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230797

August 10, 2011

By Hand Delivery

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

Re: Docket No. 42127, Intermountain Power Agency v. Union Pacific Railroad Company

Dear Ms. Brown:

Enclosed for filing in the above docket on behalf of Complainant Intermountain Power Agency ("IPA") please find the following:

1. The unbound original and twenty (20) copies of the Highly Confidential Version of IPA's Opening Evidence, consisting of one volume of Narrative and one volume of Exhibits. Please note that some of the Exhibits contain color images.

2. The unbound original and ten (10) copies of the Public Version of IPA's Opening Evidence, also consisting of one volume of Narrative and one volume of Exhibits (some of which contain color images).

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

Please note that certain of the electronic workpapers on the hard drives include Security Sensitive Information ("SSI"). The SSI information is appropriately identified in accordance with the Department of Transportation's SSI Order 2011-06-FRA-01. In addition, in accordance with SSI handling guidelines, the hard drive is password protected. Please contact Daniel Jaffe of Slover & Loftus LLP at 202-454-4420 for the password.

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

Respectfully submitted,

C. Michael Loftus

C. Michael Loftus
An Attorney for Complainant
Intermountain Power Agency

CML:cej
Enclosures

cc: Counsel for Defendant Union Pacific Railroad Company

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BEFORE THE
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INTERMOUNTAIN POWER AGENCY	)	
Complainant,	)	
v.	)	Docket No. 42127
UNION PACIFIC RAILROAD COMPANY	)	
Defendant.	)	

OPENING EVIDENCE OF COMPLAINANT
INTERMOUNTAIN POWER AGENCY

NARRATIVE

INTERMOUNTAIN POWER AGENCY

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Dated: August 10, 2011

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ACRONYMS

The following acronyms are used:

AAR	Association of American Railroads
AEI	Automatic Equipment Identifier
AEO	2011 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	Power 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 Co.
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	*Ariz. Elec. Power Coop., Inc. v. BNSF Ry. and Union Pacific R.R.*, STB Docket No. 42113 (pending)
AEP Texas	*AEP Tex. N. Co. v. BNSF Ry.*, STB Docket No. 41191 (Sub-No. 1) (STB served September 10, 2007).
APS	*Ariz. Pub. Serv. Co. and Pacificorp. v. The Atchison, Topeka and Santa Fe Ry.*, 2 S.T.B. 367 (1997)
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.*, STB Docket No. 42095 (STB served May 19, 2008)
Major Issues	*Major Issues in Rail Rate Cases*, STB Ex Parte No. 657 (Sub-No. 1) (STB served Oct. 30, 2006)
Nevada Power II	*Bituminous Coal - Hiawatha, Utah to Moapa, Nevada,* 10 I.C.C. 2d 259 (1994) **(???)**
OG&E	*Oklahoma Gas & Electric Co. v. Union Pac. R.R.*, STB Docket No. 42111 (STB served July 24, 2009)
Otter Tail	*Otter Tail Power Co. v. BNSF Ry.*, STB Docket No. 42071 (STB served January 27, 2006)

Xcel I	*Public Service Co. of Colorado d/b/a Xcel Energy v. Burlington N. and Santa Fe Ry.*, 7 S.T.B. 589 (2004)
Xcel II	*Public Serv. Co. of Colorado d/b/a Xcel Energy v. Burlington N. and Santa Fe Ry.*, STB Docket No. 42057 (STB served Jan. 19, 2005).
TMPA	*Texas Mun. Power Agency v. Burlington N. and Santa Fe Ry.*, 6 S.T.B. 573 (2003)
Seminole	*Seminole Electric Coop., Inc. v. CSX Transp., Inc.*, STB Docket No. 42210 (Complaint filed Oct. 3, 2006)
WFA I	*Western Fuels Ass'n, Inc. and Basin Electric Power Coop. v. BNSF Ry.*, STB Docket No. 42088 (STB served September 10, 2007)
WFA II	*Western Fuels Ass'n, Inc. and Basin Electric Power Coop. v. BNSF Ry.*, STB Docket No. 42088 (STB served February 18, 2009)
Wisconsin P&L	*Wisconsin Power & 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)

I Counsel's Argument

BEFORE THE
SURFACE TRANSPORTATION BOARD

INTERMOUNTAIN POWER AGENCY Complainant, v. UNION PACIFIC RAILROAD COMPANY Defendant.	)))))))))))	Docket No. 42127

PART I

COUNSEL'S ARGUMENT AND SUMMARY OF EVIDENCE

A. INTRODUCTION

In this proceeding, Complainant Intermountain Power Agency ("IPA") challenges the reasonableness of the common carrier rates established by Defendant, Union Pacific Railroad Company ("UP"), for the transportation of coal in unit train service from one Utah coal loadout (the Savage Coal Terminal), one Utah mine (the Skyline Mine), and one point of interchange with the Utah Railway Company ("URC") (Provo, Utah) to IPA's electric generating facility, the Intermountain Generating Station ("IGS"), at Lynndyl, Utah. URC provides upstream service on the interline movements with UP pursuant to a long-term rail transportation contract with IPA.

UP established the challenged rates in Item 6200-A of UP Tariff 4222. *See* Exhibit I-1. Effective as of January 1, 2011, UP's common carrier rates for coal transportation from the issue origins/interchange to IGS in IPA-supplied railcars (not including UP's applicable fuel surcharges) are as follows:

TABLE I-1

Origin/Interchange	286k Capacity Cars	263k Capacity Cars
Savage, Utah	$10.20/ton	$10.40/ton
Skyline, Utah	$10.60/ton	$10.79/ton
Provo, Utah	$7.13/ton	$7.27/ton

IPA presents its evidence concerning quantitative market dominance, variable costs, the jurisdictional threshold rate level, and qualitative market dominance in Part II following this Argument and Summary, as well as in the accompanying exhibits and workpapers. IPA presents its evidence on stand-alone costs ("SAC") in Part III. IPA presents the statements of qualifications and verifications by the witnesses who sponsor IPA's evidence in Part IV. In Part V, IPA presents its evidence regarding UP's unreasonable practice in failing to provide common carrier rates in a timely manner. IPA's evidence in support of its unreasonable practice claim consists of the Verified Statement of Mr. John L. Aguilar and the exhibits thereto.

IPA seeks the following relief:

(1) a determination that UP possesses market dominance over the transportation of coal to IPA within the meaning of 49 U.S.C. § 10707;

(2) a determination that the challenged rates exceed a maximum reasonable level and are therefore unlawful under 49 U.S.C. § 10701(d)(1);

(3) a prescription of lawful maximum rates for coal shipments to IGS pursuant to 49 U.S.C. §§ 10704(a)(1) and 11701(a);

(4) an award of reparations payable by UP to IPA for overcharges collected by UP for common carrier coal transportation to IGS since January 1, 2011, in excess of the rates prescribed by the Board, together with interest; and

(5) a determination that UP's refusal to provide its common carrier rates in the timeframe required by 49 C.F.R. § 1300.2, constitutes an unreasonable practice under 49 U.S.C. § 10702.

IPA's Opening Evidence is submitted in a manner consistent with *General Procedures for Presenting Evidence in Stand-Alone Cost Rate Cases*, STB Ex Parte No. 347 (Sub-No. 3) (STB served Mar. 12, 2001), and *Major Issues in Rail Rate Cases*, STB Ex Parte No. 657 (Sub-No. 1) (STB served Oct. 30, 2006), *aff'd sub nom. BNSF Ry. v. STB*, 526 F.3d 770 (D.C. Cir. 2008) ("*Major Issues*").

B. BACKGROUND FACTS

IPA is a political subdivision of the State of Utah and is the owner of the Intermountain Power Project ("IPP"). IPP's generating station, IGS, is located in the Great Basin of western Utah near Lynndyl, Millard County, Utah. IGS generates more than 13 million megawatt hours of energy each year from its two coal-fired units and serves approximately 2 million customers. The two IGS generating units have a total capacity of 1,800 MW and consume a total of approximately 5 to 6 million tons of coal per year.

IGS's output is committed, through long-term power sale contracts, to 36 utility entities located in Utah and California (which in turn serve customers in Utah, California, Colorado, Wyoming, Arizona, Nevada, and Idaho). In particular, IGS's generation rights are held, respectively, by the Los Angeles Department of Water and Power ("LADWP") (44.6%), five California cities (30%), twenty-three municipal Utah purchasers (14%), six cooperative Utah purchasers (7%), and one investor-owned Utah purchaser (4%). In addition to being the largest consumer of the electricity generated at IPP, LADWP also acts as the fuels purchasing and operating agent for IPP. Actual operation of IPP is carried out by the Intermountain Power Service Corporation.

The coal-fired units at IGS operate on a "baseload" basis, meaning that the units generally operate at or near their full available capacity on a continuous basis, subject to periodic planned and forced outages for maintenance or repair. Rail service to IGS is provided exclusively by UP.

C. UNION PACIFIC HAS MARKET DOMINANCE OVER THE ISSUE TRAFFIC

Market dominance is defined in the statute as "an absence of effective competition from other rail carriers or modes of transportation for the transportation to which a rate applies." 49 U.S.C. § 10707(a). However, even in the absence of effective competition, a carrier will not be found to have market dominance if the "rail carrier proves that the rate charged results in a revenue-variable cost percentage for such transportation that is less than 180 percent." 49 U.S.C. § 10707(d)(1)(A). Accordingly, there are two parts to the market dominance inquiry; quantitative market dominance and qualitative market dominance.

1. QUANTITATIVE MARKET DOMINANCE

a. Traffic and Operating Characteristics

IPA's evidence in Part II-A, sponsored by Thomas D. Crowley and Timothy D. Crowley of L. E. Peabody & Associates, Inc., calculates the variable costs for each of the rates challenged in this proceeding. In accordance with the Board's decision in *Major Issues*, the variable costs were calculated on the basis of unadjusted system average costs using the nine (9) operating characteristic inputs prescribed by the Board, namely: (1) the railroad, (2) loaded miles (including loop track miles), (3) shipment type, (4) number of freight cars per train, (5) tons per car, (6) commodity, (7) type of movement, (8) car ownership and (9) type of car. *Id.* at 60; *Kansas City Power & Light Co. v. Union Pac. R.R.*, STB Docket No. 42095, at 5-6 (STB served May 19, 2008) ("*KCP&L*").

The parties were able to reach agreement on, and stipulate to, all nine (9) of the designated inputs for coal movements from each of the three origins at issue in this case. *See* Joint Submission of Operating Characteristics, *Intermountain Power Agency v. Union Pac. R.R.*, STB Docket No. 42127 (filed June 1, 2001). These stipulated inputs were used to calculate the variable costs.

The traffic and operating parameters used by IPA to calculate variable costs for the subject traffic are as follows:

TABLE I-2

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	116.3	116.3	105.1	105.1
8. Commodity	Coal	Coal	Coal	Coal
9. Movement Type	Unit Train	Unit Train	Unit Train	Unit Train
		Skyline Mine, UT to Lynndyl, UT		
	286,000 GWR	286,000 GWR	263,000 GWR	263,000 GWR
	(6)	(7)	(8)	(9)
1. Railroad	UP	UP	UP	UP
2. Miles	172.0	172.0	172.0	172.0
3. Shipment Type	Originated & Terminated	Originated & Terminated	Originated & Terminated	Originated & 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	118.6	118.6	107.8	107.8
8. Commodity	Coal	Coal	Coal	Coal
9. Movement Type	Unit Train	Unit Train	Unit Train	Unit Train
		Savage Loadout, UT to Lynndyl, UT		
	286,000 GWR	286,000 GWR	263,000 GWR	263,000 GWR
	(10)	(11)	(12)	(13)
1. Railroad	UP	UP	UP	UP
2. Miles	185.0	185.0	185.0	185.0
3. Shipment Type	Originated & Terminated	Originated & Terminated	Originated & Terminated	Originated & 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	118.6	118.6	107.8	107.8
8. Commodity	Coal	Coal	Coal	Coal
9. Movement Type	Unit Train	Unit Train	Unit Train	Unit Train

b. Variable Costs

Table I-3 shows the calculation of variable costs for movements from each of the origins at issue to IGS based upon unit costs sponsored by witnesses Crowley and Crowley, and indexed to first quarter 2011 (1Q11) and second quarter 2011 (2Q11) wage and price levels, using the Board's established procedure for updating variable costs. The associated revenue to variable cost ratios for each of the challenged rates are set forth in Table I-3 as well (each column is similar to the corresponding column in Table I-2):

TABLE I-3

Variable Cost and Revenue/Variable Cost Ratios

	Provo, UT to Lynndyl, UT			
Item	286,000 GWR	286,000 GWR	263,000 GWR	263,000 GWR
(1)	(2)	(3)	(4)	(5)
1. Phase III Cost Base Year 2010	$1.63	$1.60	$1.74	$1.71
1Q11				
2 Index to 1Q11	1.04373	1.04373	1.04373	1.04373
3. Phase III Cost 1Q11 (L1xL2)	$1.70	$1.67	$1.82	$1.78
4. Jurisdictional Threshold (L3x1.80)	$3.06	$3.01	$3 28	$3.20
5 Rate Per Ton in Private Cars 1Q11	$7 32	$7 32	$7.49	$7.49
6. Rate to Variable Cost Ratio 1Q11	4.31	4.39	4.11	4.21
2Q11				
7 Index to 2Q11	1.09926	1.09926	1.09926	1 09926
8 Phase III Cost 2Q11 (L1xL7)	$1.79	$1.76	$1 91	$1 88
9. Jurisdictional Threshold (L8x1.80)	$3.22	$3.17	$3 44	$3 38
10. Rate Per Ton in Private Cars 2Q11	$7.43	$7.43	$7.60	$7.60
11. Rate to Variable Cost Ratio 2Q11	4.15	4.22	3.98	4.04

	Skyline Mine, UT to Lynndyl, UT			
	286,000 GWR	286,000 GWR	263,000 GWR	263,000 GWR
12. Phase III Cost Base Year 2010	$2.50	$2.45	$2 65	$2.59
1Q11				
13. Index to 1Q11	1.04373	1 04373	1.04373	1.04373
14. Phase III Cost 1Q11 (L12xL13)	$2.61	$2.56	$2.76	$2.71
15. Jurisdictional Threshold (L14x1.80)	$4.70	$4.61	$4.97	$4 88
16. Rate Per Ton in Private Cars 1Q11	$10.94	$10.94	$11.16	$11.16
17. Rate to Variable Cost Ratio 1Q11	4 19	4 27	4.04	4.12
2Q11				
18. Index to 2Q11	1.09926	1 09926	1.09926	1.09926
19. Phase III Cost 2Q11 (L2xL18)	$2.75	$2.70	$2.91	$2.85
20. Jurisdictional Threshold (L19x1.80)	$4.95	$4 86	$5.24	$5.13
21. Rate Per Ton in Private Cars 2Q11	$11 12	$11.12	$11.36	$11 36
22. Rate to Variable Cost Ratio 2Q11	4.04	4.12	3.90	3 99
	Savage Loadout, UT to Lynndyl, UT			
	286,000 GWR	286,000 GWR	263,000 GWR	263,000 GWR
23. Phase III Cost Base Year 2010	$2.64	$2.59	$2.79	$2.73
1Q11				
24 Index to 1Q11	1.04373	1.04373	1.04373	1.04373
25. Phase III Cost 1Q11 (L23xL24)	$2.75	$2.70	$2 91	$2.85
26. Jurisdictional Threshold (L25x1.80)	$4.95	$4.86	$5 24	$5.13
27. Rate Per Ton in Private Cars 1Q11	$10.56	$10.56	$10.80	$10.80
28. Rate to Variable Cost Ratio 1Q11	3.84	3.91	3.71	3.79
2Q11				
29. Index to 2Q11	1.09926	1 09926	1.09926	1.09926
30. Phase III Cost 2Q11 (L23xL29)	$2.90	$2 84	$3.07	$3.00
31. Jurisdictional Threshold (L30x1.80)	$5.22	$5.11	$5.53	$5.40
32. Rate Per Ton in Private Cars 2Q11	$10.76	$10.76	$11.01	$11.01
33. Rate to Variable Cost Ratio 2Q11	3.71	3.79	3.59	3.67

As these figures confirm, each of the challenged rates is well in excess of the 180% of variable cost market dominance standard.

2. QUALITATIVE MARKET DOMINANCE

In its analysis of qualitative market dominance, the Board must determine whether UP's rates are constrained by effective competition. Effective competition places "pressures on [a] firm [providing a good or service] to perform up to standards and at reasonable prices, or lose desirable business." *Mkt.*

Dominance Determinations & Consideration of Prod. Competition, 365 I.C.C. 118, 129 (1981), *aff'd sub nom. W. Coal Traffic League v. United States*, 719 F.2d 772 (5th Cir. 1983) (*en banc*).

In analyzing the competitive alternatives available to a shipper and the reasonableness of using those alternatives, the Board examines the existence of both intramodal and intermodal alternatives. *Ariz. Pub. Serv. Co. & PacifiCorp v. The Atchison, Topeka & Santa Fe Ry.*, 2 S.T.B. 367, 373 (1997) ("*APS*"). The law is clear that the focus of the analysis is to be on "what is feasible or practical," rather than on speculation of what is "theoretically possible." *Westinghouse Elec. Corp. v. Alton & S. Ry.*, ICC Docket No. 38188S, at 4 (ICC served Feb. 9, 1988).

Here, UP has already repeatedly admitted that the market dominance standards are satisfied both with respect to intramodal and intermodal competition.. In particular, in its responses to Complainant's First Requests for Admissions, UP admitted that it "could not prevail on the issue of whether there is qualitative evidence of effective competition from other carriers or modes of transportation" for the subject movements. *See* Part II-B at page II-B-7 (quoting UP Responses to Request for Admission Nos. 2 and 3). In addition, UP responded to IPA's Interrogatory Nos. 2 and 3 with the "unqualified admission" that UP faces no effective intramodal or intermodal competition for the subject transportation. *Id.* at pages II-B-7-8.

Notwithstanding UP's admissions, IPA presents pertinent facts in Part II-B as to why UP faces no effective intramodal or intermodal competition for the movements at issue. Those facts, which are sponsored by John Aguilar and Lance Lee of IPA's Coal Business Unit, demonstrate that it would not be feasible for IPA to build out to the line of the nearest alternative rail carrier (*i.e.*, more than 85 miles to the URC at Provo).

Likewise, IPA demonstrates in Part II-B that there is no effective intermodal competitive alternative for the issue service. While IPA does ship some coal by truck from certain origins, motor carrier service does not constitute an effective alternative for the high volume rail service from the origins at issue in this case. *See, e.g.*, *APS*, 2 S.T.B. at 374-76 (the possibility of trucking 3.5 million tons per year over a distance of 115 miles was not an effective constraint on rail rates); *Metro. Edison Co. v. ConRail*, 5 I.C.C.2d 385, 413 (1989) (truck movement of 1 million tons of coal over 200 miles was "simply impractical").

Trucking coal from the issue origins would be operationally infeasible and politically impractical. *See W. Tex. Utils. Co. v. Burlington N. R.R.*, 1 S.T.B. 638, 652 (1996), *aff'd sub nom. Burlington N. R.R. v. STB*, 114 F.3d 206 (D.C. Cir. 1997) ("*West Texas Utilities*") ("[E]nvironmental concerns, noise, community opposition, increased inefficiencies associated with loading and unloading, etc., make this [trucking] option infeasible for any of [WTU's] coal movements"). As discussed in Part II-B, the actual history of coal deliveries from the issue origins confirms that trucking does not provide a meaningful option to rail delivery. As further explained there is no competition from any other mode of transportation, *e.g.*, water carriage.

D. UP'S COMMON CARRIER RATES ARE UNREASONABLE BECAUSE SARR REVENUES EXCEED SARR COSTS

In *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 (3d Cir. 1987) ("*Coal Rate Guidelines*"), the Board's statutory predecessor adopted constrained market pricing ("CMP") as its methodology for determining maximum reasonable rate levels for market dominant traffic, such as the IPA coal movements that are in issue in IPA's rate case. In accordance with standard practice, IPA is proceeding under the SAC prong of CMP. The Board recently explained CMP as follows:

> The objectives of CMP can be simply stated. A captive shipper should not be required to pay more than is necessary for the carrier involved to earn adequate revenues. Nor should it pay more than is necessary for efficient service. And a captive shipper should not bear the cost of any facilities or services from which it derives no benefit.

W. Fuels Ass'n, Inc. & Basin Elec. Power Coop. v. BNSF Ry., STB Docket No. 42088, at 7 (STB served Sept. 10, 2007) ("*WFA I*") (citing *Coal Rate Guidelines*, 1 I.C.C.2d at 523-24).

More specifically, SAC develops the principle that a captive shipper's rates should not exceed the level that would be charged by a least-cost, optimally efficient transporter participating in a "contestable" market, unaffected by barriers to entry or exit. As the Board has explained:

> A SAC analysis seeks to determine the lowest cost at which a hypothetical, optimally efficient carrier could provide the service at issue free from any costs

> associated with inefficiencies or cross-subsidization. . . . To begin the analysis, the complainant hypothesizes a stand-alone railroad (SARR) that could serve a selected traffic group if the rail industry were free of barriers to entry or exit.

Tex. Mun. Power Agency v. Burlington N. & Santa Fe Ry., 6 S.T.B. 573, 586 (2003) ("*TMPA*"). Under SAC, the complainant identifies a traffic group, not limited to the issue traffic, to be served by the SARR and designs the transportation system that will service that group efficiently and at the lowest cost, taking account of all essential facilities and operating assets. *See, e.g.*, *WFA I* at 8; *FMC Wyo. Corp. & FMC Corp. v. Union Pac. R.R.*, 4 S.T.B. 699, 721 (2000) ("*FMC*"); *Coal Rate Guidelines*, 1 I.C.C.2d at 542-44.

IPA has calculated the SAC for the movement of coal from the subject origins/interchange to IGS using the Intermountain Railroad ("IRR") as its SARR. The results of IPA's analysis are presented in Part III-H, which shows that the rates at issue exceed those that would be charged by a least-cost, optimally efficient alternative transporter by a substantial margin.

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

1. **Stand-Alone Traffic Group**

IPA has determined the IRR's traffic group in a manner consistent with the *Coal Rate Guidelines. See WFA I* at 10-11; *TMPA,* 6 S.T.B. at 589. In particular, the IRR does not attempt to handle all of UP's traffic on its lines, but instead focuses on unit train and through trainload movements, thereby avoiding local switching and the like, except for bad-ordered/spare cars.

In order to identify the IRR's traffic, IPA utilized a combination of different data sources, most of which were provided by UP in discovery, including, *inter alia*, UP's historic revenue, car movement, and train event records, and UP's internal traffic projections. In general, IPA selected individual UP shipments (by origin and final destination points) that would move over the IRR based on revenue data, car event data, train movement data, quarterly analyst forecasts, and other financial data for the one-year period beginning January 1, 2010 and ending December 31, 2010 ("Base Year").

The issue traffic in this case consists of both single-line and interline-received coal traffic moving to IGS. The issue traffic that the IRR receives in interchange (at Provo, Utah) originates at Utah coal origins served by the URC. The URC provides its portion of these through movements pursuant to a long-term contract. In addition to the issue coal traffic, the IRR transports other coal traffic (both to IPA and to third-party shippers) principally from Utah, Colorado, and Powder River Basin ("PRB") coal sources, and it transports a substantial volume of non-coal traffic.

All of the non-coal traffic moving on the IRR is overhead traffic that moves in intact trainloads. This traffic includes intermodal, automotive, agricultural, and other non-coal traffic. This traffic principally moves on the IRR system between Lynndyl and Milford and between Price and Provo.

The IRR does not reroute any traffic or utilize any trackage rights. The IRR, however, does obtain revenues from BNSF in exchange for BNSF's use of trackage rights over the IRR system. BNSF obtained these trackage rights over UP's line in the UP/SP merger proceeding.

IPA applied the Board's average total cost ("ATC") procedures for calculating revenue divisions on cross-over traffic adopted in *Major Issues* as modified in *WFA I* at 11-14 and *AEP Texas North Co. v. BNSF Ry.*, STB Docket No. 41191 (Sub-No. 1), at 15-16 (STB served Sept. 10, 2007) ("*AEP Texas*").

IPA describes its procedures for forecasting traffic volumes and revenues in detail in Part III-A. Those procedures are consistent with approved practices in prior Board rate cases.

2. **<u>The IRR Configuration and Operating Plan</u>**

The IRR's system configuration and operating plan are described in Parts III-B and III-C. They were developed primarily by IPA Witness Paul Reistrup, a nationally-recognized expert on rail operations. Indeed, as a consultant in the early 1980's, Mr. Reistrup planned the track configurations at the IGS coal unloading facilities and at IPA's railcar maintenance facility located near Springville, UT. His designs are in use today and contribute to the successful operation of these facilities.

The IRR system is shown schematically in Exhibit III-A-1. Consisting of 278.67 constructed route miles, the IRR system provides the rail facilities needed to transport coal between the issue origins and IGS. These facilities are located entirely within the state of Utah and replicate existing UP rail lines between Price (a/k/a "CV Spur" in UP's operating timetable) on the east and Milford on the west, and include portions of UP's Green River, Provo, Sharp and Lynndyl Subdivisions. The IRR's rail lines also include the Pleasant Valley Branch, which serves the Skyline Mine, and the CV Spur which serves the Savage Coal Terminal.[1] In addition to IPA's coal traffic, the IRR also uses these lines to transport other coal and non-coal traffic that UP transports over the same lines in the real world. The IRR's Lynndyl Subdivision connects with the private spur that serves IGS (known as the IPP Industrial Lead) near Lynndyl and extends beyond to Milford, which is the first UP crew-change point west of that connection and a logical place to interchange overhead traffic that the IRR transports over a portion of UP's Lynndyl Subdivision.

As described in detail in Part III-B, the IRR's facilities have been designed and sized to accommodate its traffic group, which is smaller than that of

[1] The IRR also serves the Sharp coal loadout near Levan, UT, from which IPA ships substantial volumes of coal by rail, although IPA is not challenging UP's rates from Sharp to IGS.

most SARRs in prior coal rate cases, in particular those carrying PRB coal traffic. The main lines consist of single track with passing sidings, with Centralized Traffic Control ("CTC") where the main line encounters grades when crossing the Wasatch Mountains, and between Lynndyl and Milford, where traffic volume is heaviest. The IRR's other main lines do not require CTC given the relatively flat terrain they cross and their relatively low traffic volume. However, these non-CTC main lines have power switches remotely controlled by the locomotive engineers, a technology currently in existence on Class I railroads including main lines operated by the Kansas City Southern Railway. The maximum permissible train speed is 60 miles per hour for all trains except loaded coal trains (which are limited to a maximum speed of 50 mph), and except that all trains are limited to a maximum speed of 49 mph in the non-CTC or "dark" territory. Lower maximum speeds are in effect on the Pleasant Valley Branch, the CV Spur, and the IPP Industrial Lead (of which the IRR owns only 0.19 miles).

As described in Part III-B-2, the IRR interchanges coal traffic with the residual UP at four locations (Price, Provo, Lynndyl and Milford) and with the URC at Provo. The IRR has a small yard at each of these four points, as shown in Exhibits III-B-1 and III-B-2. The yards at Price, Lynndyl and Milford are used only to interchange trains containing crossover traffic with UP; the yard at Provo is also used to conduct 1,500-mile inspections of certain empty coal trains received in interchange from UP at Provo. Locomotives are inspected, serviced and repaired at the IRR's locomotive facility at N. Springville (located just south of Provo and near IPA's Springville car repair facility, where 1,500-mile inspections of empty IRR coal trains that move via the Sharp Subdivision are performed by IPA personnel as contractors to the IRR). Locomotives are fueled at Provo Yard or the N. Springville locomotive facility using direct-to-locomotive ("DTL") fueling by tanker truck; thus the IRR requires no fixed fueling platforms or other permanent fueling facilities.

The IRR's operating plan is described in detail in Part III-C. It is designed to enable the IRR to handle its peak year traffic volumes (and the trains moving over its system during the peak week in that year) efficiently and in accordance with all relevant customer service requirements. All coal trains move as unit trains, and all non-coal trains move intact in overhead service between on-SARR and off-SARR junctions with the residual UP. Thus the IRR interchanges only complete trains with its interline partners (UP and URC), and no switching of cars into or out of trains is required at any interchange point other than bad orders resulting from FRA-required 1,500-mile inspections of certain coal trains.

The operating plan calls for the use of a single type of modern, AC-powered locomotive model, the General Electric ES44-AC, which is suitable for handling the IRR's traffic and which is extensively used by UP to transport coal and other traffic. The IRR's maximum train speeds generally are consistent with those on the real-world lines being replicated, and its signals and communications system (including the use of CTC where warranted) are consistent with its traffic volumes and operational requirements. The IRR has also been provided with appropriate yard/interchange facilities, and with operational staffing consistent with its needs, including crew districts specifically sized for its repetitive train operations in a few well-defined corridors. Finally, the IRR's operating plan takes account of the fact that its traffic group does not include any rerouted movements (internal or external).

To verify the ability of the IRR system and operating plan to accommodate its traffic group efficiently, IPA's experts conducted a simulation of the IRR's operations during the peak traffic week of its peak traffic year in the DCF period (2020), using the Board-approved Rail Traffic Controller ("RTC") Model. The modeling exercise and the operating and other inputs used are described in detail in Part III-C-2. The average transit times for IRR trains produced by the RTC Model simulation are compared with UP's average real-world transit times for the corresponding trains, and movements in the peak year are summarized, in Exhibit III-C-3 and accompanying electronic workpapers. The results are that the IRR's transit times are similar to or lower than UP's real world transit times in all corridors, thus demonstrating the ability of its system and operating plan to meet its customers' service requirements.

3. IRR Operating Expenses

The first-year (2011) operating costs for the IRR are described in detail in Part III-D. A summary of these annual operating expenses is set forth in Table III-D-1 on page III-D-3, *infra*. The operating expenses reflect the IRR's relatively small size and location, locomotive, railcar and other equipment needs, operating plan, personnel requirements (both operating and non-operating including general and administrative personnel), maintenance-of-way plan, and costs for loss and damage, ad valorem taxes, insurance, and startup and training.

In general, the IRR's personnel and equipment needs reflect its facilities and operations in its peak traffic year during the 10-year DCF period (2020). These needs were determined by IPA's expert rail operations, engineering, information technology and MOW witnesses, and reflect the concept of an efficient, non-unionized SARR that is a Class II railroad. They also take into account the IRR's geographic scope and the relatively small peak year traffic volumes moving over the various parts of the IRR system. IPA Witness Philip H. Burris developed unit costs for application to the IRR's annual service units using actual cost data produced by UP in discovery where possible, and actual costs incurred by other railroads (where known) for comparable functions and services, along with information provided by IPA's operating, engineering and information technology experts.

IPA's development of the IRR's operating expenses is consistent with recent Board decisions in SAC rate cases, including in particular its most recent decisions in the *WFA* case. As described in Part III-G, the IRR's operating costs were adjusted forward over the 10-year DCF period based on Global Insight's forecasts of expected changes in the RCAF-A and the RCAF-U, which were combined using the phase-in approach approved by the Board in *Major Issues* at 42-47.

4. **Road Property Investment Cost**

Part III-F describes and documents in detail how the IRR is designed and constructed in accordance with governing standards of the American Railway Engineering and Maintenance-of-Way Association for track, roadbed, bridge, culvert and other requirements, and consistent with determinations made by the Board in recent cases addressing construction parameters and costs for stand-alone rail systems. *See, e.g.*, *WFA I* at 77-133. Specific grading and other design characteristics have been derived from UP data regarding existing lines that were produced in discovery, as well as direct observation and evaluation of the geography, terrain, topography and general conditions of the IRR route by IPA's expert rail engineering consultants. Design parameters for elements such as roadbed width, side slope measurements, and other features are based on Board-approved parameters from previous cases. *See, e.g.*, *AEP Texas* at 79-80; *Public Service Co. of Colorado d/b/a Xcel Energy v. Burlington N. & Santa Fe Ry.*, 7 S.T.B. 589, 671-73 (2004) ("*Xcel I*"); *TMPA,* 6 S.T.B. at 700-708; *Duke Energy Corp. v. CSX Transp. Inc.,* 7 S.T.B. 402, 476 (2004) ("*Duke/CSXT*").

The evidence submitted in Part III-F and accompanying exhibits and workpapers documents IPA's calculations of material and construction costs, including design, engineering and contingencies. Total construction costs for the roughly 279 constructed route-miles that comprise the IRR system, including associated land acquisition costs, are $640.5 million, or approximately $2.3 million per route-mile. *See* Part III-F at III-F-2 for a summary table.

Also consistent with Board precedent, IPA projects a 30-month time period for design and construction of the IRR. This estimate reasonably employs the principles of unconstrained resources and simultaneous construction, where possible, of different segments of the IRR system that spring from the entry-barrier free principle that is among the core components of CMP. *See, e.g.*, *Carolina Power & Light Co. v. Norfolk Southern Ry.*, 7 S.T.B. 235, 244 (2003) ("*Carolina P&L*"); *Coal Trading Corp. v. Baltimore & Ohio R.R.*, 6 I.C.C.2d 361, 413 (1990) ("*Coal Trading*"); *West Texas Utilities*, 1 S.T.B. at 668-69; *Coal Rate Guidelines*, 1 I.C.C.2d at 529.

The same principles apply with respect to such items as utility protection, road detours, environmental regulations compliance, and other such features. Where records or data produced in discovery do not show any expenditures by UP or its predecessors when these facilities first were installed, the related costs have been excluded from construction costs for the IRR as well. *See AEP Texas* at 85; *Xcel I*, 7 S.T.B. at 681; *Duke/CSXT*, 7 S.T.B. at 484. However, where there is evidence that UP or one of its predecessors incurred the expense – or the age of the facility or line segment indicates that such an expenditure was likely – IPA includes the appropriate cost in its analysis. *See* Parts III-F-2 and III-F-8.

As detailed in Part III-F-1, the IRR requires a total of 3,371 acres of land, including land grants and easements, based upon an average right-of-way width of 100 feet in rural areas and 75 feet in cities and large towns, and the real estate requirements for the IRR yards, buildings, service roads and other auxiliary facilities described in Parts III-C and III-F. Real estate costs are based on appraisals conducted or supervised by IPA's real estate expert, Stuart Smith, using the methodology described in Part III-F-1. Consistent with the principle of barrier-free entry cited *supra*, no assemblage factors are incorporated in the IRR real estate costs as there is no evidence that UP or its predecessor(s) were burdened by assemblage when they acquired the rights-of-way and contiguous land for the line segments replicated by the IRR. *See West Texas Utilities*, 1 S.T.B. at 670-71.

5. <u>Application of the DCF Model</u>

Part III-G outlines the DCF methodology applied by IPA in calculating SAC and the maximum SAC rates that result from the IRR. The DCF methodology is consistent with that adopted in *Coal Rate Guidelines,* as subsequently modified in *Major Issues*, and as most recently applied in *WFA* and *AEP Texas*.[2]

IPA's DCF analysis includes the following elements:

[2] As described in Part III-H-1-d, IPA has employed a debt structure for the IRR of the type actually utilized in the railroad industry, rather than using the "home mortgage" approach typically employed in prior stand-alone cases before the Board. Specifically, the IRR will make fixed, interest-only, coupon payments on its debt. As IPA explains, the AAR's filing in the 2010 cost of capital determination shows that nearly 90 percent of railroad industry debt consists of corporate bonds, notes and debentures that incorporate such periodic coupon payments.

a. Debt and equity cost for the IRR over its construction period (2008-2010) are based on the Board's annual cost of capital determinations, except that IPA utilized the CAPM methodology to determine the common equity component of the IRR's Cost of Capital ("COC"), rather than the hybrid CAPM/MSDCF methodology utilized by the Board.

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

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

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

e. The use of a "time-based" capital recovery approach, as applied in *TMPA, Duke Energy Corp. v. Norfolk S. Ry.*, 7 S.T.B. 123 (2003) ("*Duke/NS*") and *Carolina P&L*. *See* Part III-G-4.

f. The distribution of total excess stand-alone revenues over stand-alone costs in each year of the DCF Model – and thus, the determination of the annual measure of rate relief to which IPA is entitled – using the Maximum Mark-Up Methodology ("MMM") adopted by the Board in *Major Issues* and most recently applied in *Western Fuels Ass'n, Inc. & Basin Elec. Power Coop. v. BNSF*

Ry., STB Docket No. 42088 (STB served Feb. 18, 2009) ("*WFA II*"), with variable costs forecast in accordance with the Board's recent decision in *Oklahoma Gas & Elec. Co. v. Union Pac. R.R.,* STB Docket No. 42111 (STB served July 24, 2009) ("*OG&E*"). *See* Part III-H-2.

