdf." The document indicated that the Utah DOT had constructed the bridge and UP had contributed { }, which represented ${ } of investment on UP's part. IPA engineers also noted that the contributed cost was higher than the typical overhead bridge cost submitted by complainants in SAC cases, but IPA explained that the overhead bridge was unusually large compared to typical overhead bridges. Nevertheless, IPA explained that the size of the bridge was consistent with all but one of the other overhead bridges that cross the UP lines the IRR is replicating. Indeed, Interstate 15 crosses over the railroad at several points. IPA also explained that a lone, smaller overhead bridge was recently constructed to reach a subdivision of houses. This bridge had "fancy" decorative features that suggested the community had selected the bridge and paid for it. Moreover, UP did not produce any discovery documents indicating that it had paid for any portion of this bridge. Still, to be conservative, IPA included { } of the cost of this bridge in its Opening bridge costs. Examples of the bridges are shown below.

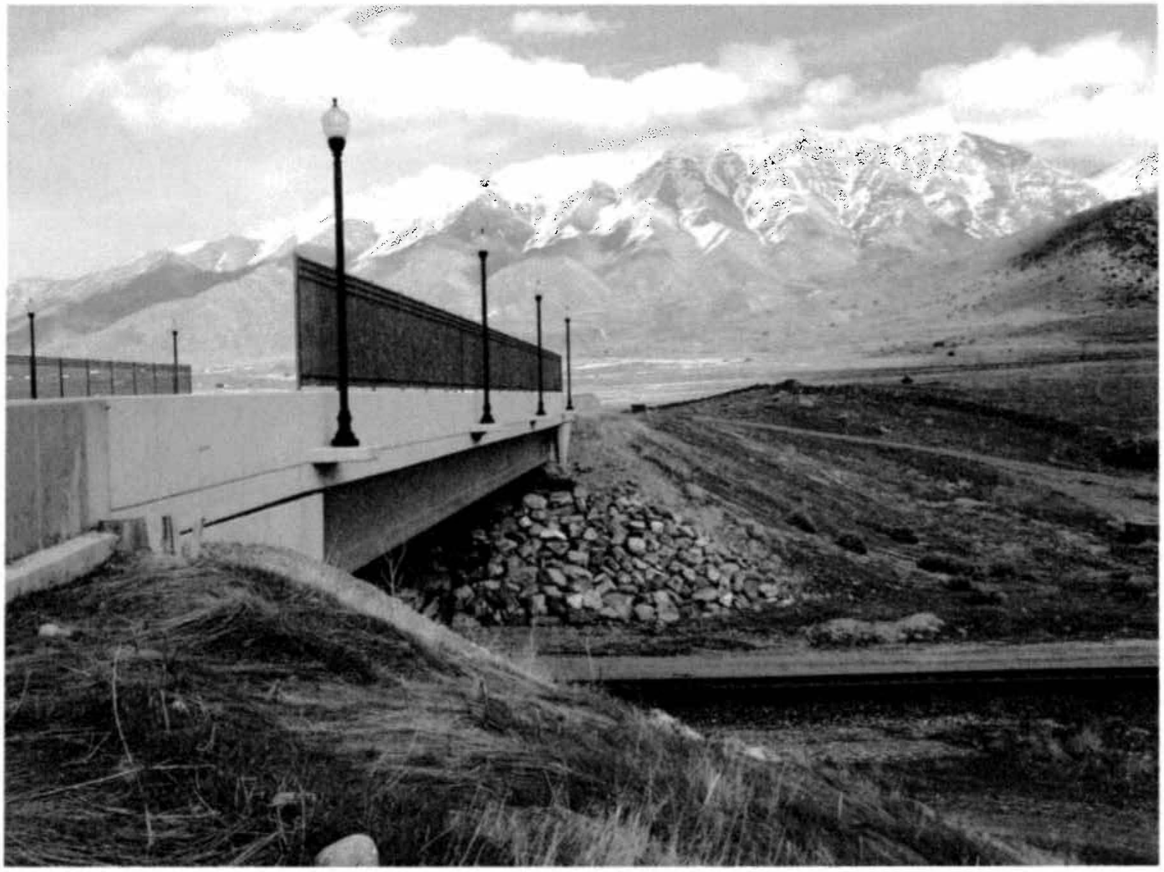

MP 730.6

MP747.59

MP 648.98 in Delta



MP 708.75 under I-15 and ramp



MP 728.3 (fancy bridge to residential subdivision)

On Reply, UP argues that the Board should reject IPA's highway overpass costs because IPA has not justified its departure from the 10% additive the Board usually uses. Reply at III.F-61. UP suggests that the project IPA used is not typical of what UP usually spends, and that the contribution level ignores other costs that the railroad might incur, such as the addition of warning devices. *Id.* Finally, UP argues that it has contributed greater amounts to such projects in other states (*i.e.*, UP argues it contributed { } percent to a grade separation project in Denver, CO). *Id.* at III.F-61-62. Thus, UP accepts the { } contribution figure for the one project with specific documentation, the overpass at

MP 747.59, but it applies the standard 10% contribution for all other projects. *Id.* at III.F-62. UP's arguments are without merit.

First, IPA notes that UP ignored IPA's description of the SR-77 overpass at MP 747.59, and how that bridge was very similar to the other bridges being replicated. The importance of this relationship is manifest. The unusually large highway overpasses at issue are significantly more expensive than the typical highway bridge. Indeed, the bridge at MP 747.59 cost more than ${ }. UP has no incentive to contribute to such projects as the highway bridge would be built regardless of the railroad's preference – and no designer of a major highway will include an at-grade crossing of a railroad main line. Indeed, were it not for the requirements of federal law obligating railroads to make such contributions (5% is typical),[24] many highway projects would be built with no contribution from the railroad. Thus, given the sizes of the bridges that cross the IRR, it is unlikely that UP would have contributed anything greater than the bare minimum of 5% to the other highway overpasses. Indeed, as explained below, there is ample evidence that UP typically contributes only 5% to such projects in Utah.

At a 2006 public hearing of the Utah Transportation Commission ("UTC") on the SR-77 overpass, the Commission minutes indicate that UP was

[24] For example, the FHWA explains that the "railroad share of federal-aid projects that eliminate an existing crossing at which active control devices are in place or ordered to be installed by a state regulatory agency is to be 5 percent." *See* http://safety.fhwa.dot.gov/xings/com_roaduser/07010/sec06.htm.

contributing 5% to the project as required by federal law. *See* Rebuttal e-workpaper "SR-77 Overpass UP 5%.pdf."

At a 2003 public meeting of the UTC discussing the construction of an overpass crossing UP's lines near Milford, the Commission minutes recount a presentation by UP representatives wherein UP noted its interest in the project due to the growth of traffic over the UP lines between Las Vegas and Salt Lake City, which was prompting a likely expansion of its Milford facilities. UP's representative therefore stated that "this project would not only benefit the city, but the railroad as well." *See* Rebuttal e-workpaper "Utah Transportation Commission UP 5%.pdf." Thus, while "UPRR's participation is typically 5% on railroad crossings . . . they would like to participate with an additional 5%, for a total of 10%, and also donate any right of way that would be involved." *Id.* In other words, UP was willing to make an exception to its usual contribution of 5% due to its own self-interest. UP has not provided any evidence that it has contributed any amount greater than 5% to the balance of the overpasses being replicated by the IRR. As UP presumably has such information at its disposal, its failure to produce it in discovery or to document it on Reply suggests that UP did not in fact contribute a greater amount.

IPA also notes that contribution percentages of 5% from railroads, including UP, are not uncommon throughout the United States. For example, in Indiana, by statute, a railroad's contribution is set at 5%. *See* Ind. Code § 8-6-3-1 (2013). In a project in Iowa, the study documentation indicates that UP was committed to contributing 5% to a major overpass. *See* Rebuttal e-workpaper "uprr-report-june07.pdf." On a project in California, UP provided no contribution at all to an overpass project. *See* Rebuttal e-workpaper "Overpass No UP funding.PDF."

As for the Denver project cited by UP on Reply, wherein it contributed { }, UP has conveniently ignored the circumstances surrounding that project. As detailed extensively in UP's own workpaper "supporting" its 10% contribution level, UP's increased contribution level was necessitated by significant self-interest that is absent for the bridges being replicated by the IRR. Specifically, UP's AFE for the project, Reply e-workpaper "Pecos Street Grade Separation AFE Request.pdf," notes the various reasons why UP was contributing { }.

1. { }

2. { }

3. { }

4. {

}

5. {

}

6. {

}

7. {

}

As the above points demonstrate, UP's Denver project is an anomaly that does not support UP's 10% cost contribution figure.

The additional costs that UP claims it incurs on such projects are also unexplained. UP suggests that the railroad typically incurs the cost of warning devices. However, there is no need for a warning device to be installed at a grade-separated crossing. Thus, this argument is without merit.

IPA's Opening bridge costs are feasible and supported by the best evidence of record. As such, IPA has not altered its Opening bridge investment cost of $13.0 million.

6. Signals & Communications

The parties' positions with respect to the IRR's signals and communications costs are summarized in the table below.

REBUTTAL TABLE III-F-7
SIGNALS AND COMMUNICATIONS COSTS
(millions)

	Item	IPA Opening	UP Reply	IPA Rebuttal	Difference
1.	Signals	$ 17.1	$ 25.7	$ 21.0	$ 4.7
2.	Communications	6.0	6.9	6.8	0.1
3.	**Total**	$ 23.1	$ 32.6	$ 27.8	$ 4.8

On Opening, IPA's expert signals and communications witness, Victor Grappone, provided infrastructure consistent with the requirements of the IRR. In accordance with the IRR's operating plan, as described in Part III-C above, IPA included a CTC system on the Lynndyl Subdivision, and remotely controlled switches (FAS-PAS) on the Sharp Subdivision. Mr. Grappone also provided for all necessary facilities to support the IRR's signals system, such as wiring. Likewise, IPA provided for complete communications coverage over the length of the IRR through a combination of fiber optic, microwave, and LMR communications.

On Reply, UP argues that IPA's signals costs and quantities are inadequate and/or incorrect. UP also takes issue with IPA's unit costs for various items. UP's narrative also suggests that IPA's signals and communications costs and methodologies are somehow grossly inadequate. UP's arguments are a red herring. In reality, UP has focused on a handful of minor cost or inventory item disputes that regularly arise in SAC cases, and it used those minor issues to suggest that IPA's signals are unworkable.

Moreover, most of the cost differences between the parties are attributable to the updating of unit costs, UP's addition of CTC in Provo, and UP's gross overstatement of cabling costs, rather than a serious disagreement on the design and implementation of the signals system. Simply put, Mr. Grappone has been designing and building railroad signal systems for over 30 years, and the basic functionality of the IRR's signal system is not undermined by UP's "nitpicking." Each of UP's specific arguments is addressed below.

a. Centralized Traffic Control

i. Disaster Recovery Dispatcher

UP argues that the IRR requires a separately-located disaster recovery dispatcher system in order to assure normal operations if the primary dispatching system were to become inoperable. Reply at III.F-62. The back-up system is not necessary. The IRR is not a Class I railroad operating thousands of trains over thousands of miles of track. The dispatching needs of the IRR are insignificant compared to such railroads. Indeed, the IRR has only one dispatcher on duty, and half of the IRR is operated as dark territory. In the event the computer-aided dispatching system became disabled, the IRR's CTC territory could be operated under a track warrant system until normal dispatching is restored. To aid in the process, an additional dispatcher could be called in as needed. Moreover, in Mr. Grappone's direct experience, a back-up dispatching system is infrequently installed on IRR-sized railroads. Indeed, even high-volume commuter railroads do not have such systems. For example, the Long Island Railroad does not have remote, duplicate dispatching systems. Indeed, UP provides no evidence that such a system is installed on any other railroad – not even on the UP.

ii. <u>Signal Components Inventory</u>

UP suggests that Mr. Grappone's inventory of various signal items is "unreliable" because it does not provide extensive detail of the exact location of each signal component, and UP is unsure how Mr. Grappone scaled certain installations, such that there is not an exact match between the number of, for example, signal huts, in the inventory versus the number of huts shown on the stick diagrams. Reply at III.F-63. Thus, UP developed a more specific list of the various required items and their locations.

UP misunderstands IPA's approach. The scaling of quantities is designed to reflect the additional costs associated with a more complicated interlocking location. Mr. Grappone's standard interlocking consists of one switch and three signals. Those locations with additional requirements were scaled up. Regardless, UP's approach results in little difference between the parties. As such, IPA has used UP's inventory on Rebuttal, except that IPA has only provided for the materials that its configuration requires based on the IRR configuration, and IPA has not included CTC in the Provo area as discussed below and in Part III-B.

UP argues that IPA's inventory of signal locations excludes a control point to connect to the UP at Lynndyl and Provo, as well as one location where a crossing signal was omitted. Reply at III.F-64. IPA agrees with these minor additions.

UP also argues that IPA should have included three hold signals in the dark territory adjacent to CTC territory. Reply at III.F-65. In other words, UP argues that the signals are needed before entering the CTC territory. This addition is not required. In dark territory, all that is required is that the train crew be prepared to stop when approaching the first CTC signal. The hold signals that UP proposes are merely a convenience.

UP also claims to have recalculated the amount of cabling and trenching that is required for the switch points and associated signals. Reply at III.F-65. UP does not describe its approach, except to argue that IPA's calculations were "inadequate." UP's recalculation of cable requirements are overstated by, in some cases, a factor of four. As an example, in UP's Reply e-workpaper "IPA Signals & Communications UP Reply.xlsx," tab "Typical Cable Layout," cell O5 dictates 500 ft. of three conductor #2 cable for a single track automatic signal location. UP's comments for this cable type indicate that this should in fact be three conductor #6 cable for use in switch control. Given that no switches are present at such a location, UP has overstated the cable requirements. Similarly, cell D4 specifies 1,600 ft. of two conductor #6 cable for an end-of siding ("EOS") interlocking. Given the increasing corresponding quantities for other interlocking types, Mr. Grappone concluded that this cable is meant to function as "track wire," which is intended for track circuit interconnection. Given the compact nature of an EOS location, a quantity of 700 ft. is appropriate. Quantities for other cable types and typical locations have been adjusted in a similar manner in Rebuttal e-workpaper "IPA Signal & Communications Rebuttal.xlsx," tab "Typical Cable Layout." Corresponding notes explaining the adjustments have been added in column T therein.

iii. <u>Miscellaneous Equipment</u>

UP's engineers also added additional, minor cost materials, including grounding kits, track circuit connections, termination shunts, and PSO cables – an addition of $167,448 to IPA's total costs. UP also changed the cable type for the commercial power drops, which IPA accepts. Reply at III.F-65-67. IPA accepts these additions, but its Rebuttal quantities are necessarily based on its configuration of the IRR.

iv. <u>Unit Prices for Signal Equipment</u>

On Opening, IPA included unit costs based on various quotes obtained from vendors. While UP generally accepts the quotes, it notes that the older costs should be indexed because the materials have increased in price. Reply at III.F-68. UP also obtained more recent quotes for several items, including a basic signal. *Id.* IPA agrees, and it has accepted UP's revised unit costs.

b. Detectors

On Opening, IPA's engineers and operating experts assumed that FEDs would be located approximately every 25 miles along the main line consistent with Board precedent and good railroad practice. In addition, the detectors were strategically located to minimize potential traffic back-ups.

UP proposes to add three FED equipment detectors. UP argues that the three additional detectors would essentially replicate UP's current count of FEDs on the lines being replicated, which it believes is appropriate. As explained in Part III-B-c above, UP's arguments are without merit. Briefly summarized , IPA's FED spacing has been routinely proposed and accepted by defendant railroads, including UP, and the Board in other SAC rate cases, including, most recently, *AEPCO 2011* (slip op. at 115) and *WFA I* (slip op. at 25). UP fails to explain how its spacing of 19 miles is materially different from IPA's average spacing of 25 miles. Moreover, UP fails to present any credible evidence supporting a different spacing for FEDs than the 25-mile spacing UP accepted in Docket No. 42127. As such, IPA has not added any additional FED devices.

c. Communications System

On Opening, IPA provided for a backbone communication system consisting of microwave towers and fiber optic facilities. Communications to and from the backbone facilities to wayside signals, locomotives and MOW crews are aided by LMR facilities, hand-held radios, and related communications systems. UP accepts IPA's approach and its unit costs. However, UP adjusted its costs to reflect its increased number of devices interfacing with the communications system. Reply at III.F-70, 71. IPA disagrees with UP's additional costs to the extent that the parties disagree on the design of the signal system and the configuration of the IRR. IPA has, however, adjusted its Rebuttal costs to reflect its increased number of devices accessing the communications system.

d. **Highway Grade Crossing Warning Systems**

The parties agree on the inventory of crossings that include gates and flashers, except that UP noted one crossing that IPA inadvertently omitted. Reply at III.F-70. IPA agrees with this addition.

UP also accepts IPA's costs, except for seven locations where unidirectional crossing signal requirements necessitate the extension of approach circuits. *Id.* IPA has reviewed these seven locations, and it agrees that the additional cable, AC power drops and trenching is required. It has added the necessary costs on Rebuttal.

e. **Insulated Joints**

On Opening, IPA provided for seven insulated joints at control points and three insulated joints for electric locks. UP argues that "maximum broken rail protection" requires ten insulated joints at control points and four at electric locks. *Id.* UP's additional insulated joints are unnecessary.

The powered turnouts and FAS-PAS locations only require seven insulated joints to operate, one at the switch and two at each of the three signal locations. Such a configuration satisfies the requirements of 49 C.F.R. § 236.51.

While adding three additional insulated joints potentially enhances the protection of the switch, it is not required. Thus, IPA continues to use seven insulated joints at each turnout. Likewise, an electric lock only requires three insulated joints to operate properly, one for the switch and two to isolate the siding from the main track.

f. <u>Remote Control</u>

On Opening, IPA provided for remote controlled switches in dark territory using the FAS-PAS system. UP accepts the use of the FAS-PAS system, except in the area near the coal wye tracks in Provo. For that area, UP argues for the addition of a CTC control system. Reply at III.F-71-72. As explained, in Part III-B above, the CTC system is an unneeded luxury for the small amount of track impacted by UP's proposed CTC addition. IPA continues to use FAS-PAS in the Provo area and the other dark territory locations it specified on Opening.

g. <u>FAS-PAS Power Derail</u>

UP proposes that a power derail be placed at FAS-PAS locations serving industry tracks rather than the standard derail that IPA provided. Reply at III.F-72. UP obtained pricing for FAS-PAS equipment with a power derail, and it adjusted the labor time to account for the installation of the derail. *Id.* at III.F-72-73. IPA agrees that power derails are preferable for these locations. IPA has adjusted its Rebuttal costs accordingly.

h. Other

UP proposes to add commercial power drops for the additional hold signals in dark territory, its additional FED locations and set-out tracks, and the unidirectional crossing locations. Reply at III.F-73. IPA rejects UP's additions for additional power drops for the hold signals and FED locations as the additional equipment is not needed for the reasons detailed above. As IPA accepts the need for the unidirectional crossing signals, it has added the necessary power drops.

With the various adjustments noted above and detailed in IPA Rebuttal e-workpaper "IPA Signals and Communications Rebuttal.xlsx," IPA's Rebuttal signals and communications costs are $27.8 million.

7. Buildings and Facilities

The following table compares the parties' buildings and facilities costs:

REBUTTAL TABLE III-F-8
BUILDINGS AND FACILITIES COSTS
(millions)

	Item	IPA Opening	UP Reply	IPA Rebuttal	Difference
1.	Headquarters Building	$ 1.7	$ 2.8	$ 1.9	$0.9
2.	Locomotive Shop	4.4	20.2	5.3	14.9
3.	Crew, MOW/Roadway Buildings	0.3	0.9	0.3	0.6
4.	Yard Site Costs (Roads, Lighting, Drainage, Wastewater, etc.)	1.8	5.0	1.8	3.2
5.	**Total**	$ 8.3	$ 28.9	$ 9.3	$ 19.6

a. Headquarters

On Opening, IPA located the IRR's headquarters at the IRR's Lynndyl Yard. The building's square footage was based on the designs and costs for a building designed to hold over 100 people, even though the IRR is only housing about 60 employees at the facility. *See* Op. e-workpapers "Headquarters.pdf." and "UP Headquarters Bid.pdf." The general building costs and designs were based on a large UP yard building facility in Marysville, KS. IPA's engineers modified the facility to accommodate the IRR's staffing and other needs. IPA provided additional details of the project and the costs in its Opening e-workpapers "2012 Buildings.xlsx," "2012 Building Sites.xls," and "2012 Headquarters Site.pdf." While IPA did make some minor modifications to UP's Marysville building, IPA did not adjust the actual size. IPA determined that the size was more than adequate, and provided additional space for areas such as a computer room, storage and crew change facilities.

UP accepts IPA's costs per square foot, but it modifies IPA's headquarters by adding additional space all over the building, including more file storage, more conference rooms, and a host of other additives. Reply at III.F-74. UP's additional square footage is unnecessary.

First, UP's assumption that the space IPA provided is insufficient is simply incorrect. According to UP's own documents, UP's Marysville facility (which IPA used as the basis for its structure) can accommodate up to 100 people, based on square footage. The IRR's headquarters, including the crew change facility, need only accommodate a little over 60 people. To be sure, IPA did not design every last element of the building, but given the low occupancy versus the square footage, there is ample space for all of the facilities that UP has added.

UP cites AREMA standards in support of its proposed separate areas, such as a dispatching area. IPA agrees that a dispatching area is needed, but the AREMA code was developed before the International Building Code was accepted in most areas as a best practice guideline. Regardless, there is ample room for any such space.

UP's add-ons such as a back-up generator or key card access, are minor cost items (*e.g.*, $1,000 for a generator) that UP suggests are glaring omissions. Reply at III.F-74-75. Simply put, not every last cost item has been included in the building cost because such items are typically incorporated into an overall building cost allowance, and as IPA's building cost is already overstated based on the occupancy, there is no need to add these items separately.

UP also complains that IPA did not provide for landscaping. Reply at III.F-74-75. While landscaping is certainly a nice addition to a building site, there are no local or state ordinances that require landscaping. And while AREMA does recommend landscaping, it also suggests that it be done in an economical manner. *See* Rebuttal e-workpaper "AREMA Landscaping.pdf." The Lynndyl area is dry and the vegetation consists mostly of brush. Thus, providing for watering or other systems to keep up the landscaping would be unnecessarily expensive. As such, IPA continues to exclude landscaping on Rebuttal.

UP also argues that IPA applied the incorrect Means Handbook location factor. Specifically, UP argues that IPA should not have applied the national average cost Means Handbook location factor used for many cost items in this proceeding. Reply at III.F-75. Instead, UP argues that IPA should have compared the Provo-area (closest to Lynndyl) costs to the Topeka, Kansas-area (closest to Marysville) costs, which results in an increase of one percent in the headquarters costs. *Id.* IPA agrees with this modification.