E. UP VIOLATED ITS COMMON CARRIER OBLIGATION TO ESTABLISH COMMON CARRIER RATES AND SERVICE TERMS IN ACCORDANCE WITH TITLE 49 AND THE BOARD'S REGULATIONS

For many years prior to the establishment of the common carrier rates under challenge in this proceeding, IPA and UP (and its predecessors) transacted business under rail transportation contracts. As the most recent of such contracts, expiring at the end of 2010, were drawing to a close, IPA endeavored to negotiate new contract terms with UP. IPA requested a meeting with UP in early 2009, but was told by UP that it would have to wait until 2010. Subsequently, IPA representatives scheduled a meeting with UP on May 12, 2010 at UP's offices in Omaha to initiate contract discussions. At the conclusion of that meeting, UP representatives told IPA that they would develop proposed terms for a new contract and would submit them to IPA when completed.

As 2010 progressed, IPA inquired on several occasions when they would be receiving UP's contract proposal, and were told on each occasion that it was still being developed but would be ready in the near future. UP's proposal was finally received on September 8, 2010. However this proposal failed to include one of the rates that had been requested by IPA, namely a rate for coal traffic received by UP in interchange from the URC at Provo, Utah. Since a large portion of IPA's coal shipments in 2011 and thereafter would, in keeping with recent years, be originating on the URC, IPA required this rate in order to be able to evaluate the economics of UP's proposal. Accordingly, IPA promptly requested that UP provide a rate effective January 1, 2011, from Provo for the URC-originated coal. After several such requests, UP finally provided the Provo rate proposal on October 14, 2010.

IPA and UP representatives met on October 24, 2010 in Salt Lake City to discuss UP's contract proposal. Discussions at that meeting established that the parties were far apart and gave no indication that further discussions would be fruitful.

Finding the terms proposed by UP to be very unsatisfactory, and with only two months remaining in 2010, IPA requested UP on October 29, 2010, to establish or disclose common carrier rates that would apply to the transportation of IPA's coal in common carriage in shipper-supplied railcars. IPA asked that "[i]f you require clarification of any aspect of our request, please contact [IPA] in writing at your convenience." Aguilar V.S. at 5 and Exhibit V-1. Ten business days from UP's receipt of IPA's request was November 12, 2010. UP did not seek any clarification of IPA's request. On November 4, 2010, UP advised IPA by email that "[c]urrently rail transportation contracts with you are in effect until the end of 2010 and they supply the applicable rates and terms." As to the common carrier rates and terms which IPA had requested, UP said it would endeavor to provide them by December 1, 2010. Aguilar V.S. at 5 and Exhibit V-2.

IPA responded to UP's refusal to provide common carrier rates within the 10 day period dictated by 49 C.F.R. § 1300.3, by letter dated November 8, 2010, pointing out the obvious fact that "there are no rates currently in existence that would govern the transportation of IPA's substantial coal volumes on or after January 1, 2011." IPA explained that UP's proposed delay "will hamper IPA's ability to plan for post-2010 coal deliveries" and renewed its request that UP provide the requested common carrier rates by November 12, 2010. IPA explained that if UP did not comply, "IPA is prepared to seek the STB's assistance in resolving this matter should that become necessary." Aguilar V.S at 5 and Exhibit V-3.

UP responded to IPA by email on November 10, 2010. UP took the position that because Section 1300.3 refers to requests "in the absence of an existing rate for particular transportation," and "contract rates currently exist for the particular transportation about which you inquired and . . . those rates will continue to apply to IPA's traffic through December 31, 2010," "Union Pacific believes that we are in compliance with both the letter and the spirit of STB rules regarding the establishment of common carrier rates." Aguilar V.S. at 5-6 and Exhibit V-4.

Since it was clear that there was no point in pursuing the matter further with UP, IPA contacted the STB's Rail Customer & Public Assistance

Program, through counsel, but was unable to obtain any relief through that informal process.

According to the Board's regulations, when a rail shipper requests a common carrier rate and there is no existing rate that would apply to the traffic involved, a rail carrier "must promptly establish and provide to the requester a rate and applicable service terms. . . . The response should be provided as soon as reasonably possible, but no later than 10 business days from receipt of the request." 49 C.F.R. § 1300.3.

UP's refusal to provide the common carrier rates on the timetable required by the Board's regulations on the grounds that there were existing contract rates cannot be reconciled with either the language or the intent of the regulations. First, it is clear that the references to "existing rates" in Sections 1300.2 and 1300.3, and to "new rate[s]" in Section 1300.3, apply only to common carrier rates. Section 1300.1(c) specifies that: "The provisions of this part do not apply to any transportation or service provided by a rail carrier under a contract authorized under 49 U.S.C. 10709 or former 49 U.S.C. 10713 . . . ." UP's claim that the contract rates in effect at the time IPA requested common carrier rates should be considered "existing rate[s]" for purposes of the language of Section 1300.3 imposing the obligation to establish new rates "in the absence of an existing rate" (Exhibit V-4) is therefore clearly wrong. The phrase "the absence of an existing rate for particular transportation" in Section 1300.3 refers to the absence of an existing *common carrier* rate, not an existing contract rate.

Even if the regulations were not very clear in this regard, it would be completely nonsensical to entertain UP's labored construction of the regulation. Since the contract rate would "exist" until the contract rate expired, UP would have no obligation to establish a new rate until January 1, 2011. At that point, since there would no longer be an "existing rate," UP would presumably be obligated to establish the rate "as soon as reasonably possible, but no later than 10 business days from receipt of the request." Obviously aware of the absurdity of that result, UP attempted to make its position appear more reasonable by committing to quote the common carrier rates 30 days in advance of the contract expiration. But there is no basis in Section 1300.3 for such timing.

It is also clear that UP's claim that "contract rates currently exist for the particular transportation about which you inquired . . ." (Exhibit V-4) was specious. The particular transportation for which IPA sought rates was transportation that would occur on or after January 1, 2011. In addition, since the regulations do not apply at all to contract rates, as specified in Section 1300.1(c), the reference to "particular transportation" in Section 1300.3 must refer to particular *common carrier* transportation, not contract service.

As of the date of IPA's October 29, 2011 request for establishment of common carrier rates, there were no "existing rates" for the transportation that was the subject of IPA's request (*i.e.*, common carrier transportation service from the subject origins/interchange to IGS beginning on January 1, 2011). UP's refusal to establish new rates within ten business days of IPA's request constituted a violation of the Board's regulations and of UP's common carrier obligations under 49 U.S.C. § 11101. IPA requests that the Board so find and direct UP to comply with the Board's regulations in the future.

F. RATE RELIEF AND DAMAGES

Based upon the evidence presented herein, the Board should find that UP possesses market dominance over the transportation of coal to IPA from the subject origins/interchange in accordance with 49 U.S.C. § 10707. The Board further should find that the rates set forth in Item 6200-A of UP Tariff 4222, and as applied to the subject movements, exceed maximum reasonable levels as determined under the SAC constraint of the *Coal Rate Guidelines*, and therefore are unlawful under 49 U.S.C. § 10701(d).

1. Prescription of Maximum Rates

In accordance with the provisions of 49 U.S.C. § 10704(a), IPA is entitled to a Board order prescribing the maximum rates that lawfully may be charged by UP to transport coal to IGS. As detailed in Table III-H-3, and as set forth below in Table I-4, the maximum rates that should be prescribed are as follows:

TABLE I-4 IPA MMM Rates per Ton – 1Q11 Through 2Q11 Maximum Reasonable Rates for Coal Movements to IGS				
Origin/Interchange	Car Type	Minimum Car Lading	1Q11	2Q11
Provo, UT	Gen. Svc. Hopper	100	$4.55	$4.78
Provo, UT	Gen. Svc. Hopper	115	$4.25	$4.48
Provo, UT	Spec. Svc. Hopper	100	$4.45	$4.70
Provo, UT	Spec. Svc. Hopper	115	$4.18	$4.40
Skyline, UT	Gen. Svc. Hopper	100	$6.90	$7.28
Skyline, UT	Gen. Svc. Hopper	115	$6.53	$6.88
Skyline, UT	Spec. Svc. Hopper	100	$6.78	$7.13
Skyline, UT	Spec. Svc. Hopper	115	$6.40	$6.75
Savage, UT	Gen. Svc. Hopper	100	$7.28	$7.68
Savage, UT	Gen. Svc. Hopper	115	$6.88	$7.25
Savage, UT	Spec. Svc. Hopper	100	$7.13	$7.50
Savage, UT	Spec. Svc. Hopper	115	$6.75	$7.10
Source: "IGS MMM Rates.xlsx."				

2. Award of Damages

Since January 1, 2011, IPA has paid UP freight charges for the subject coal transportation service to IGS at tariff rates significantly higher than the lawful maximums summarized in the previous table. Pursuant to 49 U.S.C. § 11704(b), upon conclusion of this proceeding IPA will be entitled to an award of damages sustained as a consequence of UP's violation of 49 U.S.C. § 10701(d) consisting of a refund of overpayments plus interest. *See* Part III-H-3.

3. Finding of Unreasonable Practice

For the reasons explained above and in the Verified Statement of John Aguilar, the Board should find that UP's refusal to establish new common carrier rates within ten business days of IPA's request constituted a violation of the Board's regulations and of UP's common carrier obligations under Title 49. IPA further requests that the Board direct UP to comply with the Board's regulations in the future.

Respectfully submitted,

INTERMOUNTAIN POWER AGENCY

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Dated: August 10, 2011

II Market Dominance

BEFORE THE
SURFACE TRANSPORTATION BOARD

INTERMOUNTAIN POWER AGENCY Complainant, v. UNION PACIFIC RAILROAD COMPANY Defendant.	)	Docket No. 42127

PART II

MARKET DOMINANCE

A. QUANTITATIVE EVIDENCE

The Board considers both quantitative and qualitative market dominance in determining whether there is an absence of effective competition under 49 U.S.C. § 10707.

49 U.S.C. § 10707(d)(1) defines the quantitative element of the market dominance test as a showing that the revenues produced by the rail movements at issue are at least 180% of the respective variable costs of providing the related transportation service for each of those movements. In this Part II.A, IPA demonstrates that the quantitative threshold is met with respect to each of the rates under challenge in this proceeding.

Under the approach that the Board adopted in *Major Issues*, the UP tariff rates at issue are compared to the variable costs for the corresponding movements, calculated on an unadjusted system average basis using the Board's Uniform Rail Costing System (URCS) Phase III program, and nine (9) specific traffic and operating inputs for each movement: (1) the railroad; (2) loaded miles (including loop track miles); (3) shipment type (originated and terminated or "local," originated and delivered, received and delivered or "bridge," and received and terminated); (4) freight cars per train; (5) tons per car; (6) commodity; (7) type of movement (single car, multiple car or unit train); (8) car ownership (railroad or private); and (9) type of car. *See Major Issues* at 52 n.166; *KCP&L* at 5-6. The variable costs and resulting revenue to variable cost (R/VC) ratios presented by IPA in this Part were calculated in accordance with these guidelines.

1. **Traffic and Operating Characteristics**

As directed by the Board in its decision served in this case on May 10, 2011, IPA and UP conferred about, and were able to agree upon, all of the traffic and operating characteristics for the coal movements to which the challenged rates apply. *See* Joint Submission of Operating Characteristics (filed June 1, 2011). The applicable tariff covers shipments in both 286,000 GWR and 263,000 GWR general service hoppers and special service hoppers, and specifies different rates for each weight category. The traffic and operating parameters used by IPA in its calculation of variable costs for each of the subject movements are as follows:

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	116.3	116.3	105.1	105 1
8. Commodity	Coal	Coal	Coal	Coal
9. Movement Type	Unit Train	Unit Train	Unit Train	Unit Train
			Skyline Mine, UT to Lynndyl, UT	
	286,000 GWR	286,000 GWR	263,000 GWR	263,000 GWR
	(6)	(7)	(8)	(9)
1. Railroad	UP	UP	UP	UP
2. Miles	172.0	172.0	172.0	172.0
3. Shipment Type	Originated & Terminated	Originated & Terminated	Originated & Terminated	Originated & 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	118 6	118.6	107.8	107.8
8. Commodity	Coal	Coal	Coal	Coal
9. Movement Type	Unit Train	Unit Train	Unit Train	Unit Train
			Savage Loadout, UT to Lynndyl, UT	
	286,000 GWR	286,000 GWR	263,000 GWR	263,000 GWR
	(10)	(11)	(12)	(13)
1. Railroad	UP	UP	UP	UP
2. Miles	185.0	185.0	185 0	185.0
3. Shipment Type	Originated & Terminated	Originated & Terminated	Originated & Terminated	Originated & 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	118.6	118.6	107 8	107.8
8. Commodity	Coal	Coal	Coal	Coal
9 Movement Type	Unit Train	Unit Train	Unit Train	Unit Train

2. **Variable Costs**

Table II-A-2, below, shows the calculation of variable costs[1] for movements from each of the origins at issue to IGS based upon L.E. Peabody & Associates, Inc.'s 2010 UP URCS formula and indexed to First Quarter 2011 (1Q11) and Second Quarter 2011 (2Q11) wage and price levels, respectively, using the Board's established procedure for updating variable costs.[2] All variable costs are calculated on a system average basis, with no adjustments other than those set forth in *Review of the General Purpose Costing System*, 2 S.T.B. 659 (1997) and endorsed in *Major Issues. See KCP&L* at 7-8.

[1] The testimony in this Part II-A is being sponsored by Thomas D. Crowley and Timothy D. Crowley of L.E. Peabody & Associates, Inc. Their credentials are detailed in Part IV.

[2] The methodology employed is the Interstate Commerce Commission's IE3-80 procedure, supplemented in accordance with *Complaints Filed Under Section 229 of the Staggers Rail Act of 1980*, 365 I.C.C. 507 (1982).

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

Item (1)	286,000 GWR (2)	286,000 GWR (3)	263,000 GWR (4)	263,000 GWR (5)
	Provo, UT to Lynndyl, UT			
1. Phase III Cost Base Year 2010	$1.63	$1 60	$1.74	$1.71
1Q11				
2. Index to 1Q11	1 04373	1.04373	1.04373	1.04373
3. Phase III Cost 1Q11 (L1xL2)	$1.70	$1 67	$1.82	$1.78
4 Jurisdictional Threshold (L3x1.80)	$3.06	$3 01	$3.28	$3.20
5. Rate Per Ton in Private Cars 1Q11	$7.32	$7 32	$7.49	$7.49
6. Rate to Variable Cost Ratio 1Q11	4 31	4.39	4.11	4.21
2Q11				
7. Index to 2Q11	1.09926	1.09926	1.09926	1.09926
8. Phase III Cost 2Q11 (L1xL7)	$1 79	$1.76	$1.91	$1.88
9. Jurisdictional Threshold (L8x1.80)	$3.22	$3.17	$3.44	$3 38
10. Rate Per Ton in Private Cars 2Q11	$7.43	$7.43	$7.60	$7 60
11. Rate to Variable Cost Ratio 2Q11	4.15	4 22	3 98	4.04
	Skyline Mine, UT to Lynndyl, UT			
	286,000 GWR	286,000 GWR	263,000 GWR	263,000 GWR
12. Phase III Cost Base Year 2010	$2.50	$2.45	$2.65	$2.59
1Q11				
13. Index to 1Q11	1 04373	1.04373	1.04373	1.04373
14. Phase III Cost 1Q11 (L12xL13)	$2.61	$2.56	$2 76	$2.71
15. Jurisdictional Threshold (L14x1.80)	$4.70	$4 61	$4 97	$4.88
16. Rate Per Ton in Private Cars 1Q11	$10 94	$10.94	$11.16	$11.16
17. Rate to Variable Cost Ratio 1Q11	4 19	4.27	4.04	4.12
2Q11				
18. Index to 2Q11	1.09926	1.09926	1.09926	1.09926
19. Phase III Cost 2Q11 (L2xL18)	$2.75	$2.70	$2 91	$2 85
20. Jurisdictional Threshold (L19x1.80)	$4.95	$4.86	$5.24	$5.13
21. Rate Per Ton in Private Cars 2Q11	$11.12	$11.12	$11.36	$11.36
22. Rate to Variable Cost Ratio 2Q11	4.04	4.12	3.90	3.99
	Savage Loadout, UT to Lynndyl, UT			
	286,000 GWR	286,000 GWR	263,000 GWR	263,000 GWR
23. Phase III Cost Base Year 2010	$2.64	$2 59	$2.79	$2.73
1Q11				
24. Index to 1Q11	1.04373	1.04373	1.04373	1 04373
25. Phase III Cost 1Q11 (L23xL24)	$2 75	$2.70	$2.91	$2.85
26 Jurisdictional Threshold (L25x1.80)	$4 95	$4.86	$5.24	$5.13
27. Rate Per Ton in Private Cars 1Q11	$10.56	$10.56	$10.80	$10.80
28. Rate to Variable Cost Ratio 1Q11	3.84	3.91	3.71	3.79
2Q11				
29. Index to 2Q11	1.09926	1 09926	1.09926	1.09926
30. Phase III Cost 2Q11 (L23xL29)	$2.90	$2.84	$3.07	$3.00
31. Jurisdictional Threshold (L30x1.80)	$5.22	$5.11	$5.53	$5.40
32. Rate Per Ton in Private Cars 2Q11	$10.76	$10.76	$11.01	$11 01
33. Rate to Variable Cost Ratio 2Q11	3.71	3.79	3.59	3.67

B. <u>QUALITATIVE MARKET DOMINANCE</u>

The second aspect of the market dominance analysis involves qualitative considerations and includes a review of both intramodal and intermodal competition. IPA's Intermountain Generating Station ("IGS") is located near Lynndyl in Millard County, Utah and includes two generating units with a total capacity of 1,800 MW. IGS is not served by any railroad other than UP, and it is infeasible for IGS to receive large volumes of coal by motor carriage. As such, there is no intramodal or intermodal competition and UP enjoys market dominance over the issue movements.

The challenged rates in this proceeding apply to coal shipments to IGS from three (3) origins: a Utah coal loadout (the Savage Coal Terminal), a Utah mine (Skyline Mine), and a point of interchange with the URC, at Provo, Utah. IPA anticipates that its shipments of coal from these three (3) origins over the next ten (10) years will be in the range of 2.5 to 3.5 million tons per year, out of total annual deliveries of { }. The balance of its requirements, approximately 2.5 million tons per year, is expected to be shipped from non-issue origins. The coal volumes currently under contract by IPA, and its best estimates of coal volumes and coal origins for the next ten (10) years, are set forth in an internal forecast appearing at e-workpaper "Coal Traffic Forecast.xlsx." {

}

In its responses to IPA's First Requests for Admissions, Interrogatories, and Requests for Production of Documents, UP repeatedly confirmed the absence of effective competition in this case. Specifically, UP first admitted that:

> it could not prevail on the issue whether there is qualitative evidence of effective competition from other carriers or modes of transportation for the movement of coal from the "Origins," as defined in IPA's Definition No. 13, to the IPA Generating Station under the standards currently being applied by the Board.

UP Responses to Request for Admission Nos. 2 and 3.[3]

In addition, UP responded to IPA's Interrogatory Nos. 2 and 3 with the "unqualified admission" that UP faces no effective intramodal or intermodal competition for the subject transportation:

> Interrogatory No. 2
>
> If your response to Request for Admission No. 2 was anything other than an unqualified admission, please describe the effective intramodal competition that Defendant claims exists for the transportation to which the Challenged Rates apply, the annual volume

[3] IPA Request for Admission No. 2 asked UP to "Admit that Defendant faces no effective intramodal competition for the transportation of coal from Origins to Destination." IPA Request for Admission No. 3 asked UP to "Admit that Defendant faces no effective intermodal competition for the transportation of coal from Origins to Destination." IPA's Definition No. 13, which UP references in its response, defines "Origins" as "the mine, coal loadout facility, and interchange point identified in Paragraphs 6 through 8 of IPA's Complaint."

of coal subject to such competition, and why such competition is effective.

UP Response:

Not applicable.

Interrogatory No. 3

If your response to Request for Admission No. 3 was anything other than an unqualified admission, please describe the effective intermodal competition that Defendant claims exists for the transportation to which the Challenged Rates apply, the volume of coal subject to such competition, and why you think such competition is effective.

UP Response:

Not applicable.

Finally, UP refused to produce any documents in response to IPA's request for the production of any documents regarding intramodal or intermodal competition on the grounds, *inter alia*, that IPA's request "seeks information that is neither relevant nor reasonably calculated to lead to the discovery of admissible evidence." *See* UP Response to IPA Request for Production No. 2.

While UP's admissions and objections are sufficient to resolve the issue of market dominance in IPA's favor, IPA nevertheless will address the factual details of the issue transportation service and the absence of any effective competitive alternative for that service.

1. **Intramodal Competition**

IGS is located on UP's main line between Salt Lake City, Utah and Los Angeles, California and UP is the only rail carrier capable of serving the plant. The second-nearest railroad to IGS is the Utah Railway Company ("URC"), whose tracks are located more than 85 miles from the plant. Given the distance involved, there is no practical option for a rail build-out from IGS.

The Savage Coal Terminal ("Savage") is located near Price, Utah. While both UP and URC are capable of originating coal shipments from Savage, URC cannot deliver coal to IGS. Instead, URC must interchange Savage origin coal to UP at Provo in order to complete the haul to IGS. UP is the only rail carrier capable of receiving coal in interchange from URC and transporting it to IGS. The Skyline Mine is located in Carbon County, Utah and is directly served by UP; no other rail carrier can originate coal shipments from Skyline.

Because IGS is served only by UP and a rail build-out is infeasible, there is no intramodal competition.

2. **Intermodal Competition**

There are no intermodal competitive alternatives that effectively constrain the rates charged by UP to perform the service at issue.

IPA operates and maintains approximately 400 railcars, consisting of both aluminum and steel cars. It owns a railcar servicing facility in Springville, UT, just south of Provo, UT. IPA has undertaken major upgrades to that facility in the past two years, including the construction of a new overpass, as well the installation of additional track facilities to accommodate longer unit trains. At least { } was spent on land and other funding for the overpass. In addition, IPA has spent approximately { } on its expansion of the railcar servicing facility. Very simply, IPA has always relied upon, and continues to be fully committed to, rail transportation for delivery of the vast bulk of its coal requirements. There are very good reasons for that reliance on rail transportation.

Trucking high volumes of coal to IGS is operationally infeasible, prohibitively expensive and politically impractical. For the past ten years, IPA has typically trucked less than five percent of its coal to IGS. Most of those truck deliveries have been associated with periodic changes in mining operations at the SUFCO Mine operated by Arch Coal, which is located in Sevier County, UT – approximately 115 miles from IGS. For operational reasons, the amount of SUFCO coal that IPA can efficiently burn at IGS is limited to { }. Over the last five years, IPA has shipped an average of approximately 195,000 tons of coal per year by truck from the SUFCO Mine. The remaining portion of deliveries from SUFCO, averaging around 1.75 million tons per year, have been shipped by rail via UP at the Sharp loadout near Levan, Utah. The SUFCO Mine is an underground mine that operates a longwall as well as continuous mining equipment. Truck transport from SUFCO is not continuous and regular, but is used primarily during periods when SUFCO is moving its longwall. IPA encounters community opposition to trucking from SUFCO to IGS during periods when such truck shipments are voluminous on a monthly basis.

IPA has requested and UP has provided common carrier rates for rail shipments of SUFCO coal from Sharp. IPA is currently utilizing these rates, but has not challenged them in this proceeding.

The distances from each of the challenged origins/interchange and the volumes to be shipped from each make trucking an infeasible option. Savage is approximately 187 miles from the plant. The most practical haul distance for trucking from the Skyline Mine to IGS is approximately 147 miles. The Provo, Utah interchange point with URC is approximately 90 rail miles from IGS. The volume of coal to be shipped from these origins (between 2.5 and 3.5 million tons per year) and the associated costs makes motor carriage over these distances infeasible.

a. Savage Coal Terminal

The issue traffic that IPA currently receives from the Savage Coal Terminal originates from three mines; namely, the Dugout Mine, the West Ridge Mine and the Horizon Mine. IPA has purchased coal from these mines for many years and the coal has always been moved to IGS by rail. As noted above, coal from Savage is transported by URC to Provo, where it is interchanged with UP for movement to IGS. IPA has a long term rail transportation contract with URC, which expires in { }.

A review of the most likely routes shows that trucking coal to IGS from Dugout would entail a one-way trip of 175 miles and assuming an annual volume of { }, IPA's estimated 2011 take from Dugout, would require {   } truckloads per day, or one truck every {   }. Trucking coal from West Ridge Mine would entail a one-way trip of 178 miles, and assuming an annual volume of {   }, the estimated 2011 deliveries would require {   } truckloads per day, or one truck every {   } minutes. Trucking coal from Horizon Mine would entail a one-way trip of 158 miles, and assuming the estimated 2011 deliveries of {   }, would require {   } truckloads each day. In combination, volume from these three mines would total approximately {   } truckloads per day if IPA were to attempt to ship these volumes by truck. IPA calculates the additional costs of moving coal by truck from the mines feeding Savage Coal Terminal as {   } based on 2011 trucking rates and UP's 115 tons per car tariff rate. The route from the Price area to IGS presents various challenges, including travel over crowded roads and severe winter weather, which also make the possibility of regular high volume trucking unworkable.

b. **Skyline**

The Skyline Mine is directly served by UP, and with limited exception, coal purchased by IPA from Skyline has been delivered to IGS by UP. Approximately ten (10) years ago, a small volume of coal (approximately 100,000 tons) was shipped from Skyline to IGS by truck. This was an isolated event associated with IPA's coal supply arrangements, and IPA has not and would not ship coal from Skyline by truck on a regular basis or in any significant volumes. Assuming that IPA took {   } of coal from Skyline annually, the movements would require { } truckloads per day, which equates to approximately one truck every { }. The estimated additional cost over the cost of rail transportation would be { }. The route from Skyline to IGS is also subject to the same crowded roads and severe winter weather as truck movements from the Price area.

c. **Provo**

IPA has been taking substantial volumes of coal from URC-served origins for many years. URC hauls these tonnages to Provo and IPA's trains are interchanged there to UP for movement to IGS. IPA has never utilized trucks for transporting coal from the URC interchange in Provo to IGS. There are no facilities available in the Provo area that would be capable of transloading coal from rail to truck. In addition, such an option would be impractical versus an all-rail movement in that it would require unloading coal from railcars, storing the coal on the ground and re-loading the coal into trucks (even if a suitable transload location could be identified and appropriate transload facilities constructed) and a 90 mile truck haul from Provo to IGS. Given the volumes of coal IPA anticipates shipping via URC from Savage as described above, the number of tandem truckloads required would be approximately { } per day. All of the steps involved in attempting to truck coal from Provo to IGS would unquestionably result in significantly greater costs than a direct or interchanged rail move. Indeed, even before adding a suitable transloading fee, IPA estimates that the trucking costs would exceed the rail transportation costs by {

} based on 2011 trucking rates and UP's 115 tons per car tariff rate from Provo. If one assumes a transload cost of {

} IPA believes is probably lower than could ever be achieved, the incremental cost for truck deliveries would be { }

More generally, if IPA were to truck coal from any of the origins at issue, it would require increased travel over roads that are not regularly subjected to such high coal truck volumes and would generate logistical and political problems that would further render such transportation infeasible.

Many of the trucking routes involve substantial grade elevation changes which increase the cost and complexity of hauling high volumes of coal. Moreover, IGS is not physically designed, equipped or operated to handle such large volumes of truck deliveries.

Finally, there are no navigable waterways between the issue origins/interchange and IGS, and as such, there is no effective water competition.

3. **Other Evidence of UP's Market Dominance Over IPA**

The absence of effective competition for the transportation of coal to IGS is also evident from the level of the rates charged by UP to IPA. As reflected in their revenue to variable costs ratios set forth in section II-A, the rates demanded by UP for transportation of coal from the subject origins are extremely high and reflect monopoly pricing power. All of the challenged rates are well above 350% of variable costs and, for two of the origins, exceed 400% of variable costs.

III-A Stand-Alone Traffic Group

BEFORE THE
SURFACE TRANSPORTATION BOARD

INTERMOUNTAIN POWER AGENCY Complainant, v. UNION PACIFIC RAILROAD COMPANY Defendant.	)))))))))))	Docket No. 42127

PART III

A. STAND-ALONE TRAFFIC GROUP

IPA has determined the maximum lawful rates for UP transportation of coal to IPA's Intermountain Generating Station ("IGS") utilizing the stand-alone cost ("SAC") constraint of the *Coal Rate Guidelines*.[1] IPA has created the Intermountain Railroad ("IRR") as its hypothetical least-cost, most-efficient stand-alone railroad ("SARR") for SAC purposes.

Exhibit III-A-1 is a schematic of the IRR's layout. The IRR system consists of 278.67 constructed route miles. As shown in Exhibit III-A-1, the system is located entirely within the state of Utah and replicates UP's system from

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[1] The maximum rates are set forth in Part III-G; the evidence in that Part is sponsored by IPA Witnesses Thomas D. Crowley and Daniel L. Fapp.

Price[2] on the east to Milford on the west. It serves one coal mine, two coal loadouts, and one power plant (*i.e.*, IGS). The main lines consist of single track with passing sidings totaling 309.21 track miles. The main lines consist of continuous welded rail similar to that used by UP on heavy-haul routes. Other aspects of the IRR system are described in Part III-B of IPA's Opening Evidence.

The IRR has four interchange points with UP and also interchanges traffic with the Utah Railway Company ("URC") as follows:

TABLE III-A-1
IRR INTERCHANGE LOCATIONS

Location	Carrier
Price, Utah	UP
Provo, Utah	UP, URC[3]
Lynndyl, Utah	UP
Milford, Utah	UP

IPA e-workpapers "IPA Coal Traffic Forecast.xlsx," and "Non-Coal IRR Traffic Forecast.xlsx" show the volumes and on and off locations for all IRR traffic over the 2011-2020 time period.

1. Stand-Alone Railroad Traffic

The IRR traffic group logically divides into coal and non-coal traffic. In addition, a modest amount of BNSF traffic moves over a portion of the

[2] In many cases, UP data provided in discovery, including train event, car event and waybill data, did not show Price as a station, but instead showed nearby stations, including CV Spur, Savage or Helper. IPA has retained the use of these alternative station names in some workpapers to maintain links to UP provided data.

[3] As described in Part III-C-2, loaded and empty coal trains are interchanged with the URC at different locations near Provo.

IRR system using trackage rights that BNSF holds over UP lines that the IRR replicates.[4] The IRR will receive a trackage rights fee for these movements, consistent with actual BNSF-UP practice.

All of the coal traffic on the IRR moves in unit trains or trainload service. The IRR originates and/or delivers some of its coal traffic, and the IRR provides overhead service for other coal movements. The only coal destination served directly by the IRR is IGS. The IRR moves both issue and non-issue coal traffic to IGS. All other non-issue coal traffic moving on the IRR is interchanged to UP for delivery to its ultimate destination.

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

The IRR traffic group represents a subset of the traffic that UP currently handles over the segments of its real-world system that the IRR replaces. The exclusion of some portions of that traffic, such as local traffic that requires switching, is entirely consistent with SAC principles, including the elimination of cross-subsidies and inefficiencies that detract from the least-cost, most-efficient mission of the IRR. That said, IPA's decision not to include non-coal local traffic

[4] BNSF received these trackage rights over UP's lines between Denver, CO and Stockton and San Jose, CA in the UP/SP merger proceeding. The line segment between Price and Provo is included within the BNSF-UP trackage rights agreement. *See* e-workpaper "UP-IPA-00005732 to UP-IPA-00005777.pdf."

and to handle non-coal traffic entirely in overhead service should not be construed as an indication that such activities are inherently unprofitable either for the incumbents or the SARR. Instead, the decision reflects a desire to simplify the SAC operation and presentation to the extent possible.

IPA developed the IRR traffic group utilizing a combination of different data sources, most of which were provided by UP in discovery, including: (a) UP's historic revenue, car movement, and train event records; (b) UP's Prophecy forecast data; (c) rail transportation contracts and other pricing information;[5] (d) IPA's internal coal volume forecast; (e) information developed by the Department of Energy's Energy Information Administration ("EIA"); (f) information developed by the U.S. Department of Agriculture ("USDA"); (g) analyses conducted by IPA Witnesses Thomas D. Crowley and Daniel L. Fapp; and (h) information in UP's shareholder reports, SEC filings, and equity analyst presentations.

In general, IPA selected individual UP shipments (by origin and final destination points) that would move over the IRR based on revenue data, car

[5] By agreement of the parties during discovery in this case, UP limited its production of non-coal contracts and pricing instruments to a defined subset of the total set of responsive documents. The parties further agreed that UP would not take issue with IPA's reliance on that subset as a basis for drawing inferences regarding the balance of UP's contracts and pricing instruments.

event data, train movement data and density routing data for the one-year period beginning January 1, 2010 and ending December 31, 2010 ("Base Year").[6]

a. Coal Traffic

Coal traffic, consisting of unit train and/or trainload movements, comprises approximately 45.9% of the IRR's 2011 tons. The IRR directly serves one coal mine and two coal load outs and also receives Utah-originated coal in interchange from URC at Provo and Colorado-originated coal in interchange from UP at Price. The only power plant that the IRR serves directly is IGS. There are three basic categories of coal traffic on the IRR system: (i) issue traffic to IGS; (ii) non-issue traffic to IGS; and (iii) non-issue traffic moving to destinations other than IGS.

Issue Traffic to IGS. The issue traffic moving to IGS includes: (i) coal traffic that originates on the URC at the Savage coal loadout; and (ii) coal traffic that originates on the IRR at the Skyline mine. The IRR receives coal from the Savage loadout in interchange from the URC at Provo for delivery to IGS. The URC handles the upstream portion of these Savage movements pursuant to a long-term contract with IPA that remains in effect until { }. UP's contract for delivery service for these URC-originated volumes expired at the end of 2010. The issue traffic moving from the Skyline mine moves in single-line IRR service to the IGS.

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[6] IPA's electronic workpapers include the queries that IPA utilized to draw traffic and revenue information from UP's original files.

Non-Issue Traffic to IGS. The non-issue coal traffic moving to IGS via the IRR is comprised of coal originating at the Sharp coal loadout. The IRR moves this coal in single-line service from Sharp to the IGS facility.

Non-Issue Traffic for Third-Party Shippers. The IRR also handles non-issue coal traffic for shippers other than IPA. This traffic includes: (i) coal traffic that the IRR originates at Skyline, Sharp, or Savage and interchanges to UP at Milford, Provo, or Price; (ii) overhead coal traffic the IRR receives in interchange from UP at Price and interchanges back to UP at Milford or Provo; (iii) overhead coal traffic the IRR receives in interchange from UP or URC at Provo and interchanges to UP at Milford; and (iv) overhead coal traffic the IRR receives in interchange from UP at Lynndyl and interchanges back to UP at Milford. The IRR's non-issue coal traffic is a combination of export coal, utility coal, and industrial coal from Utah, Colorado, Powder River Basin ("PRB"), and Pennsylvania origins.

IPA e-workpaper "IPA Coal Traffic Forecast.xlsx " shows detailed movement information for all coal handled by the IRR, along with the Base Year volumes attributable to each.

b. Non-Coal Traffic

The IRR also handles a substantial volume of non-coal traffic. This traffic comprises approximately 54.1% of the IRR's 2011 tons. As noted, the IRR receives and delivers this traffic in intact trainloads, and handles this traffic as a bridge carrier replacing UP for a portion of its movement. IPA's e-workpaper

"Non-Coal IRR Traffic Forecast.xlsx" shows all on-system and off-system locations for all the non-coal movements handled by the IRR for the 2011-2020 time period. Principally, this traffic moves between Milford and Lynndyl and between Price and Provo. Small amounts of this traffic move between Milford and Provo and between Price and Milford.

The non-coal traffic may be broken down into general categories as follows:

TABLE III-A-2
Summary of 2011 IRR Non-Coal Traffic

Description	Cars/Containers (thousands)	Tons (millions)
Automotive	8.8	0.2
Agricultural	11.3	1.2
Intermodal/Other	486.4	12.3

Source: e-workpaper "Non-Coal IRR Traffic Forecast.xlsx."

c. **BNSF Trackage Rights Traffic**

The IRR system also receives trackage rights fees for certain BNSF traffic that moves over the system using trackage rights that BNSF obtained from UP in the UP/SP merger. This traffic moves over the IRR between Price and Provo. The Base Year volume of BNSF trackage rights traffic is {

}

Based upon information in UP's document production, {

} of this BNSF traffic is identified as either

{ } or { }. The

remaining { } of this traffic is a combination of {

}.

d. Rerouted Traffic

The IRR does not reroute any traffic.

2. Volumes (Historical and Projected)

a. IGS Coal Traffic

The IRR's 2011-2020 coal volumes moving to IGS (including both issue and non-issue IPA coal movements) are based on IPA's internal forecast. This forecast reflects the most recently available information regarding IPA's coal supply agreements and its expectations regarding future coal sources and volumes. In particular, this forecast includes information regarding a new coal supply agreement dated July 7, 2011 with Arch Coal Sales Company, Inc. for the purchase of { } as well as other information that became available to IPA only recently. *See* e-workpapers "Coal Forecast 7-27-11.xlsx" and "IPA Coal Traffic Forecast.xlsx." IPA's forecast reflects IPA's current expectation that its coal burn going forward will be {

}, for each year of the DCF model.

A detailed schedule showing all projected issue and non-issue coal volumes for the IRR for each year of the DCF period is shown in IPA e-workpaper "IPA Coal Traffic Forecast.xlsx."

b. Non-IPA Coal Traffic

i. 2011 Volumes

The starting point for IPA's determination of the IRR's 2011 coal volumes (for coal traffic other than the IPA traffic) was UP's 2010 waybill and car and train movement records. In particular, IPA developed its Base Year traffic using UP's detailed 2010 records for each shipment UP handled in Utah as originating, terminating, overhead, or single-line carrier. From that set of records, IPA was able to identify the universe of Base Year coal traffic that moved over the lines of the IRR system. That 2010 coal traffic universe included volumes moving over the IRR lines that had originated in Utah, Colorado, the PRB, and Pennsylvania.

In order to determine the volume of this Base Year traffic that would be expected to move over those same lines of the IRR system in 2011, IPA next utilized UP's "Prophecy" forecast information. *See* e-workpaper "2010 UP Prophecy Data.xlsx." As described in greater detail below, two factors associated with the nature and the geographic scope of the Prophecy data required IPA to take certain intermediate steps in order to generate anticipated 2011 volumes moving over the IRR from each coal source. In particular, {

}

That comparison is complicated in some instances by {

}

(a) Utah Coal Originations

In order to develop 2011 Utah coal volumes for non-issue coal, IPA developed the rate of change between: (i) the 2010 actual UP coal volumes originating from all of UP's Utah coal origins; and (ii) the UP's Prophecy forecast volumes for Utah coal origins. *See* e-workpaper "2010 UP Prophecy Data.xlsx." As noted above, IPA was able to identify the entire universe of UP's actual 2010 shipments from Utah coal origins by using the UP waybill and car and train movement records that UP produced in discovery. Those records (which, as noted, show all of UP's 2010 shipments moving through Utah) were, by definition, sufficient to show all of UP's 2010 Utah coal originations. Since UP's Prophecy data identifies UP's anticipated 2011 total volume of coal shipments from Utah origins, an appropriate match exists and it is possible to draw meaningful conclusions regarding anticipated 2011 IRR coal volumes moving from Utah origins.

Specifically, by comparing the difference between UP's 2010 actual Utah coal originations and UP's 2011 anticipated Utah coal originations, IPA was able to identify a projected 2010-2011 rate of change for UP coal traffic originating in Utah. IPA applied this rate of change to the 2010 Base Year non-IPA, Utah-origin coal traffic moving on the IRR system to yield a 2011 volume level for such IRR traffic.

(b) <u>PRB/Colorado Coal Originations</u>

As noted above, IPA relied upon UP's 2010 waybill and car and train movement records and UP's Prophecy forecasts as the starting points for generating 2011 volume levels for PRB and Colorado coal traffic. The Prophecy data includes total anticipated volume figures for 2011 PRB coal originations and for 2011 Colorado coal originations. In order to derive the assumed rates of change between UP's 2010 and 2011 volumes levels that are implicit in UP's Prophecy volume forecasts, it is necessary to identify corresponding 2010 actual UP shipping volumes from each coal production region. Unlike the situation with respect to Utah coal originations, however, UP's production of waybill and car and train movement data for shipments moving through Utah does not provide a complete picture of the total volume of coal that UP originated in 2010 from either the PRB or Colorado.

Accordingly, IPA was required to look to an alternative source of 2010 UP coal originations to obtain an appropriate match with the geographic scope of the 2011 Prophecy data. Specifically, IPA utilized UP's 2010 Quarterly Analyst Presentations made as part of the railroad's quarterly earnings releases as a source of total UP 2010 volume data from each production region that IPA could pair with the regional-specific UP 2011 Prophecy data in order to calculated UP's anticipated 2010-2011 rate of change in PRB coal volumes. *See* e-workpaper "2010 UP Prophecy Data.xlsx," "1q2010slides.pdf," "2q2010slides.pdf," "3q2010slides.pdf," and "4q2010slides.pdf." IPA's particular approach for each coal origin varied slightly as a result of the geographic scope of the available UP data.

PRB Coal Volumes. The waybill and car and train movement records that UP produced in response to IPA's requests identify the total volume of PRB coal shipments that UP moved through Utah in 2010. That volume, of course, does not constitute the total volume of coal that UP moved from the PRB in 2010. Conversely, UP's Prophecy forecast for 2011 identifies the total volume of coal that UP expects to transport from the PRB to individual regions, but does not identify the total volume of PRB coal that UP expects to transport over the specific portion of its Utah lines that make up the IRR system.[7]

In order to identify the rate of anticipated change from 2010 to 2011 that is implicit in UP's Prophecy forecast, IPA was required to identify the actual volume of PRB coal shipments that UP originated in 2010 (not merely the volume of UP's PRB coal shipments that ultimately moved through some portion of Utah). In order to do so, IPA relied upon UP's 2010 Quarterly Analyst presentations. *See* e-workpapers "1q2010slides.pdf," "2q2010slides.pdf," "3q2010slides.pdf," and "4q2010slides.pdf." These presentations include total volume figures for UP's 2010 shipments of PRB coal.

Using this 2010 PRB actual coal volume level and the 2011 PRB volume forecast from the Prophecy data, IPA was able to calculate the 2010-2011 rate of change that UP anticipates in its PRB coal movements (and that is implicit in the 2011 Prophecy forecast). IPA applied that rate of change to the 2010 Base-Year, PRB-originated coal traffic moving on the IRR system to yield 2011 volumes of PRB traffic moving on the IRR system.

<u>Colorado Coal Volumes</u>. In order to forecast the volume of Colorado traffic moving over the IRR in 2011, IPA utilized the same general

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[7] { }
While IPA could have made assumptions about how future traffic volumes *may* move, there is no guarantee that traffic moving between an origin and destination region will move over a specific route.

approach that it utilized for the PRB traffic, but it was necessary for IPA to take one additional step. In particular, IPA again relied upon UP's Quarterly Analyst presentations as a source of 2010 actual volumes. UP's 2010 Quarterly Analyst presentations, however, identify only the *combined* volumes of coal originating at Colorado *and* Utah mines, rather than separately identifying Colorado and Utah coal originations. IPA therefore developed a figure for UP's total 2010 Colorado volumes from the quarterly presentations by subtracting the actual UP 2010 volume from Utah mines (which IPA obtained from UP's car and train movement records) from the combined 2010 Colorado/Utah traffic figures in the quarterly presentations in order to yield a total 2010 Colorado volume figure.

IPA then calculated the variation between this actual 2010 Colorado traffic volume and UP's 2011 Prophecy forecast of Colorado traffic to yield UP's anticipated 2010-2011 rate of change in UP traffic volumes for Colorado coal. IPA applied this rate of change to the Base Year IRR coal traffic originating in Colorado in order to develop the IRR's 2011 Colorado coal traffic volume.[8]

ii. <u>2012-2020 IRR Coal Volumes</u>

For each year from 2012 through 2020, IPA developed annual rates of change for all IRR coal traffic volumes (except IPA's coal traffic) using data for

[8] The IRR also moves a very small amount of coal originating in Pennsylvania and moving to California. To forecast the 2011 volumes for this limited amount of traffic, IPA utilized the forecasted change in total UP Energy traffic based on UP's 2010 SEC Form 10-K and UP Prophecy data. The Pennsylvania originated traffic is not forecasted to move after 2011.

individual coal supply and coal demand regions in EIA's 2011 Annual Energy Outlook ("2011 AEO") Update forecast. In this regard, EIA's Coal Marketing Module ("CMM") identifies thirteen coal supply regions, which include the Rocky Mountain Region (UT and CO), and the Wyoming Powder River Basin ("PRB"), and sixteen coal demand regions. IPA applied the annual rates of change to the IRR's prior year coal movements based upon each movement's origin and destination. For example, IPA adjusted the volumes for coal moving from the Black Thunder Mine in the PRB to {

} by the forecasted change in coal production for coal moving between the EIA's Wyoming PRB supply region and the EIA's Colorado, Utah, and Nevada demand region.

In addition, IPA capped all IRR utility coal shipment volume forecasts (for shipments to identifiable generating stations) at a tonnage level that equates to an 85% capacity factor for the generating unit(s) in question. Consistent with past STB practice, IPA did not apply a cap of this nature for export coal shipments or coal movements to industrial end users.

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

i. **<u>2011 IRR Non-Coal Volumes</u>**

In order to determine volume levels for the IRR's non-coal traffic (*i.e.*, automotive, agricultural, intermodal, and other non-coal traffic), IPA first drew information regarding UP's Base Year (2010) volumes moving over the IRR system from the traffic records that UP produced in discovery in this case. *See* e-workpaper "Non-Coal IRR Traffic Forecast.xlsx." IPA next referred to UP's 2011 Prophecy forecast data for the individual non-coal traffic groups moving via the IRR. As was the case with the use of UP's Prophecy forecasts for coal data (discussed above), the divergence in scope between the UP 2010 car and train movement records and the UP 2011 Prophecy data mandated the use of an alternative 2010 data source for purposes of properly evaluating the Prophecy forecasts.

In particular, UP's Prophecy data {

} The car and train movement records available to IPA in this case only identify the movements using the Salt Lake City line.

Because of this inability to reconcile actual 2010 IRR-specific traffic data to 2011 geographic region-specific Prophecy data, IPA looked to the next more general level of actual 2010 traffic information available to it. Specifically, IPA utilized data regarding UP system total traffic by business group from UP's

2010 financial statements. IPA used this approach for automotive, agricultural, intermodal, and the other non-coal traffic moving over the IRR.

ii. <u>2012-2020 IRR Non-Coal Volumes</u>

(a) <u>Automotive Traffic</u>

For each year from 2012 to 2020, IPA calculated the rate of change in IRR annual automotive traffic volumes by utilizing the forecasted change in new automobile and light truck sales from EIA's AEO 2011 transportation equipment forecast. In order to test the reasonableness of this segment of the EIA forecast as a likely predictor of available automotive traffic, IPA undertook an analysis of historic UP auto traffic data. *See* e-workpaper "Historic Relationship Between UP Auto Traffic and New Car Sales.xlsx." That analysis showed a nearly 90% correlation between UP automotive traffic levels and new car and light truck sales. On the basis of that analysis, IPA's expert witnesses have concluded that the EIA new car and light truck forecast provides a reasonable measure of future automobile traffic on the IRR.

(b) <u>Agricultural Traffic</u>

IPA determined the IRR's agricultural volume levels for each year from 2012 to 2020 using the annual forecasted change in U.S. agricultural production as estimated in the *United States Department of Agriculture Agricultural Projections to 2020* (OCE-201101). *See* e-workpaper "EIA and USDA Forecasts.xlsx." These USDA projections estimate future commodity volumes on a commodity-specific basis (*e.g.*, bushels of corn, bushels of wheat, etc.). In order to accommodate the different relative measures, IPA converted all commodities to short tons using USDA-supplied conversion factors.

(c) **Intermodal and Other Non-Coal Traffic**

For each of the years from 2012 through 2020, IPA adjusted the IRR's intermodal and other non-coal volumes utilizing the annual change in EIA's AEO 2011 Industrial Output Forecast. This forecast produces an estimate of the real value of industrial shipments as a measure of output for sixty industries. As indicated in EIA's National Energy Modeling System ("NEMS") Macroeconomic Activity Module Documentation Report, the output level generated in the model reflected forecasts levels of domestic production for each industry.[9]

In order to properly match the AEO 2011 Industrial Output Forecast with the IRR traffic group, IPA aggregated EIA's various industrial production traffic groups by category. Because the EIA normalizes its forecast on a real dollar basis, IPA was able to add the different EIA forecasts together in order to develop a composite forecast of traffic reflecting the traffic in the various UP business groups.

d. **BNSF Trackage Rights Trains**

IPA determined the 2010 Base Year level of the BNSF trackage rights trains using the relevant portion of the UP system beginning with the

[9] *See* "Model Documentation Report: Macroeconomic Activity Module (MAM) of the National Energy Modeling System," Office of Integrated Analysis and Forecasting, U.S. Energy Information Administration, June 2011 at page 17. IPA has included a copy of this EIA report in its e-workpapers.

trackage rights invoices issued to BNSF.[10] For each of the years 2011-2020, IPA indexed these Base Year traffic levels forward using the forecasted change in U.S. Industrial Production as reported in EIA's AEO 2011 Macro-Economic Indicators.

As indicated above, nearly { } of this BNSF trackage rights traffic consists of { }. Consequently, the Industrial Production forecast represents a reasonable measure of the likely change in future volumes for these BNSF trackage rights trains.

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

As with virtually all of the stand-alone rail systems that have been presented to the Board in prior cases under the *Coal Rate Guidelines*, the peak traffic year for the IRR will be the final year analyzed under the DCF Model, which in this case is 2020. Taking account of all adjustments to the Base Year (2010) volumes for the various general categories of IRR traffic, as described in this Subpart III-A-2 and the e-workpapers referenced herein, the IRR's peak year traffic is as follows:

[10] For purposes of its peak week period calculations, IPA utilized UP's train event data to determine when the BNSF trackage rights trains reflected in UP's invoices would enter the IRR system.

TABLE III-A-3
Summary of IRR Peak Year (2020) Traffic

Commodity	Carloads/Units	Net Tons
Coal	98,724	10,952,288
Automotive	11,067	199,602
Agricultural	12,343	1,299,560
Intermodal/Other	602,151	15,154,144

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

3. Revenues (Historical and Projected)

In Ex Parte No. 347 (Sub-No. 3), *General Procedures for Presenting Evidence in Stand-Alone Coal Rate* Cases (STB served March 12, 2001), the Board directed that discussion of revenues, both historical and projected, be grouped under four headings: (a) single-line, (b) divisions – existing interchanges, (c) divisions – cross-over traffic (meaning new interchanges with the residual defendants), and (d) other.[11] IPA has organized its discussion accordingly.

a. Single-Line

Single-line traffic refers to traffic that a SARR handles exclusively from origin to destination. In its first year of operation (2011), the IRR would

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

handle 2,020,000 tons of coal in single-line service. This 2011 traffic includes issue traffic moving in single-line IRR service from Skyline to IGS and non-issue coal moving from Sharp to IGS. Single-line traffic constitutes 17.5% of the IRR's total 2011 coal traffic and 8.0% of the IRR's total 2011 traffic volume including non-coal traffic.

Stand-alone revenues for IPA's non-issue coal traffic are calculated based on the rates established by UP in Item 6200-A of Common Carrier Tariff 4222 and the volumes discussed above. *See* e-workpaper "Coal Revenue Forecast.xlsx."

b. <u>Divisions – Existing Interchanges</u>

Divisions – Existing Interchanges refer to traffic that UP presently interchanges with URC that the IRR will interchange at the same location. The IRR's 2011 traffic includes approximately 2.7 million tons of coal traffic that IRR interchanges with URC. Such traffic comprises 23.4% of the IRR's total 2011 coal traffic.

Consistent with SAC theory and Board precedent, *e.g.*, *FMC*, 4 S.T.B. at 725, the IRR's revenue or division on traffic that it interchanges (as UP does currently) with URC, equals the revenues earned by UP on such traffic. In the case of the issue traffic moving on the IRR from Provo to IGS, IPA derived these revenues from the rates set forth in Item 6200-A of UP Common Carrier Tariff 4222 and the projected volumes for these movements. For non-issue traffic, IPA derived "existing division" revenues from the data, contracts, and other pricing documents produced by UP in discovery. Those revenues are summarized in e-workpaper "Coal Revenue Forecast.xlsx."

c. **Cross-Over Traffic**

Cross-over traffic refers to traffic that the IRR exchanges with the residual UP at one or more new, hypothetical interchange(s) because the IRR handles a shorter portion of the movement than the real-world UP. This category constitutes the largest category of the IRR's traffic because the IRR originates or terminates only coal shipments, and the IRR serves only one power plant that receives coal. The cross-over traffic in the IRR's first year of operations consists of 6.8 million tons of coal, 5.2 million intermodal tons, and 7.5 million tons of other freight. These volumes constitute 59.1% of the IRR's total tons of coal and 82.0% of all of the IRR's 2011 net tons.

Because cross-over traffic does not entail a real-world interchange, an allocation or division of revenues between the SARR and the residual incumbent must be imputed or inferred. Although this task had been controversial in past rate cases, the Board settled on the Average Total Cost ("ATC") method in *Major Issues* as the only permissible approach. The Board then slightly modified ATC in applying it in *WFA I* at 11-14 and in *AEP Texas* at 15-16. In this proceeding, therefore, IPA employs the ATC methodology to determine the cross-over revenues assignable to the IRR, as explained below.

The ATC method of allocating revenues involves comparing the variable and fixed costs (with the fixed costs being allocated based on density) on the SARR's segment and those of the residual incumbent on the cross-over traffic. The first step in applying ATC is to determine the variable costs per net ton for the IRR portion of each cross-over movement in the IRR traffic group. IPA did so utilizing the nine (9) URCS inputs identified in *Major Issues* for each movement, as derived from data produced by UP in discovery.[12] IPA utilized 2010 URCS unit costs for UP developed by L. E. Peabody & Associates, Inc. The URCS Phase III cost program was run using those inputs and unit costs to calculate the variable cost for the IRR portion of each unique movement.[13]

The next step involves determining the fixed costs for each movement's IRR routing. IPA did so by utilizing density and movement routing data produced by UP in discovery. Specifically, IPA determined the density and distance between reported stations along each movement's IRR route. The next step is to calculate the fixed costs for the IRR portion of each cross-over movement. To do so, IPA first determined 2010 Base Year fixed costs per route mile by subtracting UP's total variable costs from its total system costs as identified under 2010 URCS, and then dividing UP's resulting total fixed costs by its total system route miles.[14] UP's aggregate annual fixed costs for the "on-SARR" route were determined by multiplying the 2010 system fixed cost per route

[12] As is the norm when costing intermodal movements, IPA selected the appropriate service plan when performing the Phase III URCS run.

[13] The results are shown in e-workpaper "2010 ATC Moves For Phase III Costing v6.0_080511. xlsx."

[14] Total route miles are taken from UP's 2010 Annual Report Form R-1, Schedule 700, Line 57, Column (c).

mile by the distance between each station along the IRR's route of movement and dividing by the density between each station to develop a fixed cost per ton for each inter-station segment. Fixed costs per ton then equal the sum of the inter-station fixed costs per ton along the IRR route of movement.[15]

Similar calculations are then made to determine the variable and fixed costs and densities over the residual UP for the IRR's cross-over traffic. Utilizing the off-IRR routings identified in data produced by UP in discovery, IPA calculated the variable and average fixed costs for the UP portion of each cross-over movement in the same manner as those associated with the IRR portion. The segment densities were determined using UP's 2010 system densities. The densities were then multiplied by the off-IRR route miles for that segment, and the sum of these products was divided by each movement's total off-IRR route miles to yield a weighted average density for each movement's route. The IRR's share of each cross-over movement's total revenue under ATC is then determined as follows:

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

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

[15] The results are shown in e-workpaper "Expanded_Waybill_Data_ATC_ Percentages_080411.xlsx."

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

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

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

c. Allocate the contribution by:

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

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

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

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

Once calculated for the Base Year, the IRR revenue division ratio for the base revenues (exclusive of fuel surcharges) for each cross-over movement is held constant during each year of the DCF model life, regardless of when during the model life the movement over the IRR starts or terminates. *See AEP Texas* (STB served Nov. 8, 2006), at 3. A complete summary of IPA's cross-over revenues allocated using the ATC methodology is shown in e-workpapers "Coal Revenue Forecast.xlsx," and "Expanded_Waybill_Data_ATC_Percentages_080411.xlsx."

For much of its traffic, UP imposes a car-mile based fuel surcharge on each carload based on the price of On-Highway Diesel Fuel ("HDF") as calculated by the U.S. Department of Energy's Energy Information Administration ("EIA"). Fuel surcharges on intermodal and some contract carload traffic are in the form of a percentage-based rate increase that varies with the HDF level. The IRR's cross-over revenues will reflect the same fuel surcharge program and formulas that UP uses, and the IRR will thus collect an appropriate (per mile or percentage-based) fuel surcharge rate on each carload based on the traffic type and the IRR movement miles used in the ATC revenue division calculation. It is thus assumed that UP will continue to collect surcharges based on its current formulas on its portion of the movement.

Based on contracts provided by UP in discovery and on information posted on UP's website, IPA determined that {

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d. **Projected Revenues**

The procedures used to project IRR revenues from coal, intermodal, and other carload traffic over the 2011-2020 period are tailored to each particular traffic category, and rely on the most specific and accurate data made available by UP during discovery.

i. Revenues from IGS's Issue and Non-Issue Coal Traffic

The revenue forecast for the issue and non-issue traffic moving to IGS is based on the terms of Item 6200-A of UP's Common Carrier Tariff 4222. Specifically, IPA maintained these rates at their current levels for 2011-2020, in accordance with the terms of the tariff item. IPA then applied these rates to the forecasted volume levels for each year to generate a revenue forecast for each year from 2011-2020. In addition, because IPA's traffic is subject to the Item 695-series of UP's Tariff 6007-series, IPA calculated fuel surcharges for the IRR's IGS coal traffic as well. Fuel surcharges were calculated based on EIA's HDF forecasts as included in its June 2011 Short-Term Energy Outlook ("STEO")[16] and its 2011 AEO.[17]

Because EIA's STEO and AEO forecasts reflect different values for the projected HDF prices in the short-term, IPA developed a combination or hybrid HDF forecast based on these two EIA forecasts. In particular, IPA relied upon the more recently updated STEO forecast for the initial two-year period, and then applied the forecasted changes in the AEO forecast to the final STEO figure for the remaining time periods of the DCF model. Notably, the forecasted change in HDF prices closely correlates with the forecasted railroad fuel costs produced

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[16] The STEO forecasts prices two years into the future and is updated on a monthly basis.

[17] EIA's AEO forecasts are published on an annual basis and project HDF prices for twenty-five or more years. The most recent AEO forecast includes fuel prices for the years 2011 through 2035.

by Global Insight, which IPA is utilizing to forecast operating costs. *See* Exhibit III-A-2. Stated differently, the use of this hybrid fuel price forecasting methodology ensures that the IRR's fuel surcharge revenues and its fuel costs are changing at a similar pace. Support for and development of IPA's hybrid index appears in IPA electronic workpapers "Hybrid HDF Forecast from STEO and AEO.xls."

ii. Revenues From Non-Issue Coal Traffic Moving to Third-Party Destinations

The revenue forecasts for IRR coal traffic other than coal moving to IGS are based on 2010 traffic data provided by UP in discovery. For each movement, classified by origin, destination and governing pricing authority (*i.e.*, contract or common carriage), the starting point is the calculation of UP's 2010 net revenue per ton before fuel surcharges.[18] "Net revenue" refers to UP's line-haul revenues and other transportation revenues less absorbed switching charges, contract refunds, other revenue claims and junction settlements.

IPA estimated rates based upon the terms of the existing contract/pricing authority until its expiration, then applied the EIA's Coal Transportation Rate Escalator for the remaining years of the DCF model. In this regard, UP's Prophecy data {

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

} therefore making it necessary for IPA to rely on the EIA Coal Transportation Rate Escalator.[19]

For contract or pricing authority rate adjustment mechanisms that used the All Inclusive Index – Less Fuel (error adjusted) ("AII-LF") or the RCAF-U, IPA adjusted the subject rates based on: (i) actual AII-LF or RCAF-U values that were available; and (ii) the AII-LF and RCAF-U forecast included in the March 2011 Global Insight Rail Cost Adjustment Factor Forecast.

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}. IPA calculated fuel surcharge revenues based on the relevant contract terms. For time periods after the contract expiration date, IPA applied fuel surcharges to this traffic based on UP's "Standard Carload – HDF Indexed" rate-based fuel surcharge program and EIA's HDF forecasts as included in its June 2011 STEO and its 2011 AEO (April release).[20]

iii. **Revenues From Intermodal Traffic**

For intermodal movements governed by active contracts, tariffs, or rate sheets (collectively "pricing authorities") that UP provided in discovery, IPA used the applicable contract adjustment mechanism to escalate rates on a year-

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[19] EIA uses its Transportation Rate Escalators to forecast future coal transportation prices.

[20] IPA likewise utilized the Standard Carload – HDF Indexed rate-based fuel surcharge program and EIA's HDF forecasts for movements governed by pricing authorities that UP did not provide in discovery.

over-year basis during the term of the existing contracts. After the contract expiration date, IPA adjusted the movements' rates by the AII-LF on a year-over-year basis. Similarly, for intermodal movements governed by pricing authorities that expire prior to the SAC analysis period (and movements governed by pricing authorities that UP did not produce in discovery), IPA adjusted rates by the AII-LF on a year-over-year basis.

IPA calculated fuel surcharge revenues for the intermodal movements governed by active pricing authorities using the terms of the applicable fuel surcharge mechanism and all adjustments thereto specified in the pricing authority. For the time periods after the expiration of those pricing authorities, IPA applied fuel surcharges to this intermodal traffic based on the terms specified in Items 780-790 of UP's Master Intermodal Transportation Agreement ("MITA") and EIA's HDF forecasts as included in its July 2011 STEO and its 2011 (April release) AEO. *See* e-workpaper "Non-Coal IRR Traffic Forecast.xlsx," level "TData."

IPA also utilized UP's MITA fuel surcharge program and EIA's HDF forecasts to calculate fuel surcharge revenues for intermodal movements governed by pricing authorities that UP provided in discovery but that expired prior to the SAC analysis period (or pricing authorities that UP did not produce in discovery).

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

For automotive, agricultural, and other non-coal movements governed by active contracts, tariffs, or rate sheets (collectively "pricing authorities") that UP provided in discovery, IPA used the applicable contract adjustment mechanism to escalate rates on a year-over-year basis during the term of the existing contracts. After the contract expiration date, IPA adjusted the movements' rates by the AII-LF on a year-over-year basis. Similarly, for movements governed by pricing authorities that expire prior to the SAC analysis period (and movements governed by pricing authorities that UP did not produce in discovery), IPA adjusted rates by the AII-LF on a year-over-year basis.

For automotive, agricultural, and other movements to which fuel surcharges were applied in the Base Year, IPA determined whether the surcharges were rate-based or mileage-based using the provided waybill and fuel surcharge data and provided contracts. IPA calculated fuel surcharge revenues for movements governed by active pricing authorities using the terms of the applicable fuel surcharge mechanism and all adjustments thereto specified in the pricing authority. For the time periods after the expiration of those pricing authorities, IPA applied fuel surcharges to this traffic based on UP's "Standard Carload - HDF Indexed" rate-based (for movements with rate-based surcharges applied in the Base Year) or mileage-based (for movements with mileage-based surcharges applied in the Base Year) fuel surcharge programs and EIA's HDF forecasts as included in its July 2011 STEO and its 2011 (April release) AEO. Rate-based fuel surcharges were applied to the IRR portion of the movement base rates, and mileage-based fuel surcharges were applied to the IRR portion of the movement miles.

IPA also utilized UP's "Standard Carload - HDF Indexed" rate-based and mileage-based fuel surcharge programs and EIA's HDF forecasts to calculate fuel surcharge revenues for movements governed by pricing authorities that UP provided in discovery but that expired prior to the SAC analysis period (or pricing authorities that UP did not produce in discovery).

v. **Revenues From BNSF Trackage Rights Traffic**

For BNSF trackage rights trains moving over the IRR between Price and Provo, IPA developed Base Year 2010 revenues per gross ton-mile ("GTM") from the invoices that UP provided to IPA in discovery. The terms of the trackage rights agreement between UP and BNSF call for adjusting trackage rights fees annually based on changes in certain UP URCS components. The trackage rights agreement indicates in pertinent part that:

> The GTM Rates shall be adjusted upward or downward effective July 1 of each year during the term of this Agreement by the difference in the two (2) preceding years in UP/SP's system average URCS costs for the categories of maintenance and operating costs covered by the GTM Rates. 'URCS costs' shall mean costs developed using the Uniform Rail Costing System.[21]

[21] *See* e-workpaper "UP-IPA-00005732 to UP-IPA-00005777.pdf" at UP-IPA-00005743. The two railroads could not initially agree on how to implement

To calculate the rate adjustment between 2010 and 2011 trackage rights fees, IPA applied the UP/BNSF rate adjustment mechanism using the STB's 2009 UP URCS cost and a 2010 UP URCS costs developed by L. E. Peabody & Associates, Inc. *See* e-workpaper "Trackage Rights Forecast.xlsx." Because the UP/BNSF rate adjustment factor is based on URCS costs that are not yet known, the 2011 rates per GTM were adjusted forward by the forecasted change in the RCAF-U as prepared by Global Insight to reflect anticipated changes in future UP URCS costs. IPA applied the adjusted trackage rights fees to the forecasted BNSF trains { } to develop future trackage rights fees available to the IRR.

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the rate adjustment mechanism of their agreement, and took the matter to the Board for adjudication. Subsequent to referring the matter to the STB, UP and BNSF reached an agreement on the terms of the adjustment mechanism as indicated in the "Joint Report Regarding Implementation of Section 12 of The BNSF Settlement Agreement," filed with the STB on December 12, 2002 ("Joint Report"). The Joint Report includes in its Exhibit A the calculations agreed to by the two railroads to adjust the trackage rights fees. IPA has included a copy of the Joint Report in its workpapers. *See* e-workpaper "BNSF-UP Report on Trackage.pdf."

III-B Stand-Alone
Railroad System

III. B. STAND-ALONE RAILROAD SYSTEM

In this Part IPA describes the IRR's system configuration and facilities including its route, track and yard facilities, traffic control system, *etc.*

1. Route and Mileage

The IRR is a relatively short SARR, with a total of 278.67 route miles. It is located entirely within the state of Utah and extends from Price on the east to Milford on the west. It serves one coal mine, two coal loadouts,[1] and one power plant – IPA's Intermountain Generating Station ("IGS"). The IRR also handles non-coal traffic in overhead service, which it interlines with UP.

Exhibit III-A-1 contains a schematic map showing the IRR's route, including its local coal origins, its local power plant destination, and interchange points with other railroads (UP and the Utah Railway, or "URC").

a. Main Line

The IRR's main line starts just east of Price, where it connects with the 1.70-mile spur serving the Savage Coal Terminal (a rail loadout facility serving several coal mines in the area), and where the IRR also has an interchange with the residual UP. From Price, the main line proceeds in a northwesterly direction to Provo, replicating portions of the former Denver & Rio Grande Western's (now UP's) Green River and Provo Subdivisions. From Provo, the

[1] Several of the Utah coal mines from which IPA receives coal are not directly served by rail. Rather, their coal is trucked to nearby rail loadout facilities where it is transloaded into railcars for rail movement to destination.

main line proceeds in a southwesterly direction to Lynndyl, replicating UP's Sharp Subdivision. It then continues southwest to an interchange with UP at Milford, replicating a portion of UP's Lynndyl Subdivision.[2] The spur to IGS (known as the IPP Industrial Lead) connects with the main line just southwest of Lynndyl.

b. **Branch Lines**

The IRR has one branch line, the Pleasant Valley Branch, which extends 19.63 miles from Colton to the Skyline Mine at Skyline. The IRR also owns the Castle Valley Industrial Lead, commonly known as the CV Spur, which extends 1.70 miles from a connection with the main line near Price to the Savage Coal Terminal, and it owns 0.19 miles of the IPP Industrial Lead which extends 8.9 miles from Lynndyl to the IGS.

c. **Interchange Points**

The IRR interchanges coal and other traffic with two railroads: UP and URC. The IRR has four interchanges with UP, located at Price, Provo, Lynndyl and Milford. The IRR has one interchange with URC, located at Provo.[3] The traffic interchanged with UP and/or URC at each location is shown in the electronic workpapers for Part III-A. The IRR track configuration at each interchange point is shown in Exhibits III-B-1 and III-B-2.

[2] The Lynndyl Subdivision is part of UP's transcontinental main line extending from Salt Lake City/Ogden and points east to the Los Angeles Basin in southern California. Milford is the first UP crew-change point on that line west of the connection with the IPP Industrial Lead.

[3] As described in Part III-C-2 below, loaded and empty coal trains are interchanged with the URC at different locations in the Provo area.

All traffic is interchanged by the IRR with other carriers in intact trainloads. The coal traffic moves in unit trains with run-through locomotive power (except that, consistent with the current interchange arrangement between UP and URC, the IRR and URC use their own locomotives for their respective portions of IRR-URC interline coal movements). The non-coal traffic is overhead traffic that the IRR receives from and delivers to UP in complete trains, including run-through locomotives. There is no need for any switching of these trains at either the interchange points or any intermediate points except in connection with 1,500-mile car inspections of eastbound coal trains.

d. Route Mileage

The route mileages for the IRR's principal line segments are shown in Table III-B-1 below. Details are provided in e-workpaper "IRR Route Miles.xls." The UP operating timetables and track charts for all of the lines being replicated, which were produced in discovery, are included in IPA's electronic workpapers as folder "III-B-1\ Track Charts."

TABLE III-B-1 IRR LINE SEGMENTS AND ROUTE MILEAGE		
Segment	**UP Subdivision**	**Miles**
Main Lines		
Price to Helper	Green River	10.58
Helper to Provo[1/]	Provo	73.05
Provo to Lynndyl	Sharp	84.52
Lynndyl to Milford	Lynndyl	89.00
Total Main Line miles		**257.15**
Branch Line		
Pleasant Valley	Pleasant Valley	19.63
Total Branch Line miles		**19.63**
Other		
CV Spur		1.70
IRR portion of IPP Industrial Lead		0.19
Total Other miles		**1.89**
Total route miles		**278.67**

[1/] Includes 1.25 route miles for the Coal Wye tracks connecting the Provo and Sharp Subdivisions at Provo.

All of the IRR's 278.67 route miles represent new construction by the IRR. The IRR does not operate over any joint facilities, although the URC operates a parallel line between Price and Provo and originates coal traffic that is interchanged to the IRR at Provo.[4] The URC also operates over approximately two miles of IRR trackage between a connection with URC tracks at Provo and IPA's car repair facility located at Springville on the Sharp Subdivision.

[4] In the real world UP and URC each owns various portions of the line between Price and Provo, and both carriers jointly operate over all main tracks in this territory. However, the IRR carries only UP traffic over this line, and thus replicates only UP's facilities and operations.

e. <u>Track Miles and Weight of Track</u>

The IRR's track and yard configuration was developed by IPA's expert operating and engineering witnesses, Paul Reistrup and Harvey Stone. The network configuration was developed using (i) information provided by IPA Witnesses Thomas Crowley and Timothy Crowley (based on data produced by UP in discovery) concerning the IRR's peak-year traffic volumes and flows and the trains that will move over the IRR system in the peak week of the peak traffic year; (ii) the IRR operating plan developed by Mr. Reistrup; (iii) UP's operating timetables and track charts for the division and subdivisions involved; and (iv) a simulation of the IRR's peak-period operations executed by Messrs. Timothy Crowley and William Humphrey using the Rail Traffic Controller ("RTC") model, which has been accepted by the Board as an appropriate operational modeling tool in several previous rail rate cases.[5]

Exhibit III-B-1 contains detailed schematic track diagrams for the entire IRR system. Schematics of the IRR's yards are contained in Exhibit III-B-2. The IRR's track miles are shown in Table III-B-2 below. Details (including a breakdown of the track miles by type of track) are provided in e-workpaper "Routes & Track Miles Summaries (7_18_11).xls."