Finally, UP argues that IPA did not include fire sprinklers or fire alarms for the headquarters building, nor did IPA include a chemical fire extinguisher in the server room. Reply at III.F-75. These additions are unnecessary.

First, UP cites AREMA in support of its additions, but UP's cites are to a chapter dealing with environmental considerations of site choice. However, AREMA does state, in section 6.2.8, that all local fire and life safety codes should be followed. Based on occupant load, construction type, and construction size, IPA has determined that no sprinkler system is required per local codes. As for the fire extinguisher, this is a small incidental item that could be acquired as part of the normal materials and supplies purchases.

UP's addition of several thousand square feet to an already oversized building is unwarranted and unsupported. Thus, IPA continues to use its Opening headquarters building design and costs on Rebuttal.

b. <u>Fueling Facilities</u>

On Opening, IPA provided for direct-to-locomotive ("DTL") fueling, as needed, at the IRR's locomotive shop located at N. Springville. IPA provided separate fueling tracks and three fueling spots. Each spot was equipped with two high-density polyethylene pans designed to capture any fuel that might spill. *See* Op. e-workpaper "2012 Buildings Fueling Containment Area.pdf." Piping was provided to run any spilled fuel back to the locomotive shop where it can be separated and properly disposed of, thereby reducing environmental risks. IPA's engineers also provided for construction of a road to reach the locomotive facility and the fueling spots. IPA further provided for sanding and quick servicing of locomotives at the fueling spots. Indeed, the fueling area was equipped with water for filling cooling systems, lube oil, sand, and shop air for various repair work and testing. In other words, all servicing and general inspection can be done at the fueling area. Even minor repairs could be made if needed. The costs for the fueling-related items were rolled into the locomotive shop costs.

UP accepts the DTL fueling. Reply at III.F-76. However, UP argues that IPA failed to include separate costs for water and air. UP assumes that IPA intended to extend the water, air and lube oil systems from the locomotive shop without additional costs. UP then claims that using the water and air systems at DTL locations would somehow "over-burden" the locomotive shop facilities. Reply at III.F-76-77. UP's arguments are without merit.

Water and air are distributed throughout the locomotive shop, as the fueling area is located directly adjacent to the shop. The only additional facilities required are hoses, which represent a nominal cost subsumed in the general costs for the locomotive shop. Moreover, IPA's assertion that distributing air and water would somehow "over-burden" the locomotive shop systems is spurious. IPA's witness Ellison has operated locomotive shops in Upstate New York and in Loveland, CO where weather conditions are similar, and air and water was provided from the locomotive shop facility to outside locomotives with hoses as needed.

As for the lube oil, UP is incorrect that IPA overlooked this item. IPA provides for distribution of the lube oil in its associated costs. *See* Rebuttal e-workpaper "Locomotive Lube Oil Storage.pdf."

UP also argues that runoff from the DTL fueling area must connect to the public sewer system per code and local ordinances. As such, UP argues that IPA cannot use the locomotive shop's oil-water separator system, and instead it must install a second system to treat the DTL fueling area runoff. Reply at III.F-77. UP augments its additional oil-water separator with an industrial water storage tank to limit the outflow of treated water to the public storm system. UP does not state that it is required, but instead it argues it is simply a best practice. Reply at III.F-77. UP's additions are unnecessary.

The outdoor fueling area *can* be connected to the same oil-water separator as the locomotive shop. When trains are being refueled or washed, a valve allowing the waste to flow to the separator will be opened. Otherwise, the valve will be shut to the separator, forcing the stormwater to flow directly to the storm sewer system. As for rain water that might fall when refueling, the catchment area for the locomotive fueling pads is less than 0.05 acres, and the locomotive shop experiences only 12 to 16 inches of rainfall *per year*. Thus, storm water during fueling will not overburden the locomotive shop's oil-water separator. As there is no need for a separate system to connect to the storm sewers, a separate holding tank is not required. Thus, on Rebuttal, IPA has not modified its Opening locomotive fueling pads or associated costs.

c. **Locomotive Shop**

On Opening, IPA provided a locomotive shop that more than met the servicing needs of the small number of IPA locomotives – just 14 in all on Opening.[25] Indeed, as explained below, IPA's Opening locomotive shop was "overkill." Amazingly, UP not only rejects IPA's locomotive shop it proposes instead a locomotive shop that surpasses in cost some of the largest locomotive shops in the country (despite being smaller), which service hundreds of locomotives rather than the Rebuttal 19 locomotives that IPA is servicing. Even more problematic is UP's reliance on a locomotive shop design and cost for a commuter rail servicing facility, where the needs and requirements of the facility bear no relation to the requirements of the IRR. But fatally, UP has not documented its revised costs.

As demonstrated below: (i) IPA's locomotive shop easily meets all of the servicing needs of the IRR's locomotives; (ii) IPA's shop is far more "elaborate" than other small railroad locomotive shops that serve many more

[25] IPA has added five locomotives on Rebuttal: one ES44-AC road locomotive for repositioning and four SD40-2 locomotives for its local trains.

locomotives than the IRR will maintain; (iii) IPA's shop is structurally sound; and (iv) UP's Reply locomotive shop costs are grossly overstated vis-à-vis the IRR's requirements.

i. IPA's Locomotive Shop

(a) Configuration

The IRR has one small locomotive shop located at N. Springville. The small scale fits the workload because the IRR has only 15 road locomotives and four additional locomotives for local train service. Notwithstanding the very small number of locomotives that will be serviced in the shop, IPA's engineers provided a 22,900 square foot repair shop. The pre-engineered metal building also includes 2,000 square feet of office, crew change facilities, lunch room and locker room facilities.

The facility includes two tracks. Track 1 includes a drop table and a wheel truing area. Track 2 includes an inspection pit and a ramp track that can accommodate two locomotives. Both tracks are served by a 35-ton overhead crane that spans both tracks. In addition, there are six 3-ton jib cranes. *See* Rebuttal e-workpapers "2012 Buildings.xlsx" and "2012 Building Sites.xlsx," and Op. e-workpapers "2012 Buildings Locomotive Shop.pdf" and "2012 Buildings Locomotive Shop Site.pdf."[26]

[26] On Opening, IPA's evidence indicated that a locomotive wash facility is also provided, but this was not accurate. Instead, the locomotive shop includes facilities to wash a locomotive, but there is not a separate structure.

(b) **Capabilities**

As IPA explained on Opening, the shop is capable of performing all FRA-required inspections from 92-day and 184-day inspections to annual inspections. The shop is also designed to handle all work associated with sustaining the locomotive fleet based on component change out and parts renewal. It can accommodate minor derailment and accident repair such as sideswipe damage and typical grade crossing collision damage.

The shop will also facilitate and accommodate power assembly repairs, basic engine overhauls if necessary, air brake component troubleshooting and renewals, truck repairs, wheelset/traction motor change outs, wheel truing, diesel engine/main generator swap outs, engine component change outs such as air compressors, fuel pump motors, water pumps, radiators, turbos, carbody parts, draft gear, and couplers.

Specifically, the shop has the capacity to perform program maintenance on the track with the pre-cast inspection pit that IPA's engineers specified. This track can be used to perform top deck work, brake rigging repairs, general component change-out and electrical work. Job scopes such as head change outs, exhaust manifold repairs, water pump change outs, on-board computer and software work, air brake renewals and repairs, and other assorted work can also be performed on this track. As a practical matter, this single spot can accommodate 10% of the fleet at any given time. While not in use for program repairs, it can also be used for 184-day inspections and annuals, leaving the ramp tracks open more of the time.

The shop will not perform major component repairs such as rebuilding engines. Likewise, major wreck repairs or other specialized services would not be performed at the shop. Such work is normally outsourced.

To put the capabilities of the shop in perspective, the inside space alone accommodates more than 40% of the fleet, which if extrapolated to the UP locomotive fleet size of 7,000 units would be a facility large enough to handle 2,800 units at one time under cover, and the IRR facility overall can accommodate 9 units (6 inside spots and 3 outside spots on the fuel pad). This facility capacity accounts for almost 50% of the entire IRR Rebuttal fleet of 19 locomotives. Equivalently, UP would need a facility sized to handle 4,200 locomotives at one time, which of course is an absurdity. In other words, the shop can easily sustain the IRR's locomotive servicing requirements and meet the generally accepted standard of 90% availability without difficulty.

As a practical matter, shop capacity is generally a factor of the number of locomotives that need to be serviced in a 24-hour period or that need to be cycled for program maintenance over a specific time frame. Given the IRR's small number of locomotives, the shop will not have more than two locomotives in for inspection or program maintenance at any one time, and for half of the time the shop will have at most one (and often no) locomotives in at all. Indeed, the ES44-AC road locomotives only require inspection every 184 days, thereby reducing the overall requirements of the shop. The IRR shop can accommodate 14 locomotives per week that require 184-day or annual inspections – far more than the IRR's typical weekly requirement.

(c) Comparable Locomotive Shops

IPA is a small railroad servicing only 19 locomotives. Yet, as explained below, IPA has provided for a much more elaborate locomotive shop than many short line and regional railroads, or even locomotive contract repair shops, that service a similar number of – or even many more – locomotives than the IRR.

The Genesee Valley Transportation ("GVT") shop in Scranton, PA services at least 39 locomotives, and the shop also performs contract work for other entities' locomotives that are not included in GTV's official roster. The GVT shop locomotive roster is composed of older locomotives that require frequent maintenance to stay in operation, which means it is not uncommon for a relatively large number of the locomotive fleet to cycle through the shop on a regular basis. A new ES44-AC locomotive, such as the kind that the IRR will lease, will not require the same level of maintenance as a 50-year-old locomotive.

Despite having a very modest shop (as demonstrated in the photo below), GVT performs major overhauls well beyond what is planned for the IRR shop. The GTV shop also demonstrates how most small railroads utilize outside spaces for major component change outs by utilizing a mobile crane. Indeed, such practices are common. For example, IPA witness Ellison of Stone Consulting, while on the management team of OmniTRAX's Loveland, CO locomotive overhaul shop, regularly performed such work outside, in the dirt, rain, shine or snow. By comparison the IRR locomotive shop provides ample space to perform such work indoors. The roster of locomotives serviced by the GVT shop is shown below along with pictures of the facility.

REBUTTAL TABLE III-F-9
<u>Genesee Valley Transportation Locomotive Roster</u>

Railroad	Make	Model	Date Built	Year Built.	HP
DL	ALCO	C-420	1963	1963	2000
DL	ALCO	RS-3	Jul-51	1951	1600
DL	ALCO	RSs-3	Sep-50	1950	1600
DL	ALCO	RS-32	Apr-62	1950	2000
DL	ALCO	RS-11	Aug-59	1959	1800
DL	ALCO	C-425	?	?	2500
DL	ALCO	RS-11	Nov-57	1957	1800
DL	ALCO	C-420	1964	1964	2000
DL	EMC	SC	Mar-35	1935	600
DL	ALCO	RS-3	1952	1952	1600
MHWA	MLW	M420	Sep-73	1973	2000
MHWA	ALCO	C-425	Oct-64	1964	2500
DL	ALCO	S6	Jan-57	1957	900
DL	ALCO	RS-3	1952?	1952?	1600
DLWR	ALCO	RS-11	May-56	1956	1800
DLWR	MLW	RS-18	Dec-59	1959	1800
FRR	ALCO	RS-11	Feb-59	1959	1800
DLWR	ALCO	RS-11	Aug-56	1956	1800
DL	ALCO	RS-11	1956?	1956?	1800
LBR	GE	44 Ton	Apr-47	1947	300
LBR	GE	44 Ton	Jun-50	1950	300
LBR	GE	44 Ton	Dec-50	1951	300
DL	ALCO	RS-32	1962	1962	2000
MHWA	MLW	M420	1973	1973	2000
DL	ALCO	C-424	1964	1964	2400
DL	ALCO	C-425	1965	1965	2500
DL	ALCO	C-425	Oct-64	1964	2500
MHWA	ALCO	C-425	Oct-64	1964	2500
MHWA	ALCO	C-425	1964	1964	2500
MHWA	ALCO	C-425	Oct-64	1964	2500
DL	ALCO	C-425	Jun-66	1966	2500
DL	ALCO	C-425	Oct-64	1964	2500
DL	MLW	M630	1970	1970	3000
DLWR	ALCO	RS-11	Aug-56	1956	1800
DL	ALCO	C-636	Apr-68	1968	3600
DL	MLW	M-636	Nov-70	1970	3600
DL	ALCO	RS-3	1952	1952	1600
DL	ALCO	RS-3	Sep-52	1952	1600
DL	ALCO	RS-3	Oct-52	1952	1600

As this photo shows, the small shop includes one service track. The second door is a garage entrance for service vehicles. Major parts are handled outside with the crane seen in this picture. Yet, this locomotive shop is servicing double the number of locomotives that the IRR will service.

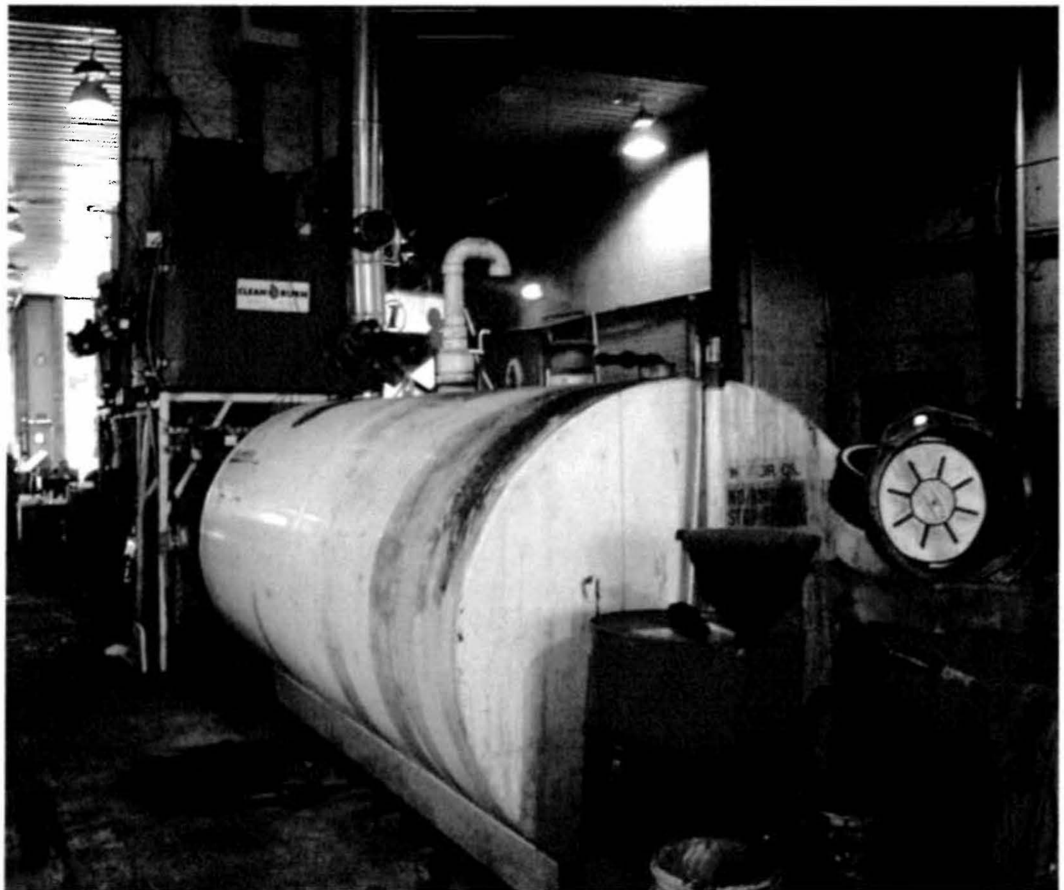
The Indiana Railroad's locomotive shop in Jasonville, IN services 34 locomotives that include primarily modern, high horsepower locomotives. Despite regularly servicing almost double the number of locomotives that the IRR will maintain, the facility is very modest vis-à-vis the IRR's locomotive shop as envisioned by IPA.

For example, the primary building is much smaller than IPA's locomotive shop. There is only one track through the facility rather than the two tracks provided by IPA. There are no fancy locker areas. There are little or no inside storage areas (the picture shows materials being stored outside). There is no dedicated wash area. Lighting is minimal outside the building. There are no dedicated stairs for access to higher points on the locomotives. Simply put, the shop is functional, but not fancy. IPA's proposed facility is much more elaborate than this facility, and it is more than adequate for its intended purpose.

REBUTTAL TABLE III-F-10
Indiana Railroad Locomotive Roster

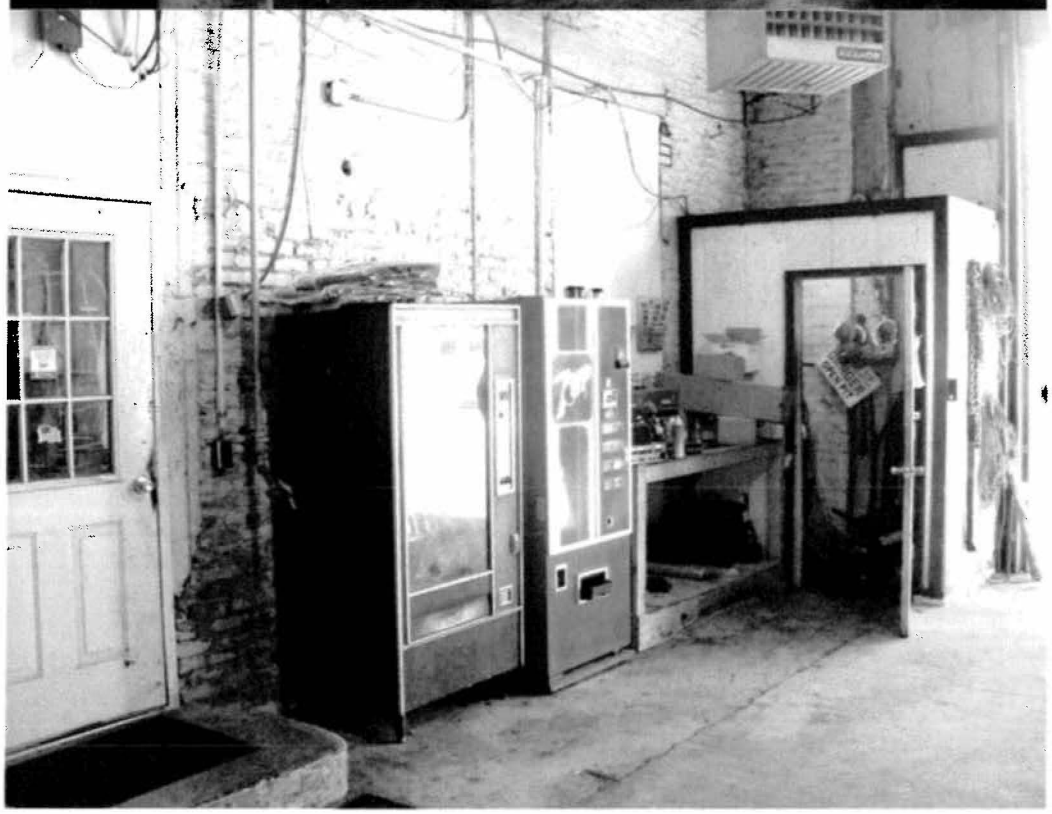
Builder	Model	Built	Inventory	Numbers
EMD	SD90/43MAC	12/1999	14	9001-9013, 9025
EMD	SD40-2	1980	6	4001-4006
EMD	GP38-2	Unknown	8	3802-3808, 3811
EMD	GP38AC	3/1971, 12/1971	3	3809-3810, 3812
EMD	GP38	9/1969	1	3801
EMD	GP11	Unknown	1	1701
EMD	CF7	Unknown	1	2543


STOP
STOP




INDIANA


CITX




INDIANA

The Western New York & Pennsylvania ("WYNP") Railroad locomotive shop is another small shop that serves many more locomotives than the IRR. Indeed, the shop can service five locomotives per day. This shop was built in 2002. Yet, it is devoid of the many bells and whistles that UP proposes. Still, IPA's shop provides for more capacity and capabilities than the WYNP shop.

As the photos below demonstrate, this is another locomotive shop with a single track, no dedicated wash facility, and a limited storage area. Yet, the shop still manages to serve a similar number of locomotives to the IRR.


630
630


630
630
RRPictureArchives.NET Image Contributed by Tim Sullivan


FALCONER
HYSTER
RRPictureArchives.NET Image Contributed by Richard Thompson

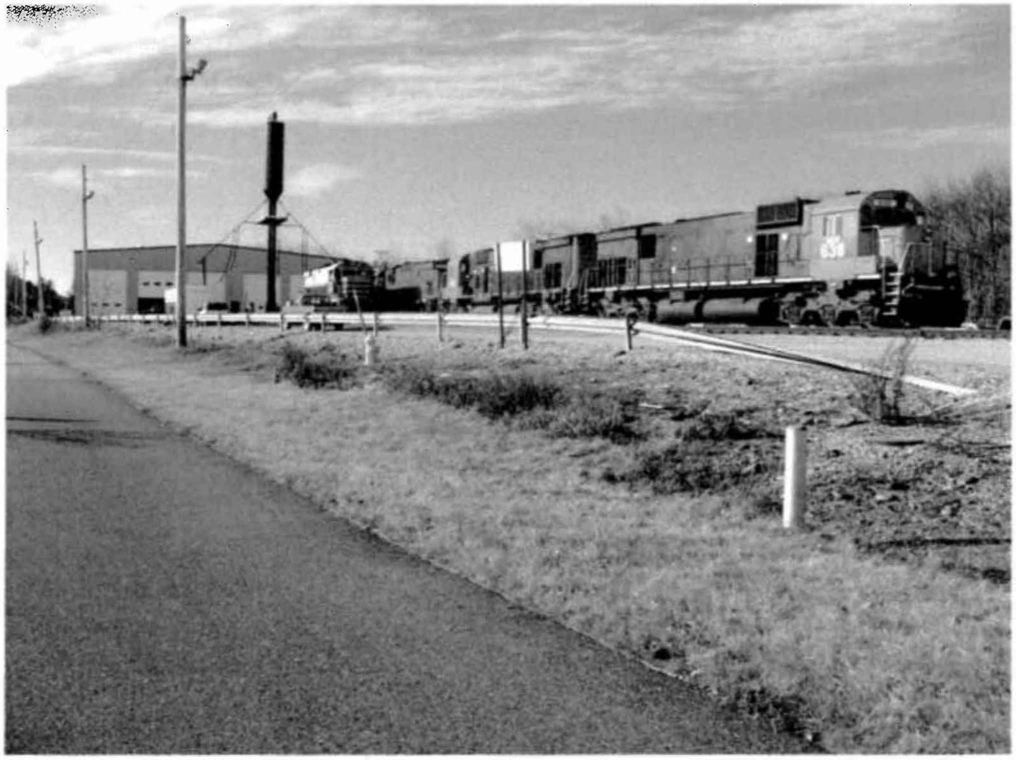
The locomotive shops described above illustrate that a simple, purpose-built locomotive shop is all that the IRR requires. Yet, IPA has gone beyond the kind of simple requirements described above and included six inside spots and a wide range of servicing capabilities.