[5] *See, e.g., Xcel I*, 7 S.T.B. at 614; *WFA I* at 15.

TABLE III-B-2 IRR TRACK MILES	
Main line track – Single first main track[1/]	278.67
– Other main track[2/]	30.54
Total main line track	309.21
Setout and MOW equip. tracks	1.97
Yard tracks[3/]	18.59
Total track miles	**329.77**

[1/] Single first main track miles equal total constructed route miles including branch lines and industrial leads (spurs).

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

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

i. Main Lines

As shown in Exhibit III-B-1, the IRR's main lines consist primarily of single track, with some sections of second main track (signaled passing sidings in CTC territory) or passing sidings at appropriate intervals to enable the IRR to move its peak period trains efficiently and without delay. The IRR has a total of 30.54 track miles of second main track/passing sidings.

All constructed mainline track (including passing sidings) consists of new 136-pound continuous welded rail ("CWR"). The Pleasant Valley Branch and the IRR-owned portion of the two industrial leads, which have lower traffic density and thus lower gross tonnages than the IRR's main lines, as well as yard and other tracks, consist of relay 115-pound CWR.

All of the IRR's track and structures are designed to accommodate a gross weight on rail ("GWR") of 286,000 pounds per car and maximum train speeds of 60 mph, conditions and operating rules permitting. However, as explained in Part III-C-3, some trains are limited to a maximum speed below 60 mph in both CTC and non-CTC territory, and all trains are limited to lower maximum speeds on the Pleasant Valley Branch and the two origin/destination spurs.

ii. Branch Lines

The IRR has one branch line, the Pleasant Valley Branch, which serves the Skyline Mine, and it owns portions of two industrial spurs serving the Savage Coal Terminal and IGS. The track configurations for the Pleasant Valley Branch and the CV Spur serving Savage Coal Terminal are shown in Exhibit III-B-1. The IRR owns only 0.19 miles of the IPP Industrial Lead serving IGS; the connection to this spur is also shown in Exhibit III-B-1. The Pleasant Valley Branch and the CV Spur each have a single main track.

iii. Sidings

The IRR's passing sidings are considered part of its main tracks, and are discussed above.

iv. Other Tracks

Other tracks include yard tracks, set-out tracks for bad order cars, and maintenance-of-way ("MOW") equipment storage tracks. Yard tracks (including interchange tracks) are discussed in the next section. E-workpaper

"Route & Track Miles Summaries (7_18_11).xls" details the track miles by type and quantity.

The IRR's setout tracks are used primarily in conjunction with its Failed-Equipment Detectors ("FEDs"). One setout track is placed near each of the FEDs, as described in Parts III-C and III-F below. All of these setout tracks are double-ended tracks, 860 feet in length between switches. This provides 600 feet in the clear to accommodate both the occasional bad-order car and the temporary storage of MOW equipment. One double-ended setout track also is located at each of the IRR's interchange yards.

The IRR also has a 1,000-foot MOW equipment storage track located at Provo. This track is included in the yard track quantity for Provo Yard.

The locations of the setout and MOW equipment storage tracks are shown in Exhibit III-B-1.[6] Details are provided in e-workpaper "Route & Track Miles Summaries (7_18_11).xls." These tracks consist of usable 115-pound CWR. The IRR has a total of 1.97 track miles for these tracks.

2. **Yards**

a. **Locations and Purpose**

The IRR has a total of four yards, located at Price, Provo, Lynndyl and Milford. The yard at Provo is a car inspection and interchange yard. The

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[6] As described in Part III-C-2, the IRR does not require helper locomotives on any of its trains. Thus no helper pocket tracks have been provided.

yards at Price, Lynndyl and Milford are essentially interchange facilities; none of these "yards" has more than two relay/interchange tracks.

b. Provo Yard

The IRR's only inspection yard is located at Provo. Provo Yard is used for interchanging trains with UP and for performing FRA-required car inspections on eastbound empty coal trains received in interchange from UP at Provo. Locomotives are fueled, inspected and repaired at a small locomotive facility at N. Springville, located just north of IPA's Springville car repair facility near the north end of the Sharp Subdivision. Locomotives on trains moving through Provo are fueled in the eastbound direction at the IRR's N. Springville locomotive facility as required, and FRA-mandated 92-day locomotive inspections are also performed there as needed.[7]

Provo Yard is shown on page 3 of Exhibit III-B-1 and in Exhibit III-B-2. It has two relay tracks, one of which is used for inspection of cars on empty coal trains received in interchange from UP at Provo.[8] Locomotives on empty coal trains received in interchange from UP that require fueling or 92-day inspection are removed from the train at Provo Yard and move light to the IRR's locomotive fueling/servicing/repair facility at N. Springville, and return to the

[7] The IRR locomotives used on empty coal trains interchanged with URC at Provo are removed from the empty train at IPA's Springville car repair facility and moved a short distance to the N. Springville fueling and servicing facility.

[8] As discussed in Part III-C-2, neither loaded coal trains nor non-coal trains interchanged with UP at Provo need to be inspected or fueled by the IRR.

train at the completion of the inspection process. Fueling is performed using tanker trucks (known as direct-to-locomotive or "DTL" fueling), which is how UP presently fuels locomotives at Provo. The relay tracks in Provo Yard are also used for interchanging trains with UP. Provo Yard also has tracks for repairing bad-order cars and storing repaired cars, and a MOW equipment storage track.

c. **Interchange Yards**

The IRR's other three yards are located at IRR/UP interchange points (Price, Lynndyl and Milford). The locations of these yards are shown in Exhibit III-B-1; schematic diagrams of all of the IRR's yards are shown in Exhibit III-B-2. Price Yard consists of one relay/interchange track. Lynndyl Yard and Milford Yard each has two relay/interchange tracks. The UP Coal Wye tracks (also known as the Ironton crossover tracks) at Provo, used to connect the Provo and Sharp Subdivisions, and on which loaded coal trains are interchanged between URC and the IRR, are shown in Exhibit III-B-3.[9]

d. **Miles and Weight of Yard Track**

The tracks at the IRR's N. Springville locomotive maintenance facility are also considered part of its yard track.[10] The IRR's yards (including the locomotive shop) contain a total of 18.59 miles of track. Details are shown in e-

[9] UP did not provide information in discovery as to the length of the Coal Wye tracks. IPA's experts estimate the route-miles for the longest of these tracks to be 1.25 miles.

[10] The layout for the locomotive facility is shown on page 7 of Exhibit III-B-2.

workpaper "Route & Track Miles Summaries (7_18_11).xls." As shown in Exhibit III-B-1, the yard tracks have 115-pound relay CWR.

3. Other

a. Joint Facilities

The IRR route has one joint facility that is owned by the IRR and used by the URC; this is the two-mile line segment between IPA's Springville car shop and the connection with the URC's tracks at Provo. The IRR steps into UP's shoes under its joint facility agreement with URC for this segment.

As noted above, the IRR replicates the UP/URC jointly operated line between Price and Provo; however, the IRR's traffic that moves over this line is entirely UP traffic. Accordingly, IPA has constructed the entire line between Price and Provo as part of the IRR rather than attempting to replicate each carrier's ownership/joint operations and share the traffic of both carriers that moves over this line. Thus the configuration of the Price-Provo line segment is designed for the IRR's traffic only.

b. Signal/Communications System

As described further in Part III-C, the IRR's main line segments between Castle Gate and W. Thistle (part of the Provo Subdivision) and between Lynndyl and Milford (Lynndyl Subdivision) are equipped with a CTC traffic control system, with powered switches that are controlled by centralized dispatchers located at the railroad's headquarters at Lynndyl. The IRR's other main line segments (Price to Castle Gate, W. Thistle to Provo and Provo to

Lynndyl) and the Pleasant Valley Branch are "dark" territory with operations controlled by track warrants issued by the dispatcher, including radio communication. Mainline turnouts (switches), including those connecting the main track and passing sidings in non-CTC territory and connecting the main track with the CV Spur and the IPP Industrial Lead, are power switches controlled by the locomotive engineers using remote-control equipment in the cabs of the road locomotives, which eliminates the need to hand-throw these switches. Power switches also are used for the yard lead tracks. Interior yard switches and set-out/MOW equipment storage track switches are hand-thrown.

Communications are conducted using a combined fiber optics and microwave system. Fiber optics are used where they are currently in place on the UP lines being replicated; microwave is used on the IRR's other lines. The microwave system, where used, includes towers at the same locations where UP currently has such facilities. All locomotives, train and yard crewmen, dispatchers and field supervisory personnel as well as hi-rail vehicles are equipped with radios connected to the fiber optics/microwave system. Certain employees also will be equipped with cellular telephones for emergency railroad use, as a back-up to the radios. Further details on the IRR's signal and communications system are provided in Part III-F-6 below.

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

All turnouts between the IRR's main tracks and passing sidings are No. 15 turnouts. This size turnout is used by UP on the lines replicated by the

IRR. Trains can operate through No. 15 turnouts at a speed of up to 30 mph, conditions permitting. No. 15 turnouts are also used for the connections to the IPP Industrial Lead, the Pleasant Valley Branch, the CV Spur, and the yard leads (except for the connection with the westerly yard lead at price Yard, which has a No. 20 turnout). No. 10 turnouts are used within yards and for setout and MOW equipment storage tracks.

FEDs, which include hot-bearing, dragging-equipment, cracked-wheel and wide/shifted load detection systems, have been spaced approximately every 25 miles along the IRR's route. The FED locations are shown in Exhibit III-B-1. Each FED is accompanied by a setout track located within three train lengths of the FED. As noted earlier, each such track is an 860-foot double-ended track (with 600 feet in the clear) to facilitate the setout of bad-order cars from trains operating in either direction. These tracks are used primarily for temporary storage of bad-order cars detected by the FEDs, as well as for temporary storage of work equipment.

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

III-C Operating Plan

III. C. STAND-ALONE RAILROAD OPERATING PLAN

The operating plan for the IRR was designed by Paul Reistrup. Mr. Reistrup is one of the nation's leading experts on rail operations, and is familiar with the rail operations involved in transporting coal from Utah mines and coal loadouts to IGS. In fact, as indicated in his Statement of Qualifications set forth in Part IV of IPA's Opening Evidence, Mr. Reistrup designed the track layout at IGS when it was constructed in the early 1980's and was involved in planning the railcar unloading facility at IGS. He also designed the track layout for IPA's railcar repair facility near Springville, UT, where the IPA trainsets used to move coal to IGS are maintained.

Mr. Reistrup's operating plan for the IRR enables the railroad to transport its peak-year traffic volume, including the trains moving on the system during the peak week of the peak year, in a manner that meets the transportation needs of its traffic group including all applicable UP transportation and service commitments to the customers in the IRR's traffic group. The operating plan is also utilized in developing the IRR's system track and yard configuration, as described in Part III-B of IPA's Opening Evidence, and it provides the basis for many of the IRR's annual operating expenses described in Part III-D.

The IRR's operating plan is designed to move the railroad's peak-year traffic efficiently over a system comprised of 257.15 miles of main lines and 36.13 miles of branch lines and industrial leads that serve coal mines/loadouts and

IGS.[1] As indicated in Part III-A-1, the IRR's peak traffic year is 2020, which is also the final year in the 10-year DCF period. The IRR's traffic group consists of coal, intermodal and general freight traffic that moves entirely in unit train or trainload service, in various flows over different parts of the system. The IRR will transport the following total traffic volumes in 2020:

TABLE III-C-1
IRR 2020 TRAFFIC VOLUME[1/]

	Cars/Containers	**Millions of Tons**
Coal		
Local	17,817	2.00
Interline Forwarded	39,919	4.37
Interline Received	26,564	2.90
Overhead	15,124	1.68
Subtotal[1]	99,424	10.95
Intermodal - Overhead	509,268	7.07
General Freight – Overhead	115,933	9.58
Total[2]	**724,625**	**27.61**

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

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

The IRR system is relatively small in geographic scope (278.67 route miles), and its traffic density is relatively low compared to that in other rate

[1] This includes the 8.9-mile IPP Industrial Lead that serves IGS (all but 0.19 miles of the IPP Industrial Lead are owned by IPA) and the privately-owned loop tracks at IGS and Savage Coal Terminal.

cases involving movements of coal from the Wyoming Powder River Basin. These factors make the IRR's operating plan relatively simple compared to the operating plans for the SARRs in other recent coal rate cases.

1. General Parameters

The IRR's operating plan reflects the service the IRR needs to provide to the customers in its traffic group. The IRR system is located entirely in Utah, and the railroad transports essentially two kinds of traffic: coal traffic that it originates and terminates or interlines with other carriers, and non-coal traffic (intermodal and other freight traffic) that is originated and terminated by other carriers and that the IRR handles in overhead service.[2] Trains moving overhead on the IRR system are transported intact, with no classification or switching activities performed at the interchange points except for the occasional switching of bad-order/repaired cars.

a. Traffic Flow and Interchange Points

The IRR's peak-year (2020) traffic volume consists of 10.95 million tons of coal traffic, 7.07 million tons of intermodal traffic, and 9.58 million tons of other freight traffic. There are essentially three kinds of traffic flows: (1) the IPA coal traffic moving from IRR-served Utah loadouts or the interchange with URC at Provo to IGS; (2) non-issue coal and other traffic moving between Price (the IRR's easterly terminus) and Provo or Milford, including coal traffic moving

[2] The IRR also handles a limited amount (approximately one million tons annually) of Colorado and Wyoming coal in overhead train service.

between the IRR-served loadouts and the UP interchanges at Provo and Milford; and (3) non-coal overhead traffic moving between Provo or Lynndyl and Milford. The peak-year (2020) traffic densities for the IRR's principal line segments are shown in Table III-C-2 below.

TABLE III-C-2
IRR 2020 TRAFFIC DENSITY BY LINE SEGMENT

Line Segment[1/]	Density (millions of gross tons per mile)
Savage to Price (CV Spur)	4.58
Price (CV Spur) to Colton	11.89[2/]
Colton to Provo	15.60[2/]
Provo to Sharp[3/]	11.97
Sharp to Lynndyl	15.56
Lynndyl to IPP Industrial Lead	39.06
IPP Industrial Lead to Milford	31.32
Pleasant Valley Branch (Skyline to Colton)	3.71

[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/] Includes BNSF trains operating between Price and Provo under a UP/BNSF trackage rights agreement.

[3/] Coal from the SUFCO mine destined to IGS and other destinations is transloaded from trucks to railcars at the Levan loadout located at Sharp, UT.

The IRR directly serves three coal origins (one coal mine and two coal loadouts) and one destination power plant (IGS). The IRR also originates coal traffic that is terminated by UP, and moves coal traffic that is originated and terminated by UP in overhead service. The overhead coal traffic is Colorado coal originated by UP and destined to power plants and industrial facilities in Nevada, California and Montana; and Wyoming coal destined to Nevada power plants. In addition, the IRR moves intermodal and general freight traffic in overhead service. This traffic is originated and terminated by UP at various locations.

The IRR moves trains to and from four points of interchange with two other carriers, UP and the URC. From east to west, these interchanges are located at Price,[3] Provo, Lynndyl and Milford. The IRR interchanges trains with UP at all four locations; it interchanges trains with the URC only at Provo. (As explained further below, the IRR and URC actually interchange coal trains at two locations in the vicinity of Provo.)

The IRR's operating plan accommodates the coal, intermodal and general freight trains moving over various parts of the IRR system during the peak one-week period in the peak traffic year (February 12 through February 18, 2020).[4] The trains that the IRR will transport during the peak week and corresponding study period for the RTC Model simulation of its operations (described below) are shown in Exhibit III-C-1.

The operating plan also reflects the IRR's relationship with the URC with respect to IPA and other coal traffic interchanged with that carrier. This

[3] "Price" is actually the point where the IRR main line connects with the CV Spur. In UP's operating timetable for the Green River Subdivision and in the peak train list for IPA's RTC Model simulation (Exhibit III-C-1), this interchange point is identified as "CV Spur."

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

relationship is based on UP's interchange and joint facility agreements with URC; the IRR steps into UP's shoes under these agreements.

URC and the IRR interchange loaded IPA coal trains on the "Coal Wye" tracks that connect the IRR's Provo and Sharp Subdivisions. (These tracks, also known as the Ironton crossover tracks, are shown in Exhibits III-B-1 and III-B-3.) The URC removes its locomotives from the train and the IRR puts its own locomotives on the train as part of the interchange process. In the empty direction, the IRR moves the IPA coal trains from the IGS to IPA's private car shop near Springville (located just south of Provo on the Sharp Subdivision), and removes its locomotives which then move to the N. Springville locomotive fueling/servicing facility. After the empty trains are inspected/serviced and reassembled by IPA personnel, the URC brings its locomotives and crew to the IPA car shop (using about two miles of IRR trackage), picks up the empty train, and moves it on to the URC-served origin loadout. Thus the IPA coal trains, whether loaded or empty, do not use the IRR's Provo Yard. The operation described above is consistent with the manner in which UP and URC interchange and operate the IPA coal trains in the real world.

b. <u>Track and Yard Facilities</u>

The IRR's track and yard facilities are described in Part III-B-2, and shown schematically in Exhibits III-B-1 and III-B-2.

The IRR's main tracks are constructed to a standard that allows for maximum train speeds of 60 mph, conditions (including gradient and curvature) permitting. Loaded coal trains are limited to a maximum speed of 50 mph on the main lines. All trains are limited to a maximum speed of 49 mph in non-CTC territory, 40 mph on the IPP Industrial Lead, 20 mph on the Pleasant Valley Branch, and 10 mph on the CV Spur. All tracks are being constructed to permit a maximum GWR of 286,000 pounds per car.

The portion of the IRR's Provo Subdivision main line between Milepost 630.40 at Castle Gate and Milepost 681.60 at W. Thistle, and the IRR's Lynndyl Subdivision main line between Lynndyl and Milford, are equipped with CTC and main-track power switches. The territory between Castle Gate and W. Thistle has heavy grades where the IRR main line crosses the Wasatch Mountains, and CTC enhances the safety of train operations in this area. CTC is needed between Lynndyl and Milford due to the relatively high frequency of train movements between these points. CTC is not needed on the remaining portions of the Provo and Green River Subdivisions, or on the Sharp Subdivision main line between Provo and Lynndyl, as these areas do not have the grades or high traffic volumes/train frequencies encountered on the main line segments with CTC. As described in Part III-B-4-b, engineer-controlled power switches are used for the turnouts connecting the non-CTC equipped main lines with passing sidings. Power switches are also used for the connections with the Pleasant Valley Branch, CV Spur and IPP Industrial Lead.

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

The IRR has one inspection/interchange yard at Provo and three small interchange yards at Price, Lynndyl and Milford, as described in Parts III-B-1-c and III-B-2. The activities at these yards are described in Part III-C-2-c-vii.

c. Trains and Equipment

i. Train Sizes

The IRR operates complete trains, including coal trains, intermodal trains, and general freight trains, in local and interline (including overhead) service. The IRR's train sizes are the same as those for the comparable UP trains operated in the most recent twelve-month period (1Q10 through 4Q10, also referred to as the "Base Year") for which UP produced usable train and car movement data.[5] Non-coal trains move exclusively in overhead service so they have the same cars (or mix of cars) as the comparable UP trains that moved between the same points in the Base Year. All trains have sufficient locomotives to provide a horsepower-to-trailing ton ratio that assures they are adequately powered to meet present contractual transit-time commitments and service

[5] The only exception to this is the IPA coal trains, which increased from 91 to 104 cars in early 2011.

requirements. This was confirmed by IPA's simulation of the IRR's operations using the RTC Model.

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

ii. **Locomotives**

The IRR requires a total of 16 locomotives to handle its peak-period traffic volume. The railroad has two types of locomotives: GE ES44-AC locomotives for road service and a EMD SW1500 locomotive for yard switching service. The numbers of locomotives required for each kind of service are shown in Table III-C-3 below. The IRR's road locomotive requirements take into account the need to equalize the locomotive power used in run-through service for the interline (including overhead) trains and a spare margin and peaking factor as described below.

TABLE III-C-3
IRR PEAK LOCOMOTIVE REQUIREMENTS

Type of Service	Number
Road – ES44-AC	15
Switch – SW1500	1
Total	**16**

(a) Road Locomotives

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

The "standard" road locomotive consist for the IRR's trains is three locomotives in a 2x1 distributed power ("DP") configuration. This configuration involves positioning two locomotives on the front of the train and one locomotive on the rear of the train (hence the "2x1" designation). The rear (DP) locomotive has no engineer and is remotely controlled by radio signals from the lead locomotive. The use of a DP locomotive configuration reduces the drawbar tension between cars and enables the same number of locomotives to haul heavier trains or the same size trains at higher speeds. DP locomotive configurations are now standard practice on UP for coal and many non-coal trains.

Most coal trains operating on the Provo and Green River Subdivisions are equipped with four road locomotives in a 2x2 DP configuration. A few heavy coal trains (a total of eight during the peak week used for the RTC Model simulation, discussed below) require at least one additional locomotive to negotiate the westbound grade toward Soldier Summit on the Provo Subdivision (for a total of five or six locomotives). The additional locomotive(s) is added to the train at Price or Provo (depending on the direction of movement), so these trains operate with a 3x2 or 3x3 DP configuration on the Green River and Provo Subdivisions. Adding the extra road locomotive(s) to these trains eliminates the need for a helper district in the Soldier Summit area.

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

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

Specifically, the locomotive spare margin is based on a UP spreadsheet produced in discovery entitled "UP Loco Utilization 2010.xlsx." This spreadsheet {

}. Using this information, a locomotive spare margin was developed and applied separately for coal, general freight and intermodal traffic types. The overall average locomotive spare margin for the IRR traffic, weighted on locomotive hours by traffic type, equals { } percent. The calculation of the IRR's locomotive spare margin is shown in e-workpaper "UP IRR Loco Utilization 2010.xlsx."

Peaking Factor. In addition to using the locomotive percent spare margin, IPA's experts determined the IRR's peak locomotive requirements by applying the methodology approved by the Board in *Public Serv. Co. Of Colorado d/b/a Xcel Energy v. Burlington N. and Santa Fe Ry.*, STB Docket No. 42057 (STB served Jan. 19, 2005) ("*Xcel II*"). In *Xcel II* at 13, the Board determined that the peaking factor is to be determined by dividing the average number of train starts per day in the peak week by the average number of train starts per day in the peak year. Applying this procedure, the IRR locomotive peaking factor equals 1.185. *See* e-workpaper "IRR peaking factor.xls."

(b) Switch/Work Train Locomotives

The IRR uses an EMD SW1500 locomotive for switching service at Provo Yard. This type of locomotive is commonly used by Class I and other railroads for such service.

A maximum of one train per day requires inspection (and thus possible switching of bad-order and spare cars) at the IRR's Provo Yard, which is the railroad's only yard where 1,500-mile inspections are performed. This low volume means that only one SW1500 locomotive is needed for switch service at Provo Yard. When this locomotive requires 92-day inspection or repairs, a spare road locomotive is used temporarily for switching.[6] Locomotive inspections and repairs are performed at the IRR's locomotive facility which is located a short distance from the IRR's Provo Yard.

[6] Spare road locomotives are also used for work-train service when needed.

The IRR has a single, one-person, 24/7 switch crew assignment (with 12-hour shifts) at Provo. A one-person switch crew is feasible because the crewman is equipped with a remote control "belt pack" so that the movement of the switch locomotive can be controlled from the ground.[7] The crewman thus can throw internal yard hand switches while on the ground, without having to dismount from the locomotive.

iii. <u>Railcars</u>

Car ownership for the IRR traffic group was determined from the shipment data produced by UP in discovery. This data shows that most of the IRR's coal and general freight traffic moves in shipper-provided equipment and that nearly all of its intermodal traffic moves in shipper-provided containers and trailers. Table III-C-4 below summarizes the ownership of railcars and intermodal units for each traffic type.

TABLE III-C-4
PERCENTAGE OF CAR OWNERSHIP BY TRAFFIC TYPE

Traffic Type	System	Foreign	Private
Coal	31.4%	0.1%	68.6%
General Freight	21.9%	14.8%	63.3%
Containers & Trailers	12.9%	--	57.4%
Intermodal Flats	100%	0.0%	0.0%
Multi-level Flats (Auto)	31.4%	68.1%	0.4%

[7] This technology is now commonly used by real-world railroads, including UP for switching operations in its yards at Salt Lake City and Provo.

The IRR system car requirements for all of the movements in its traffic group were developed based on the peak-year traffic and the simulated transit-time output from the RTC Model. The resulting IRR car requirements were increased by a 5.0 percent spare margin[8] and the 1.185 peaking factor described earlier. A complete description of the development of car ownership costs for system, foreign and private cars is set forth in Part III-D-2 below.

2. **Cycle Times and Capacity**

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

> need not match existing operating practices of the defendant railroad, as the objective of the SAC test is to determine what it would cost to provide the service with optimal efficiency. However, the assumptions used in

[8] The 5.0 percent spare margin is the same margin used by both parties in the pending AEPCO case (*Arizona Elec. Power Coop., Inc. v. BNSF Ry. and Union Pacific R.R.*, STB Docket No. 42113 ("*AEPCO*")), which was based on a review of transportation contracts provided by UP and BNSF in discovery in that proceeding. *See* AEPCO's Opening Evidence (Public Version) in Docket. No. 42113 filed January 25, 2010 at III-C-15 and AEPCO's Rebuttal Evidence (Public Version) in Docket No. 42113 filed July 1, 2010 at III-C-16. In addition, the 5.0 percent spare margin for shipper-provided cars was accepted by the Board in *WFA I* at 39 and *Otter Tail Power Co. v. BNSF Ry.*, STB Docket No. 42071 (STB served Jan. 27, 2006) ("*Otter Tail*") at C-5, and was also based on the transportation contracts produced in discovery in those proceedings. The transportation contracts produced by UP in this proceeding do not specify spare margin requirements and therefore cannot be used to demonstrate common industry practice. Accordingly, IPA is relying on public information of common industry practice concerning the railcar spare margin from other western coal rate cases as described above.

> the SAC analysis, including the operating plan, must be realistic, i.e., consistent with the underlying realities of real-world railroading.

WFA I at 15.

In recent SAC rate cases, the complainant has demonstrated that its SARR can provide service to its traffic group members that meets its customers' requirements by showing that the SARR's train transit or cycle times during the peak week of the peak year are no higher than the defendant's actual cycle and transit times during the comparable week of the most recent year for which data is available. The Board has approved use of the RTC Model for this purpose,[9] and it is so employed by IPA in this case.

a. Procedure Used to Determine the <u>IRR's Configuration and Capacity</u>

The starting point for the IRR capacity analysis is the IRR's peak-year traffic volume and its peak train counts during the 10-year DCF period. These were developed by IPA Witness Daniel Fapp from UP train/car movement data produced in discovery for the traffic included in the IRR's traffic group for the Base Year (1Q10 through 4Q10), which is the most recent 12-month period for which usable train and car event data is available. In developing the peak traffic volume and train movements, Mr. Fapp also used the traffic forecast procedures described in Part III-A-2 above.

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[9] *See WFA I* at 15.

The IRR's system (track configuration and other facilities including yards), and its operating plan, were developed primarily by IPA Witness Reistrup to accommodate the IRR's peak seven-day traffic volume and train frequencies. Mr. Reistrup is familiar with the rail lines in issue and designed the track layout at IGS and at IPA's railcar maintenance facility at Springville, UT. To refresh his recollection and observe UP's current facilities and operations on the lines replicated by the IRR, in April of 2011 Mr. Reistrup conducted a three-day field trip in which he inspected most of these lines and facilities, including the coal loadouts served by the IRR, the UP yard and UP/URC interchange facilities at Provo, and the IPA facilities at Springville and IGS. He also observed UP train operations over these lines including coal-train loading and unloading procedures.[10] In addition, Mr. Reistrup reviewed the UP operating timetables and track charts for the lines being replicated,[11] as well as maps of various facilities, and UP's interrogatory responses describing the operation of the IPA coal trains. He then developed a preliminary track configuration for the IRR, starting with UP's present main-track/passing siding configuration for the Sharp and Lynndyl Subdivisions and a single main track with strategically-placed passing sidings for the Provo Subdivision, as well as the IRR's operating plan.

[10] Mr. Reistrup's notes on his field trip are reproduced in Part III-C e-workpaper "Reistrup field trip.pdf."

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

The essential elements of the operating plan (described below), the main-track configuration, and the yard and interchange locations, as developed by Mr. Reistrup, were provided to IPA Witnesses Timothy Crowley and William Humphrey for input into the RTC Model. Messrs. Crowley and Humphrey also input various physical characteristics for the lines in issue, which were obtained from UP track charts, operating timetables and other information produced by UP in discovery. These included train speed restrictions at various locations, electronic curve and grade (topography) data, and turnout (switch) locations and types. The final steps were to populate the RTC Model with the IRR's trains during the simulation period, which includes the peak volume week in the IRR's 10-year DCF existence, and input random "outage" events.

b. Development of Peak-Period Trains

The IRR's trains moving during the peak-seven day period in the IRR's 10-year DCF life are based on the UP trains carrying traffic in the IRR's traffic group that moved during the peak week of the Base Year. The peak week was developed based on the peak volume of loaded trains selected for inclusion in the IRR's traffic group. The peak week train list was developed from UP train and car movement data provided in discovery for the Base Year, and from invoices issued by UP to BNSF for trackage rights trains moving between Price (CV Spur) and Provo.

Specifically, Mr. Fapp and his staff determined the number of IRR trains that would transport the coal, intermodal and general freight traffic included in the IRR's traffic group in 2020, which is the peak volume year during the DCF period. They did this by applying the percentage increase in the IRR's traffic from the Base Year to 2020 for each movement in the Base Year train data provided by UP in discovery to determine the number of additional trains required to move the additional traffic.[12] Mr. Fapp then added sufficient average Base Year trains to accommodate the growth in cars/containers in each IRR corridor. The "growth" trains thus developed were added to the trains that moved during the Base Year.

The results of this procedure established that the IRR's peak traffic week in the peak year is February 12 to February 18, 2020.

Based on the probable transit and train cycle times for a railroad the size of the IRR, Mr. Fapp and his staff also developed the IRR's peak-period trains operating over its lines during a two-day warm-up period (used to populate the RTC Model with trains) and a one-day cool-down period, in addition to the peak week.[13] The study period used in the RTC simulation thus covers a total of 10 days, from February 10 to February 19, 2020. A total of 269 trains were dispatched during this period, of which 193 were dispatched in the peak week and

[12] It should be noted that the UP Base Year train data for the IPA coal trains was updated to reflect more current information. In 2010 the average IPA coal train size was 91 cars; it has been 104 cars since the beginning of 2011. The 104-car train size was used for the RTC Model simulation.

[13] A two-day warm-up period was selected because, on the basis of UP's train movement records, it was apparent that the maximum time any train would normally spend on the IRR would be less than two days.

completed their runs by the end of the simulation period. The study period trains are shown in Exhibit III-C-1.

After populating the RTC Model with the study period trains. Messrs. Crowley and Humphrey ran the trains through the Model using the track/yard configuration and operating inputs developed by Mr. Reistrup, as described in the next section below.

c. Operating Inputs to the RTC Model

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

i. Road locomotives – Most trains have three ES44-AC locomotives in a 2x1 DP configuration. Most coal trains operating on the Provo and Green River Subdivisions have four such locomotives in a 2x2 DP configuration, with a few trains requiring five or six locomotives in a 3x2 or 3x3 DP configuration.

ii. Train sizes and weight – The actual size and trailing weight for each UP train carrying traffic in the IRR traffic group in the Base Year is used. Growth trains replicate trains that moved in the Base Year. The maximum train size is 175 cars and the maximum number of locomotives per train is eight.

iii. Maximum train speeds – 60 mph for all trains in CTC territory except 50 mph for loaded coal trains on the main lines (conditions permitting); 49 mph for all trains in non-CTC territory; 20 mph on the Pleasant Valley Branch; 10 mph on the CV Spur; and 40 mph on the IPP Industrial Lead.

iv. Dwell time allotted for coal trains at IGS – 3.0 hours.

v. Dwell times at the three IRR-served origin mines/loadouts (Skyline Mine, the Savage Coal Terminal, and the Sharp loadout) – 3.0 hours.

vi. Dwell time at yards – 3 hours for eastbound coal trains requiring inspection and fueling at Provo; 30 minutes for interchange for trains that do not require inspection/fueling except 45 minutes for interchanging loaded coal trains between URC and the IRR to permit locomotives to be exchanged. (Upon return of the empty coal trains from the IRR to URC the time involved also exceeds 30 minutes, but this is treated as discussed at footnote 19, *supra.*) In addition, at Provo 20 minutes are allotted to add locomotives and 15 minutes are added to remove locomotives on certain IRR cross-over trains that operate with extra locomotives while on the UP system.

vii. Crew-change time at crew-change points other than yards and interchange points – 15 minutes. (Crew Districts are discussed below.)

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

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

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

i. <u>Road Locomotive Consists</u>

The locomotive consists and requirements for the IRR's trains are described in Part III-C-1-c-ii above. The RTC simulation shows that most coal trains can operate on the IRR system (except for the mountainous portion of the Provo Subdivision) with three ES44-AC locomotives in a 2x1 DP configuration. Four such locomotives in a 2x2 DP configuration are used for most coal trains operating on the Provo Subdivision, including trains operating to/from Price, with a few coal trains requiring one or more additional locomotives. The additional locomotives are placed on the train at Provo and removed at Price, or vice versa, in the case of trains operating between Provo and the UP interchange at Price. For coal trains operating on the IRR to Skyline Mine or the Savage Coal Terminal, the additional locomotive(s) are placed on the empty train at Provo and removed from the loaded train at Provo.

All of the IRR's non-coal trains operate on the IRR in overhead service. For purposes of the RTC simulation, each non-coal train is assumed to have a number of ES44-AC road locomotives sufficient to equal the total horsepower on the train when received at the IRR on-junction as shown in UP's Base Year train movement records. Locomotives that are not needed to move the trains over the IRR are isolated (essentially shut down so that they are not contributing power for movement of the train) while they are on the IRR system.

ii. <u>Train Size and Weight</u>

The forecast (2020) trains in the RTC Model simulation are based on the corresponding "actual" Base Year trains described in Part III-C-1-c above. The maximum train size is 175 cars and the maximum number of active locomotives on any IRR train is eight.[14] All growth trains (trains carrying additional tonnage that did not move in the Base Year) are limited to the size and weight for the corresponding Base Year trains, with the locomotive consists sized

[14] One BNSF trackage rights train has eight active locomotives. For purposes of the RTC simulation, IRR trains are assumed to have the same number of locomotives as the corresponding Base Year trains as indicated by UP's train movement data, in a DP configuration, except that any train having five or more locomotives is assumed to have the number of ES44-AC road locomotives needed to provide the same total horsepower the Base Year train had since UP's train movement data does not reveal which locomotive type(s) were on the train.

to provide the appropriate total horsepower based on the use of ES44-AC locomotives.

iii. Maximum Train Speeds

The maximum permissible mainline train speeds input into the RTC Model are as follows:

1. In CTC territory: 60 mph for all trains except loaded coal trains, which are limited to a maximum speed of 50 mph.
2. In non-CTC ("dark") territory: 49 mph for all trains.
3. On branches and industrial leads: 40 mph on the IPP Industrial Lead, 20 mph on the Pleasant Valley Branch, and 10 mph on the CV Spur.

These maximum speeds are consistent with UP's operating timetables and real-world practice for the main lines being replicated by the IRR, as well as for the Pleasant Valley Branch.

Maximum train speeds are reduced below those specified above where a speed restriction is required by UP's operating timetables, or when needed to operate through a turnout (for example, the IRR has #15 turnouts for the connections between the mainline and passing sidings; trains are limited to a maximum speed of 30 mph when using these turnouts). These restrictions exist for safety reasons (such as to maintain a safe braking distance), to reduce track wear in curves, to comply with FRA restrictions regarding the movement of hazardous materials, and to avoid high-speed gauge separation on curves exceeding three (3) degrees. In addition, trains do not reach maximum authorized speed in many areas (particularly east of Provo) due to grades and curves. All of these restrictions and limitations have been incorporated into the RTC Model for application to the IRR's peak-period operations.

iv. Dwell Time at IGS

The IRR directly serves and delivers coal trains to one power plant, IGS. The train dwell time allotted at IGS is 3.0 hours. IPA's trainsets consist of rapid-discharge (air dump) railcars and IGS has a rapid-discharge coal unloading facility. This permits coal to be unloaded from each railcar significantly faster than from rotary-dump cars. During Mr. Reistrup's site visit to IGS in April 2011, IPA plant personnel advised him that the actual coal unloading process normally takes 1.5 hours per train, except when cars contain frozen coal in the winter months, in which event the trains are operated twice around the loop and through a car shaker to loosen and then unload residual frozen coal. Even then, unloading a train takes three hours or less. Mr. Reistrup thus has allotted 3.0 hours of dwell time at IGS for all trains, which should provide sufficient time to unload frozen coal when it is present.

v. Dwell Times at Mines and Other Origins

The IRR directly serves and originates coal trains at one coal mine and two coal loadouts in Utah. These origins include Skyline Mine, the Savage Coal Terminal, and the Sharp loadout. Mr. Reistrup allotted three hours of train dwell time at each origin, which is consistent with actual experience at these facilities. The maximum loading free time at these origins is three hours, as specified in UP Circular 66-2-C, Item 340-D, which contains rules pertaining to the loading of coal trains at Utah mine origins and loadouts.

vi. Dwell Times at Yards

Dwell times have been allotted for trains at the IRR's yards based on the kinds of activities performed there. At Provo Yard, these activities include 1500-mile car inspections and associated bad-order car switching, removal of locomotives for fueling/servicing and 92-day inspections or repairs as needed, crew changes, and interchange with UP. At the IRR's other three yards (located at Price, Lynndyl and Milford), the only activity performed is interchange with UP.

Provo Yard. All eastbound coal trains destined for loading on the IRR or URC in Utah and received in interchange from UP at Provo receive a 1,500-mile inspection at Provo Yard.[15] The locomotives on these trains are also removed and moved to the IRR's N. Springville locomotive facility for fueling and servicing (as well as 92-day inspections) when needed.[16] The same or other locomotives are returned to the train when the inspection process has been completed at Provo Yard. Other trains moving through Provo Yard, including loaded Utah coal trains, coal trains moving to/from origins in Colorado, and all non-coal trains, do not require inspection or locomotive fueling while on the IRR.

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[15] This does not include eastbound empty IPA coal trains or coal trains received in interchange from UP at Milford. These trains are discussed later in the text.

[16] The IRR's N. Springville locomotive facility is shown on page 7 of Exhibit III-B-2. It is located near IPA's Springville car repair facility.

These functions are performed on the residual UP at (for example) Salt Lake City, Grand Junction, CO or Denver.

Three hours of dwell time have been allotted for 1,500-mile inspection and locomotive removal/addition on the trains that require these services at Provo Yard. This includes two hours for inspection/fueling, and one hour for any bad order/spare car switching. It also includes time for removing locomotives requiring 92-day inspections or other maintenance and replacing them with fresh locomotives (when this occurs the locomotives are inspected and repaired at the IRR's locomotive facility, which is located a short distance from Provo Yard at N. Springville). The westbound coal trains (and all non-coal trains) interchanged between the IRR and UP dwell at Provo Yard for 30 minutes, which is the normal interchange time allotment.

Other interchange procedures in the Provo area. Coal and other trains moving between the Provo Subdivision and Lynndyl or beyond (including IPA trains) do not move through Provo Yard, but rather use the Coal Wye tracks which connect the Provo and Sharp Subdivisions (see Exhibit III-B-2). Loaded (westbound) trains that originate on the URC are interchanged between the URC and IRR on the Coal Wye tracks. Consistent with the real-world arrangement between UP and the URC, the locomotives on these trains are not run-through. Rather, the inbound URC crew removes the URC locomotives from these trains at the interchange point and takes them to URC's Provo Yard (located west of the Provo Subdivision main line). The outbound IRR crew brings three locomotives from the IRR's nearby N. Springville locomotive facility and places them on the train in a 2x1 DP configuration. In order to accomplish this, activate the DP unit and perform an air test, a total of 45 minutes have been allotted at Provo for the interchange procedure.

Empty IPA coal trains and other empty coal trains received in interchange from UP at Milford and destined for loading at points on the URC are interchanged with URC at IPA's Springville car shop, where they undergo inspection and bad-order/spare switching (as well as repairs) by IPA personnel. Other empty coal trains received by the IRR at Milford and destined for loading at IRR-served origins in Utah also stop at the IPA car shop for inspection when necessary, as well as associated switching and repairs. This enables the IRR to improve the efficiency of its operations by keeping these trains out of Provo Yard (which would require a reverse movement) and enabling it to consolidate all locomotive fueling, inspection and maintenance at its N. Springville locomotive facility. A total of three hours of dwell time have been allotted for inspection and locomotive fueling of the non-IPA empty coal trains at the IPA car shop.[17] After

[17] While the non-IPA coal trains are interchanged with the URC at the IPA's Springville car repair facility, there is no interchange of the same train in the case of IPA coal trains. The inbound IRR crew brings the empty train to the car shop and drops it off (and then moves the locomotives the short distance to the adjacent N. Springville locomotive facility). The empty cars are inspected and serviced by IPA personnel, with at least 12 IPA cars removed from each train and 12 different cars inserted. A URC crew subsequently brings URC locomotives to the Springville car shop and picks up the new train (which has been assembled by IPA personnel) for movement to the coal origin via the Coal Wye tracks. These trains are treated as terminating and then originating at the Springville car shop.

the inspection and associated switching have been completed, either the IRR or the URC (depending on which carrier handles the trains east of Provo) picks up the trains for movement to the origin loadout.

A maximum of two empty coal trains per day (including both IPA and non-IPA trains) will move through the Springville car repair facility during the IRR's peak traffic week. According to IPA Witness John Aguilar, who is IPA's Coal Transportation Manager, the Springville car repair facility (whose trackage was recently expanded to accommodate longer trains) has the capacity to inspect and switch (for bad-orders and spares) four trains per day. Thus the facility can easily accommodate the IRR's two trains (maximum) per day. IPA currently inspects and repairs coal cars for third parties, including { }, and will charge the IRR the same hourly fee that it charges other third parties for performing these services.

Interchange Yards. Thirty minutes of dwell time have been allotted at the IRR's interchange yards at Price, Lynndyl and Milford, where no other activities are performed. All that is required for the interchange of run-through trains is a change of crews, a brake set/release and a roll-by inspection, which can easily be accomplished within 30 minutes.[18] Thirty minutes of SARR interchange time were accepted by the Board in the *WFA* and *AEP Texas* cases.

[18] Trains interchanged with UP at Provo that move to/from the Sharp Subdivision must reverse direction when they move out of Provo Yard, and empty coal trains received in interchange from UP at Price that move to the Savage Coal Terminal for loading also reverse direction at the Price Yard. However, since all

vii. Crew-Change Locations/Times

Road Crews. The IRR's crew changes normally take place at Price, Provo (including Provo Yard, the Coal Wye tracks and the IPA car shop), the Sharp loadout, Lynndyl, Milford, or IGS. There is ample time to change crews during the performance of other functions at these locations.

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

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

1. Crews based at Milford (or Lynndyl) operate coal trains in straightaway service to Skyline Mine, Savage Coal Terminal or the UP interchange at Price. These crews operate in straightaway service back to their home terminal after receiving their minimum rest under FRA rules.[19]

IRR trains use a DP locomotive configuration with at least one locomotive on each end of the train, the outbound crew simply boards the locomotive at the opposite end of the train from the locomotive on which the inbound crew arrived. Thus there is no need to increase the standard 30-minute interchange dwell time for these trains at Provo or Price.

[19] The RTC Model simulation indicates that a single crew can operate coal trains between the Price interchange, Savage Coal Terminal or Skyline Mine to IGS or Milford (and vice versa) in a single tour of duty; in other words these trains do not require a change of crews at Provo. For 11 trains in the peak period the

2. Crews based at Provo operate in straightaway service to Skyline Mine, Savage Coal Terminal or the UP interchange at Price. These crews operate in straightaway service back to their home terminal after receiving their minimum rest under FRA rules.

3. Crews based at Provo (home terminal) operate in straightaway service to IGS or the UP interchange at Milford. These crews operate in straightaway service back to their home terminal after receiving their minimum rest under FRA rules, except that such a crew occasionally takes an empty coal train to the Sharp loadout and terminates its run there.

4. Crews based at Provo (home terminal) operate in turn service to the Sharp loadout and return to Provo, or to Skyline Mine and return to Provo. If no train is available within a reasonable period for the return trip from Sharp or Skyline, the crew is taxied back to its Provo base.

5. Crews based at Sharp (Levan) operate in turn service from the Sharp loadout to IGS and return to Sharp or to the IPA car shop at Springville.

6. Crews based at Milford operate in turn service from the Milford interchange with UP to the UP interchange at Lynndyl and return. If a shift expires while a crew is at Lynndyl (or en route from Lynndyl to Milford), the crew is taxied back to its Milford base.

7. Crews based at Price operate in turn service to the Savage coal loadout and return. These crews move empty coal trains received in interchange from UP at the Price interchange facility to Savage and return with the loaded train for interchange back to UP at Price.

These crew districts and assignments reflect the IRR's ability, as a start-up railroad, to operate in a manner that is not constrained by prior mergers and/or union work rules that limit a Class I railroad's ability to maximize the efficiency of its crew assignments. This gives the IRR much more flexibility in

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crew's on-duty time expires under the hours of service law, requiring a re-crew and taxi expense.

scheduling crews and maximizing their use within the constraints of the federal "12-hour" (Hours of Service) law, as amended by the Rail Safety Improvement Act of 2008 ("RSIA"). The RTC simulation confirms that the distance for each crew assignment, as well as the allotted time at mines or other points served by turn crews, can generally be covered by a single tour of duty including an allowance of one hour for crew preparation/taxi time. To the extent a crew's tour of duty expires under the Hours of Service law, it is taxied to its next terminal and the cost of the taxi service is included in the IRR's annual operating expenses as described in Part III-D.

viii. Track Inspections and Maintenance Windows

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

FRA rules require twice-weekly inspections for Class 4 track, which is the classification for the IRR's main tracks. As described in Part III-D-4 (which addresses maintenance-of-way costs), the IRR's main lines are inspected twice a week by the railroad's Assistant Roadmasters using hi-rail vehicles (pickup-type vehicles equipped with retractable flanged wheels so they can operate either on highways or on railroad tracks).[20] These inspections of course have to be

[20] The Pleasant Valley Branch and CV Spur are Class II track, and thus inspected once a week.

performed during the peak traffic (RTC simulation) period. However, they can be performed between train movements, and if necessary the hi-rail vehicle can follow a train on the same block with the dispatcher's approval. Accordingly, there is no need to allot separate time for FRA-prescribed track inspections in the RTC Model.

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

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

Random events that affect track, signals and equipment (operations) could be expected to occur occasionally during the IRR's peak traffic period used for the RTC simulation (although not with the frequency that they occur on the replicated UP lines since the IRR starts operations in 2011 with brand-new track, facilities and equipment, including rolling stock).

There is, of course, no way to know what events affecting train operations will occur during the 2020 RTC simulation period. However, IPA requested information from UP in discovery on events of an unexpected or "random" nature that affected train operations on the lines being replicated by the IRR in 2010, including train-related, track-related and signal-related events. The outage information provided by UP indicated that two random outages occurred on those lines during the period in 2010 comparable to the 2020 RTC simulation period (February 10 to 19).[21]

One outage involved a {

}. The incident decoder for this event describes it as follows:

{

} On the basis of these facts,

{ } Mr. Reistrup conservatively instructed Messrs. Crowley and Humphrey to include this outage as an input to the RTC Model, and to assume (in the absence of better information) that {

}.

[21] These outages, as reproduced from the 2010 outage spreadsheet that UP provided in discovery, are shown in e-workpaper "IPA_Discovery_Incidents-RTC Modeling Period.pdf."

The second outage involved {

} The duration of this event is listed as { } hours. Mr. Reistrup instructed Messrs. Crowley and Humphrey to include this outage and to assume the train { }.

d. Results of the RTC Simulation

After inputting the IRR's track and other relevant facilities, peak-period trains and operating parameters (including the random outages described above) into the RTC Model, the model runs began. During the modeling process several changes were made to the IRR's initial track configuration, in particular the relocation or removal of certain passing sidings and changes to the configuration of yards and interchange tracks. With these refinements, the Model ran to a successful conclusion.

The key outputs generated by the RTC Model were elapsed train running times over the IRR's line segments, and train cycle and transit times (used to develop locomotive and car hours and train-crew counts) over the portion of the IRR system used by each train during the peak seven days of the 10-day period modeled by Messrs. Crowley and Humphrey. A schematic diagram of the IRR's tracks as they appear in the RTC Model is attached as Exhibit III-C-2. The electronic files containing the RTC Model runs, output and case files are included in IPA's Part III-C e-workpaper folder "RTC."[22]

The RTC Model simulation demonstrates that the IRR's system configuration and operating plan are feasible, and that the IRR's operations in the peak period of the peak year meet its customers' requirements. Specifically, the average train transit times produced by the RTC simulation have been compared with UP's average train transit times for all of the IRR traffic flows during the 2010 Base Year, based on train movement data produced in discovery. The UP and IRR transit-time comparisons for the IRR's principal coal and non-coal traffic flows are shown in Exhibit III-C-3. Further details on a train-by-train basis are shown in e-workpapers "IRR Elapsed Travel Time Peak Period.xls" and "Base Year UP Non-Coal Transit Times.xls."

Exhibit III-C-3 shows that the IRR's 2020 peak-period train transit times for train movements over the various IRR line segments are faster than the real-world UP cycle times for the comparable trains during the 2010 Base Year.[23]

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[22] The Board is a licensee of the RTC Model, so the computer software is not being provided to the Board by IPA. Messrs. Crowley and Humphrey used Version RTC 2.70 L60F of the Model for the simulation of the IRR's peak-period operations presented in e-workpaper folder "RTC."

[23] The IRR's average transit time for one movement (empty coal trains moving from IGS to Sharp, shown in line 4 of Exhibit III-C-3) is shown as being { } hours longer than UP's average transit time. However, the UP traffic data does not consistently show train arrival and departure times at the IGS plant itself, but rather arrival and departure times at Lynndyl. The distance from IGS to Sharp is about ten miles greater than the distance from Lynndyl to Sharp. If the comparison could be made from IGS to Sharp rather than Lynndyl to Sharp, the

This is a higher standard than that used by railroads in the real world.[24] In any event, the transit-time comparisons demonstrate that the IRR can provide service commensurate with its customers' requirements.

3. **Other**

a. **Rerouted Traffic**

The IRR's traffic group does not include any traffic that has been re-routed from its real-world route of movement.

b. **Fueling of Locomotives**

As described earlier, the IRR re-fuels the road locomotives on coal trains that pass through Provo Yard in the eastbound direction, as needed.[25] DTL

IRR's average transit time from the RTC Model clearly would be shorter than the average UP transit time for this movement also.

The IRR average transit times shown in Exhibit III-C-3 do not include dwell time at new interchange points for cross-over traffic, such as Lynndyl in the case of non-coal overhead traffic moving between Lynndyl and Milford (Milford is a UP crew change point so trains dwell at Milford in the real world as well as on the IRR). However, if the 30 minutes of train dwell time allotted at new interchange points such as Lynndyl were added to the IRRs' average transit times, the net result would still be the same: the IRR's transit times are lower than the real-world UP's transit times.

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

fueling is performed by a contractor. The locomotives on eastbound coal trains operating via the Sharp Subdivision to destinations east of Provo (including coal trains interchanged to the URC) are DTL-fueled either at the IPA car repair facility or at the IRR's N. Springville locomotive facility if the locomotives are removed from the train at the car shop. The switch locomotive stationed at Provo Yard is also fueled by DTL service.

The only IRR trains that do not pass through Provo are (1) coal trains that originate at Sharp and move to IGS or the UP interchange at Milford, and (2) non-coal trains moving in overhead service between Lynndyl and Milford. The road locomotives on these trains are fueled while on UP, at locations such as Salt Lake City or Barstow, CA, and do not need to be fueled while on the IRR.

c. **<u>Car Inspections</u>**

i. **<u>Inspection Locations</u>**

As described above, the IRR conducts 1,500-mile inspections of eastbound empty coal trains received in interchange from UP at Provo at the IRR's Provo Yard. Other trains interchanged to UP at Provo are inspected while on UP and do not require inspection while on the IRR. Empty coal trains moving via the Sharp Subdivision to loading points on the IRR are inspected at IPA's Springville

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[25] The locomotives on these trains do not need to be fueled in the westbound direction. Each IPA coal train can make several round trips between refuelings. Westbound coal trains (and all non-coal trains) are re-fueled while on the residual UP.

car repair facility, by IPA personnel.[26] IPA charges the IRR for performing this service.

ii. Inspection Procedures

The IRR conducts 1,500-mile inspections of eastbound coal trains at Provo Yard using state-of-the-art procedures, while complying at all times with FRA-mandated safety and inspection rules.[27] It has one "standby" four-person inspection crew, with one crew member serving as foreman, on duty at Provo Yard to perform inspections as needed, subject to two hours' notice. This staffing is sufficient as a maximum of only one train per day requires inspection at Provo Yard.

Gravel roadways are provided on each side of the Provo Yard relay track where inspections are performed. The inspection crew is equipped with four low-slung, four-wheel ATV-type vehicles from which the inspectors can inspect cars at wheel/truck/air hose level which minimizes the need to dismount from the vehicle. The vehicles carry spare parts, such as brake shoes and air hoses. Some parts are also placed periodically adjacent to the rails on the inspection tracks for ready availability. Coupler knuckles are rarely replaced during 1,500-mile inspections and can be transported to a specific car needing a knuckle by a

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[26] The IPA coal trains are able to make several round trips between inspections, as the maximum distance such trains travel in each direction is only 200 miles (the distance between Savage Coal Terminal and IGS).

[27] As described earlier, IRR coal trains that do not move through Provo Yard are inspected by IPA personnel at IPA's Springville car repair facility.

company pick-up truck as needed. One car inspector, each with an ATV, is placed on each side of the train at the front of the train and one inspector (again each with an ATV) is placed on each side of the train at the rear. The inspectors meet in the middle as the inspection progresses.

As described earlier, three hours of dwell time have been allotted at Provo Yard for all eastbound trains for inspection and other functions, including removal of locomotives and switching of bad order and spare railcars. This time allotment is conservative given the deployment of the four-person inspection crew described above (a train can normally be inspected in less than two hours). The additional hour allows time to remove bad-ordered cars from trains and insert spare/repaired cars and remove/replace locomotives as necessary.[28]

d. Train Control and Communications

i. CTC/Communications System

The facilities reflected in the IRR's operating plan include a Centralized Traffic Control ("CTC") system covering the main lines between Castle Gate and W. Thistle on the Provo Subdivision and between Lynndyl and Milford. This system includes remotely controlled power switches for all main-track crossovers, between single main tracks and passing sidings, and between main tracks and yard/interchange track leads, with appropriately-spaced wayside signals. Trains can operate in either direction on any track covered by the CTC

[28] FRA "blue flag" rules prohibit the switching of cars into or out of a train while inspections are being performed.

system, which provides maximum flexibility and capacity. The IRR's other main lines, including the balance of the Provo Subdivision, the Green River Subdivision, and the Sharp Subdivision, are "dark" although their mainline switches are remotely controlled by the locomotive engineer.

All IRR train operations are controlled by a centralized dispatcher located in the IRR's headquarters building at Lynndyl. This includes the non-CTC portions of the main lines and the Pleasant Valley Branch, CV Spur and IRR-owned portion of the IPP Industrial Lead, which also do not have CTC. The centralized dispatcher controls train operations on the dark portions of the railroad by means of radio communications and track warrants.

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

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

ii. Dispatching Districts

The IRR's dispatchers are stationed at its Lynndyl headquarters. Given the IRR's relatively short length (about 279 route miles) and low traffic volume compared to other SARRs that originate coal traffic in the Powder River Basin, the IRR requires a single dispatching district or "desk" which is manned by one dispatcher three shifts per day, seven days per week. This desk is responsible for dispatching trains, inspection vehicles and work equipment on the IRR system.

A single dispatching position should have no problem handling the IRR's train movements. The entire IRR system is no longer than some crew districts on Class I railroads, and the IRR's operations are highly repetitive. It moves only complete trains with no intermediate switching (pick-ups or set-outs), no local or wayfreight trains, and no passenger or commuter trains. It also uses modern, computer-aided train control technology and communications. Such computer-assisted dispatching technology greatly facilitates the work of the dispatcher.

iii. PTC Implementation Under RSIA

Under the Rail Safety and Improvement Act of 2008, commonly known as RSIA, Class I rail carriers are directed to equip trains that operate over lines that carry regularly scheduled intercity or commuter rail passenger trains and certain hazardous materials (as defined in DOT regulations) with positive train control ("PTC") systems by December 31, 2015. This is halfway through the 10-

year DCF period for this case. However, the IRR is a Class II railroad based on its annual revenue, and it does not carry any intercity passenger or commuter trains. Accordingly, although the IRR's traffic group includes some commodities that would otherwise require a PTC system, the IRR does not need to equip itself for PTC compliance.

However, the IRR's road locomotives will operate in run-through service over UP lines that carry passenger trains and hazardous materials, and thus are subject to RISA's PTC requirements. It is likely that an IRR locomotive will occasionally be the lead locomotive on such trains while on UP lines. Thus the IRR's road locomotives must have PTC interoperability with UP's locomotives when they are on UP lines, which means they must be equipped with onboard PTC apparatus that is compatible with the PTC apparatus on UP road locomotives. *See* 49 C.F.R. § 236.1006(b)(4). IPA has provided for this, as described in Part III-D-1-a below.

e. **Miscellaneous Aspects of the Operating Plan**

Other elements of the IRR operating plan are described in Part III-D. These include locomotive maintenance facilities and procedures, equipment maintenance facilities and procedures, and operating personnel requirements – including Train & Engine ("T&E") crews and non-train operating personnel involved in management, field supervision, yard operations, and mechanical functions. As described in Part III-D-4, the IRR's maintenance-of-way plan (and associated employees) has been carefully coordinated with its operating plan and is fully consistent with the operating plan.

III-D Operating Expenses

III. D. OPERATING EXPENSES

This section of IPA's Opening Evidence details the IRR's annual operating expenses for equipment, personnel, information technology, maintenance-of-way, taxes and loss and damage, together with the development of the related service units and costs. The expert witnesses responsible for the evidence in this Part include Paul Reistrup (Operating and General & Administrative personnel), Joseph Kruzich (IT requirements and costs), Philip Burris (locomotive and freight car requirements, personnel compensation, equipment lease rates and operating unit costs, taxes, loss and damage costs and insurance costs), and Gene Davis (maintenance-of-way plan, personnel and costs).

IPA Witnesses Timothy Crowley and William Humphrey developed train transit/cycle times from the RTC Model simulation of the IRR's operations, as described in Part III-C-2 above. The RTC Model output was directly used to calculate the IRR's locomotive hours and car hours for the peak week of the 2020 peak year. The annualized operating statistics were then developed for the Base Year using the methodology accepted by the Board in *WFA I* at 33.[1] Operating

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[1] In the *WFA* case both parties and the Board accepted calculation of these same operating statistics for all trains in the peak traffic year and indexed the resulting statistics to traffic levels for the first year in the DCF model through use of a tonnage index. Subsequent to the *WFA* decision, the complainant in the *Seminole* case (*Seminole Electric Coop., Inc. v. CSX Transp. Inc.*, STB Docket No. 42110, Complaint filed Oct. 3, 2006) and the defendants in *AEPCO* deviated from calculating operating statistics for peak-year traffic, and instead calculated these statistics for all trains moving in the Base Year and then indexed the resulting statistics to the first year in the DCF model. IPA has adopted this approach and calculated operating statistics for the Base Year rather than the peak

statistics including locomotive hours, locomotive unit miles, railcar hours, railcar miles and crew starts were calculated for all trains moving in the Base Year.[2] The locomotive and car statistics were then indexed to the first year in the DCF analysis (2011) based on the ratio of first-year tons divided by Base-Year tons, calculated separately for coal, general freight and intermodal traffic. The resulting statistics were utilized to determine overall locomotive requirements and car ownership requirements, as shown in e-workpapers "IRR Operating Statistics.xls" and "IRR Car Cost.xls."

The actual locomotive and car hours and associated expenses derived from transit/cycle times for any year would be lower than those presented here because the average number of daily trains containing IRR traffic moved during each year from 2011 forward is smaller than the daily trains moved by the IRR during the peak one-week period of the 2020 peak year. Thus the IRR's transit/cycle times should be faster on a daily average basis for the entire year than as compared to the peak week.

The IRR's annual operating expenses for 2011, its first year of operations, are shown in Table III-D-1 below.

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year but has otherwise used the methodology accepted in *WFA I* to develop the operating statistics from the RTC outputs.

[2] Development of the IRR's locomotive miles, car miles, locomotive hours and car hours is shown in e-workpaper "IRR Base Year Trains with RTC results.xlsx." Development of T&E crew requirements is shown in e-workpaper "IRR Crews Hotels and Taxis.xlsx."

TABLE III-D-1 IRR 2011 OPERATING EXPENSES ($ Millions)	
Locomotive Lease	$ 1.30
Locomotive Maintenance	$ 1.13
Locomotive Operations	$13.67
Railcar Lease	$ 3.57
Materials & Supply Operating	$ 0.37
Train & Engine Personnel	$ 2.89
Operating Managers	$ 3.03
General & Administrative	$ 7.08
Loss & Damage	$ 0.06
Ad Valorem Tax	$ 1.48
Maintenance-of-Way	$ 5.60
Insurance	$ 1.57
Startup and Training	$ 1.82
Total*	**$43.58**

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

The source of the numbers in Table III-D-1 is IPA e-workpaper "IRR Operating Expense.xlsx."

1. **Locomotives**

The IRR's peak-year locomotive requirements are summarized in Table III-C-3 in Part III-C-1 above. The IRR uses two types of locomotives: GE ES44-AC locomotives for road service and an EMD SW1500 locomotive for yard switching service. The IRR needs a total of 15 ES44-AC locomotives to transport its annualized peak-week trains, including spares, and one SW1500 locomotive for yard service.

a. **Leasing**

The IRR leases all of its locomotives. To determine the costs associated with the ES44-AC road locomotives, IPA's experts used an annual lease cost of ${ } based on a UP lease for ES44-AC locomotives dated { }, produced by UP in discovery.[3] An annual lease cost of $37,342 was used for the SW1500 locomotive. This lease cost was developed from an article in the June 2008 issue of *Railway Age* titled "2008 Guide to Equipment Leasing."[4] Application of these annual lease amounts results in a total locomotive lease expense of ${ } for 2011.

As explained in Part III-C-1-c-ii, *supra*, IPA's experts used a locomotive spare margin of { } percent, based on UP's actual experience as shown in materials it produced in discovery. IPA's experts also applied a peaking factor of { } percent. The peaking factor was calculated using the same approach approved by the Board in *WFA I* at 33-34. In particular, the peaking factor is equal to the trains moving in the February 12 through February 18, 2020 peak week divided by the average number of trains moving per week in 2020.

[3] *See* e-workpapers "Lease Payments-ES44AC.xls." This includes a cost of ${ } for equipping each road locomotive with Positive Train Control ("PTC") apparatus, which was developed from information provided by UP in discovery in spreadsheet "PTC.xlsx," tabs "cost model" and "locomotive."

[4] *See* e-workpaper "Locomotive Cost.pdf." The lease cost for SW1500 locomotives ranges from $75 per day to $125 per day. IPA used the average price of $100 per day, indexed to 1Q11 using the AAR equipment rents index. This produces an annual lease payment of $37,342.

b. **Maintenance**

The IRR's locomotives are inspected and maintained at N. Springville, UT, where the IRR has provided a locomotive maintenance facility to be used by its locomotive maintenance contractor.[5] Locomotives requiring inspection or maintenance used for interline coal and other movements with UP are exchanged with power on the trains at Provo as necessary to enable them to cycle through the locomotive shop. Locomotives on trains that do not operate through Provo (*i.e.*, the trains operated overhead between Lynndyl and Milford) are inspected and maintained on the residual UP.

Annual maintenance costs of ${ } and $54,410 per locomotive are used for the ES44-AC locomotives and the SW1500 locomotive, respectively. The amount for the ES44-AC locomotives is based on a Locomotive Maintenance Services Agreement between UP and { }. The locomotive maintenance cost for ES44-AC locomotives for the first five years of the DCF model are based on { } For the remaining five years of the DCF Model, maintenance for ES44-AC locomotives acquired at the start-up of the model are based on { }

[5] This facility is shown on page 1 of Exhibit III-B-2. It is described in more detail in Part III-F-7, *infra.*

The amount for the SW1500 locomotive is based on UP's average maintenance costs for yard locomotives as reported in its R-1 Annual Report. *See* e-workpaper "IRR switch assignments.xls."

In addition to normal locomotive maintenance costs, the IRR incurs periodic overhaul costs for its locomotives. For ES44-AC locomotives the costs are incurred every six years[6] and are annualized to equal ${ } per locomotive.[7] The cost of the locomotive overhauls and the frequency of their occurrence are shown in e-workpaper "IRR switch assignments.xls."

The total locomotive maintenance cost for the IRR equals $714,582 in the Base Year.[8]

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

A contractor fuels, sands and lubricates locomotives as required at the IRR's Provo Yard or N. Springville locomotive facility. Locomotives are removed from empty coal trains at Provo Yard or the nearby IPA car repair facility as necessary for fueling, servicing and inspection at separate facilities provided for this purpose.[9] Freshly fueled and serviced locomotives are placed on these empty

[6] The typical overhaul period is one overhaul every eight years. However, as the IRR has a relatively high average utilization for locomotives of 11,978 miles per year, the average overhaul period has conservatively been shortened to one overhaul every six years.

[7] *See* e-workpaper "IRR Loco Overhaul.xls."

[8] *See* e-workpapers "IRR Operating Expense.xls" and "III-D-1 Locomotive Cost. pdf."

[9] All IRR locomotives are removed from the train in the case of empty coal trains interchanged with URC at the IPA car repair facility near Provo.

trains at Provo Yard or the IPA car shop for movement to the mines or delivery in interchange to the URC. Locomotive fueling is performed using tanker trucks (commonly known as direct-to-locomotive or "DTL" fueling). The locomotives on the overhead trains moving between Lynndyl and Milford do not require fueling while on the IRR and are fueled by UP. The IRR fuel cost is based on the average price per gallon UP paid for fuel at Provo, UT in 2010 of ${ } per gallon, indexed to 1Q11 using the AAR fuel index to equal ${ } per gallon. Other IRR locomotive servicing costs (primarily sand and lubrication) are based on a cost of $0.2919 per diesel unit-mile calculated using UP's 2010 R-1 with the cost indexed to 1Q11. *See* e-workpaper "Loco Servicing Cost.xls."

i. Fuel Cost

As stated above, the IRR's fuel price per gallon is based on the actual price per gallon paid by UP at Provo in 2010, indexed to 1Q11. The fuel price paid at Provo was provided by UP in discovery in Bates document IPA-00040963 (reproduced in e-workpaper "III-D-1 Locomotive Cost.pdf). The cost used in IPA's analysis includes the price of fuel, transportation and DTL service as shown in the UP discovery document.

ii. Fuel Consumption

The average fuel consumption for the IRR's road locomotives is based on UP's average fuel consumption for 4400 horsepower locomotives operating in Utah, as developed from data provided by UP in discovery, adjusted to reflect the fuel efficiencies of ES44-AC locomotives relative to UP's fleet of

4400 horsepower locomotives. UP's average fuel consumption for 4400 horsepower locomotives in Utah equals { } gallons per locomotive unit mile. *See* e-workpaper "Utah Fuel Consumption IRR.xlsx." However, UP's 4400-horsepower locomotive fleet is comprised of 2,883 AC4400 horsepower locomotives, of which 852 are ES44-AC locomotives. As thoroughly documented in the trade press and news releases, GE's new ES44-AC locomotives are estimated to be six percent more fuel efficient than its AC4400 predecessor locomotives. *See* e-workpaper "III-D-1 Locomotive Cost.pdf." To reflect the efficiency of the IRR's all-ES4400-AC locomotive fleet, IPA's experts have adjusted the fuel consumption of UP's average 4400 horsepower fleet in Utah downward by 4.2 percent, *i.e.* 70.4 percent of a six percent fuel efficiency gain.[10]

Fuel consumption for the IRR's switch locomotive equals 2.91 gallons per locomotive unit mile and is based on fuel consumption statistics for SW1500 switch locomotives developed by FPC International in fuel consumption tests for this type of locomotive. *See* e-workpaper "III-D-1 Locomotive Cost.pdf."

2. Railcars

a. Leasing

The IRR uses a mixture of IRR-provided cars, foreign cars and private cars. For IRR-provided coal cars, IPA's experts developed lease costs on the basis of full service leases. The full service lease cost per car for IRR-

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[10] [1-(852/2883) x 0.61 x 100.

provided equipped (rotary) gondolas and steel hoppers equals ${ } per year and ${ } per year, respectively, as of 1Q11. The lease cost for equipped gondolas and hopper cars is based on recent UP lease agreements provided by UP in discovery.[11]

Car costs for non-coal traffic moving in railcars owned by foreign railroads are based on time and mileage by car type developed from UP's 2010 R-1. For non-coal traffic moving in UP equipment, annual full service lease costs were developed for each car type from information provided by UP in discovery or from publicly available sources.[12] A weighted annual car cost for each car type was then developed based on the percentage each car type moves on the IRR system. The weighted average annual car cost was then converted to a cost per hour and cost per mile and applied to the car hours and car miles for the 2010 Base Year trains indexed to 2011 traffic levels.

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

Boxcars	$5,150
Equipped Boxcar	${ }
Gondolas	${ }
Covered Hoppers	${ }
Open-top Hoppers	${ }
Flat Cars	$5,064

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

[12] *Id.*

The lease costs for each car type is based on either current UP lease agreements provided by UP in discovery, or the most recent Railway Age Guide to Equipment Leasing in which the specific car type is found, with all lease costs indexed to 1Q11 using the AAR Equipment Rents-West Region. *See* e-workpaper "IRR Car Costs.xlsx."

The IRR's freight car requirements include a spare margin of 5.0 percent. This is the same spare margin used by both parties in *AEPCO* and was based on a review of UP and BNSF transportation contracts provided in discovery in that proceeding. *See* AEPCO's Opening Evidence (Public Version) in Docket No. 42113 at III-C-15 and AEPCO's Rebuttal Evidence (Public Version) in Docket No. 42113 at III-C-16. In addition, the 5.0 percent spare margin for shipper-provided cars was also accepted by the Board in *WFA I* at 39 and *Otter Tail* at C-5, and was also based on evidence of the transportation contracts provided in discovery in those proceedings. The transportation contracts provided by UP in this proceeding do not specify spare margin requirements and therefore cannot be used to demonstrate common industry practice. As a result IPA is relying on public information of common industry practice on the railcar spare margin as shown in public testimony and STB decisions.

b. <u>Maintenance</u>

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

Shippers who supply railcars for their coal movements make their own separate arrangements for maintenance of their cars, either at destination power plants or at existing contract-repair facilities on or near the route of movement.

The IRR needs a total of three End-of-Train Devices ("EOTD"), primarily for work trains. The IRR's coal trains do not need EOTDs because they have DP locomotives or helpers on the rear. Details concerning EOTD expenses are shown in e-workpaper "IRR Materials and Supplies.xls."

c. **Private Car Allowances**

For IRR coal movements that occur in private cars, the cars are provided per diem and mileage-free under the terms of the relevant UP transportation contracts and pricing authorities. That is, the cars are provided free of charge to UP and the freight rate reflects the fact that UP/URC are not incurring car costs.

Because UP does not pay private car allowances for coal movements in private cars, and because the IRR is replacing UP with respect to its coal traffic, the IRR also pays no mileage allowances with respect to coal movements in private cars.