(d) UP's Criticisms of IPA's Shop

UP raises a long list of so-called deficiencies in IPA's locomotive shop. Only two of its arguments, seismic resistance and pit floor concrete quantities, have any merit, and IPA has corrected these items on Rebuttal.

Initially, UP argues that the locomotive shop building shell cost quote is unworkable because, according to UP, it reviewed the Kessel Construction website and determined that Kessel has never built such a shop. Therefore, by extension, Kessel must know nothing about the requirements of a locomotive shop. Instead, UP substitutes the costs from a completely inapplicable locomotive shop project for commuter rail service, and simply scales those costs to the IRR shop. IPA addresses UP's substituted project in subpart (ii) below. However, UP is completely wrong with respect to Kessel.

Kessel has built a large locomotive shop. Indeed, Kessel completed a project in Olean, NY, that included 5 tracks through the facility. Photos of this facility are included below.



In other words, Kessel is well aware of the requirements for a locomotive shop, and UP's off-hand rejection of Kessel's building costs is without merit.

(i) **Structural Issues**

UP argues that IPA's locomotive shop design has eight areas that suffer from "inadequate structural elements." Each area is address below.

First, UP argues that IPA's slab on-grade of 6 inches with wire mesh in the shop area is inadequate because it does not meet ASHTO design standards for a forklift of 10,000 pound capacity and 14,000 pound vehicle weight. Reply at III.F-78. UP argues that a typical shop should have 8-inch thick slabs with steel bars. *Id.* at 78-79. UP is incorrect. As shown in Rebuttal e-workpaper "CRSI Design Handbook – Slabs on Grade.pdf" the Concrete Reinforcing Steel Institute ("CRSI") Design Guide table plainly shows that a 6-inch slab on grade with wire mesh reinforcing is sufficient to handle the loads that UP suggests.

Second, UP argues that the Kessel building cost did not provide for reinforced jacking pads for raising locomotives to service them or remove parts that cannot be accessed from the drop pit, such as a fuel tank. Reply at III.F-79. UP then notes that it would not be feasible to lift a locomotive with IPA's 35-ton crane, and it suggests that a 60-ton crane would be needed, which requires a huge jacking pad (24-inches thick, 24-feet wide and 135-feet long). *Id.* UP's argument is nonsensical and it is inconsistent with how IPA intends the shop to operate.

While UP is correct that a 35-ton overhead crane cannot lift a 420,000 pound locomotive, the notion that the IRR needs to lift a locomotive is inexplicable, unless UP is simply trying to justify the use of jacks and the ancillary jack pads to run up the cost of the shop without providing any realistic cost-benefit for the absurd extra cost.

The design of the IRR's locomotive shop takes into consideration those functions which are most apt to be performed during normal locomotive maintenance. Indeed, the purpose of this shop is to provide running repairs, normal overhauls and renewal of component parts. Thus, it is designed to handle those functions while relying on contract repair shops for the rare occasions when a special repair would require an unusual event – like having to lift a locomotive or replace a fuel tank. This is the reason the IPA shop includes the locomotive drop table arrangement in its design, which will perform all needed functions without supplemental locomotive jacks and a jack pad area for the express, but remotely possible, need to drop a fuel tank.

New locomotives seldom need to have a tank dropped as part of ordinary maintenance. Internal tank repairs, should they even be necessary, are dealt with by cutting access into the tank and resealing. Indeed, even damage due to accidents is usually dealt with without dropping the tank. In those very rare instances where a tank does need to be dropped, it can be done with alternative jacking procedures. If the tank is seriously damaged, it is probable that the locomotive will be sent to a contract repair backshop as other issues will likely need to be addressed beyond the capabilities of the IRR's repair shop, such as catastrophic accident damage. Moreover, in the event such a repair has to be done on site, which is highly unlikely because such a repair would only happen during a major overhaul or after a very damaging accident, rental jacks could be placed outside and operated there. In short, UP's jackpad criticisms are misplaced because the IRR locomotive shop does not require such pads in the first place.

Third, UP suggests that IPA's proposed costs for the special concrete slabs and foundations needed for drop tables, wheel truing machines, and inspection pits are inadequate because they do not account for the concrete, steel reinforcing or labor necessary to construct these facilities. Specifically, UP argues that these forms are very complex, and IPA should not have used a Means Handbook cost for free-standing concrete walls to address these areas. Reply at III.F-79-80. UP also suggest that failure to follow its overly complex approach may result in work areas that are inconsistent with OSHA requirements for confined spaces. *Id.*

IPA disagrees that the forms are very complex. Many railroads throughout the United States use drop tables, wheel truing areas and inspection pit, and many vendors offer pre-engineered systems that provide safe and efficient installation and operation of such facilities. UP's OSHA concerns are also a red herring. Pit access is normally only needed for maintenance and servicing of the drop table mechanical assembly. Controls and control stations are located outside of the pit area. Ladders and access are engineered by the vendor in an approved and safe manner. Simply put, OSHA regulations for confined spaces are not applicable to this infrastructure.

UP also argues that keeping ground water out of the pit is a concern, and it suggests that pumps are necessary in pit locations. Reply at III.F-80. UP's arguments are unfounded. Utah receives 14 to 18 inches of rainfall per year and the percolation rate is up to 0.60 inches/hour. *See* "Loco Shop Rainfall.pdf." The typical soil profile on the building site has only one restrictive layer (36 to 48 inches). The ground below this is layer is categorized as fine sand. *See* Rebuttal e-workpaper "Yard Cross Sections.pdf." Rainfall will follow the path of least resistance through the sand as opposed to percolating through the concrete pit walls. Therefore, no pumping infrastructure is required.

IPA agrees, however, with UP that additional concrete is required for the locations identified above. Specifically, IPA's computation of the square feet of concrete work inadvertently failed to calculate the concrete required for the floor of the pit, drop table and wheel truing areas – only the walls were included. Per IPA's specifications on Opening, the floors will be 24-inches thick to support the concentrated loads from the equipment. The unit costs used for IPA's pit concrete is based on wall construction, which is far more difficult than typical floor construction. The additional cost therefore provides more than enough allowance for the pit floor construction, as well as anchor bolts and other small items requiring embedding in the concrete before the equipment can be installed in the pits. Rebuttal e-workpaper "2012 Buildings.xlsx," includes the additional 300 CY of concrete required. The addition increases the locomotive shop cost by approximately $100,000.

Fourth, UP argues that IPA should have provided concrete pad footings for the building columns because the footings specified by IPA are not adequate to support the 32-foot high columns that anchor the building. UP argues for much large concrete pad footings. Reply at III.F-80. UP's approach is unwarranted.

UP assumes the 24"x8" footings are spread footings by suggesting the footing size would be 6'x6'x24". These footings would individually support independent columns. IPA's proposed strip foundation is a 3'-10" deep continuous wall with a 24"x8" footer surrounding the entire locomotive shop building. IPA's building includes reinforced concrete piers with adequately designed footers tying into the foundation wall system. Reinforcement of the structure is consistent with American Concrete Institute design recommendations. The necessary costs of the described foundations have been included in the quote provided by Kessel.

Fifth, UP argues that the locomotive shop building is not designed to withstand the seismic forces in the Provo, Utah area. As noted above, UP's argument is valid. To correct this error, IPA requested that Kessel update its building quote to account for the required reinforcements. Kessel has made the requested adjustment. This increased the cost of the locomotive shop by $752,563. *See* Rebuttal e-workpaper "Provo Locomotive Shop Proposal.pdf."

Sixth, UP argues that IPA's pre-cast inspection pit is inadequate and undocumented. UP proposes instead to install a much more expensive cast-in-place pit. Reply at III.F-81. UP also complains that IPA's 65-foot pit is too small.

UP proposes a much larger pit that can accommodate two locomotives. *Id.* UP's arguments are without merit.

First, IPA notes that its pre-cast concrete pit cost quote is based on an industry standard pit. *See* Op. e-workpaper "Locomotive Shop Pit Drawings.pdf" and Rebuttal e-workpaper "120-3-8x4-0-INSP-PIT-GEN.pdf" Thus, there is no need for a costly cast-in-place pit as UP proposes. Second, UP's arguments for a larger pit are meritless. Specifically, UP ignores that in addition to the 65-foot pit, there are two ramp spots that can accommodate underside inspection as well. In other words, there are three shop spots available for underside inspection. Adding another pit length, as UP suggests, would take away other premium work areas. The inefficiency that UP introduces logically results in a need for the shop to be even bigger, which is plainly unnecessary.

Seventh, UP argues that IPA's proposed locomotive shop contains several safety hazards that must be addressed, namely: lack of ladder access at the ends of pits; no pit lighting; no central trench drain; no grind pump for the drain system; no system distribution for compressed or electrical outlets; and no exhaust ventilation. Reply at III.F-81. UP also notes that IPA's cost estimates do not match the pit sizes that IPA shows in its workpapers.[27] *Id.* Again UP's arguments are without merit.

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[27] UP's assertion is incorrect. *See* Rebuttal e-workpaper "Buildings 2012.xlsx," and Op. e-workpaper "2012 Buildings Locomotive Shop.pdf."

With respect to the ladder access at the end of the pits, UP cites the International Building Code in support of its assertion the stairs IPA included are unsuitable. Reply at III.F-81 n.234. The IBC regulation is written as part of a building code for general occupancy and means of egress, especially in cases of emergency. It does not apply to an inspection pit which is a workplace tool (*i.e.*, the inspection pit is not an office building). Regardless, the pits have ingress/egress stairs at each end providing for quick emergency escapes, just as a ladder would provide. Moreover, the designs for the pits, wheel truing area and drop table are all based on industry standard designs for such facilities. These are not "one off" designs made for this proceeding. Thus, changing these designs with trenching, superfluous ladders and other appurtenances is unnecessary.

As for UP's arguments for specialized exhaust ventilation, UP cites International Mechanical Code Section 303.7. Reply at III.F-81. However, this code is inapplicable. To begin with, the International Mechanical Code concerns itself with appliances, such as fuel-fired appliances. It has no application to locomotive inspection pits which are open areas strictly used to inspect or repair underside components. Indeed, Section 101.2 of the Code specifically notes that it:

> shall regulate the design, installation, maintenance, *alteration* and inspection of mechanical systems that are permanently installed and utilized to provide control of environmental conditions and related processes within buildings. This code shall also regulate those mechanical systems, system components, *equipment* and appliances specifically

> addressed herein. The installation of fuel gas distribution piping and *equipment,* fuel gas-fired appliances and fuel gas-fired *appliance* venting systems shall be regulated by the *International Fuel Gas Code*.

(Emphasis added). In addition, Section 303.7 (Pit locations) plainly states it is concerned with fuel-fired appliances that are not relevant here:

> Appliances installed in pits or excavations shall not come in direct contact with the surrounding soil. The sides of the pit or excavation shall be held back a minimum of 12 inches (305 mm) from the appliance. Where the depth exceeds 12 inches (305 mm) below adjoining grade, the walls of the pit or excavation shall be lined with concrete or masonry. Such concrete or masonry shall extend a minimum of 4 inches (102 mm) above adjoining grade and shall have sufficient lateral load-bearing capacity to resist collapse. The appliance shall be protected from flooding in an approved manner.

IPA's engineers point out that locomotive pits are not containment-type structures as defined by the International Building Code and do not have appliances installed within. Ventilation is provided from the top, sides and ends, and in any event there is no exhaust that would need to be ventilated as there are no appliances operating within them. As for the upward drift of locomotive exhaust, such emissions are handled by the exhaust ventilation included as part of the building's HVAC systems.

As for lighting, electrical outlets and air distribution, UP has reached a new level of absurd detail. It is not standard practice in a SAC case to specify the location of each light and electrical outlet. As is standard practice, IPA's experts based the locomotive shop costs on a functional engineering solution that includes sufficient budgetary allowance to include such minor items. Indeed, all of IPA's building and facilities costs include sufficient allowances for incidental and ancillary equipment. A building's costs are based on budgetary costs for the overall infrastructure necessary for its operational function. Individual details such as the specific placement of individual lighting receptacles, water fountains, CCTV, and card readers do not noticeably affect the overall cost of the building, and the specific design of each system is not necessary for the general costing and design included in a SAC case.

Eighth, UP accepts IPA's costs for a 35-ton crane, but it then adds additional costs to make modifications to the building so that it can support the crane. UP also adds costs for beams and rails for the crane to run on, an access ladder and inspection platform, and electrified rails to power the crane. Reply at III.F-82. UP's modification and additions are without merit because UP mistakenly believes the crane is attached to the building, and that the crane quote did not include necessary appurtenances.

IPA's 35-ton crane is freestanding. *See* Op. e-workpaper "12155_Stone Consulting_ER.pdf." In addition, the costs for foundations are included in the Kessel quote. Thus, no modifications to the building are required. In addition, the crane includes the necessary electrified rail system that powers the movement of the crane. *Id.* Likewise, the crane already includes a walkway with a

42-inch guardrail for inspection purposes (the crane is access by a ladder installed on the end beams). *Id.* Thus, all of UP's additions are unnecessary.

Briefly summarized, UP has raised only two valid structural objections, which IPA has corrected.

(ii) <u>"Neglected" Items</u>

UP argues that IPA neglected four items that it believes are necessary for a functioning locomotive shop. Again, UP's additions are without merit.

First, UP argues that IPA should have included body harnesses tethered to a moveable overhead trolley to secure workers when working on top of a locomotive. Reply at III.F-82. IPA disagrees with UP's approach. When working on top of a locomotive, IPA assumed that a man-lift would be used. The worker then ties-off to the man-lift. This is the approach that Mr. Ellison used in the many locomotive shops that he worked in, including the OmniTrax and Alaska Railroad shops.

Second, UP argues that the embedded track costs are based on "outside" track rather than a typical locomotive shop inside track. UP bases its assumption on a reference in IPA's buildings spreadsheet to aggregate base, geotextiles, and concrete ties. Reply at III.F-82. UP is incorrect. The supporting structure for the track is 12-inch fiber reinforced concrete slab, which is more than adequate for the purpose. *See* Rebuttal e-workpaper "CRSI Design Handbook – Slabs on Grade.pdf."

Third, UP argues that IPA did not include a separate locomotive wash facility, and that such a facility represents a "best practice" that IPA should have implemented. Reply at III.F-83. As explained above, IPA incorrectly described a separate wash facility rather than its inclusion of washing capabilities in the main shop. While IPA's engineering experts agree that a separate wash facility is certainly a convenience, it is not necessary. As demonstrated in the photos of other small railroad locomotive shops, locomotive wash facilities are not normally included. Indeed, even major locomotive shops often do not have separate wash facilities. For example, CSXT's Cumberland (Maryland) Shop, one of its major shops that services over 1,000 locomotives, only added a locomotive wash facility in 2010 – the shop has been operating since 1919. *See* Rebuttal e-workpaper "CSXT Loco Shop Article.pdf." Mr. Ellison also notes that utilizing the time-honored practice of manual wash with a pressure washer or steam jenny ultimately does a better job of cleaning the locomotive, and it will utilize only a fraction of the 600 gallons of water per hour typical of a wash booth.

Fourth, UP added an emergency generator to the locomotive shop. Reply at III.F-83. UP has suggested there is an applicable AREMA standard, but has not cited it. An emergency generator is not a standard item for a locomotive shop of this size. There are not enough time-critical operations being performed to warrant such a system. Moreover, Mr. Ellison has worked at many locomotive shops that did not have an emergency generator. Thus, IPA's exclusion of a generator is plainly feasible.

(iii) **"Inadequate Design and Size"**

As described above, IPA's locomotive shop has the capacity to accommodate one-third of the IRR's locomotive fleet at one time *inside* the building. Yet, UP argues that the design and size of IPA's facility is inadequate. IPA addresses each argument below.

First, UP argues that the shop does not have adequate space for locomotive repair. Specifically, UP latches on to a small point in IPA's Opening evidence wherein IPA noted that the shop could remove large components and send them out for repair. Reply at III.F-83-84. UP concludes that such an operation would require a large amount of floor space and a separate long-term repair track where a locomotive could be stored without interfering with the two main repair tracks. *Id.* UP's proposal is ridiculous.

Specifically, the spot across from the drop table and in front of the ramp is the designated spot for program repair work and overhaul. While this arrangement may seem constraining as the locomotive has to back out from the ramp when this spot is occupied, this is a minor inconvenience that does not require the absurd expense of a larger building and more track. As a practical matter, managing the occasional program maintenance locomotive spot is really a matter of planning rather than an actual operational bottleneck. Moreover, preparation work can also be performed on the spot in front of the wheel true, as the wheel true can be accessed via the drop table, if the table is clear. Much of the drop table work can be planned work, and normally, a wheel true can be completed on a locomotive in one shift. Thus, this area can, with proper planning, be fluid and responsive to fleet availability demands. Finally, IPA notes that the total throughput of locomotives through the shop each week is nominal. Thus, a bottleneck is unlikely to form. In other words, if the shop were handling 300 locomotives a month like CSXT's Cumberland Shop, an extra track might be warranted, but UP's addition of track here is pointless.

Second, UP argues that IPA is missing space for either a transfer track to move wheel sets from the drop table to a location where the crane can pick them up or a flatbed truck to enter the locomotive shop under the crane. Reply at III.F-84. Again UP has taken a narrow interpretation of IPA's smaller sized shop and fleet, and it apparently failed to thoroughly review IPA's Opening shop drawings. Wheel sets would come in through the shipping/receiving door and be prepped in the work area as designated in the drawings. The overhead crane would index them to or from the drop table. A flatbed truck can also access the shop and park under the 35-ton crane, and the crane can access the work area and the drop table. In addition, there is also ample room to tear down or build up wheel set combos using a forklift or a forklift in combination with the overhead crane. Thus, there is no need to change IPA's Opening shop plan.

Third, UP argues that the shop is not large enough to accommodate the maintenance team. Reply at Reply at III.F-84. In addition, UP argues that the space is not large enough to accommodate the crew-change location that IPA assumed would operate out of the shop. *Id.* UP also argues that the shop must house car inspectors. Thus, UP has added a separate crew change building, and increased the size of the locomotive shop by more than 50 percent. *Id.* UP's additions are unwarranted.

The shop services a total of only 19 locomotives, and therefore needs a small number of people to be domiciled there at one time. Mr. Ellison projects that at no time would more than eight mechanical people work in the shop on a full time basis. As there would be multiple shifts at the location, desk-sharing would be standard. This is consistent with Mr. Ellison's experience at many locomotive shops. The conference/lunch room is designed for at least 10 people and there are lockers for 48 people. Of these 48, 30 are to be designated for train and engine personnel use – although all 30 crew members would never be there at one time. This leaves an additional 18 lockers for mechanical use. The car inspection personnel will be working out of the car shop, near but not in the locomotive shop area. In any event, there is ample space to house those inspectors in the locomotive shop if need be because it has at least 10 unused lockers. Thus, UP has once again gold-plated the facility.

(iv) <u>"Incorrect Site Costs"</u>

UP makes three final modifications to IPA's costs based on its "revised" locomotive shop. None of the changes are warranted.

First, UP adds parking lot space for the separate crew change building it has added on Reply. Reply at III.F-85. As explained above, a separate crew change building is unnecessary. Thus, a separate parking lot is unnecessary.

Second, UP provided for paved parking lots rather than the gravel parking lots that IPA provided. *Id.* UP argues that pavement is better in case it snows. *Id.* And, of course, UP helpfully added catch basins and storm drainage piping, which would not be needed if gravel is used. *Id.* UP's additions are unnecessary. Simply put, gravel parking lots work. Indeed, a gravel parking lot can provide better traction in snow. A paved parking lot is simply gold-plating.

Third, UP claims to have corrected the lighting around the locomotive shop. UP's overstated lighting is discussed below in Part III-F-7-h.

IPA does not accept any of UP's revised site costs.

ii. <u>UP's Locomotive Shop</u>

UP's locomotive shop costs are both unsupported and inapplicable to a basic freight railroad locomotive shop. After rejecting IPA's basic shop cost from its Kessel quote as unreliable, UP instead proposes to base its locomotive shop costs on a massive commuter rail, multipurpose equipment maintenance and layover shop that is being built by the San Joaquin Regional Railroad Commission ("SJRRC Project"). As demonstrated below, this project is in no way comparable to the shop that the IRR would need – even if such a shop had to be scaled up to the size of the SJRRC Project to accommodate more locomotives. More importantly, UP's proposed costs are not supported by any evidence.

First, IPA notes that UP claims that the SJRRC Project and its "associated construction bids, form the basis by which UP replaces the design and costs proposed by IPA." Reply at III.F-78. UP provides no explanation as to how it "replaced" IPA's costs. The only narrative or workpaper that even touches on the substitutions is found in UP's Reply e-workpaper "2012 Buildings UP Reply.xlsx," tab "UP Reply_LocoShopUnitCosts." In that spreadsheet, UP hardcoded various unit costs and quantities for a variety of items, including "Buildings and Facilities" and "Shop Slab Concrete." Yet, UP provides no workpapers that support any of the costs from the SJRRC Project. In other words, UP has utterly failed to support the supposed SJRRC Project costs and there is no way for the Board to determine if they are valid. IPA has presented the only valid and supported costs for the IRR's locomotive shop.

Second, the SJRRC Project is designed to service commuter rail locomotives *and passenger rolling* stock, which are subject to FRA regulations that mandate daily inspections and servicing. *See* 49 C.F.R. Part 238. It is also designed as an overnight storage facility for locomotives and cars. In other words, the facility is multipurpose. Indeed, as one article explains, "[p]its, walkways and platforms along tracks in and out of the shop will allow workers to give each *car* a thorough sight inspection from top to bottom . . . ." http://cvbizjournal.com/local-news/altamont-commuter-express.html#.UcuaTBYqcUs (emphasis added). In addition, the article notes some capabilities that are unnecessary for the IRR: "[o]ne pit will allow workers to drive in a train and lower an engine or other heavy piece of equipment onto a 100-ton capacity lift that can be moved and raised again to allow crews to work on equipment on the main level." *Id.* One quote summed up the difference between the large multi-purpose commuter facility and the basic requirements of the IRR: "Everything is bigger here . . . . It's like a Jiffy Lube for these locomotives." *Id.*

The SJRRC Project also appears to include a brick fascia, which is another unnecessarily expensive item.

Briefly summarized, IPA presents the only feasible, supported cost and design for the IRR's locomotive shop. Hence, it has continued to use its Opening design and costs with the revisions to account for special concrete floors in the inspection pit, wheel true and drop table areas, and the additional costs for increased seismic resistance.

d. Car Repair Shop

The parties agree that car repairs will be contracted out. Reply at III.F-85.

e. Crew Change Facilities/Yard Offices

On Opening, IPA constructed one crew change facility at Milford. The crew changes at Lynndyl and Provo were integrated into the headquarters building and the locomotive shop, respectively. The Milford building is based on a pre-engineered metal building shell finished with sheet rock wall coverings, painted, hard wearing floor surfaces, one walled-in office, and a unisex restroom. The Milford facility also serves as a yard office. Details of the design and costs were included in Opening e-workpapers "2012 Buildings.xlsx," "2012 Building Sites.xlsx," "2012 Buildings Crew Change.pdf," and "2012 Buildings Crew Change Site.pdf."

UP accepts the derivation of IPA unit cost for the building, but proposes a series of changes to the design. Specifically, UP argues that the building is not ADA compliant and not large enough, and it adds separate facilities for women. UP supposedly corrects these deficiencies. Reply at III.F-85-86. UP's arguments are without merit.

The building is ADA compliant. *See* Rebuttal e-workpaper "Rebuttal Crew Change.pdf." This workpaper demonstrates a standard ADA-compliant design that IPA used in developing its design.

As for separate facilities for women, the Milford crew change has only 10 or so employees that are regularly using the facility. Under the standards of the International Plumbing Code 2009, 403.2, Exception No. 2: "Separate facilities shall not be required in structures or tenant spaces with a total occupant load, including both employees and customers, of 15 or less." *See* Rebuttal e-workpaper "Plumbing Code.pdf." As such, UP's addition is unnecessary.

UP also adjusts the structural costs for the IPA's crew change building. Specifically, UP argues that the proposed building is smaller than the building used as IPA's source cost. UP then surmises that a smaller building would cost more per square foot than a larger building, which assumption it bases on Means Handbook square foot costs for a similar building. UP's cost increase is unwarranted.

First, UP is inconsistent in that it accepts scaling for other items, such as the headquarters building and locomotive shop, but not the crew change facility. Second, UP's change in unit cost is unwarranted because UP is referencing an inapplicable one-story office building from the Means Handbook. There is no similarity, other than the number of floors, between the Means Handbook building that UP is using and the building design from the Kessel quote. IPA's buildings resemble a building that Means would classify as "Warehouse & Offices Combination." *See* Rebuttal e-workpapers "Means SqFoot-Page 174.pdf" and "2012 RS Means – Page 835.pdf." The Means building cost per square foot, for a similar sized building, is $68.50 per sf. When the location factor of 0.937 is applied, the Means cost is $64.18 per sf, which is nearly identical to IPA's cost of $66.63 per sf. Thus, UP's additive is unnecessary.

UP also adds paved parking lots and additional lighting to the crew change facility. Reply at III.F-86. UP's additions are unnecessary. As noted in the locomotive shop discussion, paved parking lots are a luxury not a necessity. As for the additional lighting, the building is served by a small parking area that is easily lit from lights on the exterior of the building.

Finally, UP adds a second crew change building in Provo because it assumes that the locomotive shop does not have adequate space to accommodate a crew change location. Reply at III.F-87. As discussed in Part III-F-7-c above, the locomotive shop can accommodate a crew change. As such, IPA has not added a second crew change building on Rebuttal.

f. **<u>MOW Buildings</u>**

On Opening, IPA included one MOW building at Lynndyl, accompanied by a garage facility for MOW equipment. The building is based on the same design as the crew change building. IPA's engineers based the space requirements on the total MOW staffing as developed by IPA witness Gene Davis. Details of the design and costs were included in Op. e-workpapers "2012 Buildings.xlsx," "2012 Building Sites.xlsx," "2012 Buildings Maintenance of Way Office.pdf," "2012 Buildings Maintenance of Way Garage.pdf," "2012 Buildings Maintenance of Way Site.pdf," and "MOW & Crew Buildings.pdf.

UP raises the same arguments it made with respect to crew change buildings (*i.e.*, not ADA compliant, not large enough, and not adjusted for economies of scale in building costs). Reply at III.F-87. For the reasons, noted above, UP's arguments are without merit, and IPA continues to use its Opening design and costs.

UP claims to have accepted IPA's MOW garage. Reply at III.F-88. Yet, UP then claims that one bay of the garage should be used as mechanical shop, to which it adds a jib crane, a vehicle exhaust ventilation system, and 25-feet of embedded rail for installing, testing and servicing hi-rail assemblies. UP's additions are without merit.

IPA is not running a mechanical shop. When vehicles need servicing they will be fixed by qualified repair shops. The costs associated with such servicing are provided for in the MOW budget. Adding a crane, an exhaust system and fixed rail is an unnecessary and pointless expense. Thus, IPA has not included these additional items on Rebuttal.

Finally, UP adds a second MOW building at Milford to house one track maintenance crew and one track supervisor. Reply at III.F-88. UP has provided no justification for the addition other than "operating needs." *Id.* UP's addition is unnecessary. Simply put, all of the IRR's facilities can easily be reached from Lynndyl, which is centrally located on the IRR system. Similarly, it is wasteful to include an extra building to accommodate virtually no staff. As such, IPA continues to specify one MOW building on Rebuttal.

g. <u>Wastewater Treatment</u>

UP accepts IPA's wastewater treatment, except for its addition of a second oil-water separator for the fueling facilities. Reply at III.F-88. As explained in the locomotive shop discussion, the second oil-water separator and storage tank are unnecessary. Thus, IPA continues to use it Opening wastewater treatment costs.

h. <u>Yard Air, Lighting and Drainage</u>

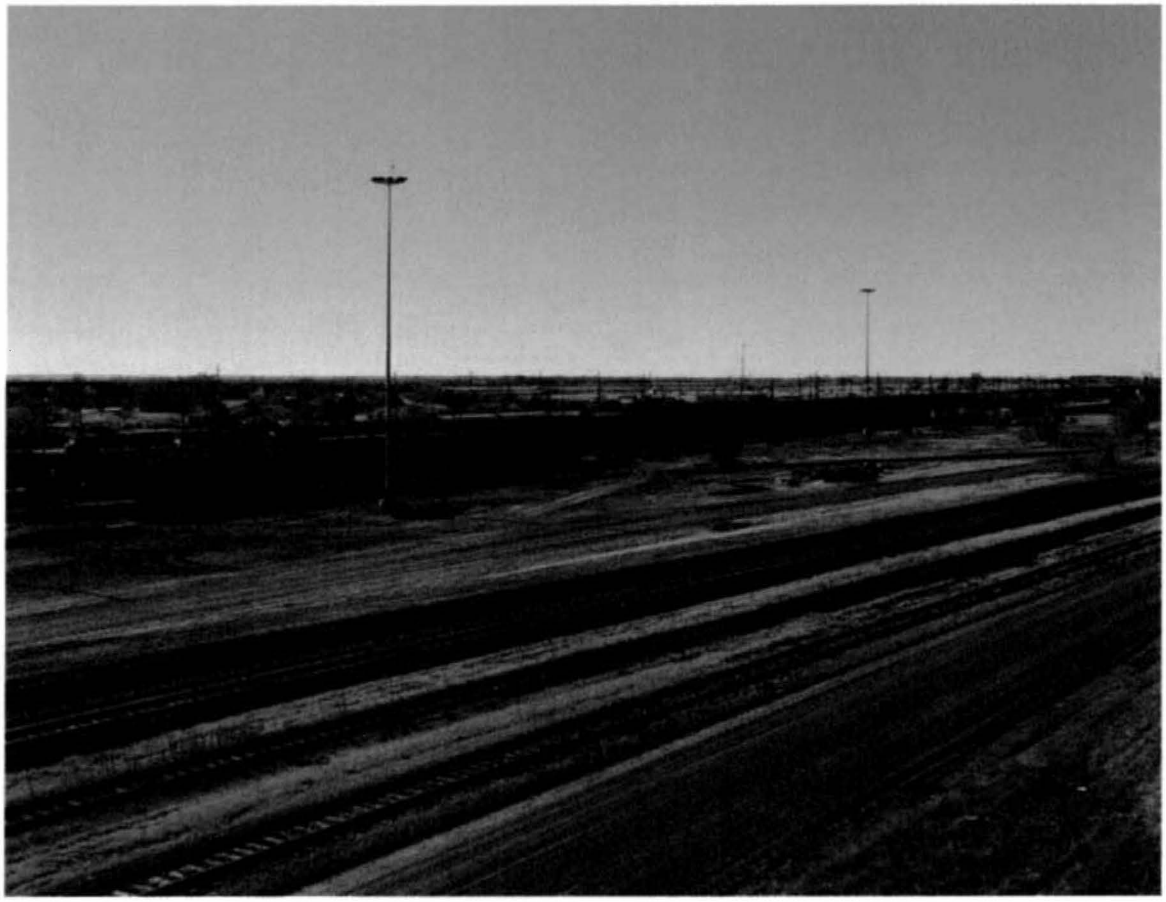
On Opening, IPA did not provide for yard air at Milford or Lynndyl, but it did provide for air at the locomotive shop, DTL fueling areas and MOW shop. UP argues that air should be added at the other yards. Reply at III.F-89. Such air is not required as the locomotive-supplied air is sufficient. No switching is performed in Lynndyl. Thus, yard air is not needed. In Milford, a small amount of switching is performed, but the cars are usually connected to the local or road locomotives during such times. As such, IPA has not added air on Rebuttal.

On Opening, IPA provided lighting by assuming the use of 40-foot light poles, with dual 3-foot arms. Each arm has a 400-watt HPS cobra head luminaire. Lights were spaced every 300 feet, and between tracks to ensure maximum coverage. However, to aid in fueling locomotives, the fueling spots near the locomotive shop include lights spaced at 100 foot intervals. The costs and details of these items were included in the general yard development costs shown for each yard in IPA's Opening e-workpapers "2012 Building Sites.xlsx," "Marysville Yard.pdf," and "Lights1.pdf."

UP accepts IPA's specified lights, but it claims that a pull box at the base of each light should be added. Reply at III.F-89. UP's addition is unnecessary. The light poles specified by IPA already include a removable plate hand-hole for maintenance. *See* Op. e-workpaper "Typical Lightpole with handhole.pdf"

UP also insists on adding far more lighting than is necessary to the yard facilities. Reply at III.F-89-90. For example, UP supposedly adjusts its lighting to provide ideal coverage over multi-track locations. Again, UP's additions are unnecessary.

First, IPA notes that UP has only minimal lighting at its own yards. Indeed, as shown in the photo below (which was included in IPA's Opening e-workpaper "Marysville Yard.pdf"), UP's yards have far less lighting than UP proposes to use here.



Second, IPA's light approach is more than adequate. Under AREMA standards, the recommended illumination level is 1.0 foot-candle ("fc") for yard locations. *See* Rebuttal e-workpaper "AREMA Yard Track Lighting.pdf." As shown in IPA's Op. e-workpaper, IPA's lighting configuration provides for an average of 1.0 fc in its yards. *See* Op. e-workpaper "Lights1.pdf." As such, IPA continues to use its Opening lighting configuration and costs.

On Opening, IPA noted that no yard drainage was observed at UP's yard facilities located along the IRR route. Nevertheless, to be conservative, IPA provided sloping in the yards and it placed drains at the low points. *See* Op. e-workpaper "Yard Cross Section.pdf." UP argues that IPA did not demonstrate that there is a single low point between two yard tracks where the water would flow. Reply at III.F-90. UP opts to add drainage pipes between yard tracks. *Id.* UP's additions are unnecessary. Simply put, UP plainly ignored the yard track profiles that detail how the water would be channeled to the drains at the low points. As such, IPA has not modified its Opening yard drainage costs.

8. <u>Public Improvements</u>

The parties' positions with respect to the costs for public improvements are summarized in the table below.

REBUTTAL TABLE III-F-11
<u>PUBLIC IMPROVEMENTS</u>
(millions)

	Item	IPA Opening	UP Reply	IPA Rebuttal	Difference
1.	Fences and Cattle Guards	$ 2.4	$ 3.4	$ 2.4	$1.0
2.	Signs	0.09	0.09	0.09	0
3.	At-grade crossings	1.6	1.6	1.6	0
4.	**Total**	$ 4.1	$ 5.1	$ 4.1	$ 1.0

a. <u>Fences</u>

The parties agree on the route miles of fencing that are required on the IRR. Reply at III.F-90-91. However, UP does not accept IPA's fencing unit costs and it adds unnecessary gates to the fences. UP's proposed changes are without merit.

UP argues that one gate should be installed for every mile of fencing. Reply at III.F-91. UP provides no rationale for its gates. Thus, UP has not supported this additional cost. Regardless, IPA's own inspection of the territory did not reveal any railroad gates, let alone one gate per mile. As such, IPA has not included gates in its Rebuttal public improvement costs.

On Opening, IPA's fencing unit cost was $2.04 per LF. The unit cost was based on a discovery document furnished by UP. Specifically, IPA utilized the total cost per LF for "Fence - Right of Way – Construct" to which it added the total cost for "Fence - Right of Way - Corner Bracing - Furnish & Install" to determine a cost per LF. The cost was then adjusted by the relevant historical index. In other words, IPA used actual bids that UP received to build right-of-way fence.

On Reply, UP complains that IPA's data is inadequately documented. Reply at III.F-91. With all due respect, UP's impeachment of its own documents is not credible. Moreover, UP then notes that it has incurred costs for fencing that range from $2.00 per LF to $5.00 LF. *Id.* Yet, UP then determines that it will utilize a higher cost of $3.24 per LF, which it argues is better documented. In other words, UP admits that $2.04 per LF is within its normal range of prices, but it simply does not like the lower cost. As previously noted, it is well established that the Complainant shipper is entitled, under *Coal Rate Guidelines*, to use the least cost option provided it is feasible. Thus, IPA continues to uses its Opening fencing unit cost.

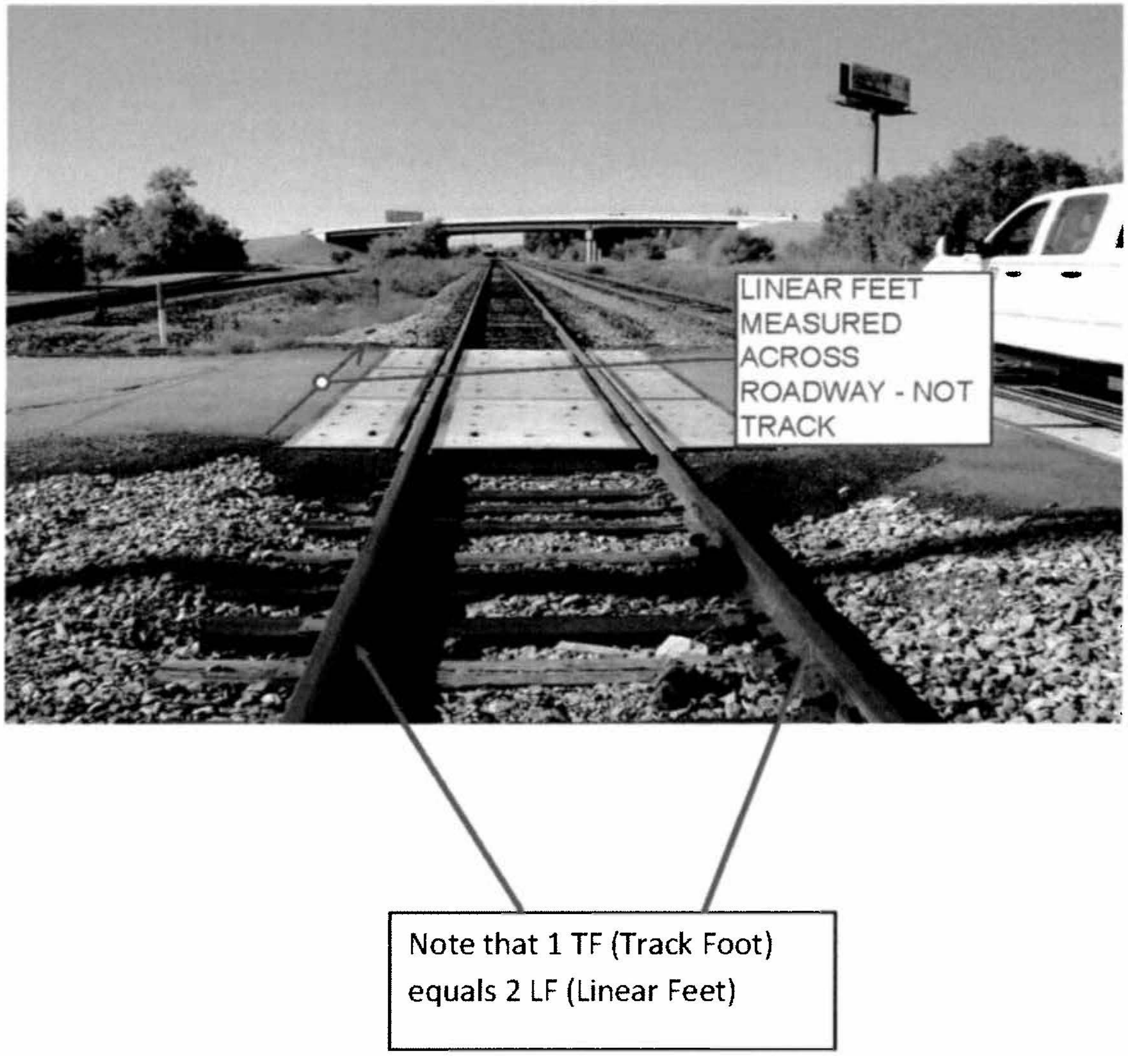
b. Signs and Road Crossing Devices

The parties agree on the standard package of signs that should be placed along the IRR. Reply at III.F-92.

c. Grade-Separated and At-Grade Crossings

The parties agree on the locations of at-grade crossings and the applicable unit costs for crossing materials. Reply at III.F-92. On Opening, IPA relied on a quote that determined the cost for crossing materials based on linear feet (width) of the *road* crossing. UP, apparently misunderstanding the quote, argues that the material should have been measured in track feet (*i.e.*, one track foot = two linear feet). However, the quote is measured in linear feet because it is driven by the width of the crossing, not the associated track feet, but it "covers" all of the track that it spans over. In other words, the crossing goes across the track and the material extends over both sides of the track based on the roadbed width. Thus, the only element that may vary is the width of the road crossing the track. IPA used a 40 foot crossing width, which UP accepted. The illustration below illustrates the basis of IPA's crossing costs.

TRACK FOOT v. LINEAR FOOT
EXAMPLE



DEFINITION:

ONE Track foot = A one-foot section of two side-by-side rails, anchored on ties, sitting on a standard ballast roadbed.

Thus, on Rebuttal, IPA has continued to use its Opening grade quantity unit costs and quantities.

9. Mobilization

The parties agree on the 3.5 percent mobilization additive, and the parties agree on the cost items to which it should be applied. Reply at III.F-93.

10. Engineering

UP accepts IPA's engineering additive of 10 percent. *Id.*

11. Contingencies

UP accepts IPA's contingency factor of 10 percent. *Id.*

12. Other

The parties agree on the construction schedule. *Id.* While UP agrees with the construction schedule as proposed by IPA, UP nevertheless argues that because IPA's schedule calls for some activities to be undertaken in the winter, IPA must add $9.8 million to accommodate so-called "winter construction." Reply at III.F-95. UP then cites a long list of theoretical "productivity" reductions that might occur, including longer start times for equipment, frozen subballast, and concrete curing issues. *Id.* Based on its theories, UP increases equipment and labor costs for earthwork, bridges, subballast and track labor by a factor of 1.19 to 1.28, depending on the category, for all work that it believes will occur in January, February or March. *Id.* at III.F-96. As explained below, UP's increases are inadequately explained, inapplicable, and inconsistent with real-world rail construction projects, including UP projects. In addition, the data that UP relies upon is flawed and unreliable. Moreover, such costs have been rejected in prior proceedings. Thus, IPA rejects UP's additional costs.

UP has erred by adding winter construction costs to unit costs derived from bids. Even if UP's winter costs were legitimate, which they are not, it is inappropriate to add winter costs to items that are based on contractor bids or actual contractor prices because those bids necessarily recognize and take into account potential adverse weather conditions that may occur. Moreover, UP has provided no evidence that any of the contractor bids that IPA relied on had any limitation as to time of year of construction or added costs for winter construction. Thus, UP's additions to track labor and bridges[28] are inapplicable.[29]

UP also suggests that additional costs related to concrete work would also occur whenever the temperature drops below 40 degrees. UP Reply at III.F-95. However, none of the work being done in the "winter" requires cast-in-place concrete. All of the IRR's bridges and box culverts use pre-cast concrete. Thus, there is no need to protect such concrete in colder temperatures.

As for the application of UP's additive to Means Handbook unit costs, again UP errs. UP implies that the Means Handbook does not capture varying levels of productivity in its unit costs. UP Reply at III.F-94. However,

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[28] UP used Means Handbook costs for its Type 2 and Type 3 bridges, but as explained in Part III-F-5 above, the additional bridge types are unnecessary.

[29] UP based its common earthwork additive on its Means Handbook unit cost for this activity, but IPA continues to use its Shawnee-Jireh project unit cost. Thus, any winter work additive would not be applicable. Moreover, part of the Shawnee-Jireh project earthwork, including clearing and embankment, was undertaken in the heart of winter (December-February). *See* Rebuttal e-workpaper "83402 CAS.pdf." Thus, the unit cost already accounts for any winter additive, were such an additive even necessary.

the very Means Handbook reference that UP cites (Reply e-workpaper "RS Means Pages_IX&X.pdf") indicates that the UP's additive is unnecessary. Specifically, the Means Handbook states that:

> Labor costs reflect productivity based on actual working conditions. In addition, to actual installation, these figures include time spent during a normal workday on tasks such as material receiving and handling, mobilization at site, site movement, breaks, and cleanup.
>
> *Productivity data is developed over an extended period so as not to be influenced by abnormal variations, and reflects a typical average.*

(emphasis added). As the Means Handbook language plainly demonstrates, the unit costs therein are developed based on an examination of costs and productivity over an extended period – not merely optimal conditions. As the Means Handbook represents a national average, the costs necessarily include a wide range of conditions, including winter weather. In other words, there is no need for a winter construction adjustment for Means Handbook unit costs.[30]

UP also ignores the fact that the Means Handbook does not include any separate additive for winter construction costs. Thus, UP had to create one based on the various construction estimating and productivity studies that it

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[30] UP's workpaper includes a second page from the Means Handbook that indicates that productivity may be impacted by adverse conditions, and the language therein instructs the reader to consult another portion of the Means Handbook that describes how to use the "Unit Price Pages." Reply e-workpaper "RS Means Pages_IX&X.pdf." However, UP failed to include the additional pages in its workpapers. Regardless, IPA's engineers have searched the Means Handbook adverse condition pages, and there is no option for "winter weather."

included in its workpapers. However, UP has failed to describe how its made-up additive meshes with the Means Handbook unit costs it is adjusting.