With respect to private cars used for non-coal traffic, IPA's experts have included a private car charge per car-mile by car type which is applied to all private car-miles on the IRR. The private car mileage charge by car type was developed from data contained in UP's 2010 R-1. *See* e-workpaper "IRR Car Costs.xlsx."

3. Personnel

The IRR is a small SARR, particularly compared to most SARRs that handle Powder River Basin coal traffic. It is a non-unionized Class II rail carrier, and thus does not need the kind or level of staffing typical of a unionized Class I railroad such as UP.

a. Operating

i. Staffing Requirements

The IRR's operating personnel include train crews as well as other operating employees, including the senior management staff based at the railroad's Lynndyl headquarters and line supervisory and other field employees in the Transportation and Engineering/Mechanical departments. The staffing plan for these operating personnel was developed by IPA Witness Paul Reistrup, who has substantial experience in senior management and operations at several railroads and is a recognized expert in the field of railroad operations.

(a) Train/Switch Crew Personnel

The IRR requires a total of 38 T&E crew members to transport its first-year trains. This count, which includes switch crews based at Provo Yard, is based on the number of trains moving over the various parts of the IRR system during the Base Year (indexed to reflect first-year traffic levels), and the crew districts/assignments and switch crew assignment developed by Mr. Reistrup, as described in Part III-C-2-c-vii, *supra*. The RTC simulation was used to confirm that most train crews operating in these crew districts could complete each tour of duty within 12 hours, as required by federal law. Development of the IRR's first-year crew requirements based on Mr. Reistrup's crew districts and yard crew assignments, and on traffic levels, was performed by Mr. Burris. Details on the development of the IRR's T&E personnel are provided in e-workpaper "IRR Crews Hotel and Taxis.xlsx."

Consistent with Board precedent, T&E crews were developed using the total number of crew starts as determined by the actual train counts over the entire Base Year. *See Xcel I* at 62. In *Xcel I* the Board determined crew requirements based on all trains moving in the peak year rather than extrapolating peak-week crew requirements to a full year of traffic; the peak-year crew requirements were then indexed back to traffic volumes in the first year of the DCF model. Here, crew requirements are determined following the *Xcel I* precedent, *i.e.* using all trains moving in the year rather than extrapolating peak-week crew requirements to a year's traffic volume. The only difference is that the crew requirements are determined for all trains moving in the Base Year and indexed to traffic volumes in the first year of the DCF model, rather than for all trains moving in the peak year and indexed to traffic volumes in the first year of the DCF model. As stated previously, this methodology is the same as that followed by the complainant in *Seminole* and the defendants in *AEPCO*.

Review of the results of the RTC Model simulation indicates that the crew on only 11 of the 269 total trains operating during the 10-day simulation period needed to be relieved due to exceeding the maximum permissible time on duty under the hours-of-service law. The total number of crew starts from each relevant crew base was adjusted upward to reflect re-crewing. The crew start count was used to determine the total number of T&E crews required using the standard formula employed by the Board *to* determine how many crews are required to cover the number of crew starts assuming that each crew member is available 270 days per year. *Xcel I* at 61-62.

(b) Non-Train Operating Personnel

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

TABLE III-D-2 IRR NON-TRAIN OPERATING PERSONNEL	
Position	**No. of Employees**
Vice President – Operations*	1
Director of Operations Control	1
Managers of Train Operations	3
Managers of Locomotive Operations	1
Crew Callers	5
Dispatchers	5
Manager of Operating Rules, Safety & Training	1
Customer Service Managers*	2
Chief Engineer	1
Manager of Mechanical Operations	1
Equipment Inspectors	6
Total	**27**

This staffing level is comparable to the staffing level proposed by Mr. Reistrup on behalf of the complainants in *WFA I*, and accepted by the Board in that case (*id.* at 42), with reductions where warranted due to the IRR's considerably smaller traffic density and reduced yard activity compared with the SARR involved in *WFA I*. Mr. Reistrup has also moved several positions that he included in the General & Administrative ("G&A") personnel for the *WFA I* SARR to the IRR's operating personnel for consistency with the approach used by the Board in *WFA*. These positions are denoted by an asterisk in Table III-D-2. A description of each operating position shown in this table is provided below.

(i) Headquarters Transportation Management

The IRR's Operating Department has one vice president, the Vice President-Operations. The Vice President-Operations is responsible for the transportation, customer service, marketing, engineering and mechanical functions.[13] The Director of Operations Control, who reports to this Vice President, supervises all train operations and the IRR's field operating managers (described in the next sub-section). He also supervises the IRR's Crew Callers and Dispatchers.

The IRR's crew-calling system is automated. It is augmented by one Crew Caller position that is on duty 24/7/365 (thus requiring five employees) and that is also available to answer questions that cannot be dealt with by an automated system.

The IRR has one train dispatching district or "desk," with one Dispatcher position manned by five employees on a 24/7/365 basis. A single desk is sufficient given that the IRR system is only 278.67 route-miles long (roughly the equivalent of a UP mainline road crew district) and that the maximum number of trains moving on the system in any day during the peak week of the 10-year DCF Model period is only 31.

The Manager of Operating Rules, Safety & Training also reports to the Vice President-Operations. This individual interfaces with the FRA in matters pertaining to rules and operating practice, and is responsible for the IRR's operating timetable, operating rules, and related instructions. A single position is warranted to supervise the rules, safety and training function because of the IRR's

[13] The IRR has a total of four senior executives – the President and three Vice Presidents including the Vice President-Operations. These executives share a pool of two Administrative Assistants who are included in the general and administrative personnel described in the next section.

limited geographic scope, relatively low traffic density compared with the SARRs in other recent coal rate cases, and the number of employees.

The IRR's Customer Service Managers are included within the operations/transportation function, consistent with the approach followed by the Board in the *WFA* case. The IRR requires two Customer Service Managers (as well as a Marketing Manager who is included with the IRR's general & administrative staff). The IRR has no need for a larger staff of customer service personnel because of the size and nature of its traffic group. Customer Service Managers monitor train locations, maintain contact with the IRR's coal origin (mine or loadout) operators, and answer customers' questions concerning the locations of specific trains on the IRR system. The IRR serves only three locations where traffic is originated (one mine and two coal loadouts) and only one local destination (IGS). It also handles a maximum of only 31 trains per day, most of which are non-coal overhead trains that move in only three discrete flows and that are originated and terminated by UP with the maximum haul on the IRR being only 89 miles. Given these facts, the IRR does not need 24/7 coverage of the customer service function. Thus most customer service inquiries, particularly for non-coal traffic, will be directed to UP rather than the IRR. Almost all customer calls to the IRR will occur during normal business hours, which is when the IRR's two customer service managers are on duty.[14] To the extent the IRR

[14] One will be on duty from 6 AM to 2 PM, and the other will be on duty from 10 AM to 6 PM.

receives customer service calls (including possible calls from UP) at other times, the calls can be taken by the dispatcher on duty who will not be very busy given the IRR's limited train activity (an average of just over one train per hour on the peak day). The Dispatcher can call on the Manager of Train Operations on duty for further assistance with customer or UP inquiries as needed.

(ii) **Field Transportation Management**

The IRR needs one Manager of Train Operations ("MTO") and one Manager of Locomotive Operations ("MLO"). These positions, which report to the Director-Operations Control, are the equivalent of the Trainmaster and Road Foreman of Engines positions on a Class I railroad.

The MTO is stationed at the IRR's Lynndyl headquarters. This is a 24/7 position with 12-hour shifts; thus a total of three employees are needed to staff them. The MTO is responsible for managing train operations and for supervising train crews. The MTO also performs FRA-mandated and other appropriate testing, and responds to and investigates accidents and day-to-day operational issues. One position is sufficient since the IRR's total route mileage (278.67) is comparable to that of many Class I railroad subdivisions.

The MLO is responsible for the safe and efficient handling of locomotives and trains by the IRR's locomotive engineers. He is an FRA-certified locomotive engineer and qualified on all of the IRR's route miles. He performs FRA-mandated testing and observation of engineers in train handling, efficiency testing, and other assistance as needed. A single individual can easily cover 278 miles (including branch lines and spurs) given the relatively low frequency of train operations on most of the IRR's lines and the fact that he does not have to cover each crew district every day.

The IRR does not need any separate yard management positions such as a Yardmaster. The IRR has only one yard (at Provo) where car inspections and associated bad-order/spare railcar switching is performed, and the volume of inspections is very light (a maximum of one train per day). The 24/7 MTO can easily supervise the movement of trains and locomotives in the yard area as well as the switching operations themselves. Nor does the IRR need any crew haulers, for the reasons set forth in *WFA I* at 42.

(iii) Engineering and Mechanical Management

The IRR's size and traffic volumes are such that it does not need a separate vice president to oversee the engineering and mechanical functions – such top-heavy staffing is more typical of Class I railroads. Instead, the IRR has a Chief Engineer and a Manager of Mechanical Operations based at its Lynndyl headquarters. These individuals report to the Vice President-Operations.

The Chief Engineer oversees the IRR's engineering function, including, in particular, maintenance-of-way and structures, and supervises the in-house MOW staff. He or she is also responsible for contract maintenance and for general oversight of contractor performance. The Manager of Mechanical Operations oversees the IRR's mechanical function and interfaces with the locomotive and car maintenance contractors. He or she is also responsible for budgeting and for the Equipment Inspectors stationed at Provo Yard.

Given the small number of trains that require inspection at Provo Yard (a maximum of one train per day), the IRR has a single four-person crew of Equipment Inspectors stationed at Provo Yard on a 24/7 standby basis. A total of six employees are required to staff this standby inspection crew.

ii. Operating Personnel Compensation

The salaries and benefits for the IRR operating personnel described above are based on comparable and competitive compensation packages presently available in the railroad industry. Specifically, the annual salaries for the non-train operating personnel (other than the Vice President – Operations) are based on data contained in UP's 2010 Wage Form A&B Reports provided in discovery.

The salary for the Vice President – Operations of $176,089 is based on the average salaries paid to senior executives employed by the Providence and Worcester Railroad Company ("P&W"), a publicly held regional railroad, as shown in its April 27, 2011 Proxy Statement to Shareholders.[15] The P&W operates 518 route miles in the northeastern United States and the salaries paid to P&W executives is far more in line with what executives at the smaller, Class II IRR would earn than are the salaries paid by UP to its executives.

[15] This calculation includes salaries and bonuses paid to senior executives (excluding the Chairman/CEO) employed by P&W for the entire year 2010.

The salary for the IRR's conductors ($48,902) is equal to the average wage paid to railroad conductors earning the top quartile of wages in the State of Utah in 2010 as reported by Salary.com. *See* e-workpaper "III-D-3 Salaries.pdf" The salary for the IRR's locomotive engineers is calculated by increasing the wage for conductors reported above by the percentage difference in the wages for engineers and conductors on the UP in 2010 as reported in UP's Wage Forms A&B.

The fringe benefit ratio for all IRR employees of 37.5 percent is based on the average fringe benefit ratio for all Class I railroad employees in the United States in 2009 as reported by the AAR. *See* e-workpaper "III-D-3 Salaries.pdf." Fringe benefits for all Class I railroad employees in the US was used as the ARR no longer reports the fringe benefit paid to railroad employees on a state-by-state basis.

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

i. <u>Introduction</u>

The IRR's general and administrative ("G&A") personnel and equipment needs were developed primarily by IPA Witness Reistrup, who has held various executive and senior management positions at Class I and other railroads (including the Presidencies of Amtrak and the former Monongahela Railway, a coal-hauling railroad in the Eastern United States that is roughly comparable in size and traffic volume to the IRR).[16] The G&A staffing and equipment for the information technology function were developed by IPA Witness Joseph Kruzich. Employee compensation and equipment costs (other than for computers and related equipment) were developed by IPA Witness Philip Burris.

In developing the G&A staffing for the IRR, Mr. Reistrup drew upon two principal sources: his executive and managerial experience in the railroad industry, and his experience in developing G&A staffing levels in other SAC rate cases, including in particular the recent *WFA* case, in which the G&A staffing level he developed for the complainant's SARR and proposed to the Board was largely accepted for a SARR that, while comparable to the IRR in terms of route mileage, had much higher traffic density and vastly higher revenues. Unlike the IRR, the SARRs in *WFA* were Class I railroads.

For the Board's convenience, Mr. Reistrup has structured the IRR's G&A staff along the lines of the G&A staff for the SARRs in *WFA* – although he notes that this structure is more typical of a Class I railroad, and that other organizational approaches, with fewer personnel and more contracting, would more likely be used by a start-up regional railroad.

The G&A staffing level developed by Mr. Reistrup (assisted by Mr. Kruzich) for the IRR consists of a total of 24 employees, excluding the Vice

[16] Mr. Reistrup developed the IRR's engineering staff and equipment needs in consultation with IPA's maintenance-of-way witness, Gene Davis.

President-Operations and the Customer Service Managers who, consistent with the Board's treatment in *WFA*, are treated as non-train operating personnel rather than G&A personnel. As described in more detail below, the functions performed by the IRR's 24 G&A personnel are similar to the functions for the SARR G&A personnel described by Mr. Reistrup in the complainants' opening evidence in *WFA*, albeit on a reduced scale given the substantial disparity in the scale of the railroads' operations. This staffing is very conservative as it follows a Class I railroad model rather than a regional railroad model.[17]

In comparing the IRR's staffing needs with those of the SARRs in the *WFA* case, Mr. Reistrup first notes that while the IRR's route miles are roughly comparable to the route miles for the two *WFA* SARRs,[18] the IRR's track miles (329.77) are much lower than the track miles of either the *WFA I* SARR (446.75) or the *WFA II* SARR (443.55).

[17] An example of another approach is the Monongahela Railroad ("MGA"), a regional (two-state) coal-hauling railroad which Mr. Reistrup headed from 1988 to 1992. The MGA had a general office staff consisting of four persons – the President (Mr. Reistrup) who also served as personnel director, a Manager of Marketing, a Treasurer who also served as revenue accountant, and a chief of police. The MGA's non-train operating personnel consisted of four people, a Senior Trainmaster, a Road Foreman of Engines, an Engineering Officer who was in charge of maintenance-of-way, and a Bridge Engineer. The MGA was comparable in size to the IRR, with annual traffic volume of about 30 million tons.

[18] The *WFA I* SARR has 218 route miles, compared with 278.67 route miles for the IRR. However, the *WFA II* SARR has 304 route miles, which is more than the IRR's route miles, and has lines in two states versus only one for the IRR and the *WFA I* SARR. The Board-approved G&A staffing was identical for each version of the *WFA* SARR.

Most importantly, the IRR has considerably lower traffic volumes and density than either the *WFA I* SARR or the *WFA II* SARR. The *WFA I* SARR carried 219.1 million tons in its peak year, and the *WFA II* SARR carried 68.3 million tons in its peak year. The IRR carries only 29.0 million tons in its peak year. Although the IRR carries intermodal and general freight traffic in addition to coal traffic, the non-coal traffic moves exclusively in overhead service and in only three discrete flows and most of this traffic moves only 89 miles on the IRR system. Thus, as set forth in greater detail below, the IRR marketing and accounting effort required for this traffic is not great, and the overall G&A staffing level and expense should be substantially lower than that approved in *WFA*.

With respect to coal traffic, both the *WFA* SARRs and the IRR serve a single power plant destination, and thus move only one customer's coal in local service. However, the *WFA* SARRs both serve a total of 16 coal origins, whereas the IRR serves only three coal origins (Skyline Mine and the Savage and Sharp loadouts). The *WFA* SARRs move much more coal traffic for a much larger number of customers to considerably more destinations than does the IRR.

Finally, the IRR's total annual revenues do not exceed $175.1 million in any year during the 10-year DCF Model period. This is less than half of the *WFA II* SARR's highest total annual revenues, and the IRR is a Class II rail carrier rather than a Class I carrier. This simplifies the IRR's treasury and financial reporting requirements and also means, among other things, that it does not have to install a Positive Train Control ("PTC") system[19] or staff itself for planning and implementation of PTC technology.

For all of these reasons, even using the same Class I railroad staffing template, the G&A staffing level for the IRR should be much smaller than the G&A staffing level approved by the Board for the *WFA I* and *WFA II* SARRs. In this regard, in several recent SAC rate cases such as the pending *AEPCO* case , the defendant railroads have purported to "benchmark" the SARR's G&A staffing against supposed "peer groups," including small Class I railroads such as the Kansas City Southern Railway ("KCS") or short-line holding companies such as RailAmerica or Genessee & Wyoming Inc. Mr. Reistrup submits that those companies have far more complex traffic patterns and operations than the IRR, and that the only even remotely appropriate benchmarks (taking into account traffic and revenue differences) are the staffing level accepted by the Board in *WFA I* and *WFA II* or the MGA staffing level.

Mr. Reistrup turns now to the specifics of the IRR's G&A staffing needs.

ii. Staffing Requirements

The IRR's G&A staff is based at its Lynndyl headquarters and is summarized in Table III-D-3 below. This table does not include the operating

[19] Under the Railroad Safety Act of 2008, Class I railroads (and other railroads that handle intercity and/or commuter passenger trains) must equip many of their lines with PTC systems by December 15, 2015. The IRR is not a Class I railroad, and it does not operate any passenger trains.

staff, which was described in the preceding section, or the MOW staff which is described in Part III-D-4.

TABLE III-D-3 IRR GENERAL & ADMINISTRATIVE STAFF	
Department/Position	**Employees**
Executive	
Outside Directors	3
President and CEO	1
Administrative Assistants	2
Marketing	
Marketing Manager	1
Finance and Accounting	
Vice President – Finance & Accounting	1
Treasurer	1
Controller	1
Asst. Controller	1
Manager of Budgets and Purchasing	1
Law and Administration	
Vice President-Law & Administration	1
General Attorneys	1
Manager of Safety and Claims	1
Director – Human Resources	1
Manager of Training	1
Director – Information Technology	1
IT Specialists	6
Total	**24**

(a) Executive Department

The Executive Department includes three employees: the IRR's President and two Administrative Assistants. It also includes the IRR's Board of Directors.

The President serves as the IRR's CEO, and the other department heads (Vice Presidents) report to him. The President is also responsible for the IRR's external relations (other than marketing of its transportation services), including community and government relations. Given the IRR's limited geographic scope within a single state and narrow operational focus, the President does not need a separate staff to assist him with these functions. Assistance can be provided as needed by the IRR's three Vice Presidents.

The Executive Department has a pool of two Administrative Assistants who are 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).

The President is also a member of the IRR's Board of Directors, and serves as Chairman of the Board. Consistent with stand-alone theory, the IRR is not a publicly-owned company and therefore does not need a large board of directors with numerous outside directors. It can be governed by a five-person Board, consisting of the President, the Vice President-Transportation, and three outside Directors. The outside directors would likely include a representative of the IRR's customer group, a representative of its investors, and an independent director with no other connection to the IRR. This would assure independent oversight of the IRR's affairs. Since the outside directors would have a direct and substantial interest in the IRR's affairs, they should be willing to serve on its board without compensation other than the reimbursement of expenses for attending board meetings. Accordingly, IPA has not provided any expenses for compensating the IRR's directors except for travel expenses to attend board meetings.

The STB approved exactly the same composition for the SARR's Board of Directors, and the same level of compensation, in the *WFA* case. *See WFA I* at 44.

The IRR's Transportation and Marketing functions are headed by the Vice President-Operations, who is included in the IRR's Operating personnel discussed above. The Operating personnel who report to this Vice President were also described earlier. The only G&A employee who reports to the Vice President-Operations is the Marketing Manager. The IRR requires only one employee who is specifically devoted to the marketing function.[20] The Marketing Manager interfaces with the IRR's customers and handles day-to-day marketing functions as well as contract renewals. One such Manager is sufficient given the IRR's small size and the limited nature of its traffic group.

It should be noted that while the SARR traffic group in the *WFA* case consisted entirely of coal, the number of origins served, the volumes, and the number of coal customers involved were far larger than in this case.[21] Thus the level of in-house marketing effort required for the *WFA I* SARR (which was

[20] The IRR also has two Customer Service Managers, who also report to the VP-Operations and are included in the Operating personnel described earlier.

[21] The *WFA I* SARR carried about 219 million tons of coal in its peak year moving to several destinations. The IRR carries only 10.9 million tons of coal in its peak year.

staffed with two Marketing Managers) was considerably greater than for the IRR. In addition, the IRR serves exclusively as an overhead carrier for non-coal traffic, all of which is originated and terminated by UP. The non-coal traffic moves in relatively small volumes in only three discrete flows, with most of this traffic moving only 89 miles on the IRR between Lynndyl and Milford. This traffic is originated and terminated by UP, which has by far the lion's share of the haul. For example, the non-coal overhead traffic that the IRR transports between Lynndyl and Milford moves between points east of Salt Lake City and the Los Angeles Basin. The rail distance just between Salt Lake City and Los Angeles is 768 miles. Thus, UP will have by far the largest stake, and will largely undertake, the marketing effort for this traffic. Given these facts, there is no need for the IRR to have more than one Marketing Manager; nor does it need an outside marketing contractor.

(b) <u>Finance and Accounting Department</u>

The IRR's Finance and Accounting Department consists of five employees, headed by the Vice President-Finance & Accounting. The level of staffing for this department and the positions involved are appropriate given the small traffic volumes (and the small number of traffic flows) involved. Again, the IRR's total revenues (and accounting and cash management needs) are much smaller than for any of the SARR's involved in recent coal rate cases. Although the IRR has a more diverse traffic group than the *WFA I* SARR, its non-coal traffic moves in a limited number of discrete flows in overhead service and its total annual traffic volume and revenues are far less than those of the *WFA* SARRs.

The IRR has two employees who report directly to the Vice President-Finance & Accounting: the Treasurer and the Controller. As 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. The Treasurer is responsible for managing the IRR's cash flows and balances. He does not need any other employees to assist him with these functions given that the IRR is a Class II railroad with annual revenues far lower than those of the *WFA* SARRs.

The Controller is responsible for all accounting functions, including direction of all billing, vendor payment processing, payroll, budgeting and auditing. He or she is assisted by an Assistant Controller and a Manager of Budgets and Purchasing. This support staff is sufficient for the IRR's needs given its small size and limited traffic group, and the availability of computerized accounting packages and programs available to assist in performing these functions.[22] The Assistant Controller oversees IPA and interline freight and related billing, accounts payable and payroll processing, and the tax function,

[22] These packages and programs are described in detail in the subsection below on the IRR's Information Technology Department.

As in the *WFA* case, the ICC does not need internal auditing or real estate staff. Mr. Reistrup is unaware of any independent Class II railroad that has an internal auditor; this function is outsourced. Once the IRR is constructed there will be no need for additional real estate acquisitions or sales.

which is limited because the IRR has property in only one state. In this regard, the IRR uses an outside accounting firm with property and payroll tax specialists to prepare all tax returns. The IRR is a privately-held Class II railroad with minimal financial reporting requirements (it does not need to prepare reports to the SEC or the equity-investment community), and that uses a financial accounting computer to track all of its physical assets and asset replacements.

The final position in this department is the Manager of Budgets and Purchasing. This individual handles the preparation of the annual company budget, monitors monthly performance against plan, and prepares forecasts and cost and revenue analyses as required. Given the small size and Class II status of the IRR, one individual can easily handle both the budgeting and the purchasing function (as described in part III-D-4 below, there is a separate individual in the Engineering/MOW department who is responsible for materials purchasing).

(c) Law and Administration Department

The Law and Administration department is responsible for the IRR's legal affairs, safety and claims administration, human resources and training, and information technology. It consists of 12 employees (including the IT staff), headed by the Vice President-Law & Administration. The IRR's Law and Administration department is organized along the same lines as those approved by the Board for the SARRs in the *WFA* case (*see WFA I* at 45).

Legal/Claims function. The IRR has one General Attorney who supervises the IRR's in-house legal work and interacts with outside counsel (the

IRR retains one outside law firm, given that all of its facilities and operations are located in a single state). The General Attorney is responsible for administering litigation and claims, environmental compliance, and contract matters. The department is also staffed by a Manager of Safety and Claims, who supervises the out-sourced risk and claims management contractor and provides assistance in investigating claims. This position is also responsible for government safety reporting and representing the IRR in industry associations and forums..

Human Resources and Training Functions. Human resources is a function that lends itself well to out-sourcing. External resources exist in this field (as described in the section on IT systems below) that will support a small in-house human resources staff whose primary responsibility is to interface with the outside contractor and assure that the IRR has a pool of employees that enables it to engage in ongoing operations. Accordingly, an appropriate staffing level for the IRR's human resources function consists of a Director of Human Resources and a Manager of Training. This staff, which is the same as that approved by the Board in *WFA I*, is sufficient to manage training, recruiting, compliance, compensation and benefits, employee relations and training since most of these functions will be out-sourced.

Information Technology function. The IRR's IT systems and associated personnel were developed by IPA witness Joseph Kruzich and reflect the size of the IRR's traffic group and revenues and its operating plan. Mr. Kruzich has considerable experience with the IT function at Class I and other railroads. The IRR's IT systems (described in the next section) are administered by a staff consisting of a Director-Information technology and six IT Specialists. As discussed in more detail in the next section, the IRR does not have a main-frame environment, but rather a NT/PC-based system. This means far less effort is required than at a Class I railroad due to the relative simplicity of a NT/PC-based system. Furthermore, approximately 90 percent of the IT computer requirements (train movement, revenue accounting, car accounting, *etc*). are outsourced to RMI.

A staff of seven people (including the Director and six IT Specialists) is adequate to provide sufficient coverage with at least one person on duty during normal business hours seven days a week. As most of the IRR's application software is available from vendors, very little development and maintenance effort is required.

The primary IT staff function is to trouble-shoot various problems with vendors, coordinate the transportation software applications with the outside vendor (RMI) and the business users, and monitor the network infrastructure. There will also be occasions when enhancements will be required to the crew-calling, accounting, human resources and dispatchers systems. The IRR's staff of IT specialists will be active participants in this effort.

The Director oversees the IT department's daily activities, provides senior management with updates to new technology, and advises as to the future strategic direction for the department. This includes formulation of the logical and physical computer architecture plans and assessment of the cost and feasibility of all user requests.

The six IT Specialists perform the following specific functions:

- One Lead RMI Technician – responsible for all RMI applications (RMI is the IRR's principal software vendor/contractor, as described in the next section) and serves as a liaison to RMI and the user Departments. This person ensures that all the users' needs are met in an efficient and timely manner.

- One Help Desk PC Technician – takes incoming calls from the various users and reroutes the call to a Programmer Technician for immediate handling. This position follows-up with the user to make sure the problem has been resolved. This assignment is during regular business hours with an answering machine to take calls during the night and the weekends. These messages are monitored by the on-duty Programmer/PC Technician to assure prompt handling.

- One Network/Exchange 2007 Engineer – responsible for overseeing network security matters and local area network (LAN) and wide area network (WAN) functionality. This individual oversees the messaging design and implementation of the Windows 2007 Exchange (server) environment. He/she is also responsible for planning, designing and managing transmission facilities and cabling and communications devices, and also handles any telecommunications issues that may occur.

- Two Programmers/Development – responsible for maintaining and upgrading the crew calling, accounting, human resources and dispatchers systems. These employees help manage the crew calling, dispatching and accounting systems, and they also are responsible for developing a corporate information web site. The IRR's web site will not be elaborate because its customer base is small.

- One IT Security/Server Manager – responsible for defining the security model to protect against cyber-security vulnerabilities, protecting internal and external railroad data from malicious attack, as well as performing general server maintenance work. This *individual is also responsible for server infrastructure support to manage network needs and system infrastructure upgrades.*

iii. Compensation

The salaries and benefits for the IRR's G&A personnel described above are based on comparable and competitive compensation packages currently available in the railroad industry (and in other service industries).

Specifically, annual salaries for the general and administrative personnel were estimated based on data contained in UP's Wage Form A&B Reports provided in discovery. In addition, the salaries paid to the IRR's senior management, *i.e.* the President and Vice Presidents, are based on the salaries and bonuses paid to officers in comparable positions at the P&W which is a regional railroad that is more comparable to the IRR than any Class I railroad.

The G&A staff salaries are summarized in Table III-D-4 below.

TABLE III-D-4
IRR General & Administrative Staff Salaries

Position	No. of Employees	Annual Salary	Total Salaries
President and CEO	1	$432,046	$432,046
Administrative Assistants	2	$45,227	$90,454
Marketing Manager	1	$93,536	$93,536
Vice President – Finance & Accounting	1	$176,089	$176,089
Treasurer	1	$176, 089	$176,089
Controller	1	$102,592	$102,582
Assistant Controller	1	$93,782	$93,782
Manager of Budgets/Purchasing	1	$93,782	$93,782
Vice President-Law & Administration	1	$176,089	$176,089
General Attorney	1	$102,592	$102,592
Managers of Claims	1	$93,782	$93,782
Director – Human Resources	1	$93,782	$93,782
Manager of Training	1	$93,782	$93,782
Director – Information Technology	1	$93,782	$93,782
IT Specialists	6	$71,426	$428,557
Total (excludes outside directors)	**21**	**xxx**	**$2,340,737**

Details supporting the derivation of the compensation numbers in Table III-D-4 are included in e-workpapers "IRR Salaries.xlsx" and "IRR Operating Expense.xls." It should be noted that the numbers in the Total Salaries column in this table may not equal the number of employees times annual salary due to rounding.

iv. Materials, Supplies and Equipment

The IRR owns or leases various types of vehicles and equipment used by its Operating and G&A staffs. Costs for this equipment have been included in the calculation of the IRR's annual operating expenses. *See* e-workpaper "IRR Operating Expense.xls" for details concerning equipment and supplies (except for IT and MOW equipment and supplies, which are discussed separately below).

Company vehicles are needed at the IRR's Lynndyl headquarters. A pool of three Ford Explorers (a small SUV with all-wheel drive) is maintained at headquarters for use primarily by the headquarters Operating and G&A staff while traveling in the field on IRR business. Ford Explorers are also needed for the field transportation, mechanical and maintenance-of-way supervisory personnel, and a pick-up truck and four ATV-type vehicles are needed for the car inspection personnel. A total of five company vehicles are needed, including the three Headquarters G&A pool vehicles, one additional Ford Explorer for the Manager of Train Operations, and one Dodge 4WD, 4-door extended cab pick-up for the inspection crew based at Provo Yard.

The IRR also needs miscellaneous office equipment and supplies including desks, telephones and janitorial supplies. Details on the miscellaneous equipment are provided in e-workpaper "IRR Materials and Supplies.xls."

v. <u>Other</u>

(a) <u>IT Systems</u>

The IRR's information technology systems have been developed by IPA Witness Joseph Kruzich, its experienced railroad IT expert. Mr. Kruzich reviewed the IRR's operating plan and G&A requirements to determine the railroad's basic computer and communications needs and the kind of support needed by its staff. The IT systems described below enable the IRR to operate safely and efficiently and to perform all administrative functions.

It should first be noted that the IRR does not have many of the complex computer system requirements that a large Class 1 railroad has. The IRR's operations are similar to those of other small SARRs in other recent SAC rate cases such as *WFA*, in that it does not have extensive yard or switching operations. However, the IRR's traffic volumes and revenues are much lower than those of the SARR involved in *WFA*. It has a low volume of train movements per day, as well as a single local customer and a total of only four interchange points. It also handles primarily trainload movements, with multiple-car billing (using the RMI Revenue System to allocate revenues), with billing for individual railcars only for overhead non-coal movements. This reduces the complexity of the computer and communication systems required to support operations, and renders unnecessary the colossally expensive mainframe systems that large carriers such as UP use.

The IRR thus does not require a large data center facility to house mainframe computer systems and associated peripheral equipment. As described below, the IRR's IT system design is NT/PC-based, with outsourcing of many IT requirements to RMI in Atlanta, GA. The IRR's system can be housed in a room approximately 20' X 30', with normal office-environment heating and air conditioning. This room is located in the IRR's Lynndyl headquarters.

Based on the IRR operating plan and G&A staff departments/sizes, the capital requirements for IT and communications systems equal $1,853,876. The annual operating cost for IT and related communications equals $2,396,875 at year 2011 price levels. The table below shows the capital and annual operating expenses separately for information technology and communications systems.

TABLE III-D-5 CAPITAL AND OPERATING COSTS FOR IRR IT AND COMMUNICATIONS SYSTEMS		
Item	**Capital Cost**	**Operating Cost**
Information Technology	$1,823,051	$2,291,282
Communications	$ 30,825	$ 105,593
Total	**$1,853,876**	**$2,396,875**

The IRR's computer and communications systems are described below. They have been designed to meet the IRR's mission-critical technology needs to achieve operating efficiencies, customer satisfaction, optimum staffing,[23] maximum productivity and safe train operations. The costs shown in the workpapers are based on the IRR's highest daily train counts and number of annual carload transactions.

Transportation System. The key item in the IRR information technology architecture is RMI's Transportation Management Services ("TMS") package. TMS is an integrated system for managing day-to-day rail operations

[23] The IRR's IT personnel requirements are described above in the discussion of G&A personnel. The IT staff size is largely a function of the systems described in this section.

that is in use on several railroads. It includes modules for yard and inventory control, waybilling, train operations, switching settlements, demurrage, EDI consists, waybills, bills of lading, blocking instructions, work orders, switch instructions, and many other features. This system is outsourced to RMI using frame relay communications from Lynndyl (where the major transactions reporting occurs) to Atlanta, GA, where RMI is located. Field personnel access the RMI system via the Internet. The annual operating expense for the RMI system is detailed in e-workpaper "IRR RMI Price Sheet.xls."

Crew Management System. A crew management system is needed to efficiently manage the IRR's train crews and equipment. The IRR will purchase a license from PS Technology for the SCAT Client Server system, and related equipment and software (Oracle Data Base). This system provides the capacity needed to schedule crew requirements involving slightly less than 50 train/engine/yard employees (peak year) and with six crew-change points over the IRR system. It also minimizes the need for a large staff of crew callers or other crew management personnel. Cost for the crew management system is further detailed in e-workpaper "IRR-Capital Budget.xls."

Dispatching System. A computerized dispatching system, assisted by one human dispatcher on a 24/7 basis, monitors the movement of trains and other equipment at all times, and distributes traffic efficiently across the railroad. The IRR will purchase and implement a PC-based version of the Alstom CTC Dispatching system. This system is similar to the one that is currently being used by the KCS. This system has plenty of capacity to meet the IRR's needs and includes all necessary equipment, installation and on-site tests. A detailed description of the system's capacity is included in e-workpaper "Technology and Communications Budget.pdf."

Revenue Accounting. The IRR needs a revenue system to handle interline settlements for all the trainload transactions and single and multiple-car transactions. RMI has a revenue system that meets the IRR's requirements. In particular, the RMI Revenue Management Services (RMS) is a full-function revenue management system that has been certified by the AAR for Interline Settlement System (ISS) processing. This certification allows railroads using ISS/Connect to participate in the Interline Settlement System. ISS/Connect provides complex rate management, EDI management, freight billing, and support for industry reference files, revenue protection, and additional functionality. The RMS cost is based on the total monthly settlements. The IRR has an estimated maximum of 1,127,951 carloads annually that are processed through the revenue management system at a cost of $588,972. These costs are shown in e-workpaper "IRR-Operating Budget.xls."

Car Accounting. The IRR needs a receipt and payable car hire system, because the IRR owns some railcars and uses some railcars provided by its connecting carriers. RMI has a car hire system for receipts and payables that provides the necessary features needed by the IRR to keep track of its cars off-line and foreign cars on-line. This system computes charges due the IRR from foreign railroads (primarily UP) and the IRR's payables to foreign roads. The system separates car earnings by designated owner groups, issues remittance and settlement summaries, flags non-moving cars and missing junctions and helps keeps track of assets with on-line access to car movement data. The annual operating expense for this system ($268,812) is based on the number of non-private interchange cars and intermodal units handled per month. *See* e-workpaper "IRR-Operating Budget.xls."

General Accounting. The IRR uses the SAGA MAS 200 package for its general accounting system. SAGA MAS 200 is an industrial-strength accounting software package that will adequately support all of the IRR's general accounting functions. It is capable of handling high-volume accounting transactions daily, and has multi-user network capabilities. SAGA MAS 200 provides financial snapshot and business analysis reporting and has the core accounting features needed to run a medium-size business. The software is designed to run on Windows 7 and a Windows NT operating system. The total operating and capital costs for this system, including hardware and training, is $81,831, which includes a Dell OptiPlex 380 PC, cables, HP LaserJet P4015n printer and Dell PowerEdge T710 Server. Details are included in e-workpaper "IRR-Capital Budget.xls."