The Means Handbook is a sophisticated pricing tool that is the product of significant data collection and interpretation on the part of the publisher, RS Means. Yet, UP simplistically applies an additive developed from non-Means Handbook sources without any consideration of the degree to which productivity levels for differing conditions are already incorporated into the Means Handbook unit costs. In other words, UP blindly applies an additive that appears to be based on deviations from "ideal" conditions rather than the multitude of conditions that the Means Handbook considers. Thus, UP's winter construction additive is hopelessly flawed, and IPA rejects its application to Means Handbook unit costs (or any other costs as well).

UP's adjustment to the Means Handbook unit costs is further flawed because UP's winter weather adjustment provides no corresponding beneficial adjustment for spring, summer or fall conditions. As the Means Handbook represents an average over an extended period of time, UP's winter weather adjustment distorts the average. To correct this, UP must provide a corresponding beneficial correction during the balance of the year, which UP fails to do.

UP's weather data is also flawed. Specifically, UP includes Ironton, UT in its average temperatures for the Sharp Subdivision. Reply e-workpaper "IRR Climatic Data Winter Months.xlsx." Ironton is located close to the coal wye tracks in the southern portion of the City of Provo. Yet, UP's weather data indicates that the average temperature in Ironton is 13.4 degrees colder than Provo – the city it is located within. This data is plainly flawed, and UP's inclusion of it in its weather data spreadsheet, from which UP attempts to derive its additive, incorrectly skews the results.

UP's analysis of the weather data is further flawed because UP relies on average temperatures. The average reflects the temperature over a 24-hour cycle rather than the temperatures experienced during daylight hours, when the crews would be working.

UP also incorrectly lumps March in as a winter month. For construction purposes, it is meteorological winter, not astronomical winter, that is the relevant benchmark. As the National Weather Service defines it: "meteorological winter is defined as the contiguous period spanning December 1st through the last day of the following February." Thus, UP should not have included March in its winter weather additive.[31]

UP's application of its additive is also flawed. Specifically, UP assumes that production in all categories of work is equal in all months that a given activity might occur. In other words, UP ignores the normal ebb-and-flow of construction work. For example, solid rock excavation is unlikely to occur every month on an even basis given the small quantities involved here. Likewise,

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[31] IPA notes that even UP's flawed weather data indicates that the average temperatures are comfortably above freezing in March. Nonetheless, it is unlikely that program track maintenance work (as opposed to construction work) would be performed in this area in March.

UP's additive ignores normal construction start-up activities. Thus, if grading is set to start in January, the first activities would include mobilizing, staking out and other preliminary work. Clearing, which UP does not include in its additive, would occur next, and so on. Thus, UP makes no attempt to place the variety of activities in any meaningful sequence. Instead, it assumes that all categories of work will be spread evenly over time.

UP further ignores that railroads are regularly built in winter months without incurring additional costs because the projects are bid out. For example, WRPI built 100+ miles of railroad in 14 months, including working straight through the winter of 1983-84. Yet, the unit costs did not change simply because part of the construction work was performed in the winter.

UP's anecdotal evidence concerning possible difficulties that the IRR might face are also flawed. Reply at III.F-95; Reply e-workpaper "Memo Winter Working Conditions Al Lee 090803 RCP 2011.pdf." Specifically, the e-workpaper that UP cites appears to be notes of a call with a local CAT machinery dealer in North Dakota discussing winter conditions in North Dakota (which, of course, is located on the Canadian border, far to the north of Utah). This appears to have been generated for another case – presumably *Otter Tail* because it is the only SARR that has gone through North Dakota. UP makes no attempt to relate the North Dakota conditions to those in central Utah.[32]

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[32] UP's workpapers include a workpaper concerning conditions in the Wasatch Mountains, but the IRR will not operate or construct any facilities in this

In using its North Dakota reference, UP also ignores the fact that the Board rejected the addition of winter construction costs in *Otter Tail*. Indeed, the Board held, in part, that the defendant's lack of support for its additive was fatal. *Id.*, slip op. at D-18. As UP has not provided sufficient or reliable support here, its additive should likewise be rejected.

IPA also notes that the IRR construction schedule provides ample time to allow the movement of certain construction activities to warmer months, without disturbing the overall 30-month schedule. *See* Op. e-workpaper "Construction Schedule 11-20-12.xlsx." Indeed, IPA's engineers prepared a sample construction schedule illustrating that all of the work could be done without working during the winter. *See* Rebuttal e-workpaper "Example Revised Schedule 06-28-13.xlsx." In *Otter Tail*, the Board agreed that such flexibility obviated the need for additional winter construction costs. *Id.* at D-18 ("based on the flexibility to alter the OTRR construction schedule by 3 months . . . no additional costs for winter construction are included here."). Thus, UP's winter construction costs are irrelevant as well as unsupported.

Finally, UP ignores that weather delays are a part of any construction project. The fact that it may be cold one day, and warm the next, does not justify a massive additive, especially when a large bulk of those costs already include unit pricing that likely exceeds what the project would cost if all

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area. Reply e-workpaper "Stacy & Witbeck interview about earthwork.pdf." Thus, this workpaper is inapplicable.

elements were bid out (*i.e.*, SAC complainants have shown the Means Handbook unit costs can bettered on large, bid-out construction projects). Simply put, UP has failed to support its proposed winter construction costs and they should be rejected.

III-G Discounted Cash
Flow Analysis

III. G. DISCOUNTED CASH FLOW ANALYSIS[1]

In Part III.G of its Reply, UP raises several criticisms of IPA's discounted cash flow model, but also accepts several of its elements. Most notably, UP seeks a major change in the Board's approach to determining the cost of equity capital, asking it to impose an unprecedented direct equity flotation cost.

1. Cost of Capital

UP accepts IPA's use of the Board's railroad industry cost of capital for 2010 and 2011, the first two years of the SARR's construction. Reply at III.G-1. It also accepted IPA's reliance on the 2011 cost of equity and cost of debt as a proxy for 2012. *Id.*

After the filing of UP's Reply, on April 19, 2013, the Association of American Railroad's ("AAR") filed its opening statement in *Railroad Cost of Capital – 2012*, EP 558 (Sub-No. 16). In that filing, the AAR has submitted a 2012 cost of debt of 3.29 percent; a cost of common equity of 13.33 percent; a railroad industry capital structure of 22.62 percent debt, 0.00 percent preferred equity and 77.38 percent common equity; and an overall railroad industry cost of capital of 11.06 percent. On Rebuttal, IPA relies on these cost of capital figures submitted by the AAR in EP 558 (Sub-No. 16).

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

2. **Equity Flotation Costs**

UP argues that IPA "ignored" the Board's decision in *AEP Texas*, which UP suggests requires the inclusion of equity flotation costs in determining the cost of equity capital for a SARR. Reply at III.G-2. In fact, the Board has never imposed a requirement that a shipper include flotation costs, but has consistently rejected efforts by railroads to add them to a SARR's cost of equity. *AEPCO 2011*, slip op. at 137-38; *Xcel I*, 7 S.T.B. at 659; *TMPA*, 6 S.T.B. at 751; *Wisconsin P&L*, 5 S.T.B. at 1040; and *Duke/CSXT*, 7 S.T.B. at 433.

In *AEP Texas*, the Board dealt with a situation where the shipper proposed a restructuring in order to take advantage of the availability of lower capital costs and included an equity flotation cost designed to track the Board's treatment of debt flotation costs for the railroad industry as a whole. The railroad defendant, BNSF Railway, opposed the shipper's refinancing plan and advanced a direct equity flotation fee of 3.9%. The Board rejected the Shipper's restructuring approach, but included equity flotation costs, determined in the manner proposed by the shipper, in the cost of equity. The resulting additive to the cost of equity was 0.13%.

The Board explicitly rejected BNSF's approach of a direct flotation fee of 3.9%.

The Board's rationale for rejecting any equity flotation cost additive in all cases preceding (and following) *AEP Texas* relied on two grounds. The first is that equity flotation costs are already reflected in the Board's cost of equity determinations and including the costs again would constitute a double-count. *See, e.g.*, *Duke/NS*, 7 S.T.B. at 123 ("Duke argues that the annual cost of capital computation already includes flotation fees . . . . Duke's points are well taken."). The second is that the railroads do not incur these fees, and imposing them on a SARR would inflict a cost burden not incurred by the incumbent railroad.

In this case, IPA has not proposed to include any equity refinancing, and *AEP Texas* is inapposite. UP has made no showing that it or any other railroad has incurred any equity flotation cost in any recent period, or that the current cost of equity does not already reflect historic equity flotation costs.

In *AEPCO 2011*, the railroad defendants, BNSF and UP, argued, as UP does here, that inclusion of a direct equity flotation cost was required under *AEP Texas*. The Board rejected the carriers' proposal for multiple reasons. First, the Board noted that in *AEP Texas* "both parties had agreed that an equity flotation fee should be included . . ." *AEPCO 2011*, slip op. at 137, but that "[h]ere, . . . AEPCO does not agree with the inclusion of a separate equity-flotation cost." *Id.*, slip op. at 138. Second, it pointed out that "The Board previously has explained that flotation fees already are included in the Board's cost-of-capital computation. *Duke/CSXT*, 7 S.T.B. at 433." *Id.* Lastly, the Board observed that to include such a fee, it would require evidence concerning the existence and fees for equity flotation of the size that the SARR would require. *Id.* (citing *Xcel I*, 7 S.T.B. at 659). The Board also observed that even if it were to allow a separate fee, a figure of 3.9% would be "too high." *Id.*

In an effort to respond to the last of the Board's reasons for rejecting an equity flotation fee in *AEPCO 2011*, UP has "identified" what it describes as "several IPO's that took place in 2012 of roughly the size of IRR's." Reply at III.G-2. A review of the referenced workpapers reveals that none of the six IPOs is for a railroad or even for a company in a related industry. Rather, they involve a plastics company (Berry Plastics); a cloud-based human resources and financial management applications company (Workday); a global distributor of pipes, valves, fittings and related products (MRC); a global alternative asset manager (Carlyle); an independent petroleum exploration and production company (Midstates); and a global oilfields products company (Forum). The six IPOs range from $234 to $733 million with only one of the six within $50 million of the approximate $400 million in equity needed by the IRR. UP provides no explanation of how these IPOs were selected or why they should be deemed persuasive evidence of a railroad's stock flotation cost. No witness, much less a witness with demonstrated expertise on the subject of equity flotation fees, sponsors the narrative in which UP proposes its flotation fee of 7.3%.

In the precedent the Board cited in *AEPCO 2011* for the need for adequate support for a claimed equity flotation fee, the Board rejected evidence presented through testimony from the President and Chief Executive Officer of a private consulting firm who "estimate[d] the size of this [4%] fee based on his experience and consultation with the Chief Financial Officer (CFO) of his company," supported by "a memorandum from the CFO purporting to reflect telephone conversations with three undisclosed financiers . . . ." *Xcel I*, 7 S.T.B. at 659. At least in that situation there was some witness purporting to provide an estimate developed for a railroad. Here, there is only limited data for a selection of six IPOs with no support whatsoever as to their representativeness or suitability for estimating an equity flotation cost for a small railroad.

UP has not even begun to explain why the companies chosen are appropriate benchmarks for the railroad industry. Underwriters receive payment for new equity issues in the form of a spread; that is, they are allowed to buy shares of stock for less than the offering price at which the shares were sold to investors. These share prices are based in part on the riskiness of the underlying firm.[2] Unless the SARR and the comparable firms face the same levels of risk, the underwriting spreads, and subsequently, the costs of the underwriting will differ.

Moreover, the information in the 10-Qs themselves about the 6 IPOs selected by UP indicates that they are not at all comparable to the SARR. While the IPOs ranged in size from $234 million to $733 million, the public offering of newly-issued shares (meaning the number of shares specified in UP's electronic spreadsheet) amounted to relatively modest portions of the total number of shares that the firms already had outstanding. It thus appears that the primary purpose of

[2] In more risky issuances of common equity, the underwriter will usually receive some extra noncash compensation, such as warrants to buy additional common stock in the future. *See* Brealey, R. A., Myers, S. C., and Allen, F., *Principles of Corporate Finance, Eighth Edition*, 391 (McGraw-Hill Irwin 2006) ("Brealey, Myers and Allen") for a more complete description of the risks inherent in underwriting common equity IPOs.

the IPOs was not to raise capital to fund the enterprise by acquiring physical assets or covering operating costs. Instead, the IPOs appear to have been undertaken to enable the previously-issued shares that were already held by stockholders to be sold as publicly-traded stock (presumably after a "lock-up" period ended).[3] In some instances, some of these already outstanding shares were included in the offering itself, although UP ignores those additional shares when it calculates the underwriting fees as a percentage of the proceeds of the shares sold. In addition, the proceeds from some of the IPOs were used to repurchase or extinguish otherwise outstanding debt. In short, UP has made no demonstration that its six IPOs are at all comparable to the SARR.

For example, the first IPO identified by UP, Berry, involved 29,411,764 shares, but the 10-Q included in UP's workpapers identifies 113,038,346 shares outstanding. The IPO thus covered only 26 percent of the firm's shares. The 10-Q in UP's workpapers also indicates that the $470.6 million raised (29.4 million shares at $16 per share) went largely to repurchase $455 million of debt. UP's second IPO, Workday, is similar in that the IPO covered 26.2 million shares, but the firm had 166 million shares outstanding according to the 10-Q. The offering covered only 16% of the shares. The third IPO, MRC, covered 17 million shares of 101.5 million shares outstanding or 17%.

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[3] Lock-up periods are described at http://www.sec.gov/answers/lockup.htm. Each of the six IPOs noted by UP had 180-day lock-up periods (information available at www.nasdaq.com).

Furthermore, the MRC IPO included not only the 17 million IPO shares, but also 5.7 million shares held by a selling stockholder. In addition, the proceeds were used to repay amounts under a debt facility.

The fourth IPO, Carlyle, is more complicated in that the offering appears to involve units in only the limited partnership, where another entity was the general partner. In other words, the IPO was for a passive stake in a much larger entity, as opposed to conventional equity. Moreover, the 10-Q states that the proceeds were used to extinguish debt, and not to acquire assets or fund current operations.

The fifth IPO, Midstates, covered 18 million shares, but the 10-Q shows 66 million shares outstanding.[4] The IPO thus covered only 27.3% of the shares. The offering also included 9.6 million shares held by stockholders. Most of the $215.6 million in net proceeds was used to redeem preferred units and pay down borrowings. Only $49.5 million was used to fund operations.

The last IPO, Forum, covered 13.9 million shares (as well as an additional 7.9 million shares owned by selling stockholders) out of a total of 85.7 million shares outstanding. In other words, the IPO of company shares covered only 16.3% of the total shares. Also, the proceeds were used to repay outstanding debt.

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[4] The relevant page of the 10-Q was not included in UP's workpapers, but is included in IPA's workpapers. *See* Rebuttal e-workpaper "Midstates IPO.pdf."

The six IPOs presented by UP are thus not particularly representative of the SARR. Even if the IPO proceeds were deemed to be roughly in the same range as the SARR's equity, the IPOs involve firms with much larger market capitalizations. In addition, the IPO proceeds were largely used to extinguish debt rather than procure assets or fund operations. It also appears that a primary objective of the IPOs was to enable the much greater number of shares that was already outstanding to be traded.

UP has provided no basis on which to conclude that the underwriting fees charged for the six IPOs would be at all representative of the fees that would be charged for the SARR with its much smaller total market capitalization, and UP has not even made an adjustment to reflect the additional shares that were included in some of the offerings. Nor has UP considered alternative funding mechanisms that might be available to the SARR at a lower cost, such as private placement and private equity.

UP's proposed adjustment for equity flotation costs is defective in an additional respect. The effect and intent of UP's proposed adjustment is to increase the cost of the SARR's equity. Faced with such high equity flotation costs, the SARR would likely redefine its capital structure to mitigate the costs incurred.[5] This mitigation of an added cost reflects the least-cost, most-efficient

[5] UP's efforts to require IPA's SARR to amortize its debt rest on the same defect. The reduction in debt resulting from the amortization would lower the cost of the equity and preclude the increase in the overall cost of capital that UP seeks to achieve. This matter is addressed in Part III-H-1.

nature of the SARR, that is, the SARR would not pay any more than necessary for its capital. The substitution also reflects application of established principles of corporate finance.

The STB has already observed that "the costs of debt and equity are related to the debt-to-equity ratios. For example, if a company is highly leveraged with debt, its costs of debt will be higher." *Methodology to be Employed in Determining the Railroad Industry's Cost of Capital*, EP 664 (STB served Aug. 20, 2007), slip op. at 8. The STB's statement reflects the Modigliani-Miller theorem[6] that a firm's cost of capital is independent of its capital structure. In particular, debt may be cheaper than equity, but attempting to reduce the overall cost of capital by displacing expensive equity with cheaper debt will be ineffective because the increased debt will increase risk, driving up the cost of both the additional debt and the remaining equity. However, it follows that if equity is made more expensive by adding an external factor such as flotation costs, then the firm could respond by rebalancing its capital structure to replace the suddenly more expensive equity with lower-cost debt so as to mitigate the higher cost of equity. In other words, "the costs of debt and equity are related to the debt-to-equity ratios," and externally increasing the cost of debt or equity leads to a corresponding adjustment to the debt-to-equity ratios. UP made no effort to take

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[6] Modigliani, F., and Miller, M. H., *The Cost of Capital, Corporation Finance, and the Theory of Investment*, 47 Am. Economic Rev. 261-97 (June 1958).

such substitution into account, and its flotation cost adjustment is, therefore, overstated.

UP's efforts to incorporate an adjustment for flotation costs reflect the difficulty of seeking to modify an isolated element of the railroad industry cost of capital. While IPA would not claim or suggest that the STB's existing cost of capital methodology is perfect, it does have an internal coherence, and altering any single element of it is apt to create a need for additional changes.[7] Moreover, adding an equity flotation cost in one SAC rate case would cause the shipper in the next rate case to develop an alternative to use of the railroad industry cost of capital. The railroad industry cost of capital at least purports to reflect the opportunity cost of the railroad industry, *i.e.*, what the industry requires to attract or, more accurately at this point, retain capital and especially equity. The SARR is a hypothetical construct whose purpose is to determine what rate the incumbent needs to charge to avoid cross-subsidization, and no flotation cost additive is needed to achieve that objective.

Furthermore, whatever flotation costs the industry incurred were incurred long ago, and have been spread over many years and an immense volume of shipments. Any flotation additive for the SARR would need to be spread over

[7] For example, assuming *arguendo* that an equity flotation adjustment were added, then some compensating adjustment would become necessary if a railroad included in the composite sample were to engage in an actual public offering and those flotation costs were included within the industry cost of capital. Without such an adjustment, there would be a double-count of equity flotation costs.

equivalent years and volumes. Otherwise, the incumbent would benefit from economies of scale, scope, and/or density relative to the SARR, and such an advantage is contrary to SAC theory. Moreover, any equity flotation costs incurred by the incumbents were incurred when securities laws and securities regulation were much more lax or even non-existent. The SARR's flotation costs would need to be adjusted to reflect the laxness of the earlier legal requirements to avoid conferring the benefit of an entry barrier on the incumbent.

Even if equity flotation costs were not already reflected in the cost of common equity, they still would have to be excluded from the SAC analysis because their presence would create an entry barrier inconsistent with the theory of contestable markets. An equity flotation fee is a financial transaction cost, and like any costs incurred by the SARR and not the incumbent, must be excluded from the SAC analysis. This axiom extends from the very foundation of contestable market theory, which states that an entrant into the market must be able to enter the market quickly and efficiently to gain any available profits, *e.g.*, "hit and run entry." If the financing costs for the incumbent and the entrant are not the same, the incumbent could engage in limit pricing, which makes hit and run entry into the market impossible.[8] The only way contestable markets can function is if the market entrants have the same cost of capital as the incumbent.[9]

The STB's *AEPCO I* and earlier decisions reflect the substantial burden that both shippers and railroads must bear in seeking to depart from use of the railroad industry average cost of capital for purposes of a SAC analysis. The Board should reject UP's attempt to depart from longstanding precedent and to require the SARR to incur any equity floatation cost. Even if the Board were to conclude that some adjustment for equity flotation cost should be allowed, it should follow the approach accepted in *AEP Texas* and permit only an adjustment that tracks the Board's treatment of flotation costs for debt for the railroad industry as a whole. UP has failed to provide any meaningful basis for inclusion of its proposed 7.3% flotation fee for equity.

3. <u>Inflation Indices</u>

UP accepted IPA's use of actual AAR cost indices, Global Insight forecasts and historical USDA land property values to calculate annual inflation forecasts for road property asset and operating expense DCF inflation. It updated those indices where new actual and forecasted index values have become

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[8] *See* Stephen Martin, *The Theory of Contestable Markets*, Department of Economics, Purdue University (July 2000).

[9] *Id.* at 24 "the cost of financial capital must be the same for entrants and incumbents."

available. On rebuttal, IPA relies upon the same approach, but updates the index values where possible. [10]

4. <u>Tax Liability</u>

UP claims that IPA has erred in four respects in its calculations of the IRR's income tax liability. The supposed errors are: 1) a misapplication of bonus depreciation guidelines; 2) an incorrect assumption that bonus depreciation would apply to replacement of IRR assets; 3) use of an incorrect tax life for certain road property assets; and 4) failure to amortize debt over a 20-year financing term. UP discusses the first three claimed errors in Part III.H.1.f and the fourth in Part III.H.1.d. IPA responds to these arguments in the corresponding sections of this Rebuttal.

5. <u>Capital Cost Recovery</u>

UP accepted IPA's capital cost recovery calculations using a 10-year DCF period in accordance with the Board's decision in *Major Issues*, except for the errors assigned in other sections of its III.G and III.H Reply Evidence. IPA on Rebuttal follows the same methodology as its Opening Evidence except as described in Parts III-G and III-H of this Rebuttal.

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[10] IPA updated the AAR Railroad Cost Recovery indexes through 1Q 2013 and RCAF indexes through 2Q 2013. In addition, IPA updated the Global Insight Forecast to the March 2013 issue in place of the December 2012 issue used by UP.

III-H Results of SAC Analysis

III. H. <u>RESULTS OF SAC ANALYSIS</u>[1]

1. <u>Results of SAC DCF Analysis</u>

In its Opening Evidence, IPA presented the results of its DCF analysis in two Exhibits, Exhibit III-H-1 (Principal Case), which calculated cross-over traffic revenues using the STB's accepted Modified ATC approach, and Exhibit III-H-1 (Alternative Case) which calculated cross-over traffic revenues using the "Alternative" ATC methodology that the Board described in EP 715. On Rebuttal, IPA presents its DCF results in three Exhibits, Rebuttal Exhibit III-H-1 (Principal Case), Rebuttal Exhibit III-H-1 (Alternative Case 1) and Rebuttal Exhibit III-H-1 (Alternative Case 2).

The Principal Case on Rebuttal tracks the Principal Case on Opening with the exception that on-SARR local traffic is now served directly by the IRR with local trains. Alternative Case 1 is the same as the Alternative Case in the Opening Evidence in that it mirrors the Principal Case except for calculating cross-over traffic revenues using the "Alternative" ATC methodology. Alternative Case 2 also mirrors the Principal Case in all but one respect, namely, the operations and establishment of divisions for local traffic on the IRR:

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[1] The evidence in Part III-H is sponsored by IPA Witnesses Thomas D. Crowley and Daniel L. Fapp.

Table III-H-1
IPA Principal and Alternative Cases on Opening and Rebuttal

Opening		Rebuttal	
Principal Case	Modified ATC UP serves On-SARR Local Traffic and receives a Fee	Principal Case	Modified ATC IRR serves On-SARR Local Traffic and receives a Modified ATC Revenue Division
Alternative Case	"Alternative" ATC UP serves On-SARR Local Traffic and receives a Fee	Alternative Case 1	"Alternative" ATC IRR serves On-SARR Local Traffic and receives an Alternative ATC Revenue Division
		Alternative Case 2	Modified ATC UP serves On-SARR Local Traffic and receives a Modified ATC Revenue Division

As discussed in more detail in Part III-A-2, IPA's Principal Case on Rebuttal responds to UP's objections to IPA's treatment of local traffic on the IRR by having the IRR serve the local traffic directly rather than utilizing UP to do so. In Alternative Case 2, IPA presents a DCF analysis that follows the Principal Case with the exception of the treatment of local traffic. Alternative Case 2 assumes the local traffic would be handled by UP in the same manner as the Principal Case in the Opening Evidence, but with divisions for such traffic established under Modified ATC with UP as the originating or terminating carrier. *See* Part III-A-3-c-iii.

Because the evidence continues to show stand-alone revenues in excess of stand-alone costs in all years of the DCF, IPA sets forth the Maximum R/VC ratios resulting from application of the Board's Maximum Markup

Methodology ("MMM") in Rebuttal Exhibit III-H-2 (Principal Case), Rebuttal Exhibit III-H-2 (Alternative Case 1) and Rebuttal Exhibit III-H-2 (Alternative Case 2).

In Part III-H of its Reply, UP discusses the results of its SAC DCF analysis; application of MMM and the *PPL Montana/Otter Tail* cross-subsidy tests; a proposed new cross-subsidy test relying on ATC for revenue allocation; and finally, several alternative bases for effectively eliminating cross-over traffic revenues (elimination of all cross-over traffic, efficient component pricing, limiting traffic group to SARR-originated or SARR-terminated traffic and limiting traffic group to UP trainload service).

IPA responds to each of UP's arguments in turn.

a. <u>Cost of Capital</u>

In its Reply, UP includes a direct equity flotation cost of 7.3% in calculating the cost of equity component. For the reasons discussed in Section III-G-2 above, IPA does not accept this change, but updates the cost of capital calculations to reflect the latest Association of American Railroads' cost of equity capital, cost of debt and capital structure figures submitted in *Railroad Cost of Capital – 2012*, EP 558 (Sub-No. 16).

b. <u>Road Property Investment Values</u>

UP has modified IPA's Opening road property investment as described in Part III-F and detailed in Table C of Exhibit III-H-1. UP accepts IPA's IRR construction schedule.

As described in Part III-F above, IPA has made several adjustments to its calculation of road property investment in response to UP's Reply Evidence. Its revised road property investment figures appear in Table C of Rebuttal Exhibit III-H-1 (Principal Case), Rebuttal Exhibit III-H-1 (Alternative Case 1) and Rebuttal Exhibit III-H-1 (Alternative Case 2).

c. Interest During Construction

UP uses the same methodology as IPA in calculating interest during construction. IPA continues to rely on that methodology on Rebuttal.

d. Interest On Debt Capital

In its Opening Evidence, IPA developed interest payments based upon a coupon payment methodology that reflects the manner of payment for the vast majority of railroad industry debt. Op. at III-H-2-3. UP rejected this approach, characterizing it as assuming a "single debt instrument that has a 20-year term, while also assuming that the terms of the instrument would reflect the railroad industry cost of debt, which is calculated based in part on instruments with much shorter intervals to maturity, and thus correspondingly lower yields." Reply at III.H-2. UP incorrectly characterizes the financing IPA has posited, and its error has led it to perceive a "disconnect with [IPA's] assumption that IRR's cost of debt would reflect the railroad industry's cost of debt." *Id.* at III.H-3.

IPA does not maintain that the debt financing for the IRR should consist of a single 20-year note. As IPA explained in its Opening Evidence, "the SARR debt should also mirror the composition of [the railroad industry's] debt . . .

." Op. at III-H-3. Rather than a single, all encompassing note, real-world railroad industry debt is composed of numerous debt instruments per railroad, which have differing terms and yields. The debt financing for the IRR would similarly involve a variety of debt instruments with a composite yield equal to the industry debt cost.

Consistent with the cost of capital assumption of the STB's DCF model, IPA assumes that the IRR's capital structure would not change over time. As debt instruments are paid off, new debt would be issued. This is also consistent with real-world debt financing, not only by railroads, but by many other industries.[2]

The many reasons companies maintain certain levels of debt include using the power of leverage to manage earnings and cash flexibility. From an earnings perspective, the interest a company pays is a tax deductible expense, and thus, returns to bondholders escape taxation at the corporate level. Debt confers a tax shield in which the government, in effect, pays a portion of the interest expenses equal to the corporate tax rate. Maintaining certain levels of debt allows a company to exploit these tax shields to maximize the return to shareholders. If the debt portion of the capital structure of a company is fixed and permanent, the

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[2] *See Nevada Power II*, 10 I.C.C.2d at 319 ("We agree that it is more realistic to assume that the SARR would issue new debt as old debt is amortized. This is the procedure followed by many large corporations, including most U.S. railroads, as a way of reducing the overall cost of capital.").

company commits to refinance its present debt obligations when they mature and to keep rolling over its debt obligations indefinitely as is done by real world railroads.[3] The company can then look forward to a permanent increase in earnings and cash flow equal to the interest expenses associated with the debt multiplied by the effective corporate tax rate.

From a cash flow perspective, maintaining consistent levels of debt can provide a firm financial slack. Financial slack means having cash or marketable securities available to pursue opportunities when they present themselves. A company that is cash poor from paying down debt unnecessarily may miss out on such an opportunity. Additionally, since a firm's cash flow is seldom consistent from month-to-month or year-to-year, maintaining certain levels of debt allows the firm to manage these peaks and valleys in cash flow. This is one reason why companies do not immediately pay off debt when they are in a long cash position, but instead will maintain the debt to assist with fluctuating cash levels.

Thus, IPA's approach for calculating debt costs is fully consistent with real-world debt financing, both in terms of utilizing a variety of debt

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[3] This example is the same example Brealey, Myers and Allen discuss at pages 469 to 470. *See* Part III-G-5 n.2 *supra*.

instruments and in terms of relying on coupon payments of interest only, rather than amortizing principal with each payment.[4]

e. Present Value of Replacement Cost

In its Reply, UP makes three modifications to IPA's calculations of the replacement cost of IRR assets. Reply at III.H-5. The first two relate to the DCF replacement cost calculations of tax depreciation-related items, *i.e.*, bonus depreciation allowances for asset replacements and assumed tax depreciation lives for certain assets. *Id.* Following UP's organization, IPA responds to these two items in III-H-1-f below.

UP's third modification relates to IPA's treatment of future tax benefits for tax deductible interest. Based upon its assumption that the IRR's debt consists of a single note which must be amortized over 20 years, UP made a "correction" to IPA's replacement cost calculations to provide such 20-year amortization for new debt for future asset replacement. Reply at III.H-5.[5] Because IPA believes that the treatment it provided on Opening is correct for the

[4] As noted in IPA's Opening at III-H-3 n.3, although most railroad companies pay interest semi-annually, IPA has assumed quarterly coupon payments to stay consistent with the structure of the Board's DCF model.

[5] In actuality, UP's Reply DCF model assumes replacement assets are financed with debt with lives of 20 years or less, depending upon the useful life of the asset. If the asset has a useful life of more than 20 years, then UP assumes the asset is financed with a 20-year debt instrument. If the asset has useful life of less than 20 years, the maturity date of the debt is equal to the useful life of the replaced asset. *See* Reply e-workpaper "Exhibit III-H-1 Reply.xlsm," tab "Replacement-Interest," cell D6.

reasons discussed in III-H-1-d above, it continues to develop replacement costs using the same approach it used on Opening with respect to future tax benefits from tax deductible interest payments.

f. Tax Depreciation Schedules

UP contends that IPA's tax depreciation schedules contain three errors. The first is IPA's assumption that "IRR would take full advantage of the bonus depreciation benefit for all road property assets . . . ." Reply at III.H-6. Noting the Board's statement in *AEPCO 2011* that it would not necessarily apply the "now-expired 2008 and 2009 tax benefits" in future rate cases (*id.*, slip op. at 142), UP argues that allowing the IRR to take full advantage of the bonus depreciation afforded by federal tax law under provisions enacted *after* the laws involved in *AEPCO 2011*, would place the IRR at an "unfair advantage" relative to UP. Reply at III.H-6.

The bonus depreciation provisions involved in *AEPCO 2011* were the Economic Stimulus Act of 2008 ("Stimulus Act") and the American Reinvestment and Recovery Act of 2009 ("ARRA"). Two subsequent laws have also provided bonus depreciation benefits: the Tax Relief, Unemployment Insurance Reauthorization and Job Creation Act of 2010 ("2010 Tax Relief Act") and the American Taxpayer Relief Act of 2012 ("2012 Tax Relief Act").[6]

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[6] *See* KPMG TaxNewsFlash, January 10, 2011, for a detailed discussion of the 2010 Tax Relief Act, and CCH Tax Briefing, January 3, 2013, for a detailed discussion of the 2012 Tax Relief Act. IPA has included copies of both

Although UP strains to characterize bonus depreciation provisions as being very temporary, with highly restricted "window[s]" (Reply at III.H-6), such provisions have become a recurring and enduring element of the federal tax laws, now covering qualifying property placed in service in 2013 and in each of the last five years.

It is difficult to perceive how UP is disadvantaged by allowing the IRR to utilize bonus depreciation when UP itself has taken extensive advantage of such provisions, "enjoy[ing] system-wide bonus depreciation benefits over the 2008 through 2011 time period totaling $5.1 billion." Reply at III.H-7. It estimates an additional $1.2 billion in bonus depreciation benefits for 2012. *Id.* UP also presumably took advantage of other tax benefits in the form of investment tax credits and otherwise that have been available to it in the past, but that expired prior to 2012, and are thus not available to the IRR. For example, UP received tax credits from the now expired American Jobs Creation Act of 2004.[7]

Nor does UP's suggestion that the Board should limit the amount of bonus depreciation for the IRR to a simple route-mile prorate of its own bonus depreciation have any merit. UP has made no attempt to demonstrate any justification for such a prorate as being reflective of the assets included in the IRR and in fact, the mix of assets for the UP and the IRR are very dissimilar. Unlike

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documents in its electronic workpapers. *See* Rebuttal e-workpapers "KPMG Bonus Depreciation.pdf," and "CCH Tax Briefing on 2012 Tax Relief Act.pdf."

[7] *See* UP 2005 Annual Report to Shareholders at page 28.

UP, the IRR has: no large yards or other terminal facilities such as intermodal and auto ramps; no large bridges; no tunnels; no branch lines; no freight car repair facilities; no work-train equipment; and no investment in PTC (wayside or back room support equipment) other than the equipment on its locomotives. The differences in the distribution of UP and IRR land and road property asset mixes are clearly shown in Table III-H-2 below.

Table III-H-2
Comparison of UP and IRR Gross Investment Percentages For Land and Road Properties

	Union Pacific					
Investment Category (1)	**2008** (2)	**2009** (3)	**2010** (4)	**2011** (5)	**2012** (6)	**IRR** (7)
1. Land	12.4%	12.1%	11.8%	11.6%	11.1%	4.1%
2. Rail and OTM	29.0%	28.6%	28.4%	28.4%	28.8%	20.2%
3. Ties	17.4%	17.9%	18.1%	18.2%	18.3%	10.2%
4. Ballast	9.3%	9.5%	9.5%	9.5%	9.6%	8.8%
5. Other 1/	31.9%	32.0%	32.3%	32.2%	32.2%	56.6%
5. Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

1/ UP's SEC Form 10-K indicates "Other" includes investments in grading, bridges, tunnels, signals buildings and other road assets.

Source: Rebuttal e-workpaper "UP and IRR Gross Investment.xlsx."

Table III-H-2 above compares the percentages of UP's gross land and road property investments for the years 2008 through 2012 to the percentage of the IRR's Rebuttal gross land and road property investments. It is clear by reviewing Table III-H-1 above that UP and the IRR have a completely different mix of land and road property assets. For example, land makes up 4.1 percent of the IRR's total land and road property investment,[8] while land investment as a percentage of UP's land and road property investment ranges between 11.1 and 12.4 percent.[9] Similarly, the IRR's "Other Investment" category, which consists primarily of grading and signals costs, is significantly different than the UP's "Other Investment," which consists of grading, bridges, tunnels, signals, buildings and other road assets. Given such disparate land and road property assets, there is no rational reason for imputing UP's bonus depreciation to the IRR.

The second error UP asserts IPA committed in its tax depreciation schedules was to assume that bonus depreciation benefits would be available in perpetuity. Reply at III.H-7. IPA agrees that this was incorrect and has removed the bonus depreciation benefit from the asset replacement tabs of the DCF on Rebuttal.

The third error UP asserts is that IPA used incorrect tax depreciation lives for certain of IRR's road property assets. Reply at III.H-7-8. Consistent

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[8] Since the IRR does not purchase any of its equipment or rolling stock, all of the IRR's assets are in land and road property accounts.

[9] The differences in land are a significant factor since land is a non-depreciating asset. This means that the IRR has a larger percentage of its investment in asset categories likely eligible for bonus depreciation than does UP, which has a higher percentage of its assets in a non-depreciable investment category.

with the Board's rulings in other cases, IPA has used 15-year MACRS lives rather than the 20-year MACRS lives utilized by UP.[10]

g. Average Annual Inflation in Asset Prices

UP has accepted IPA's inflation assumptions for assets.

h. Discounted Cash Flow

On Opening, IPA addressed a flaw in the Board's DCF model that results in an inconsistency between the assumption that the SARR's capital structure will remain constant into perpetuity, and the assumption that the SARR would be 100% equity financed after year 20 and before its first replacement cycle. In order to correct for this flaw, IPA adjusted the terminal value in the capital carrying charges to reflect the assumption that the SARR's level of debt is held constant into perpetuity and that interest tax shields consistent with this level of debt are accounted for in the cash flow calculation.[11] Op. at III-H-8-9.

In its Reply, UP claims that the mismatch between (1) the assumption that the SARR would be 100% equity-financed after 20 years and before its first replacement cycle and (2) the cost of capital, which assumes that

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[10] The STB has not addressed this issue in its publicly available decisions, but the Board can confirm the use of the 15-year MACRS percentages by reviewing its DCF models from prior SAC cases.

[11] IPA calculated an interest tax shield perpetuity by dividing the last full quarterly coupon payment by one plus the quarterly real cost of capital. To avoid double counting the impact of the interest tax shields, IPA also adjusted the asset replacement calculations to remove the impact of the interest tax shields on replacement assets. Op. at III-H-9.

the SARR has debt and its associated tax shielding interest payments, has been a "mainstay" of the Board's DCF model since *Coal Trading* (1990) and *McCarty Farms* (1997). It claims further that the Board affirmed this approach in *Major Issues*. Reply at III.H-9. UP's characterization of these precedents is inaccurate.

In *Coal Trading*, the ICC reviewed an ALJ decision which had relied on a 40/60 debt equity ratio for the involved SARRs. *Id.*, 6 I.C.C. 2d at 427. The railroad defendants argued that since amortization of the debt principal would result in a steadily declining debt/equity ratio, the DCF analysis should assume a changing debt/equity ratio. The ICC agreed[12] that the analysis should utilize a changing debt/equity structure and computed the changes in the ratio resulting from the changes in the amount of debt. *Id.*

There is no indication in the decision that either of the parties addressed, or that the ICC considered, whether any changes in the cost of debt or the cost of equity should be made as a result of the changes in the debt/equity structure, but the decision's annual cost of capital calculations show that no such changes were made. Instead, the industry cost of equity and cost of debt, reflecting the industry debt/equity structure, were utilized. *Id.*, 6 I.C.C.2d at 442, Attachment 1, Annual Cost of Capital, Table A.

[12] The ICC noted that this issue had not been addressed by the complainants. *Id.*

While the ICC decided to change the debt/equity ratio over time in line with debt amortization, the *Coal Trading* decision reflects no consideration by the agency of the full panoply of issues associated with the capital structure and the cost of capital. As discussed above in III-H-1-d, both the cost of debt and the cost of equity are affected by changes in the debt/equity ratio, yet it appears that this issue was never even raised, much less considered, by the ICC in *Coal Trading*. The methodology employed by the ICC in *Coal Trading* has not been adopted as a regular practice. This agency has not utilized continually changing debt/equity ratios to reflect amortization of debt. Although changes to the industry-wide cost of equity have been incorporated into the DCF analysis for the years for which Board cost of capital determinations are available, the debt/equity ratios have remained fixed. *See WFA II*, slip op. at 26 (discussing the Board's use of historic costs of equity).

McCarty Farms, which UP also relies upon as enshrining the "mismatch" as a mainstay element of the DCF model, similarly lacks any appearance of awareness of the tension between the debt/equity structure and the lack of debt/absence of interest tax shields as a result of the amortization of debt. Both the rail defendant and the complainant in that case utilized the ICC-determined 1978 industry-wide capital structure of 40% debt and 60% equity for the SARR. Burlington Northern (the defendant in that case) argued that the Board should use the current cost of debt for each of the twenty years of the SAC analysis, but the Board rejected this approach and relied upon the complainant's average of the debt cost for the three-year construction period. For the cost of equity, the Board relied upon the industry-wide cost of equity as determined in its annual determinations, where available, and on averages of such costs for those years for which annual determinations were not available. *McCarty Farms*, 2 S.T.B. at 522-23. The STB never addressed the fact that equity costs decline as companies become less leveraged.

It is noteworthy that the Board specifically commented upon the SARR's freedom to choose a debt financing arrangement that would minimize its costs:

> As an efficient, least-cost replacement for the incumbent, the [SARR] would be free to choose a method of financing its debt to minimize that cost.

McCarty Farms, 2 S.T.B. at 523 n.126. For the IRR, that least-cost method of financing is to adopt a coupon-based interest payment structure that does not amortize debt principal as in a typical home mortgage type of loan, but replaces or rolls over debt as appropriate to maintain a portfolio of debt instruments that mirrors the industry-wide average and affords a continuing string of interest payments and associated tax benefits.[13]

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[13] It is also worth noting that the STB's standard DCF model assumes any debt issued in the future equals the average cost of debt during the construction period. One can see this in the calculation of replacement costs of future assets, where the standard Board DCF model assumes interest rates on debt issued after the SARR construction period equals the construction period average costs of debt.

The other Board precedent that UP cites is *Major Issues*, which UP characterizes as "affirm[ing]" the mismatch. Reply at III.H-9. However, all the Board did in *Major Issues* was refuse to consider a suggested change to Table E of the DCF model as being "beyond the parameters of this rulemaking . . . ." *Major Issues*, slip op. at 65. The change that had been suggested related to the appropriate period for amortizing assets purchased with debt capital, but the Board did not consider or discuss the suggestion on its merits or make any ruling of consequence with regard to the "mismatch" issue raised here.

UP suggests that the Board might revert to the ICC's approach in *Coal Trading*, "[i]f [it] were so inclined..." as a correct way to eliminate the mismatch raised by IPA. Reply at III.H-10. As discussed above, such an approach would be misguided, because, *inter alia,* it would fail to reflect the impact of continuing changes in the debt/equity ratio on the cost of debt and cost of equity, would fail to reflect the actual debt financing arrangements of the railroad industry, and would deprive IPA of its right to develop the most efficient and least cost SARR debt financing arrangement. Op. at III-H-9-10.

i. <u>Computation of Tax Liability – Taxable Income</u>

UP has accepted IPA's assumed federal tax rate of 35 percent and Utah state income tax rate of five percent.

j. <u>Operating Expenses</u>

IPA adjusted train and engine personnel expenses, locomotive related expenses, rail car lease costs and loss and damage expenses annually by the change in IRR net ton-miles. Op. at III-H-11-12. This approach takes into consideration the shifting nature of the IRR's traffic base. UP challenges this approach and argues that the Board should use annual changes in car-miles to adjust these operating expenses. Reply at III.H-10-11. It argues that the use of ton-miles overweights coal traffic and underweights intermodal traffic. *Id.* For intermodal shipments, UP relies upon flat-car miles rather than container miles.

Use of ton-miles to adjust future operating expenses implicitly takes into consideration both changes in traffic mix and traffic volumes. The Board has accepted the use of ton-miles to adjust operating costs in prior cases. In *AEPCO 2011*, for example, the Board's most recent SAC decision (which also involved substantial volumes of intermodal traffic), the Board relied upon ton-mile adjustment of operating expenses which had been proposed by AEPCO and accepted by UP and BNSF. *See*, *e.g.*, AEPCO Rebuttal at III-H-7, *AEPCO 2011* (filed July 1, 2010). In *Xcel*, the Board also relied upon ton-miles in calibrating increases in operating expenses "that vary in proportion to tonnage and distance . . . ." *Xcel*, 7 S.T.B. at 618.

UP made an additional correction to IPA's IRR operating expense, namely its calculation of startup and training costs. Reply at III.H-11. UP claims that IPA allocated its start-up and training expenses over only a part of the first calendar year of SARR operations instead of over the full first 12 months.[14] IPA

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[14] *See* Reply at III.H-11.

reviewed its Opening evidence, and agrees that only a portion of the start-up costs were allocated. IPA also agrees, in part, with UP's proposed modification to allocate the start-up costs over the first full year of IRR operations. However, as explained below, IPA disagrees with UP's approach to adjusting the start-up expenses.