Human Resource Management. The IRR uses Optimum Solutions, Inc.'s NT/PC-based system for human resources. This system covers the IRR's human resource data needs at an affordable cost. The software package includes all basic employee reporting features, employee profile tracking, attendance reports, benefit, insurance and COBRA reports compensation/job history reports, EEO and citizenship reports, organizational reports, and all OSHA and workers' compensation reports. The system uses a Dell OptiPlex 380, cables, an HP Laser Jet P4015n printer and a Dell PowerEdge T710 Server. The total operating and capital cost for this system, including hardware and training, is $59,997. *See* e-workpaper "IRR-Capital Budget.xls."

Network and Router Equipment. The IRR needs networking capability and routers because it has a small number of computers in multiple locations. Networking and router equipment permit these computers to communicate with one another. The IRR needs one router at each field reporting location and one at its headquarters. The IRR's communication network consists of a fiber optic/microwave and commercial telephone system. The costs for these items are included in the network infrastructure costs discussed elsewhere in this Part and in Part III-F. The IT operating-expense budget for a network computer system for LAN and WAN, routers at various locations, and internet access for headquarters and field locations is shown in e-workpaper "IRR-Operating Budget.xls."

Workstations and Printers. Both desktop and laptop PC's are provided, and included in the IRR's IT costs, with a high-end configuration to run a state-of-the-art operating system while avoiding the need to purchase other applications. One PC is provided for each G&A employee as well as for operating personnel located at headquarters. Additionally, one PC is provided at each crew change point and all yard locations where employees are assigned. Laptops are provided for use by employees who are required to travel a considerable amount of their time. The total capital cost for desktop and laptop computers is detailed in e-workpaper "IRR-Capital Budget.xls."

The IRR needs a variety of printers for work orders, safety bulletins and normal office work such as printing contracts, correspondence and reports. A color printer is needed for various maps, charts and diagrams. Printers are also needed in the field and at interchange locations to print information relating to the work performed there. The equipment needs include a desktop laser printer for each desktop PC, a printer for laptop PCs where needed, one color and one line printer at headquarters, and one line printer at each yard location. See e-workpaper "IRR-Capital Budget.xls."

Voice and Data Communications. The IRR needs a telephone system and telephone service to handle external and internal telephone activity. This system includes traditional telephones for each administrative employee, the NTS telephone system, a voicemail system and a calling card system. NexPath Telephony Sever-NTS Server Rack Mounted Systems is capable of handling 51 outside lines and up to 85 extensions, and thus accommodates the IRR's needs. This system is capable of handling internal calls over the microwave system and external calls from various parties. The external calls would consist of local and long-distance telephone service, 800 services, paging and faxing. The cost of this system is included in the IT Capital Budget.

Data telecommunications to support the RMI transportation system from Lynndyl to Atlanta is provided by AT&T. This is a frame relay system that is based on estimated transactions. The Internet is used for data communications for all the field offices. The field offices also have Internet access to the RMI transportation system in Atlanta. Mobile (cellular) phones and pagers are provided for employees who need them to perform their work efficiently. *See* e-workpapers "IRR-Capital Budget.xls" and "IRR-Operating Budget.xls" for details on the capital and operating costs for all of these items.

Software Maintenance. Software products such as PC accounting packages that run on a server, and tools such as security software and monitoring software, require payment of annual maintenance fees for support and upgrades. Some of these fees are included in the licensing agreement, such as that for the Oracle Solutions program which has an annual fee payable for the use of its product. Other providers have a flat charge for the package with no annual fees, but they will have enhancement from time to time with a specified charge for the upgrade. The annual fees payable by the IRR are detailed in e-workpaper "IRR-Operating Budget.xls."

Railinc Services. The IRR requires some Railinc services to pass and receive car location information to/from UP and URC (its other interchange partner) for the various interchange locations. The annual cost for Railinc service is shown in e-workpaper "IRR-Operating Budget.xls."

Security Software. The IRR also needs security software to protect its network from exterior intrusion due to the large amount of data that is transmitted from Lynndyl to Atlanta and other parts of the railroad. The system to be used is the Watchguard Firebox X6500e UTM Software Suite. The Watchguard suite offers comprehensive Unified Threat Management and is an easily managed firewall and AV/IPS security appliance for mid-size businesses requiring a secure, private network. The specifications for this system and its capital and operating costs are shown in e-workpaper "IRR-Capital Budget.xls" and "IRR-Operating Budget.xls."

(b) Other Out-Sourced Functions

As described earlier, several functions customarily provided in-house by large Class I railroads such as UP can be out-sourced by the IRR. Consistent with the stand-alone concept of an efficient, least-cost railroad, out-sourcing is used wherever the economics so justify without sacrificing service quality.

Out-sourced functions at the IRR include several finance and accounting functions, including preparation of income, property and payroll tax returns and financial/account auditing; legal services, including claims administration and investigation; and administration of the company's retirement plan. *See* e-workpaper "IRR Outsourcing.xls."

A number of independent accounting, payroll service and other firms have the experience and systems to perform these functions. For example, the payroll service firm Paychex has experience in complying with Railroad Retirement and other railroad-specific tax and regulatory reporting requirements. In the human resources area, regional and industry employers' associations are available as a resource for the IRR's internal human resources staff.

In addition, the IRR outsources the inspection of certain empty coal trains at the IPA Springville car repair facility located just south of Provo. Empty coal trains arriving from locations south of Lynndyl (*i.e.* IGS and the Milford interchange) and moving to origins or interchange points on the Provo and Green River Subdivisions (*i.e.* Skyline, Savage or Price) are inspected by IPA's personnel at the IPA car repair facility. The IRR contracts with the IPA car shop to perform this service and associated bad-order switching, which IPA Witness John Aguilar estimates at {

}. In the Base Year 588 trains require this inspection/switching service at a cost of ${ }. This amount is included in the IRR outsourcing expense.

Estimated annual costs have been developed for outsourcing all of the functions described above. The total outsourcing expense in 2011 equals $968,155. Details are provided in e-workpaper "IRR Outsourcing.xls."

(c) **Start-Up and Training Costs**

The IRR's start-up and training costs have been calculated using the procedures approved by the Board in *WFA I* at 51-54.

Initial training costs for the IRR's train crew personnel amount to $1.0 million. Training for these T&E employees is based on publicly available information related to training T&E employees. *See* e-workpaper "III-D-3 Training and Recruitment.pdf." The components of training costs for train crew personnel include the cost of providing the training ("course cost"), train crew wages (including fringes), and travel costs and includes both classroom and on the job training.

Based on training course material available from MODOC Railroad Academy, conductor trainees receive four weeks classroom training and five weeks of on the job training. Engineer trainees must complete the nine week conductor training and 16 weeks of additional training. MODOC's course cost for conductor and engineer training equals $6,492 and $26,484, respectively.[24] In addition to the course cost, train crew wages per week, including fringes, are included as follows: (1) novice conductors - $620; (2) conductors - $752; and (3) engineers - $843. The wages for conductors and engineers are based on 80 percent of the wages for these positions, which as described previously are based on the highest paid T&E personnel in the state of Utah.

[24] The Engineer training course cost of $26,484 includes the $6,492 cost of the conductor training course.

Calculation of the training costs for the IRR's train crew personnel is shown in e-workpaper "IRR Operating Expense.xls," tab "T&E Training." The average training cost for train and enginemen is $24,464 per individual, including tuition, travel and salary as appropriate.

Training for the IRR's dispatchers is based on information available from UP's website which shows that dispatcher trainees must complete a 28 week training program. Training costs for the IRR's MOW employees are based on the weeks and cost of training accepted by the STB in *Otter Tail.*

IT Specialists are paid 1.6 weeks of wages for training based on information available on UP's website which indicates that IT personnel must attend an eight day class.

Initial hiring costs of ${   } per employee are included for rank-and-file employees based on information provided by UP in discovery in a document titled "2010 Training and Recruiting.xls." Recruiting costs for managerial and executive employees equal 10 percent of their first year's salary based on fees charged by several independent recruiting firms. Information regarding these firms and their fee structures are included in e-workpaper "III-D-3 Training and Recruitment.pdf." Subsequent annual recruitment and training expenses are based on a three (3) percent average annual attrition rate, which is the training failure rate experienced by MODOC Railroad Academy. *See* e-workpaper "III-D-3 Training and Recruitment.pdf."

A total amount of $1.8 million has been provided for initial IRR training and recruiting costs. Further details concerning the development of this figure are included in e-workpaper "IRR Operating Expense.xls," tab "Training." Consistent with *WFA I*, start-up training and recruitment costs are treated as operating expense in the IRR's first year of operations.

(c) Travel Expense

Travel expenses have been included for all IRR employees at the Manager level and higher (except for the Customer Service Managers and the Assistant Controllers, as these positions do not require travel) and for the three outside members of the Board of Directors. Annual travel expenses of $8,000 per employee are included. This amount is based on the most recent available annual survey of corporate travel managers performed by Runzheimer International, which estimates the annual cost of corporate business travel. *See* e-workpapers "IRR Operating Expense.xls" and "III-D-3 Material and Supplies.pdf."

4. Maintenance-of-Way

The maintenance-of-way ("MOW") plan for the IRR was developed by one of IPA's expert railroad engineering witnesses, Gene Davis, P.E. Mr. Davis brings considerable hands-on experience with railroad MOW activities, having served in Norfolk Southern Railway's Engineering Department for eighteen years including service as a Track Supervisor, Bridge and Building Supervisor, and Assistant Division Engineer-Bridges. He currently works part-time as Engineer of Bridges and Structures for the Western New York & Pennsylvania Railroad, and is an FRA-qualified track inspector.[25]

a. **General Approach to Developing the MOW Plan**

Mr. Davis's MOW plan follows the precepts approved by the Board in prior SAC rate cases, as well as those he applied as the MOW witness for the complainant in the recent *AEPCO* case, which is currently awaiting a decision on the merits by the Board. In addition to his testimony in the *AEPCO* case, Mr. Davis reviewed the discussion of the SARR MOW plan in *WFA I* which was similar in size to the IRR.

The IRR's MOW plan includes a sufficient field staff to perform day-to-day inspection and maintenance activities, supported by a managerial/office engineering staff that reports to the IRR's Chief Engineer. Capital maintenance programs are also required during the ten-year DCF period to renew/replace the fixed facilities, including the principal elements of the track structure. The IRR's MOW staff also was structured to include planning, budgeting and contracting related to annual capital programs.[26]

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[25] Mr. Davis's detailed Statement of Qualifications is set forth in Part IV.

[26] Consistent with the treatment of program renewal work in other rate cases such as *WFA I* and *AEP Texas*, all of IRR's program maintenance work is performed by contractors and the cost of capital programs is reflected in the DCF model. Under the DCF model, a portion of IRR's fixed assets are assumed to be renewed each year even though the IRR starts operations with a new physical plant, which means there will be no need for significant program work in the first ten years of its operations.

Some maintenance that is considered operating expense is also contracted out, but the vast majority of day-to-day spot maintenance work is performed by the IRR's field MOW employees with assistance and supervision from the office engineering staff. This includes twice-weekly, FRA-required track inspections, non-scheduled or special inspections necessitated by storms or extreme heat swings, monthly turnout and walking track inspections, annual bridge and culvert inspections, and routine day-to-day maintenance including spot-surfacing and lining rough track areas, repairing malfunctioning signals and power switches, replacing rail and welding track components, replacing broken turnout components, performing minor repairs to bridges, making emergency infrastructure repairs such as those caused by a derailment, replacing a broken rail, joint and frog maintenance, bridge and culvert emergency repairs, at-grade highway/rail crossing gate repairs or replacement and minor vegetation control.

In crafting the IRR's MOW plan, Mr. Davis has developed a field organization and supervisory/support staff appropriate to each needed maintenance function given the railroad's geographic scope, terrain, traffic volume and gross tonnages by line segment.[27] The basic functions include track inspection

[27] Mr. Davis's development of IRR's field MOW staff is guided by the principle that an efficient, least-cost SARR does not require unionized employees and does not face the same constraints as Class I railroads in terms of the level of supervision required and ability to cross-train. This enables field MOW employees to be utilized in a more versatile manner, such that an employee can perform more than one function where consistent with the level of specialization needed.

and routine maintenance, communication and signal inspections, testing and maintenance, bridge/culvert inspection and minor building maintenance, as well as budgeting and administrative support. Mr. Davis also considered the equipment needed to perform each function, as well as the maintenance work (other than capital programs) that appropriately could be contracted out. The staff and equipment described below are those needed to accommodate IRR's peak-year operations in terms of gross tons transported.

b. MOW Personnel

The IRR's MOW personnel (employee) requirements are summarized in Table III-D-6 below.

TABLE III-D-6 IRR MAINTENANCE-OF-WAY PERSONNEL	
Position	**No. of Employees**
HQ Office/Supervisory (based at Lynndyl)	
Track Engineer	1
Communications & Signals Engineer	1
Bridge Engineer	1
Engineer of Programs, Budgets, Safety & Training	1
Subtotal	4
Field	
Roadmasters	2
Assistant Roadmasters	3
Track Crew Foremen	4
Track Crew Members	8
Roadway Machine Operators	4
Welders/Helpers/Grinders	4
Roadway Equipment Mechanic	1
Smoothing Crew Foreman	1
Smoothing Crew Member/Machine Operator	1
C&S Supervisor	1
Signal Maintainers	3
Communications Technician	1
Communications Maintainer	1
B&B Supervisor	1
B&B Inspector	1
B&B Machine Operator	1
B&B Foreman	1
B&B Carpenter/Helper & Water Service	1
Subtotal	39
Total	**43**

The MOW personnel shown in Table III-D-6 equate to 6.48 constructed (and maintained) route miles per employee and 7.67 constructed (and maintained) track miles per employee. This level of MOW staffing reflects the IRR's size, traffic volumes, and annual gross tonnages for the various line segments.

c. MOW Organization by Function

The IRR's field MOW organization is dictated by the railroad's geographic scope (route miles), track miles and peak-year traffic volume measured by the gross tons traversing each line segment. (Tonnage is the metric that has the greatest single impact on railroad infrastructure condition and largely dictates how MOW resources should be allocated.) In addition, the distances that field forces must travel to cover their assigned territory are considered. The general office MOW staff (which reports to the Chief Engineer) is structured to provide adequate supervisory and administrative support to the field forces, as well as to prepare the annual MOW budget and supervise contractors in their performance of MOW work. The field and office support personnel requirements of each MOW function are discussed below.

i. Track Department

The IRR's Track Department consists of 29 employees, organized into the positions shown in Table III-D-7 below. The annual compensation associated with each position, by employee and in total, is also shown in the table.[28] A discussion of each position follows the table.

[28] Derivation of the annual compensation shown in connection with each position is shown in Part III-D-4-b. Compensation amounts are salaries excluding fringe benefits.

TABLE III-D-7 IRR TRACK EMPLOYEES			
Position	**No. of Employees**	**Comp. Per Employee**	**Total Comp.**
Track Engineer	1	$ 102,592	$ 102,592
Roadmasters	2	$ 93,536	$ 187,073
Asst. Roadmasters	3	$ 79,391	$ 238,174
Track Crew Foremen	4	$ 65,097	$ 260,388
Track Crew Members	8	$ 49,673	$ 397,384
Roadway Machine Operators	4	$ 56,775	$ 227,101
Welder/Helper/Grinders	4	$ 58,481	$ 233,923
Roadway Equipment Mechanic	1	$ 58,481	$ 58,481
Smoothing Crew Foreman	1	$ 65,097	$ 65,097
Smoothing Crew Member/Machine Operator	1	$ 56,775	$ 56,775
Total[1]	**29**	**x**	**$1,826,984**

[1] Total in this and subsequent MOW personnel tables may not add due to rounding.

General Office Staff. The Track Department is headed by the Track Engineer. He is responsible for maintaining all IRR track, preparing the annual track budget and arranging for/overseeing contractor performance of track maintenance (capital) programs.

Field Staff. Given the IRR's small size and maintenance needs, the IRR does not need any intermediate field supervision between its Track Engineer and Roadmasters. The IRR's Roadmasters are supported by Assistant Roadmasters, track crews and other personnel described below.

Roadmasters and Assistant Roadmasters. The Roadmasters are the IRR's principal field maintenance supervisors. They are responsible for day-to-day track maintenance in assigned geographic districts. There are two Roadmaster districts, each headed by a Roadmaster, averaging about 139 route miles and 165 track miles each. The specific territories for which each Roadmaster is responsible, by subdivision and milepost, are described in e-workpaper "MOW Roadmaster Territories.xls."

The Roadmasters are assisted by three Assistant Roadmasters with one on each Roadmaster's district and one splitting his/her time between the two Roadmasters' districts. Each Assistant Roadmaster is assigned a territory of about 93 route miles. The third Assistant Roadmaster is stationed at Sharp, UT and inspects the north part of his/her territory (between MP 713 and Provo) on Mondays and Thursdays and the south part of his territory (between MP 713 and Lynndyl) on Tuesdays and Fridays. On Wednesdays, the Sharp Assistant Roadmaster will split his/her time alternating on the respective Roadmasters' territories. The Assistant Roadmasters conduct scheduled routine and special track inspections in accordance with all applicable FRA regulations (specifically 49 CFR § 213.233) and are trained and certified by the IRR. They are responsible for track inspections and assist in routine field supervision of the track crews (described below). Each Assistant Roadmaster inspects approximately 46 route miles of track per day, four days per week (Monday, Tuesday, Thursday and

Friday).[29] The Assistant Roadmasters also assist the Roadmasters with other MOW activities, such as, on Wednesdays, performing routine switch inspections, vehicle maintenance, working with the local track crews, checking quality behind the track crews and other light maintenance, as well as additional track inspections as dictated by temperature, weather conditions or emergency situations.

It is now common in the railroad industry to have Assistant Roadmasters perform track inspections. This obviates the need for separate Track Inspector positions. When an Assistant Roadmaster is on vacation or otherwise unavailable, the Roadmaster or a certified Track Crew Foreman, who is cross-trained for this purpose, performs the routine and/or special track inspections.

Track Crews. The IRR employs a total of four field track crews, each consisting of a Foreman and two Crew Members who are essentially track laborers. Each crew is responsible for day-to-day maintenance of the track in a defined territory averaging 70 route miles although the lengths of individual territories vary depending on the amount of second main track involved.[30] These crews perform various tasks in connection with routine track maintenance, such as correcting track geometry defects (surface, line and gauge), repairing detected rail defects, replacing missing/broken joint bars and bolts, replacing failed tie

[29] The frequency of track inspections is dictated by the FRA track classification. IRR maintains mostly FRA Class 4 track which requires inspection twice per week with at least one calendar day interval between inspections.

[30] The territories of the track crews are described in e-workpaper "MOW Roadmaster Territories.xls."

plates/insulators/clips, replacing occasional defective ties at critical locations such as joints, switch points and frogs, removing snow/ice from switches, repairing rail lubricators, minor at-grade highway-rail crossing repairs, assisting smoothing gangs (upon request) and replacing/repairing damaged signs.

The territory assigned to each field track maintenance crew, the three-person crew size and the tasks they are expected to perform are all consistent with modern practice on Class I railroads and regional railroads (some of the latter use two-person track crews). The crew territories also reflect the concept that some work traditionally handled by large, in-house track program maintenance gangs at a Class I railroad is contracted out (as described further below). Moreover, each Roadmaster territory includes a backhoe and dump truck, which further limits the need for additional track and other field personnel.

Roadway Machine Operators. Mr. Davis has staffed the IRR with a total of four Roadway Machine Operators. One Operator is assigned to each of the two backhoes with one backhoe assigned to each Roadmaster district. One additional Operator is assigned to an excavator and one to a Prentice Loader, both of which are available system-wide. The excavator operator is also assigned a hi-rail, three-way (rotary) dump truck which is used to maintain the IRR's ditches as well as transporting ballast, crushed rock or other materials that might be necessary in various MOW activities. Together with the individual Roadmasters' backhoes, the excavator can easily keep the IRR's ditches clean and free-flowing. (It should be noted that much of the UP roadbed underlying the lines being replicated by IRR is on fill or embankment with no parallel ditches except in cut sections. Thus, much of the IRR route does not feature ditches that need cleaning or repairing.)

Additional machine operators are assigned under other classifications, such as Smoothing Crew (Tamper or Regulator Operator) Member or Foreman. Track crew members operate a Hi-rail Boom Truck, one of which is assigned to each track crew whose members are not considered machine operators.

Welder/Helpers/Grinders. The IRR employs two, two-person welding crews, coinciding with each of the two Roadmaster districts. Each welding crew consists of a welder and a welder helper. There are substantially fewer turnouts in each Roadmaster's district compared to those for which UP is responsible today, as well as very few joints to maintain, so there will not be much need for welding repair on the brand-new IRR. However, welding crew members are qualified and trained to Thermite-weld joints where replacement rail is installed as well as to repair engine wheel burns, chipped rail ends or localized rail flow problems and maintain turnout and rail crossing frogs and switch points without removing them from the track.[31] Additionally, the welding crews will assist the B&B forces when welding on steel bridges is required. Although all of the IRR's main track is comprised of continuous welded rail (CWR), there are

[31] It is much more efficient to do welding in place rather than to remove the defective frog, install a replacement and transport the defective frog to a shop for repairs.

some joints associated with turnouts, insulated joints and defective rail replacement locations. Rail ends must be maintained and insulated joints may require slotting to prevent joint or signal failure and premature rail removal/replacement caused by significant rail-end batter and chipping. In addition, welding crews provide backup support on larger jobs such as contracted flash butt/Thermite welding programs and rail detector car/rail grinding operations. Each welding crew is assigned a hi-rail flatbed truck equipped with a self-contained, diesel-driven electric welding generator, cable crane winches for handling molds, and oxygen and acetylene tanks, as well as necessary hand tools and other welding equipment.

Roadway Equipment Mechanic. The IRR also needs one Roadway Equipment Mechanic, assigned as needed among the two Roadmaster territories. This individual is responsible for maintaining and performing routine repairs to IRR field equipment, including tampers, regulators, backhoes and the other specialized equipment assigned to the field MOW forces. The Roadway Equipment Mechanic is assisted by Machine Operators who perform simple daily maintenance tasks on their machines. Trucks (hi-rail and regular) are maintained at dealerships with local mechanics used to perform most auto or truck-related repairs and maintenance.

Smoothing Crew. The IRR employs one, two-person smoothing crew, which performs spot surfacing and lining of the track as needed to correct any significant surface irregularities noted in geometry test car data, or variations found by the Roadmaster/Assistant Roadmaster during track inspections. The crew covers both Roadmasters' territories. Given IRR's new track structure, it is unlikely that there will be many surface or line irregularities within the first ten years of the railroad's existence.[32] Most surfacing and lining takes place in areas featuring the highest number of curves. The smoothing crew consists of a Foreman, who also operates a machine (*i.e.*, the ballast regulator), and one Smoothing Crew Member (Machine Operator). This crew is assigned a Tamper and a Ballast Regulator. The Tamper is used to surface and line track. The Ballast Regulator is used to move ballast, restore the roadbed section and shoulder ballast, fill the tie cribs and sweep the track following surfacing and lining. This crew assists field track forces and contractors with derailments or other problems requiring minor surfacing work. If additional labor is needed to assist a smoothing crew in unusual circumstances, or in other instances such as during vacation times, it can be drawn from the nearest track crew or other machine operator who has been cross-trained on the smoothing crew machinery.

ii. Communications & Signals Department

The IRR's Communications & Signals (C&S) Department consists of seven employees. The specific positions and compensation levels in this department are shown in Table III-D-8 below.

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[32] Even where existing railroads have installed CWR, it usually replaced older, jointed rail whose joints took a pounding that tended to damage the roadbed over time. The IRR does not maintain any old roadbed that has been pounded/ damaged by trains running over jointed rail for many years.

TABLE III-D-8 IRR C&S EMPLOYEES			
Position	**No. of Employees**	**Comp. Per Employee**	**Total Comp.**
Communications & Signals Engineer	1	$ 102,592	$ 102,592
C&S Supervisor	1	$ 79,391	$ 79,391
Signal Maintainers	3	$ 73,910	$ 221,731
Communications Technician	1	$ 67,378	$ 67,378
Communications Maintainer	1	$ 67,378	$ 67,378
Total	7	x	**$ 538,472**

General Office Staff. The C&S Department is headed by the Communications & Signals Engineer. This Engineer position is responsible for all communications and signals-related functions, assuring that the proper tests are conducted and that any necessary maintenance is being performed. This position is also responsible for developing the necessary capital programs to keep all signal and communication equipment functioning reliably as well as supervising outside contractors who maintain the communications equipment including microwave towers and associated equipment and radios. This individual works closely with the C&S Supervisor to ensure that any signal or communication problems are handled promptly.

Field Staff. The field staff is led by one C&S Supervisor. The C&S Supervisor position is responsible for field supervision of the Signal Maintainers, Communications Maintainer and Communications Technician (described below).

The C&S Supervisor is located at Provo to provide adequate coverage of the IRR geographic territory.

Signal Maintainers. The IRR employs three Signal Maintainers. This position is responsible for scheduled inspections and routine testing and maintenance of the IRR signal system. Signal Maintainers repair defective trackside signals that govern train movements, repair/replace at-grade, highway-rail crossing protection devices, perform monthly FRA-mandated tests and change out broken signal bulbs. The number of Signal Maintainers required is a function of the number of AAR signal units.[33] Based on IPA Witness Victor Grappone's calculation that 4,181 total signal units are required to operate the IRR system safely and efficiently, Mr. Davis conservatively provided three Signal Maintainers, which equates to one Maintainer per 1,394 signal units. This number is reflective of practice at several Class I and other railroads.

Communications Technician. The IRR employs one Communications Technician who is primarily responsible for maintaining train crew radios and other communications devices and is based at Lynndyl. The Technician is on call if a problem arises in the CTC control center and can be supplemented by assistance from the Communications Maintainer if necessary.

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[33] An AAR signal unit is a measure of the difficulty of maintaining a particular signal device. There are normally more AAR signal units than there are individual signals.

Communications Maintainer. The IRR employs one Communications Maintainer who is primarily responsible for maintaining communication devices throughout the IRR system and assists the Communications Technician when applicable. This position is based out of Lynndyl and also assists with problems in the CTC Control Center when necessary.

iii. **Bridge & Building Department**

The IRR Bridge & Building (B&B) Department consists of six employees. The specific positions and compensation levels in this department are shown in Table III-D-9 below.

TABLE III-D-9
IRR B&B EMPLOYEES

Position	No. of Employees	Comp. Per Employee	Total Comp.
Bridge Engineer	1	$ 102,592	$ 102,592
B&B Supervisor	1	$ 79,391	$ 79,391
B&B Inspector	1	$ 70,018	$ 70,018
B&B Machine Operator	1	$ 56,775	$ 56,775
B&B Foreman	1	$ 60,679	$ 60,679
B&B Carpenter/Helper	1	$ 52,874	$ 52,874
Total	**6**	**x**	**$ 422,330**

General Office Staff. The IRR B&B Department is headed by the Bridge Engineer who is responsible for inspections and maintenance of the IRR bridges, culverts and tunnels and for inspections of and minor repairs to buildings. This position is also responsible for preparing the annual bridge repair budget and supervising the contractors who perform periodic bridge maintenance and/or major structural repairs, as well as periodic building maintenance. With the implementation of the FRA Part 237 regulations on September 13, 2010, the Bridge Engineer also will be a qualified Professional Engineer (PE). The IRR office and field staff is sufficient to comply with FRA Bridge Management Program requirements.

Field Staff. The B&B field staff is not large, reflecting the fact that all IRR bridges are constructed using modern technology with concrete and steel components. That combination results in little or no annual maintenance to the structures – unlike bridges with timber components which are common on Class I railroads, including the UP lines replicated by the IRR.

B&B Supervisor. The IRR employs one B&B Supervisor, who reports to the Bridge Engineer. This individual is headquartered in Provo along with the Bridge Engineer. The B&B Supervisor is primarily responsible for performing regular bridge, culvert and tunnel inspections, and for conducting periodic inspections of the IRR's buildings. He/she also recommends minor bridge repairs/maintenance to the B&B crew or, on occasion, the appropriate Roadmaster, to the extent the repairs (such as tightening or restoring missing bolts, clearing debris from bridge piers and culvert inlets, etc.) are within the capability of the field track, backhoe or excavator operator. Major bridge, tunnel and culvert repairs are contracted out.

<u>Bridge Inspector and other field B&B employees</u>. The B&B Department's field employees include one Bridge Inspector, who performs annual bridge, culvert and tunnel inspections as a part of his/her daily routine, one B&B Machine Operator, and one B&B crew that performs routine bridge, tunnel and culvert maintenance over the IRR system. The B&B Supervisor is assisted by a B&B Machine Operator, equipped with a rubber-tired bridge hoist/crane. The B&B crew consists of a Foreman and a Carpenter/Helper. This crew performs bridge, culvert and tunnel repairs to the extent they do not involve major pier or superstructure repairs, which would not occur during the foreseeable future and which would be contracted out. Any needed welding of steel bridge components is accomplished by utilizing the welding crew which is qualified in bridge welding procedures.

iv. Misc. Administrative/Support Personnel

The IRR employs one additional Engineering administrative and support person at the Lynndyl headquarters who is dedicated to the MOW function but who do not support any particular field sub-department. This person, the Engineer of programs, Budgets, Safety & Training, reports to the Chief Engineer and develops the annual MOW budget (including the capital or program budget) as well as interfacing with contractors performing both program and day-to-day work and with governmental agencies involved in public projects that affect the railroad. He/she also deals with other MOW administrative matters involving environmental, safety and training, as well as payroll and monitoring/payment of contractor invoices.[34] This Engineer has an annual salary of $102,592.

d. Compensation of MOW Employees

Salaries of IRR MOW personnel, other than the Chief Engineer (who is included in the Operating personnel discussed earlier in Part III-D), are set forth in Tables III-D-6 through III-D-9 above. The total annual compensation of these MOW personnel in the Base Year (excluding fringe benefits) equals $2.9 million. MOW salaries are based on the salaries paid by UP to MOW personnel in 2010, as shown in UP's Wage Forms A and B, indexed to 1Q11 levels. Details are provided in e-workpaper "IRR Salaries.xls."

e. Non-Program MOW Work Performed by Contractors

While IRR's in-house MOW forces handle most day-to-day maintenance of IRR track and facilities, it is more cost-effective to contract out some maintenance work that is often treated as operating expense. The treatment of such contracted work by the IRR is consistent with the approach approved by the Board in *WFA I* at 69-73.

Such contracted work involves several broad categories including: (i) routine maintenance that can be scheduled on a regular basis but is not performed frequently enough to justify IRR investment in the equipment and

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[34] The IRR's purchasing function is centralized in a Budgets and Purchasing section within the Finance & Accounting Department, discussed above under General & Administrative expenses. However, purchasing associated with the IRR's MOW function is coordinated by the Engineer of Programs, Budgets, Safety & Training.

personnel required to accomplish it (such as track geometry, ultrasonic rail testing, rail grinding and ballast cleaning); (ii) unplanned maintenance that does not occur at regular intervals and is more economically handled by contractors who have the requisite expertise and specialized equipment available (such as snow and/or storm debris removal and bridge pier or superstructure repairs); and (iii) unplanned maintenance events requiring more employees or specialized equipment than the IRR supports because of the infrequency and unusual nature of the events (such as removing damaged cars/lading and repairing the track structure after a major derailment or weather event/storm).

Specific areas of maintenance that are performed by contractors are described below.

i. Planned Contract Maintenance

Track Geometry Testing. Track geometry testing is a routine maintenance function. The frequency of such testing is generally a function of the annual gross tonnage moving over the track. Such testing ensures that the track and related structures meet all FRA standards in terms of alignment, gauge and profile. Track geometry test results are used to prioritize work by the smoothing crew. Geometry testing is required and completed with varying frequency, depending on the annual gross tonnage moving over various portions of the IRR. Generally, track carrying between 5 and 30 million gross tons per year ("MGT") is tested once per year; track carrying 30 to 60 MGT is tested twice per year and track carrying more than 60 MGT is tested three times per year. These frequencies are generally consistent with Class I railroad practice. The frequencies assumed with regard to testing track carrying above 30 MGT are conservative on a newly-constructed railroad that features better roadbed compaction, drainage, ballast and subballast, rail and timber. The newer construction manifest in the track structure will hold up better than average. Also, the IRR will have experienced no roadbed damage from previous use of jointed rail, where low joints developed from batter weakening the sub-grade over time.

The cost of track geometry testing is ${ } per track mile. This amount is based on information provided by UP in discovery (*see* e-workpaper "MOW Costs-Final.xls," tab "Geometry Testing"). Mr. Davis utilized the latest UP contract cost and indexed that amount to 1Q11. The total annual miles of testing and related cost calculations are detailed in e-workpaper "MOW Costs.xls," tab "Annual MOW Expenses."

Ultrasonic Rail Testing. Ultrasonic rail testing is important in preventing derailments because it helps reveal internal rail defects before failure that could cause disruptions to IRR operations. FRA regulations (49 CFR § 213.237) require testing rail to locate internal defects in Class 3 track over which passenger trains do not operate at least once every 30 MGT or once a year, whichever interval is longer, and similar testing of Class 4 through 5 track at least once every 40 MGT or once a year, whichever interval is shorter. Consistent with these standards, the IRR conducts ultrasonic rail testing at least once a year on all of its main lines and twice a year on track carrying greater than 40 MGT annually.

Branch lines are tested once a year. These testing frequencies are more than adequate given that the IRR starts operations with all new rail on its main tracks and sidings.

Based on a spreadsheet provided by UP in discovery, the average cost of ultrasonic rail testing is ${ } per track mile indexed to 1Q11 prices for each pass over the track with a test car. *See* e-workpaper "MOW Costs-Final.xls," tab "Rail Flaw Detection" for details. The total annual miles of ultrasonic testing and related cost calculations are detailed in e-workpaper "MOW Costs-Final.xls," tab "Annual MOW Expense."

Rail Grinding. Rail grinding is a part of most Class I railroads' MOW plans that is deemed necessary based on traffic, tonnage and rail characteristics, while extending the service life of the rail and increasing locomotive fuel efficiency. Studies have indicated that premium rail in high-density territory, even with heavy curves, can withstand well in excess of 150 MGT without the need for grinding.[35] Here, due to the moderate annual tonnage, no 136-pound premium CWR rail is being used on the IRR main tracks; instead standard 136-pound CWR is used on all IRR main tracks. To be conservative, the IRR will rail grind consistent with the approach used in *WFA*, in that rail grinding will be performed every 60 MGT on mainline track not constructed of premium

[35] *See* Kevin Sawley, Transportation Technology Test Center Inc., Report 928, "North American Rail Grinding Practices and Effectiveness," August 1999; *Railway Track and Structures*, December 2000, page 15 (included as e-workpaper "grinding.pdf").

rail. Tangent rail and rail in curves less than three degrees receive one pass while rail in curves equal to or greater than three degrees receives two passes. Switches, rail crossings (diamonds) and rail located in at-grade road crossings also will be ground at the same time that normal rail grinding is performed.

The annual cost per mile allocated to rail grinding is ${ } per pass mile. This cost is based on information provided by UP in discovery { } indexed to 1Q11. The total miles of grinding and the related cost calculations are detailed in e-workpaper "MOW Costs-Final.xls," tab "RailGrinding Cap. Costs." Switch grinding is performed at the same intervals as the rail grinding, also at a cost of ${ } per mile. The quantity has been included in the total rail grinding effort to be accomplished.

In *WFA I*, the Board treated the cost of rail grinding as an operating expense, notwithstanding the complainant's argument that it should be capitalized because it extends rail life. *Id.* at 71. However, it is rail industry practice to capitalize the cost of rail (and related switch) grinding and, {

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<u>Ballast Cleaning/Undercutting</u>. Recognizing that the IRR system carries many coal unit trains, over time, the ballast may become fouled and require shoulder cleaning (and occasional undercutting) MOW activities. Little such work would be required in the early years of IRR operations but, after year three, about five percent of the IRR's main and passing siding mileage should be cleaned each

year or about sixteen miles annually at a cost of $19,500 per year. These costs are detailed in e-workpaper "MOW Costs-Final.xls," tab "Shoulder Cleaning Costs." By taking a proactive approach to shoulder cleaning, wholesale undercutting should not be necessary during the ten-year DCF period.