As a matter of background, training and start-up costs occur prior to the commencement of a SARR's operations. The STB affirmed this definition in its *Otter Tail* decision:

> But all start-up expenses, by definition, occur before a firm begins operations. SOP 98-5 defines start-up activities as one-time activities an entity undertakes when it opens a new facility, introduces a new product or service, conducts business in a new territory or with a new class of customer or beneficiary, initiates a new process in an existing facility or commences some new operation.[15]

Based on the STB's definition, start-up expenses in this proceeding are assumed to occur prior to the IRR's November 2012 operational start-up. This means that the start-up expenses incurred reflect wage and price levels prior to November 2012. UP's Reply approach would escalate the start-up costs by the hybrid RCAF over the first full year of operations, which implicitly infers that the expenses were incurred after the November 2012 start-up. UP's position is contrary to the STB's position on the timing of start-up expenses and must be

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[15] *See Otter Tail*, slip op. at C-17.

disregarded. The STB should apply IPA's Rebuttal approach, which allocates the start-up expenses over the first full year of the IRR's operations, but maintains them at the start-up time period wage and price levels. This better aligns the level of the wage and price expenses with the period in which the start-up expenses were actually incurred and paid.

k. Summary of SAC

Total SAC for the IRR based upon the various adjustments that IPA has made in this Rebuttal Evidence is summarized in Table L of IPA Rebuttal Exhibit III-H-1.

2. Maximum Rate Calculations

The SAC analysis summarized in Parts III-A through III-G and the accompanying Rebuttal Exhibits, and displayed in Rebuttal Exhibits III-H-1 (Principal Case), III-H-1 (Alternative Case 1) and III-H-1 (Alternative Case 2), demonstrates that over the 10-year DCF period the revenues generated by the IRR exceed its total capital and operating costs under either approach to the calculation of ATC divisions.[16] Tables III-H-3 and III-H-4 below show the measure of excess

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[16] As noted in Part I and Part III-A of the Opening Evidence and this Rebuttal Evidence, IPA has calculated revenues using the Board's Modified ATC methodology, and IPA respectfully submits that the Board should continue to rely upon that methodology. Nevertheless, IPA also has calculated cross-over traffic revenues using the "Alternative" ATC methodology that the Board described in EP 715. Similarly, although IPA relies upon the IRR direct service for local traffic contained in the Principal Case, it has also presented an analysis with UP service for the local traffic and cross-over revenue divisions calculated under Modified ATC. IPA's calculations of revenues and maximum rates using these alternative

revenue over SAC in each year of the DCF period for IPA's Principal Case and Alternative Case 1, respectively.

Table III-H-3
Summary of IPA Rebuttal DCF Results for the IRR
November 2, 2012 to November 1, 2022 – Principal Case

Year	Annual Stand-Alone Requirement	Stand-Alone Revenues	Overpayments (Shortfall)	PV Difference	Cumulative PV Difference
(1)	(2)	(3)	(4)	(5)	(6)
11/2-12/31/12	$15,940,268	$17,022,195	$1,081,927	$1,110,673	$1,110,673
2013	98,027,274	103,904,678	5,877,403	5,426,253	6,536,926
2014	98,910,950	107,125,732	8,214,782	6,818,099	13,355,024
2015	101,765,557	111,162,631	9,397,073	7,011,526	20,366,550
2016	104,876,935	113,551,223	8,674,288	5,818,439	26,184,989
2017	109,690,846	120,599,674	10,908,829	6,578,145	32,763,134
2018	113,905,431	126,260,488	12,355,057	6,697,655	39,460,789
2019	117,633,151	130,709,096	13,075,946	6,372,412	45,833,202
2020	121,638,107	136,009,993	14,371,885	6,296,471	52,129,672
2021	125,496,473	141,437,098	15,940,625	6,278,292	58,407,964
1/1-11/1/22	108,236,102	122,712,422	14,476,321	5,125,628	63,533,592

Source: Rebuttal e-workpaper "Exhibit III-H-1 Rebuttal.xlsm."

assumptions are set forth in Rebuttal Exhibit III-H-1 (Alternative Case 1) and Rebuttal Exhibit III-H-1 (Alternative Case 2).

Table III-H-4
Summary of IPA Rebuttal DCF Results for the IRR
November 2, 2012 to November 1, 2022 – Alternative Case 1

Year	Annual Stand-Alone Requirement	Stand-Alone Revenues	Overpayments (Shortfall)	PV Difference	Cumulative PV Difference
(1)	(2)	(3)	(4)	(5)	(6)
11/2-12/31/12	$15,940,268	$16,916,590	$976,322	$1,002,262	$1,002,262
2013	98,027,274	103,401,440	5,374,165	4,961,643	5,963,906
2014	98,910,950	106,702,870	7,791,919	6,467,131	12,431,037
2015	101,765,557	110,751,829	8,986,272	6,705,011	19,136,048
2016	104,876,935	113,170,932	8,293,997	5,563,352	24,699,399
2017	109,690,846	120,163,970	10,473,124	6,315,411	31,014,810
2018	113,905,431	125,814,378	11,908,947	6,455,820	37,470,630
2019	117,633,151	130,299,707	12,666,556	6,172,901	43,643,530
2020	121,638,107	135,607,513	13,969,406	6,120,140	49,763,671
2021	125,496,473	141,060,482	15,564,009	6,129,960	55,893,631
1/1-11/1/22	108,236,102	122,414,775	14,178,674	5,020,240	60,913,871

Source: Rebuttal e-workpaper "Exhibit III-H-1 Rebuttal (Alt. 1).xlsm."

Where, as in this case, stand-alone revenues are shown to exceed stand-alone costs, rates for the members of the IRR traffic group – including IPA in particular – must be adjusted to bring revenues and SAC into equilibrium. In *Major Issues*, the Board adopted MMM as its rate prescription approach for use in proceedings under the *Coal Rate Guidelines*. *See Major Issues*, slip op. at 14-23.

Under MMM, maximum reasonable rates for each year of the DCF period are expressed as a ratio of each movement's stand-alone revenues to the variable cost of providing the subject service over the IRR route. Revenues are expressed as each movement's annual stand-alone revenue calculated using the Modified ATC methodology detailed in Part III-A-3 (and the Alternative ATC Methodology in IPA's alternative case) in IPA's Opening and Rebuttal Evidence.

Revenues are categorized based on traffic type (*i.e.,* coal and non-coal), UP origin and destination, and IRR origin and destination. Variable costs for each movement are calculated using 2011 UP URCS Phase III costs applied to the nine cost inputs identified in *Major Issues*.[17]

UP argues in its Reply that application of MMM to this case must be done following the variable cost methodology the Board directed the parties to develop for its consideration in *AEPCO 2011*. Reply at III.H-13-14. Specifically, UP contends that variable costs should be developed for carload and multiple car shipments within the traffic group (overhead intermodal and merchandise shipments) as unit train shipments. In addition, UP claims that the Board should reject the URCS unit train default assumption of two and substitute actual empty return ratios. *Id.* at III.H-15.

The Board did not, as UP claims, order the use of the methodology UP employs. In its decision in *AEPCO 2011*, the Board decided *not* to resolve the issue of whether carload and multi-car service handled by the SARR as trainload traffic should be costed as trainload traffic. *Id.*, slip op. at 35-36. Moreover, the Board did not direct the parties in *AEPCO 2011* to depart from URCS procedure by utilizing actual empty return ratios instead of the URCS default assumption of two. As the Board's decision notes, the shipper there had pointed out that such a

[17] Consistent with Board precedent, a tenth variable, service type, was used when developing URCS costs for intermodal traffic.

procedure would constitute "a movement-specific adjustment that *Major Issues in Rail Rate Cases* specifically disallows in rate cases." *Id.*, slip op. at 36. IPA discusses in Part III-A-3-c why it would be improper for the Board to determine variable costs based upon the SARR's operations for ATC purposes. For those same reasons, and for other reasons discussed below, it would also be improper for the Board to require development of variable costs based upon the SARR's operations rather than those of the incumbent railroad for purposes of the MMM methodology.

The Board adopted MMM in *Major Issues.* It did so in the belief that it was a preferable methodology to the percent reduction methodology for establishing maximum rates in a manner consistent with the demand characteristics of the traffic in the SAC traffic group. The rationale for the percent reduction approach had been that "allocating the SAC costs among the traffic group in proportion to the existing rate structure would implicitly reflect the varying demand elasticities within the SAC traffic group." *Id.*, slip op. at 10. However, the Board concluded that approach was subject to abuse. *Id.*, slip op. at 10-11. It still believed it was important to allow railroads to engage in appropriate differential pricing and to afford relief in a manner that reflected the SAC traffic group's differing demand characteristics. It concluded that MMM "would provide railroads the opportunity to earn adequate revenues by permitting demand-based differential pricing" and that a "railroad could justify charging a higher rate to the complainant as an appropriate application of differential pricing – but only to the extent needed to cover SAC costs that could not be covered by a uniform application of SAC costs among all the traffic in the traffic group." *Id.*, slip op. at 12.

In the context of UP's argument that the Board should require variable costs to be developed for MMM purposes based upon the SARR's operations and costs rather than those of the defendant railroad, it is important to keep in mind the fact that the Board was focused on the defendant railroad's rates and the relative demand characteristics of the traffic as reflected in those rates when developing MMM.

> The approach recognizes that, because competition would compel *the defendant carrier* to price some of its services below an average R/VC level, *the defendant carrier* must be able to price other services above the average to compensate. By design, the Maximum Markup Methodology therefore calculates the precise amount that *the defendant carrier* would need to price its services above the average R/VC ratio to cover all its costs and earn adequate revenues. *This calculation rests on the demand for rail transportation services, as observed in the existing rate structure of the defendant carrier*.

Id., slip op. at 20 (emphasis added).

In order to evaluate the differing demand characteristics of the traffic group, it is necessary to calculate revenue to variable cost ratios; *i.e.*, a movement with a rate at 150% of variable cost is viewed as having more elastic demand than a movement with a rate at 350% of variable costs. For such ratios to reflect demand "as observed in the existing rate structure of the defendant carrier," the operations and costs must be those of the defendant carrier, not the SARR as proposed by UP. Developing costs consistent with the SARR's operations would not produce ratios reflective of the demand in UP's rate structure unless the SARR's variable costs were the same as UP's, in which case the process of calculating the SARR's costs would be meaningless. In this case it is clear that the UP URCS variable costs adjusted to reflect the SARR's operations are significantly different from those for the UP for the cross-over traffic.

Another critical inconsistency between UP's development of variable costs for MMM purposes and the Board's rationale for adopting MMM is that it would frustrate the Board's intent to give effect to the Long-Cannon factors in the statute. 49 U.S.C. § 10701(d)(2); *Major Issues*, slip op. at 16-19. "[T]he Maximum Markup Methodology reflects the important principle that a railroad should recover as much of its costs as possible from each shipper served before charging differentially higher rates to its captive shippers." *Id.*, slip op. at 16. If variable costs are developed on the basis of the SARR's operations and costs, as discussed above, the resulting R/VC ratios will not reflect the demand characteristics of the traffic group relative to the UP's cost structure and the intended fulfillment of the Long-Cannon goals will be frustrated.[18] For this reason

[18] This can be observed by a simple example. Assume a competitive single-car shipment has a rate of $100 per car and an URCS Phase III variable costs of $75 per car based on the incumbent's operations. This would produce an R/VC ratio of 133% for the movement. Also assume the MMM model produces a maximum R/VC ratio of 150%, meaning this competitive shipment would not

also, the Board should reject UP's proposed approach for developing variable costs for MMM purposes.

Even if the Board were to conclude that variable costs should be developed for MMM purposes based upon the IRR's operations and costs, UP's proposal that the Board substitute "actual empty return ratios for the URCS unit train default assumption of two"[19] should be rejected. This procedure would require overriding the values in the Board's URCS Phase III costing program, which automatically utilizes an empty/return ratio of 2.0 for trainload or unit train traffic. Accordingly, it constitutes the sort of movement-specific manipulation that the Board prohibited in *Major Issues*. *Id.*, slip op. at 47-61.

Furthermore, the exercise is nonsensical as it treats the movement as trainload or unit train for some URCS purposes (such as the absence of various switching costs), but not for others (the empty/return ratios). As such, the costing would be internally inconsistent and must be rejected as an unprincipled, transparent attempt to lower the variable costs of the IRR's non-coal traffic in

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receive any relief if the actual variable costs are used. If the same movement was costed for MMM purposes as a trainload movement instead of a single-car movement and its costs fell to $60 per car producing an R/VC ratio of 167%, it would now be entitled to relief in the MMM model. Even though the railroad could charge this movement $100 per car without fear of losing the traffic, the MMM model would limit this movement's revenue to $90 per car (150% maximum R/VC x $60 per car MMM variable costs). The $10 per car difference that the movement could absorb would instead have to be absorbed by other movements.

[19] Reply at III.H-15.

order to dilute the MMM relief for the issue traffic. *Major Issues* prohibits this type of results-oriented approach.

In keeping with the Board's decision in *Major Issues*, IPA relied upon UP's unadjusted URCS Phase III variable costs in developing the MMM analysis. *Id.*, slip op. at 14. Specifically, for non-issue traffic, IPA utilized the unadjusted UP 2011 URCS Phase III variable costs to calculate each movement's ATC revenue divisions.[20] For the issue IPA traffic, IPA used the unadjusted UP 2011 URCS Phase III variable costs included in IPA's quantitative market dominance determination.

UP also argues in its Reply that IPA erred in its application of MMM by using the incorrect index to adjust the MMM URCS costs from 2012 through 2022. UP asserts that based upon the Board's precedent, the RCAF-A should be used to project UP Phase III variable costs for the movements in the IRR traffic group. As IPA discussed on Opening, in *WFA II*, the Board directed use of the RCAF-A for this purpose on the grounds that it would "properly forecast the defendant carrier's variable costs" to calculate the degree of differential pricing needed to cover total SAC. *Id.*, slip op. at 30. More recently, however, the Board determined that in calculating variable costs to implement an R/VC ratio rate standard, the Board's standard URCS indexing approach would produce more accurate results. *OG&E*, slip op. at 11. As it obviously would be inappropriate to

[20] *See* Rebuttal e-workpaper "MMM Model Rebuttal.xlsm."

use two different indices to accomplish the same, singular purpose, IPA is relying on the Board's more recent precedent, and using the Board's URCS indexing procedure to forecast variable costs for the MMM calculation.

The STB's URCS index uses five indexes: the AAR's Wage, Wage Supplements, Materials and Supplies and Fuel Indices, and the Producer Price Index – All Commodities ("PPI"), which are weighted by actual railroad costs reported in Annual Report Form R-1. Global Insight publishes forecasts for each of the first four indices, and the Board already accepts Global Insight's forecasts of the first three for use in the DCF model. The fuel forecast is included in the same documentation. Likewise, EIA – whose coal production, transportation cost and GDP-IPD forecasts already are accepted by the Board – publishes a PPI forecast. To forecast UP URCS Phase III variable costs for MMM purposes, therefore, IPA uses the STB's URCS index, with the September 2012 Global Insight and EIA's June 2012 forecasts of its components. Weighting factors are taken from UP's Annual Report Form R-1 data for calendar year 2011.

Following the calculation of the specific annual variable costs for each movement, IPA calculated each movement's maximum contribution toward SAC each year, expressed as a mark-up over the movement's variable costs. Under MMM, a movement cannot contribute more to SAC than the contribution reflected in the mark-up of its current, actual or forecasted rate over variable cost. For each year in the DCF period, the MMM model sets each movement's R/VC ratio at the lesser of the average R/VC ratio required to cover total SAC, or the movement's actual R/VC ratio. The average R/VC ratio required to cover SAC then is iteratively increased until no movement in the traffic group is assigned a share of SAC greater than its actual contribution over variable costs as measured by its R/VC ratio, and the aggregate adjusted stand-alone revenues equal total SAC.[21] *Major Issues*, slip op. at 14.

Application of MMM yields the following maximum R/VC ratios for each year of the DCF model as shown in Table III-H-5 below:

Table III-H-5
Rebuttal MMM Results

Year	Principal Case Maximum R/VC	Alternative Case 1 Maximum R/VC
(1)	(2)	(3)
11/12-12/12	303.3%	311.5%
2013	306.5%	314.5%
2014	282.4%	286.4%
2015	274.7%	278.5%
2016	277.2%	280.8%
2017	260.7%	263.5%
2018	252.0%	254.0%
2019	248.0%	249.7%
2020	242.3%	244.1%
2021	236.3%	238.4%
1/22-11/22	231.9%	234.1%

Sources: Rebuttal e-workpapers "MMM Model Rebuttal.xlsm," and "MMM Model Rebuttal (Alt. 1).xlsm."

[21] According to the Board, this step reflects the assumption that the rates charged by UP on all non-issue traffic are profit-maximizing rates, such that the reapportionment represents "an appropriate application of demand-based differential pricing." *Major Issues*, slip op. at 14.

As indicated in Table III-H-5, the maximum R/VC ranges from 231.9% to 306.5% over the 10-year DCF period under IPA's Principal Case methodology. The maximum R/VC ranges from 234.1% to 314.5% over the 10-year DCF period under IPA's Alternative Case 1 methodology.[22]

As applied to the unadjusted Phase III URCS variable costs for the issue movements, the following MMM maximum reasonable rates apply to shipments to IGS at the 4Q12 wage and price levels:[23]

TABLE III-H-6 (Principal Case)
IPA MMM Rates per Ton – 4Q12
Maximum Reasonable Rates for Coal Movements to IGS

Origin/Interchange	Car Type	Minimum Car Lading	4Q12
Provo, UT	Gen. Svc. Hopper	100	$6.10
Provo, UT	Gen. Svc. Hopper	115	$5.67
Provo, UT	Spec. Svc. Hopper	100	$5.98
Provo, UT	Spec. Svc. Hopper	115	$5.58

Source: Rebuttal e-workpaper "Rebuttal Maximum Rates.xlsx."

[22] The maximum R/VC ranges for IPA's Alternative Case 2 appear in Rebuttal e-workpaper "MMM Model Rebuttal (Alt. 2).xlsm."

[23] The MMM maximum reasonable rates for IPA's Alternative Case 2 appear in Rebuttal e-workpaper "Rebuttal Maximum Rates.xlsx."

TABLE III-H-6 (Alternative Case 1) IPA MMM Rates per Ton – 4Q12 Maximum Reasonable Rates for Coal Movements to IGS			
Origin/Interchange	**Car Type**	**Minimum Car Lading**	**4Q12**
Provo, UT	Gen. Svc. Hopper	100	$6.26
Provo, UT	Gen. Svc. Hopper	115	$5.83
Provo, UT	Spec. Svc. Hopper	100	$6.14
Provo, UT	Spec. Svc. Hopper	115	$5.73

Source: Rebuttal e-workpaper "Rebuttal Maximum Rates.xlsx."

The maximum lawful rates for the transportation of coal from the origins covered by UP Tariff 4222 equal the greater of the jurisdictional threshold or the MMM maximum rates. Tables III-H-7 compares UP rates to IPA as of November 2, 2012, to the jurisdictional threshold and the MMM maximum. The issue rates are greater than both the jurisdictional threshold and the MMM rates for all origins.

TABLE III-H-7 (Principal Case) Maximum Rate Summary for 4Q12				
Origin	**November 2, 2012 UP Rate Level (excluding fuel surcharge)**	**Jurisdictional Threshold Per Ton**	**MMM Rate Per Ton**	**Maximum Rate Per Ton**[1/]
Provo, UT	$7.13-$7.27	$3.31-$3.62	$5.58-$6.10	$5.58-$6.10

[1/] The Maximum Rate Per Ton equals the greater of the Jurisdictional Threshold or MMM Rate Per Ton.

Source: Rebuttal e-workpaper "Rebuttal Maximum Rates.xlsx."

TABLE III-H-7 (Alternative Case 1) Maximum Rate Summary for 4Q12				
Origin	**November 2, 2012 UP Rate Level (excluding fuel surcharge)**	**Jurisdictional Threshold Per Ton**	**MMM Rate Per Ton**	**Maximum Rate Per Ton[1/]**
Provo, UT	$7.13-$7.27	$3.31-$3.62	$5.73-$6.26	$5.73-$6.26

[1/] The Maximum Rate Per Ton equals the greater of the Jurisdictional Threshold or MMM Rate Per Ton.

Source: Rebuttal e-workpaper "Rebuttal Maximum Rates.xlsx."

3. Cross-Subsidy Issues

UP further contends that even if the IRR's revenues should be found to exceed its costs, the rate relief that IPA might otherwise receive would need to be reduced (but not eliminated) through the application of the STB's "*PPL Montana/Otter Tail*" maximum rate cross-subsidy test.[24] Reply at III.H-16-18; *see also id.* at I-12-14.[25] UP further contends that the Board's cross-subsidy test

[24] UP discusses the application of the "*PPL Montana/Otter Tail* test," but in actuality these are two separate analyses. The *PPL Montana* test is a threshold cross-subsidy analysis that determines if the revenue attributable to all movements moving over a specific SARR segment covers the operating costs for the movements and the segment's investment costs. If the segment passes this threshold query, a subsequent analysis, first described in the *Otter Tail* decision, may limit the relief available to traffic moving on the segment so as to not create an improper cross-subsidy. It is the *Otter Tail* test that UP relies upon to find that, on IPA's evidence, the maximum rates should be limited to levels higher than MMM ratios determined by IPA. Reply at I-14; *id.* at III.H-17-18.

[25] UP criticizes IPA for not having addressed the cross-subsidy issue on Opening. Reply at I-12 ("As a final example of IPA's departures from precedent, IPA's DCF analysis omitted any test for cross-subsidies, despite IPA's conclusion that SARR revenues [] exceed SARR costs."). But the burden for demonstrating a cross-subsidy falls to the defendant, and the complainant has no affirmative

should be revised to reflect the STB's subsequent adoption of ATC, which would result in a greater reduction (but again, not the elimination) of IPA's rate relief. *Id.* at III.H-18-20; *see also id.* at I-14-16. As explained below, both of UP's arguments are defective.

UP's cross-subsidy contentions focus on the "traffic moving on the IRR line segment between Milford and Lynndyl" because, according to UP, that traffic "does not share any facilities with the IPA issue traffic moving on the IRR lines between Provo and Lynndyl." *Id.* at III.H-17. UP is here referring to the overhead traffic that the IRR moves only between Milford and Lynndyl (or vice versa), and that the IRR interchanges with UP at Milford and at Lynndyl. UP is not referring to overhead traffic that the IRR moves between Milford and Provo (or vice versa), as that traffic shares all of the IRR facilities used by the issue traffic.

Employing the parlance of *Otter Tail*, UP views the IRR segment between Lynndyl and Provo as constituting the "core" facilities of the IRR, IPA as "Shipper 1," the Milford-Lynndyl segment as secondary facilities, and the cross-

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obligation to prove a negative as part of its Opening submission. *AEPCO 2011*, slip op. at 15-16 ("when a defendant fails to identify a section of the SARR that is not self-supporting, it has not met its burden to demonstrate an internal cross-subsidy"); *see also Rate Regulation Reforms,* slip op. at 10-11 ("The approach to identify an internal cross-subsidy … is an affirmative defense, with the evidentiary burden of production and persuasion on the railroad.") (discussing Simplified-SAC). UP has cited no authority that suggests otherwise.

over traffic moving between Milford and Lynndyl as "Shipper 3" traffic that does not utilize the IRR's core facilities.[26]

A critical threshold issue is then whether the Milford-Lynndyl traffic uses any core facilities of the IRR. To the extent that the Milford-Lynndyl traffic uses *any* of the core facilities, then the traffic constitutes "Shipper 2" traffic in the terminology of *Otter Tail*, meaning it shares facilities with the issue traffic. In that case there is no "Shipper 3" traffic at all, *i.e.*, traffic that shares no facilities with the issue traffic, and there is thus no basis for any application of the *Otter Tail* cross-subsidy test. *Otter Tail*, slip op. at 9 ("A full SAC presentation may include the 'secondary facilities' needed to serve Shipper 2 but not used by Shipper 1"); *id.*, slip op. at 10 (explaining that "revenues from Shipper 3 should not be used to pay for the core facilities," although such revenues can free-up additional Shipper 2 revenues to contribute more for the core facilities).

UP's critical assertion is then that the overhead traffic moving between Milford and Lynndyl (*i.e.*, both Milford-Lynndyl overhead traffic and Lynndyl-Milford overhead traffic) "does not share any facilities with the IPA issue traffic." Reply at III.H-17. The apparent predicate for UP's assertion is that IPA's

[26] Again, the overhead traffic in issue here is the traffic that the IRR moves only between Milford and Lynndyl (or vice versa). Most of this traffic moves to or from Salt Lake City via the portion of UP's Lynndyl Subdivision that the IRR is not replicating. IPA refers to the northbound overhead traffic moving only over the IRR segment between Milford and Lynndyl as the Milford-Lynndyl overhead traffic, and to the southbound overhead traffic moving only over the IRR segment between Lynndyl and Milford as Lynndyl-Milford overhead traffic.

RTC simulation, on Opening, routed the issue traffic over the IRR main line for the 1.55 miles between Lynndyl and the connection to the IPP Industrial Lead, but routed the southbound Lynndyl-Milford overhead traffic through the Lynndyl Yard instead of the main line. *Id.* at I-12-14; *see also* Part III-A-1, *supra*. UP thus seeks to claim a cross-subsidy because IPA's (and UP's own[27]) simulation routed these southbound overhead traffic movements over a different track (effectively, a passing siding) that is located only 15 feet from the main line.

UP's factual predicate is insufficient to support subjecting the Milford-Lynndyl and Lynndyl-Milford overhead traffic to the cross-subsidy analysis. On Opening (and again on Rebuttal), the IPA issue traffic and the northbound Milford-Lynndyl overhead traffic both utilize the main line and thus, even under UP's overly restrictive view of what constitutes the "core facilities," clearly overlap for 1.55 miles. As noted above, on Opening, the southbound IPA issue traffic used the 1.55 miles of main line, but the southbound Lynndyl-Milford

[27] UP indicates that its depiction of the IRR's routing is based on UP's own RTC simulation. Reply at I-13 & n.22. IPA's Opening simulation did not direct the northbound Milford-Lynndyl overhead traffic to use Lynndyl Yard, but allowed it to use the main line at Milford. However, UP directed the issue traffic and both the Lynndyl-Milford overhead traffic and the Milford-Lynndyl overhead traffic to use the yard tracks, and the routing instruction appears in UP's workpapers. *See* UP Reply workpaper "UP Reply Case.zip." UP did not allow the RTC simulation to find its own routing solution for any of these overhead movements, regardless of direction. *See* Part III-B-1-a, *supra*. Thus, the major difference between IPA's and UP's instructions was that IPA routed only the southbound overhead traffic through the yard, while UP routed both southbound and northbound overhead traffic via the yard.

overhead traffic was routed over the Lynndyl yard tracks.[28] IPA used specific routing instructions to use the yard tracks in its RTC simulation on Opening only for the southbound Lynndyl-Milford overhead traffic as a simplification to eliminate the possibility of any track conflict and to make the RTC model easier to run. If the Opening RTC model had been instructed to allow use of the mainline at Lynndyl, some of the Lynndyl-Milford overhead traffic would have been routed over the main line, as the only major activities that occur at Lynndyl (other than for one train that picked up cars at Lynndyl)[29] are crew changes and interchanges. *See* Part III-B-1-a, *supra*. Moreover, in the real world, the IPA issue traffic and Lynndyl-Milford overhead traffic must be routed over the same main line because there is no other track at Lynndyl that can accommodate the trains.[30]

To confirm the irrelevance of the routing instructions for overhead traffic received and forwarded in interchange from UP, IPA modified its RTC simulation on Rebuttal by substituting an instruction to allow southbound Lynndyl-Milford overhead trains to use the main line as an alternative to using the

[28] On Rebuttal, for southbound traffic received in interchange from UP at Lynndyl, the RTC was programmed to allow the interchange traffic to use the 1.55 miles of main line track.

[29] As explained in Part III-B-1-a, *supra*, the Lynndyl Yard is not a true yard as very little occurs in the way of traditional yard functions such as inspection, car maintenance, *etc*. Instead, it is functionally the equivalent of a multi-track section.

[30] UP's track chart for its existing facilities on the IRR-replicated line at Lynndyl shows only some side tracks that can accommodate only a few cars and are nowhere near sufficient to accommodate IPA's trains or the Milford-Lynndyl trains without also occupying the main line. *See* Op. e-workpaper "Lynndyl Track Profile (2011 Tonnage).pdf."

Lynndyl Yard, thereby allowing the model to determine the routing of the trains. The Rebuttal simulation causes both the issue traffic and the overhead traffic moving in both directions to utilize the main line when available, thereby eliminating the putative predicate for UP's cross-subsidization claim. *See* Part III-B-1-a, *supra*.[31] There is thus no basis whatsoever for applying UP's proposed cross-subsidy adjustment.

Furthermore, even if the Milford-Lynndyl and Lynndyl-Milford overhead traffic were always deemed to be diverted off the main line to the Lynndyl Yard, the IPA issue traffic and the cross-over traffic would still both receive benefits from sharing common IRR facilities; *i.e.*, it would be more expensive to construct, maintain, and operate the yard track in the absence of the main line. In other words, the IRR would still realize economies of scale, scope and density by adding an additional track at Lynndyl because the main line track is already present. Those efficiencies include shared use of common grading and

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[31] In UP's RTC simulation, UP instructed the model to route both southbound Lynndyl-Milford overhead traffic and (contrary to IPA's Opening simulation) northbound Milford-Lynndyl overhead traffic through Lynndyl Yard. In addition to running its Rebuttal RTC simulation as described above in the text, IPA reran UP's RTC simulation with instructions to allow both Lynndyl-Milford and Milford-Lynndyl overhead traffic to use the main line at Lynndyl, as an alternative to using Lynndyl Yard. When so re-programmed, UP's version of the RTC model routed both the IPA issue traffic and the overhead traffic moving in both directions over the 1.55-mile main line overlap, when available, without any degradation in the transit times. As with IPA's Opening simulation, all of the northbound overhead traffic was routed over the 1.55-mile main line overlap except for one train that moved through Lynndyl Yard because it picked up cars there.

mobilization during construction, shared use of communications and data facilities, shared staffing, and shared maintenance, all of which would be more expensive if the tracks were not adjacent. Indeed, the ability to expand capacity by adding a short yard track, rather than establishing entirely new facilities, is part of the economies of scale, scope, and density that characterizes railroading, which is why "the average cost of serving customers decreases as the volume of business increases over a network."[32] The presence of an additional yard or yard track provides useful redundancy (*e.g.*, one track can continue to be used when another track might be out of service for maintenance or a random outage).

The fact that different types of traffic might use different tracks does not signify that they fail to share common facilities. For example, "[t]he 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." *PPL Montana*, 6 S.T.B. at 292 n.11. What is true of through track facilities is also true of yard facilities. "Thus, to show that the captive shipper is cross-subsidizing other traffic, the evidence must at a minimum demonstrate that the revenue from the challenged rate, combined with revenue

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[32] Laurits R. Christensen Associates, Inc., *A Study of Competition in the U.S. Freight Railroad Industry and Analysis of Proposals That Might Enhance Competition* (Revised Final Report, Nov. 2009), ES-22.

from other traffic that *could* share those facilities, exceeds the costs attributable to serving those shippers." *Otter Tail*, slip op. at 24 (emphasis added). UP's focus on whether the IPA and the cross-over traffic between Lynndyl and Milford actually share the exact same track is thus too narrow and ignores railroading economics and operations.

UP included in its Reply workpapers cross-subsidy templates based on IPA's Opening analysis and UP's Reply analysis.[33] The STB must summarily disregard the templates based on UP's Reply analysis because they include the same overstated costs and understated revenues UP included in its primary SAC evidence.

In addition, UP incorrectly allocated revenues and improperly developed operating expenses in both the examples based on IPA's Opening workpapers and those based on its own Reply workpapers. In allocating revenue on traffic moving on the Provo to Lynndyl line segment in both its IPA Opening templates and its Reply templates, UP improperly excluded all of the Milford-Lynndyl traffic even though, as discussed extensively above, both traffic sets share common facilities.

UP also incorrectly calculated indirect operating expenses attributable to the Provo to Lynndyl line segment in both cases. UP states that it

[33] UP states it included cross-subsidy workpapers based on IPA's Opening Evidence because its own Reply analysis did not result in overpayments leading to potential rate reductions. *See* UP Reply at III.H-17.

developed indirect operating expenses using the approach from the Board's *Otter Tail* decision.[34] UP is incorrect. As shown in the *Otter Tail* decision, the STB used an indirect operating expense approach to allocate costs for five expense categories: 1) Operating managers; 2) General & Administrative; 3) Training and Recruitment; 4) Loss & Damage; and 5) MOW.[35] In contrast, UP included in its indirect operating expense calculations two additional expenses – ad valorem taxes and operating materials and supplies.[36]

UP made two errors in its allocation of ad valorem taxes. First, one need not allocate ad valorem taxes using UP's indirect approach because, as discussed in section III-D above, ad valorem taxes in SAC cases are correctly calculated based on mileage prorates of the incumbent's ad valorem tax expenses. Since the Provo-Lynndyl line segment miles are known, a simple straight mileage proration will provide the correct ad valorem tax for the segment. Second, ad valorem taxes under the STB's URCS formula have zero (0) variability, and therefore are best allocated using a metric such as a mileage prorate.[37]

Second, UP incorrectly used an indirect approach to allocate operating materials and supplies expenses. Materials and supplies expenses are a

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[34] *See* Reply at III.H-17.

[35] *See Otter Tail*, slip op. at 29.

[36] *See* Reply e-workpaper "Exhibit III-H-1 Reply XSub.xlsm," tab "Indirect Expenses," and e-workpaper "Exhibit III-H-1 Opening Cross Subsidy.xlsm," tab "Indirect Expenses."

[37] *See* URCS Table D8 Part 2, Line 319, Column (4).

direct function of the line segment's train and engine personnel. Because UP was able to identify the train and engine personnel attributable to the Provo-Lynndyl line segment, it can directly calculate the materials and supplies for the segment as well. There is no need to use an indirect allocation approach.

UP's proposed alternative cross-subsidy test seeks to rely on ATC to allocate revenues to the Lynndyl-Provo segment. UP's description of its procedure is that "UP re-ran ATC to isolate revenues for the Provo-Lynndyl segment, and only included expenses associated with that segment." Reply at III.H-20.[38] The result is an increased MMM ratio for the Provo-Lynndyl segment, meaning less rate relief for IPA. Reply at III.H-21 & Table III.H.7. UP's justification for its ATC-based approach is that when the STB adopted the *PPL Montana/Otter Tail* tests, the agency assigned "all the cross-over contribution to the core facilities" because the STB's methodology for allocating cross-over revenues "was not sensitive" to the relative traffic densities. *Id.* at III.H-19. UP claims that because ATC is sensitive to densities and allows fixed costs to be considered in the revenue allocations, ATC should be used "as the best method of performing that allocation short of requiring a 'Full-SAC' analysis." *Id.* at III.H-19-20.

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[38] The costs under UP's ATC-based cross-subsidy test are less than the costs under UP's *Otter Tail* test, as are the revenues, but UP does not elaborate upon the allocation of the costs.

IPA strongly disagrees with UP's ATC-based cross-subsidy analysis for several reasons.

First, as a threshold matter, there is no basis for *any* cross-subsidy test because, as explained *supra*, the IPA issue traffic and the Milford-Lynndyl traffic share common IRR (and real-world) facilities and thus benefit from economies of scale, scope and density. Since there is no "Shipper 3" traffic, there is no predicate for applying any cross-subsidy test in IPA's rate case at all.

Second, UP's claim that the STB would have adopted an ATC-based approach for applying its cross-subsidy approach had a methodology been available that permitted allocation based on fixed (meaning unattributable) costs is specious. Indeed, the approach that UP proposes amounts to a "segmented" SAC analysis, one that would yield a different R/VC MMM analysis for a segment based on its allocated revenues (which would be allocated based on attributable/variable and unattributable/fixed costs) and associated costs. However, the STB made clear in *PPL Montana II* that it had not adopted and was opposed to such a segmented approach.

> Contrary to PPL's characterization, we did not employ a "segmented SAC" test. In contrast to what we do in a SAC analysis, in our threshold cross-subsidy analysis, we purposely excluded unattributable costs from the analysis, and looked only at whether the revenue generated by western-part traffic would be sufficient to cover costs *not* shared by shippers only using the north-south part of the WMCRR.[22] Had PPL's SARR satisfied the threshold cross-subsidy analysis, we would have proceeded to perform a SAC

analysis, comparing total WMCRR revenues to total WMCRR costs.

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[22] As long as the traffic on the western part could make any contribution to the carrier's unattributable cost, the railroad would be better off participating in the transportation than not participating in it. *See Rate Guidelines –Non-Coal Proceedings,* 1 S.T.B. 1004, 1016 (1996).

PPL Montana II, 6 S.T.B. at 768 & n.22 (original emphasis).

The ATC-based approach that UP now proposes is a variant of the segmented approach that the STB considered and rejected in *PPL Montana II.* The STB excluded unattributable costs from the allocation precisely because they could not be attributed to a specific segment, particularly inasmuch as a SARR or other railroad would be willing to handle traffic that "could make any contribution to the carrier's unattributable cost[s]." *Id.* at 768 n.22. The fact that the STB now takes average unattributable or fixed costs into account in allocating cross-over revenues or contribution between the SARR and the residual incumbent has no reason to take such costs into account for allocating revenues across the segments of the SARR. Indeed, ATC is a variant of fully-allocated costing, and SAC was developed and adopted in order to avoid fully-allocated costing. There is no reason to engage in an expensive and complicated SAC analysis, only to have the ultimate measure of relief be adjusted by the application of fully-allocated costing principles.

Third, the use of ATC, in effect, to allocate relief across the different segments of the SARR is especially inappropriate. ATC considers the variable/attributable and fixed/unattributable costs of the incumbent/defendant, and not the costs and efficiencies of the SARR. Moreover, even with respect to the incumbent/defendant, ATC considers only system average variable costs and average fixed costs that take into account the incumbent's traffic density and not any other cost factor. Unless the SARR incorporates in its traffic group all of the traffic reflected in the incumbent's traffic densities, applying the ATC approach on a segmented basis will understate the revenue available for that segment.[39] In contrast, a SAC analysis requires a bottom-up analysis that takes into account all of the specifics of individual routings, facilities, terrain, associated grading requirements, traffic, level of service as reflected in transit time, etc. All of these factors are ignored in the ATC analysis, which makes ATC an especially poor choice for the allocation exercise envisioned by UP. ATC may be, in effect, a "necessary evil" for allocation of revenues between on-SARR and off-SARR segments, but it should not be used where actual SAC revenue and cost data have

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[39] For example, IPA did not include all UP traffic originating and terminating along the line segments replicated by the IRR, and derives no revenues from the traffic not included. However, ATC divisions for the IRR are based on UP traffic density data that includes this originated and terminated traffic. The higher UP traffic densities lower the average fixed cost component of the ATC division relative to the result if lower IRR densities were used. Simply stated, the IRR would receive more revenues if the lower SARR densities were used than the higher UP traffic densities.

already been developed. That said, segmented SAC analyses should generally be avoided for the reasons that the STB noted in *PPL Montana II*.

Finally, while UP claims that ATC should be utilized to correct for cross-subsidies because it provides the best approximation of a "Full-SAC" analysis,[40] UP's conclusion does not follow even if its premise is otherwise sound. In this instance, UP's application of ATC for cross-subsidy purposes raises the MMM ratio (which reduces the SAC relief) on the "core" IRR facilities. Since ATC is simply a mechanism for allocating the incumbent's revenues between segments, it logically follows that ATC must also lower the MMM ratio (which increases the SAC relief) on the "secondary" IRR facilities. One must then consider whether the outcome of relief from the posited "Full-SAC" analysis is best approximated by (a) a SARR with only the core facilities, (b) a SARR with only the secondary facilities, or (c) a full SARR that contains the core and secondary facilities. Since the full SARR is larger and more encompassing, and less subject to the limitations of fully-allocated costing, it is more apt, using UP's logic, to reflect the outcome of a "Full-SAC" analysis. UP has provided no basis on which to conclude that a SAC analysis that is restricted to ATC-core facilities would provide a better "Full-SAC" approximation than a SAC analysis for the ATC-secondary facilities. Yet, that is the substance of UP's argument.

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[40] Reply at III.H-19-20 & nn.46, 47 (quoting *Rate Regulation Reforms,* slip op. at 6-7).

In sum, UP has failed to present any cogent arguments for the inclusion of a cross-subsidy analysis. The IRR contains no "Shipper 3" traffic, and there is thus no basis for any *Otter Tail*-type adjustment. Even if there were a basis to apply such an adjustment, UP's ATC-based approach should not be utilized for the reasons stated above.

4. Reparations

As described in its Opening Evidence, IPA has been paying rates under UP Tariff 4222 in excess of the maximum reasonable rates per ton since November 2, 2012. UP thus owes IPA the difference between the rates paid and the lawful maximum levels in principal reparations payments. Such principal will increase until UP complies with a final order of the Board in this proceeding. IPA is also entitled to interest on all principal reparations amounts, calculated from the date that the first unlawful charge was paid at the rates described in Part I-D, and otherwise in accordance with 49 C.F.R. § 1141.1, *et seq.*

The Board's regulations (49 C.F.R. § 1141.1, *et seq.*) provide for interest at the coupon equivalent of the 91-day United States Treasure bill ("T-Bill"), updated and compounded each calendar quarter. The rate is currently at historically low levels, approximately 0.06% per year, or almost 200 times lower than the AAR's estimate of the 2012 annual cost of capital. As IPA described in its Opening Evidence, there is a significant asymmetry in having the reasonableness of IPA's rates adjudged under a very high cost of capital and then having interest on IPA's reparations awarded at a much lower level.

In EP 715, the Board proposed to utilize the U.S. Prime Rate as a measure of interest due on reparations. *See* EP 715, slip op. at 18. As described in Parts I and III of IPA's Opening Evidence, the Board stated in EP 715 that it was not proposing that any new cross-over traffic limitations would apply to pending cases. *Id.*, slip op. at 17 n.11; *accord E.I. DuPont de Nemours & Co. v. Norfolk S. Ry.*, NOR 42130 (STB served Nov. 29, 2012) slip op. at 4-5. Similarly, the Board stated that its proposed "Alternative ATC" methodology would be used in "future" cases. EP 715, slip op. at 18. Conversely, the Board did not include any language in EP 715 suggesting that its newly proposed interest rate measure would apply only to complaints filed after July 25, 2012 (*i.e.*, to cases not pending as of the effective date of the EP 715 proposals). *See* EP 715, slip op at 18. For the reasons set forth above and in the evidence that IPA filed in EP 715 as part of the Concerned Captive Coal Shippers, IPA respectfully requests that the Board calculate interest on reparations using the U.S. Prime Rate.

IV Witness
Qualifications

VERIFICATION

I, Thomas D. Crowley, verify under penalty of perjury that I am the same Thomas D. Crowley whose Statement of Qualifications appears in Part IV of the Narrative portion of IPA's Opening Evidence filed in this proceeding; that I am responsible for the portions of the foregoing Rebuttal Evidence of IPA that relate to quantitative market dominance (Part II-A), traffic and revenue (Part III-A), network needed to accommodate the issue and other SARR traffic (Part III-B), discounted cash-flow analysis (Part III-G), and the results of the SAC analysis (Part III-H); that I know the contents thereof; and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Thomas D. Crowley

Thomas D. Crowley

Executed on: July 1, 2013

VERIFICATION

I, Philip H. Burris, verify under penalty of perjury that I am the same Phillip H. Burris whose Statement of Qualifications appears in Part IV of the Narrative portion of IPA's Opening Evidence filed in this proceeding; that I am responsible for the portions of the foregoing Rebuttal Evidence of IPA that relate to the operating statistics of the SARR (Part III-C), locomotive and freight car requirements, crew requirements and operating expenses (Part III-D), and the portion of road property investment cost (Part III-F) related to the cost of land easements; that I know the contents thereof; and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Phillip H. Burris

Executed on: July 1, 2013

VERIFICATION

I, Daniel L. Fapp, verify under penalty of perjury that I am the same Daniel L. Fapp whose Statement of Qualifications appears in Part IV of the Narrative portion of IPA's Opening Evidence filed in this proceeding; that I am responsible for the portion of the foregoing Rebuttal Evidence of IPA relating to traffic and revenue, part III-G relating to the discounted cash-flow analysis, and Part III-H relating to the results of the SAC analysis; that I know the contents thereof; and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Daniel L. Fapp

Executed on: June 30, 2013

VERIFICATION

I, Timothy D. Crowley, verify under penalty of perjury that I am the same Timothy D. Crowley whose Statement of Qualifications appears in Part IV of the Narrative portion of IPA's Opening Evidence filed in this proceeding; that I am responsible for the portions of the foregoing Rebuttal Evidence of IPA set forth in Part III-F (grading) and Part III-E (investment in non-road property) and co-sponsoring Part III-B (network needed to accommodate the issue and other SARR traffic) with Mr. Thomas D. Crowley, and Part III-C (RTC Model) with Mr. William H. Humphrey; that I know the contents thereof; and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Timothy D. Crowley

Executed on: July 1, 2013

VERIFICATION

I, William W. Humphrey, verify under penalty of perjury that I am the same William W. Humphrey whose Statement of Qualifications appears in Part IV of the Narrative portion of IPA's Opening Evidence filed in this proceeding; that, together with Mr. Timothy D. Crowley, I am co-sponsoring the portions of the foregoing Rebuttal Evidence of IPA set forth in Part III-C that relate to the simulation of the SARR's operations using the RTC Model; that I know the contents thereof; and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

William W. Humphrey

Executed on: July 1, 2013