Yard Cleaning. The IRR's yards should be cleaned once a year to ensure that debris does not affect rail operations. The IRR features one inspection/fueling yard at Provo as well as three smaller interchange-only yards at Price, Lynndyl and Milford. The amount and cost of yard cleaning required in these yards is based on Mr. Davis's experience. Details of the calculations are shown in e-workpaper "MOW Costs-Final.xls," tab "Yard Cleaning." The total annual cost of yard cleaning is $17,000 per year.

Vegetation Control. Weed spraying, brush cutting and mowing are necessary to prevent overgrowth into the rail bed or other structures, which can cause a safety hazard. The most obvious and critical vegetation control concerns the ballast section. If vegetation is allowed to flourish in the ballast section, it will soon foul the ballast and interfere with the most important function of ballast, which is to permit water to drain from the track structure, uninterrupted. If water is allowed to be retained in the track structure, it can reduce tie life and destabilize the track structure, thus increasing the risk of track irregularities and derailments. Vegetation control also is critical in the vicinity of at-grade, highway-rail crossings to ensure the safety of both train operations and the road traveling public.

IRR vegetation control requirements are based primarily on the climatic conditions and annual rainfall in the geographic areas it serves. The IRR system can control potential vegetation growth on its system by weed spraying once per year in the spring with a second application as needed about three to five weeks after the initial application.

The annual cost of vegetation control is based on Mr. Davis's experience. The total cost per mile of vegetation control is $116.63, with a total annual expense of $32,500. *See* e-workpaper "MOW Costs-Final.xls," tab "Annual MOW Expenses."

Very little brush-cutting should be required because the IRR right-of-way will be cleared during construction and much of the right-of-way is located in arid areas where brush does not grow readily. Scheduled, periodic weed spraying will inhibit brush growth greatly. Because brush and weeds sometimes tend to accumulate near road grade crossings, the IRR's system-wide excavator and the individual Roadmasters' backhoes will be used as needed to keep the right-of-way cleared near road crossings where contracted vegetation control work may not be sufficient.

<u>Crossing Repaving</u>. At-grade, highway-rail crossings must be repaved periodically. Asphalt pavement is typically used with treated hardwood crossing timbers in many public grade crossings. The life of asphalt pavement is largely a function of highway/road traffic, at least beyond 24 inches outside each rail, although rail traffic is also a factor within the crossing zone proper. A typical

pavement application will last eight to twelve years, or longer. Consequently, there should be little need for the IRR to begin re-paving activities immediately. However, to be conservative, and consistent with the approach used in the DCF model, Mr. Davis assumed that paving would begin in the IRR's first year of operations. As the paving should last at least ten years, Mr. Davis assumed that ten percent of the total crossing paving quantity would be re-paved each year. The total cost of crossing paving is $206,468 annually. This amount is capitalized as it is performed in conjunction with the annual capital (renewal) program. *See* e-workpaper "MOW Costs-Final.xls," tab "Crossing Repaving."

Equipment Maintenance. Normal maintenance of company-owned or leased equipment is contracted out, although the IRR employs one in-house mechanic who performs routine maintenance and repairs to the basic equipment used by its field track forces. Equipment that may require additional maintenance/repair by contractors (because it may be beyond the capability of the IRR's mechanic) includes hi-rail trucks, excavators and backhoes, ballast regulators, tampers, hydraulic power units and certain power hand tools. The IRR's mechanic is prepared and equipped to perform preventive maintenance and straightforward repairs even to this equipment.

A generally-accepted cost in the railroad industry for the annual cost of maintaining MOW equipment is five percent of its purchase price.[36] This

[36] In *WFA I* at 69, the Board accepted a higher figure on the basis of a special study performed by the defendant. In this case, UP did not provide any

amounts to $197,896 annually. *See* e-workpaper "MOW Costs-Final.xls," tab "Annual MOW Expenses."

Communications System Inspection and Repair. Periodic inspection and planned maintenance of the IRR communications system, which is described in detail in Part III-F-6 below, is performed in part by contractors with assistance from the IRR's in-house Communications Technician and Maintainer. The IRR communications system includes microwave towers, fiber optics and LMR radio facilities, which are inspected annually.

Communications maintenance and inspection costs are normally a component of maintenance agreements covering communications systems entered into at the time of installation. In *WFA I*, the complainant proposed and the Board accepted an annual communications system maintenance cost of two percent of original purchase cost. Based on Mr. Davis's experience, this percentage is reasonable and it has been applied to the IRR communications-equipment acquisition costs developed by IPA Witness Victor Grappone. The result is an annual cost of contracted repairs to IRR communications facilities of $148,246. *See* e-workpaper "MOW Costs.-Final.xls," tab "Annual MOW Expenses."

Bridge Inspections. As described earlier, the IRR B&B Supervisor and B&B Inspector perform basic bridge inspections as part of their duties, including annual inspections of all bridges. Since all IRR bridges will be newly

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information on its annual equipment maintenance costs in discovery, and Mr. Davis believes the five percent figure is reasonable.

constructed, the IRR's B&B Supervisor and Inspector can perform all the annual bridge (and culvert) inspections. Therefore, no contract bridge inspection is required.

Building Maintenance. All IRR buildings are new at operations start-up so only occasional routine maintenance is required.[37] Other than general plumbing and electrical repairs over time, HVAC systems generally require semi-annual inspections and/or maintenance which are performed by contractors (as is occasional outside maintenance). Mr. Davis developed an annual cost of $205,150 for contract building maintenance, which is based on two percent of the total building cost. *See* e-workpaper "MOW Costs-Final.xls," tab "Annual MOW Expenses."

ii. Unplanned Contracted Maintenance

Snow Removal. IRR yards and main tracks may require occasional snow removal. Most snow removal activity is performed by IRR field maintenance personnel who are not normally as busy in the winter as during the remainder of the year in the areas where snowstorms are likely to occur.

All main track switches are equipped with switch heaters. The ballast regulator equipped with a snow blower is used to blow out snow-laden switches and trackage in higher-elevation areas as needed; the regulators are run by Smoothing Gang members who are not as busy in the winter in those areas.

[37] UP provided no information in discovery concerning building maintenance costs.

Snow removal from roadways and parking lots, primarily in the inspection/fueling yard areas will be contracted out; it is better handled by contractors because it is uneconomical to employ extra in-house staff and own infrequently used, specialized equipment necessary to perform this work.

UP provided no data on snow removal costs in discovery. Based on his experience, Mr. Davis has allocated $15,000 per year to perform contract snow removal. *See* e-workpaper "MOW Costs-Final.xls," tab "Annual MOW Expense."

Storm Debris Removal. There may be infrequent occasions where severe winds bring down trees or scatter debris on the right-of-way, as well as ice storm damage during winter conditions. Depending on the severity and extent of the damage, outside contractors will be called upon to clean up debris. In-house MOW forces will be available to assist, but the IRR will not staff up to respond to such occasional potential events. Once again, UP provided no information in discovery on storm debris removal costs. Based on his experience, Mr. Davis provided $15,000 annually to cover the cost of this activity. *See* e-workpaper "MOW Costs-Final.xls," tab "Annual MOW Expense."[38]

Building Repairs. As described earlier, all IRR buildings are new. Nevertheless, the buildings may require occasional unplanned repairs. Typical occurrences include storm damage, water and sewer line repairs, electrical failure,

[38] Neither snow nor storm debris removal costs are significant when compared to other MOW activities. The cost estimates provided in the text are reasonable given the inability to realistically plan or forecast an annual amount covering activities that are based solely on unpredictable weather.

HVAC repairs, etc. In Mr. Davis's experience, unplanned annual costs of building maintenance generally are subsumed within the general building maintenance costs described above.

iii. **Large Magnitude, Unplanned Maintenance**

Derailments. A new railroad such as the IRR, constructed to modern standards, is less likely to experience a major track-caused derailment than the older track structure and sub-grade of the UP lines being replicated. Nevertheless, over the IRR's ten-year life under the DCF model, derailments may occur. Removing equipment and lading and restoring the track structure after a major derailment usually requires heavy specialized equipment. Today, few railroads use in-house staff to clear and repair track after such derailments without assistance from a contractor, and most Class I railroads no longer employ auxiliary forces dedicated to derailment response. The same is true for regional and short-line railroads, which are even less able to afford this stand-by resource. Almost all rail carriers rely primarily on contractors to respond to such occurrences because it is not cost-effective to support a separate complement of employees and heavy equipment on stand-by to deal with infrequent, major derailments.

The IRR's average annual cost of repairing damage from derailments (primarily contractor expense) is $7,339. This figure is based on 2010 FRA Accident Reports for UP. *See* e-workpaper "IRR Derailment and Clearing Wrecks.xlsx" for details of this calculation. Given the IRR's brand-new rail network at start-up (including the fact that it did not replace older, jointed rail with

CWR but starts operations with CWR on all of its main tracks), and considering that it moves only complete trains with no local industry switching, the IRR certainly should not incur greater derailment expenses than the real-world UP does on a per-mile basis. When the estimated cost of clearing wrecks[39] is added, the IRR total annual cost of derailments is $7,501.

Washouts. Again, a new railroad roadbed/track structure is not as prone to washouts as older, real-world railroad roadbed that may have experienced previous water-related damage. Nevertheless, washouts may occur – for example, when a culvert through the sub-grade becomes blocked, preventing the flow of water. This blockage can be caused by melting snow or severe rainstorms that cause heavy runoff to threaten the integrity of the right-of-way; floating debris on the upstream ends of some culverts also could prevent culverts from serving their intended purpose.

Based on the relatively arid territory in which much of the IRR route is situated and the IRR's total route miles, the average annual cost of washout repairs likely would not exceed $50,000 and could be much less. This cost includes furnishing and placing up to 1,000 tons of rip-rap at a material cost of $30 per ton. Other related work would be performed by local field forces (including

[39] The cost of clearing wrecks is based on the average costs incurred by UP from its 2010 R-1. The IRR estimated cost of clearing wrecks is $162. *See* e-workpaper "IRR Derailment and Clearing Wrecks.xlsx."

the backhoe, excavator and smoothing crew) as needed. *See* e-workpaper "MOW Costs-Final.xls," tab "Annual MOW Expenses."

Ditching. Since the IRR starts operations with a newly-constructed roadbed/track structure with clear, open ditches, little ditching is likely to be required. In-house equipment including the excavator and backhoes are available to handle any necessary repairs or ditch clearing. However, to be conservative, Mr. Davis accounted for the possibility of having to contract out some specialty service totaling $15,000 annually should the IRR's in-house equipment be insufficient to handle needed ditch clearing.

Environmental Cleanups. The IRR operates locomotive inspection and servicing or repair facilities at N. Springville (near Provo) that might be a source of inadvertent discharge of environmentally hazardous materials. In addition, IRR transports some hazardous commodities over several of its lines. An infrequent environmental cleanup could occur if hazardous commodities are released during a derailment. Derailments are less likely to occur on the IRR than on a Class I railroad such as UP because the IRR begins operations in 2011 over a brand-new track structure that includes CWR on all of its main tracks. It will not incur costs associated with situations where CWR replaced jointed rail that caused ballast and sub-grade problems due to compression, which increases the risk of track-caused derailments.

UP provided no information on the cost of environmental cleanups in discovery. However, IRR is providing protective drip pads at the location where locomotives are fueled at its N. Springville locomotive facility. This insures that oil emissions from idling locomotives are contained. At N. Springville, 600 track feet are protected by drip pads, at a cost of $3.00 per track foot. These pads are replaced every three months, at a cost of $7,200 annually. *See* e-workpaper "MOW Costs-Final.xls," tab "Annual MOW Expense."

f. <u>Contract Maintenance</u>

Program maintenance, such as rail and tie renewal programs, is performed by contractors and is capitalized in the DCF model. Consistent with the Board's SAC precedent and Class I railroad practice, the following more frequent MOW work that is contracted out is also capitalized rather than being included in operating expense.

i. <u>Surfacing</u>

The IRR employs one field smoothing crew which performs day-to-day surfacing of the track to correct rough spots. In addition, heavy-tonnage track subjected to the high axle loadings of unit coal and other trains needs to be surfaced on a regular basis (once every three years) to prevent it from deviating from acceptable standards. Consistent with standard railroad practice as well as the Board's approach in recent SAC cases, including *WFA I*, this surfacing is performed by a contractor and it is capitalized in the DCF model because it is in the nature of program work.

ii. **Rail Grinding**

As noted earlier, {

} The rail and switch grinding frequencies developed by Mr. Davis, as described in the preceding section, were provided to IPA Witness Thomas Crowley for purposes of capitalizing them in the DCF Model.

iii. **Crossing Repaving**

Again, as discussed earlier, UP is assumed to follow standard industry practice and capitalize road crossing renewal in conjunction with track and signal program work. The IRR follows the same approach. The crossing repaving frequencies developed by Mr. Davis also were provided to Mr. Crowley for purposes of capitalizing them in the DCF Model.

iv. **Bridge Substructure and Superstructure Repair**

Bridge life expectancy under UP's depreciation accounting is 60 years. This life expectancy generally reflects the longevity and stability of bridge superstructure and substructure components.[40] Nonetheless, unexpected minor repairs on a bridge substructure and superstructure will be required from time to time. The likelihood that steel and concrete repairs will be required is negligible given that the IRR structures are new in year one and enjoy a life expectancy of over half a century.

[40] The IRR's bridge replacement is accounted for in the DCF process.

However, to be conservative, Mr. Davis assumed having to repair or perform contract maintenance on three of the IRR's 109 total bridges, or about three percent, per year as a result of unexpected events such as being struck by vehicles or high water, resulting in having to repair/replace bridge components or make pier repairs. Mr. Davis assumed a contractor's crew of four working over a period of two days ($2,000) plus material ($1,000) and equipment ($1,000) for the three emergency repairs or a total of $12,000 annually. This cost is expensed.

g. **Equipment**

The IRR's in-house MOW forces require a variety of equipment to perform their duties, some of which have been described previously. MOW equipment requirements and costs (other than for small tools, whose cost is included as a materials additive to the base compensation cost of each employee) are described below. The costs of all of this equipment are detailed in e-workpaper "MOW Costs-Final.xls," tab "Annual MOW Equipment Cost."

i. **Hi-Rail Vehicles**

Each of the IRR's four field track crews is equipped with a hi-rail truck which provides transportation of the crew and is equipped with the tools necessary for the crew to perform its duties. This crew-cab vehicle comfortably seats a Foreman and two Track Workers. Its hi-rail gear provides the versatility required of maintenance forces to gain access to the track and carry out their duties, particularly on the portions of the IRR network where traffic density is high.

For example, if a track crew cannot access the track at its headquarters due to imminent train arrival, the crew travels by road to a point where a dispatcher can provide positive protection for the crew to get on the track. Alternatively, if a crew is on the track and it cannot remain or proceed due to an oncoming train, the hi-rail vehicle is removed until the train clears the CTC block or, in non-signaled territory, passes the track crew's location, and then either returns to the track or moves, by road, to another point where (with authority from a dispatcher) it again obtains the authority to gain access to the track.

Each of the hi-rail vehicles is equipped with a boom crane and overhead racks. They allow the crew to load 39-foot rails, frogs, switch points, switch ties, cross ties and other materials necessary to perform track maintenance. The vehicle also is equipped with a hydraulic system providing the capability for operating portable tamping tools (2), an impact wrench (1), a rail saw (1), a rail drill (1), a spike hammer or driver (1), a spike puller (1), *etc.*, which are included in the complement of tools carried on the vehicle.[41] Based on information obtained from hydraulic tool vendors, Mr. Davis determined that the IRR's cost to equip a gang truck or Assistant Roadmaster truck with these tools is ${ } per vehicle. *See* e-workpaper "MOW Costs-Final.xls," tab "Annual MOW Equipment Cost."

[41] The hydraulic systems on the track crew's hi-rail trucks can perform more functions than an air compressor. Air tools largely have been replaced by hydraulic tools supplied to each crew and each Assistant Roadmaster.

While B&B crew hi-rail trucks are equipped with a different type of crane than the track crew hi-rail trucks, the trucks cost approximately the same and are similarly outfitted with hydraulic and hand tools.

Other MOW personnel are assigned smaller hi-rail vehicles. These include the Roadmasters and Assistant Roadmasters, Signal Maintainers and welding crews. The Assistant Roadmasters' vehicles also are equipped with a hydraulic pump and tool set similar to the system in the track and bridge crew vehicles. The HQ Engineering/MOW staff also is assigned hi-rail vehicles as described in Part III-D-4-f. In addition, the IRR equipment roster includes one trailer assigned to move the excavator to job sites as well as a Prentice Loader (material handling) truck. Trailers are also provided to host the backhoes assigned to each Roadmaster. These vehicles are used to deliver equipment, tools and materials to the field track and other crews.

Smaller hi-rail vehicles driven by supervisory employees are intended essentially for their transportation and that of others who may accompany them together with some capability for small material transport. Vehicles rated three-quarters to one ton are suitable. Hi-rail vehicles assigned to Assistant Roadmasters, Signal Maintainers and Welders not only provide transportation of employees, but are equipped with service bodies for transporting equipment, tools and parts. Here, too, vehicles rated three-quarters to one ton are appropriate. The rating specification accommodates a wide variety of vehicle manufacturers and body configurations.

As shown in e-workpaper "MOW Costs-Final.xls," tab "Annual MOW Equipment Cost," IRR's total hi-rail vehicle cost is $1.59 million and the total vehicle costs are $1.86 million. The $1.59 million number for hi-rail vehicles excludes the Prentice Loader and regular and rotary dump trucks, which adds $0.57 million to the hi-rail vehicle costs, increasing the total to $2.16 million. Addition of the regular dump trucks and hi-rail vehicles brings the total vehicle cost to $2.44 million.

ii. Equipment for Track and Related Work

IRR field crews responsible for track maintenance (including the track crews, smoothing crews and welding crews) are assigned other specialized equipment needed to perform their tasks, as described below.

Rail Drills. Rail drills are needed by field track crews for drilling holes in new replacement rail when bolted joints are installed by replacing a rail that is found to be defective through electronic testing or visual detection. Each track crew and each Assistant Roadmaster is assigned one hydraulic rail drill as part of the hydraulic tool set on their truck.

Rail saws. Rail saws are used by field MOW personnel to crop torch-cut rail ends or shorten existing rail ends when joints are to be installed. Providing smooth rail-sawn ends meets FRA requirements for the IRR track classes, as no torch-cut rail is allowed in Class 4 track. Each hydraulic tool set contains one rail saw.

Impact Wrenches. Each track crew and Assistant Roadmaster also is outfitted with an impact wrench in the hydraulic tool set on their hi-rail vehicle. This piece of equipment is used to loosen and tighten joint bolts where joints are present in the track infrastructure. The impact feature of these tools is especially effective where a nut and bolt are rusted or seized and manual attempts to loosen them might prove unsafe. The impact wrench also is equipped with calibration capability so that applied force can be set in accordance with manufacturer's specifications.

Tamping Tools. Each field track crew is equipped with two small, hand-held tampers. Major surfacing programs are incorporated into major rail and tie renewal projects and are performed by outside contractors with large tamping equipment. However, additional spot surfacing may be required to smooth joints, switch and railroad crossing frogs, switch points, bridge approaches, at-grade crossing approaches, local spots on the high sides of curves, and as curves move (out) in the spring and (in) during the fall. This spot power tamping (versus hand tamping with ballast forks) minimizes speed restrictions due to track conditions. Thus, each track crew is equipped with a set of tamping tools powered by the hi-rail vehicle's hydraulic system.

Spike Hammers (Drivers). Each set of hydraulic tools is accompanied by a single spike hammer or driver which drives regular cut spikes into wooden ties or lag screws into timber headers (or planks) in at-grade, highway-rail crossings. These power tools reduce manual labor associated with spike installation.

Spike Puller. Lastly, each set of hydraulic tools includes a single spike puller which again reduces the amount of manual labor associated with spikes, only this time involving the removal of existing spikes from timber ties.

Tamper and Ballast Regulator. The smoothing crew is equipped with a modern high-speed tamper with switch-tamping capability to perform spot tamping work and a ballast regulator which is required to move ballast, restore the roadbed section and shoulder ballast, and sweep the track. The crew performs virtually all of the spot tamping, lining and surfacing required to maintain proper track line and surface. The initial capital cost of the tamper is ${ } and indexed to a 1Q11 price of ${ } while the cost of the ballast regulator is ${ } and indexed to a 1Q11 price of ${ }. The source of these initial capital costs is UP discovery document "Equipment Roster.xlsx." The calculation of the amounts shown is detailed in e-workpaper "MOW Equipment Index.xls."

Grinders. Each of the two welding crews is equipped with a complement of rail grinding equipment, including straight and profile grinders. This equipment is used to grind rail to the designed profile at specific locations. IRR welding crews use the Thermite welding process to eliminate joints created temporarily in CWR where a section of rail is replaced. They also restore, by welding, rail ends which are battered, chipped or crushed, switch and rail crossing frogs, and switch points. Once welding is complete, the weld zone needs to be ground to conform with the rail profile adjacent to the zone. In addition, the crews slot insulated rail joints found in the vicinity of switches, railroad crossings and bridge approaches. The joints require slotting as the railhead flow, under traffic, moves to span the joint gap. If the flow is not checked by slotting, it eventually breaks off, causing the rail end to chip or may cause signal failures.

Each of the four track crews also is equipped with a straight grinder in connection with its occasional rail repair work. The cost of four straight grinders used by the track crews and two sets of grinding equipment used by the welding crews is included in the cost of the welding or track crew trucks.

400-Amp Welders. Each of the two welding/grinding crews also is equipped with a 400-amp welder, mounted on the crew's hi-rail truck. This smaller welding tool provides the crew with the needed flexibility to access a work site regardless of track location. The cost of two 400-amp welders is $24,000, which is included in the truck cost of welders.

Oxy-Acetylene Welders. Finally, each of the two welding crews is equipped with welding and cutting torches and fuel cylinders. The total cost of oxy-acetylene equipment used by the two welding crews is $1,500.

Track Hoe. The IRR's MOW equipment roster includes one backhoe track excavator (also known as a "trackhoe"), normally stationed at Provo. This machine, which is operated off-track, is also available to assist each Roadmaster's backhoe. It is used primarily in clearing slide areas, installing culverts; and other miscellaneous excavation work. It is also occasionally needed by the field track and signal forces. The trackhoe is effective in specialized ditching purposes (such as improving drainage in the vicinity of at-grade highway/rail crossings, placing signal conduit) and in spot excavating. It also can clear debris and beaver dams lodged at culverts and bridges when equipped with the optional grapple attachment. The total cost of the trackhoe on { } which was indexed to a 1Q11 price of ${ } based on UP's "Equipment Roster.xls" provided in discovery (and included in the e-workpapers for Part III-D). *See* e-workpaper "MOW Costs-Final.xls," tab "Annual MOW Equipment Cost."

Backhoes and Dump Trucks. Each of the two Roadmaster territories is equipped with a small rubber-tired backhoe, dump truck, and trailer to transport the backhoe. These additional support vehicles supplement the equipment described in the preceding sections and are available to the track and smoothing crews on an as-needed basis. The cost of this equipment is ${ }.

Details (including sources) concerning the costs of all equipment items described above are provided in e-workpaper "MOW Costs-Final.xls," tab "Annual MOW Equipment Cost."

iii. Work Trains

Contractors provide all equipment (except locomotives) necessary to support large track programs. As explained in Part III-C-2-c, the IRR has spare road locomotives that are available for occasional use in contractor work-train service, as needed.[42] Those locomotives also can be used to move the occasional car of ballast, etc., needed by the IRR's field MOW track forces.

The IRR does not need any separate work-train equipment of its own. Spot ballast is purchased by the carload, with the IRR simply moving the carload supplied by the vendor to the location where it is needed. Spot ties can be moved to the location where they are needed by the Prentice Loader truck. Based on Mr. Davis's personal knowledge and observation, many railroads (including Class I's) are now using this approach and no longer employ fleets of work-train equipment to be used by in-house MOW forces.

The IRR does need to store or hold work-train equipment temporarily, for either contract jobs or cars of material supplied by outside vendors. Mr. Davis provided one 1,000-foot MOW equipment storage track for this purpose at the IRR's Provo inspection/fueling yard. This track also can be used for temporary storage of some of the IRR's larger hi-rail equipment as well as contractor on-track equipment.

h. <u>Scheduling of Maintenance</u>

Spot maintenance work carried out by the IRR's MOW crews is not scheduled in planned maintenance windows. Although much of the work is routine, some occurrences are unplanned but require immediate attention and do

[42] For example, CWR is laid in 1,600-foot strings from a rail train of specialized flatcars that requires a locomotive. Other contractor equipment items such as a spike pullers, nipper-spikers, tampers and ballast regulators are self-propelled and do not require motive power.

not reflect the normal, routine approach to spot maintenance designed by IPA's Witness Davis. Given the flow of traffic on the railroad, scheduling spot MOW work must be fluid and flexible to the extent feasible given specific maintenance needs. Although the IRR's field MOW crews (including signal maintainers) are responsible for all routine maintenance work that occurs on the IRR right-of-way, they also address conditions requiring immediate remedial action such as broken rails, broken joint bars, down or malfunctioning crossing signal gate arms, etc. Any condition requiring remedial action that cannot be met by the MOW field crews is referred to the proper authority, usually the Roadmaster or an Assistant Roadmaster, who calls in needed resources. In the meantime, field MOW forces provide flag protection in such situations.

An IRR field maintenance crew may perform different work on succeeding days. In addition to regular duties, which the Foreman of each crew will have planned, the Roadmaster or other supervisor will assign specific tasks which will be referred to a particular crew or a combination of crews. The tasks assigned on a particular day will depend on the expected rail traffic (train frequency) and thus the work window available. A particular track crew may be able to move on track by hi-rail vehicle directly from its base to a location requiring, for example, the change-out of a defective rail which has precipitated a temporary slow order, thereby restricting the speed of trains. Another crew could be assigned a similar task but, because of a differing circumstance with respect to train location and work window, must move by road (in its hi-rail vehicle) closer to the task's location, and then obtain a work window from a dispatcher.

Other activities can be scheduled more easily. For example, following the passage of an ultrasonic rail test car, some rails will require immediate removal and joints must be Thermite-welded. Since the testing is planned, the replacement of defective rails can be scheduled. The field track crew, assisted by a welding crew, can then be in position to replace the defective rails and weld them.

Ultimately, the IRR field MOW crews are not relying on specific maintenance windows that are planned substantially in advance of needed work. Instead, crews plan their days around specific information concerning the number of trains expected that day in their territory and the work that needs to be completed. Obviously, no scheduled maintenance would be performed during the IRR peak traffic period, which occurs in February. Only emergency repairs will be performed during that period.

5. **Leased Facilities**

The IRR has no leased track facilities. As discussed in Part III-A, the IRR does receive revenue from BNSF for use of the IRR's facilities between Price and Provo.

6. **Loss and Damage**

The IRR's annual loss and damage cost equals $58,324. This cost was developed based on UP's actual 2010 loss and damage per ton for the commodities moving on the IRR, multiplied by the number of tons of each commodity moved on the IRR's replicated parts of the UP system in the Base Year, then multiplied by the traffic group ton ratios by commodity group to reflect 2010 IRR trains.[43] *See* e-workpaper "IRR Loss and Damage.xlsx."

7. <u>Insurance</u>

The standard practice of large railroads is to self-insure against potential liability except for catastrophic risks. The IRR also self-insures against most types of claims, and obtains insurance at competitive rates to cover catastrophic loss and Federal Employers Liability Act exposure.

Insurance expenses for the IRR were calculated using the 2010 insurance ratio for the P&W, a publicly traded regional railroad, or 3.73 percent of operating expenses. *See* e-workpaper "IRR Insurance.xls."

8. <u>Ad Valorem Tax</u>

The IRR operates only in the state of Utah. To develop ad valorem taxes, the amount of tax that UP paid per route mile in 2010 was calculated for its route miles in Utah. These amounts were then applied to the IRR's route miles. Details of the calculation are shown in e-workpaper "IRR Ad valorem.xls."

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[43] For cross-over traffic, the IRR's share of the loss and damage payments was calculated on the percentage of the IRR's car-miles to UP's total car-miles by two-digit STCC code.

9. Calculation of Annual Operating Expenses

The IRR's operating expenses for its first year of operations (2011) are summarized in Table III-D-1 above. The methodology used to calculate these expenses for input into the DCF model is summarized at pp. III-D-1 to 2 above.

III-E Non-Road Property Investment

III. E. NON-ROAD PROPERTY INVESTMENT

1. Locomotives

The IRR leases all of its locomotives. The annual locomotive lease cost is included as an operating expense, as described in Part III-D-1 above.

2. Railcars

The IRR also leases all of its railcars. The annual railcar lease cost is also included as an operating expense, as described in Part III-D-2 above.

3. Other

Most of the IRR's other equipment, including company vehicles, maintenance-of-way equipment such as hi-rail trucks, radios, and telephones (*see* Parts III-D-3 and III-D-4 above) are purchased. Computers and related hardware are also purchased. The IRR's IT and computer system needs, and the associated capital investment, are described in Part III-D-3-c-iv above. The purchase prices of these items are annuitized and included in the IRR's operating expenses.

The IRR does not operate over any joint facilities owned by other carriers. The Utah Railway Company operates over approximately two miles of IRR trackage in the Provo area in connection with the interchange of certain coal trains with the IRR.

III-F Road Property Investment

III. F. ROAD PROPERTY INVESTMENT

IPA's SARR road property investment evidence is being sponsored by Stuart Smith (land acquisition costs), Harvey Stone (engineering and construction costs), Timothy Crowley (grading/roadbed preparation costs), Victor Grappone (communications and signals), and Phillip Burris (land grants and easements). These witnesses' qualifications are set forth in Part IV.

The IRR replicates existing UP rail lines in the State of Utah, including portions of the Green River, Provo, Sharp and Lynndyl Subdivisions. As discussed in Part III-B, the IRR replicates a portion of one of UP's transcontinental intermodal and general freight corridors, as well as part of UP's coal corridor through Utah and Colorado.

The IRR's road property investment costs are summarized in Table III-F-1 below.

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

	Item	Investment
1.	Land	$ 34.7
2.	Roadbed Preparation	150.4
3.	Track	242.0
4.	Tunnels	28.9
5.	Bridges	26.6
6.	Signals, Communications & Other Equipment	26.4
7.	Buildings & Facilities (including Fueling Facilities)	10.4
8.	Public Improvements	3.5
9.	Subtotal	523.0
10.	Mobilization	13.6
11.	Engineering	48.8
12.	Contingencies	55.0
13.	**Total Road Property Investment Costs**	**640.5**

1. Land

The IRR's land acquisition costs were developed by Stuart A. Smith of MillenniuM Real Estate Advisors, Inc. Mr. Smith has over 25 years of real estate appraisal experience. He has prepared land acquisition cost testimony in prior STB maximum-reasonable rate cases, including *AEPCO, Seminole* and *Wisconsin P&L.*[1] Mr. Smith's extensive qualifications in the real estate appraisal field are set forth in Part IV.

[1] *Wisconsin Power & Light Co. v. Union Pac. R.R.*, 5 S.T.B. 995 (2001) ("*Wisconsin P&L*").

The IRR's route passes through a single midsized city, Provo, UT. More than three-quarters of the territory traversed by the IRR is rural or otherwise low density, such as the river valleys passing through the Wasatch mountains. Mr. Smith's land acquisition report ("Report") necessarily focuses in more detail on the Provo area, where land acquisition costs per acre are higher.

Mr. Smith's methodology and his determination of land acquisition costs for the IRR are set forth in his Report which is included as e-workpaper "IRR Land Valuation Report.pdf." A summary of Mr. Smith's land valuation determinations is provided in Table III-F-2 below.

TABLE III-F-2
IRR LAND ACQUISITION COSTS

Property Type	Cost (millions)
ROW – Fee Simple (excluding grants and easements)	$ 31.5
Yards	3.2
Microwave Towers	0.004
Total	**34.7**

a. Right-of-Way Acreage

The IRR will acquire 1,085 acres in fee simple for its right-of-way at a cost of $31.5 million. This figure excludes acreage acquired through grants and easements. Consistent with established Board precedent, the right-of-way has an average width of 100 feet in most areas, plus additional width at various locations as needed. *See Xcel I*, 7 S.T.B. at 667. However, an average width of 75 feet was used in industrial, commercial, and urban areas in and around Provo as indicated in Mr. Smith's Report. *See Duke/CSXT*, 7 S.T.B. at 472-73; *Wisconsin P&L*, 5 S.T.B. at 1018; *West Texas Utilities*, 1 S.T.B. at 702.

b. Yard Acreage

The IRR has no large yards. It has three small interchange yards that require no extra acreage and one inspection/interchange yard in Provo. The additional yard trackage in Provo is easily accommodated by widening the right-of-way to 150 feet, which Mr. Smith did in his calculation of mainline acreage. The IRR has one locomotive repair facility located in the Provo area on the Sharp Subdivision. This facility requires 19.5 acres at a cost of $3.17 million. Details of the shop acreage calculations are included in e-workpaper "Building Site Development Costs.xls."

c. Microwave Tower Acreage

The IRR has eight microwave tower locations situated on or near its right-of-way (one microwave tower is co-located at the locomotive shop). While the Board has approved the use of three acres per microwave tower site, *see TMPA*, 6 S.T.B. at 699, IPA's engineers observed that various communication tower sites observed on or near the IRR's right-of-way were far smaller than three acres. Indeed, it appeared that the typical site uses no more than half an acre. Photos of several sites showing the fenced perimeter are included as e-workpapers in the "Photos" folder. *See, e.g.*, e-workpaper "100-3490, P422020a.pdf."

However, to be conservative, Mr. Smith's land valuation included one acre per microwave site. Thus, the IRR requires eight acres for microwave towers at a total cost of $4,000.

d. Property Values

Consistent with recent Board decisions, property values were determined by evaluating the land adjacent to the UP right-of-way being replicated by the IRR. "The land along the ROW is a prime indicator of a ROW's value and has been used in all prior SAC cases." *Duke/CSXT*, 7 S.T.B. at 473; *Duke/NS*, 7 S.T.B. at 169. The total cost of the property necessary for construction of the IRR is $34.7 million, excluding land grants and easements. The methodology used and analysis developed in determining the acquisition cost is summarized below.

i. Methodology

Vacant land is best appraised using the sales comparison approach. *Xcel I*, 7 S.T.B. at 669. This method provides a price indication by comparing the subject properties to similar properties that have sold recently, applying appropriate units of comparison, and making adjustments based on the elements of comparison to the sale price of the analogues. Generally, the sales in the rural areas served by the IRR are analyzed using price per acre as the key determinant to establish a value estimate. Land sales in the Provo area were appraised using a variety of measures, such as cost per square foot and cost per acre, but all values were analyzed on a cost per acre basis in order to develop a final acquisition value.

In valuing the IRR's ROW, Mr. Smith utilized a method that is consistent with traditional and accepted real estate practices applied to all types of rights-of-way when a corridor value is not required. Land sales in the vicinity of a right-of-way are examined to develop across-the-fence ("ATF") land prices. *See Xcel I*, 7 S.T.B. at 669 (supporting ATF values). Land sales adjacent to or near the UP rail lines being replicated form the basis for the IRR's real estate acquisition cost estimate.

Mr. Smith acquired land sale data from various licensed appraisers and other sources. Utah is a non-disclosure state. Mr. Smith consulted with those local real estate appraisers in developing his analysis.

ii. <u>Application</u>

Mr. Smith inspected most of the IRR right-of-way by driving near the replicated UP right-of-way. Areas where physical inspection was not possible were reviewed using other data such as topographic maps and satellite imagery. Mr. Smith details his various inspection techniques in his Report (e-workpaper "IRR Land Valuation Report.pdf").

These inspections aided in Mr. Smith's determination of the highest and best use of the property along the ROW, the specific breaks between land use segments, and the overall impression of an area relevant to potential value. Such inspections are inherently of more value in populated areas than in the isolated rural areas where land patterns are consistent for long stretches. Consequently, Mr. Smith concentrated his inspection efforts in the Provo area.

After completing his inspections, Mr. Smith subdivided the ROW into various segments based on the land use types he identified. In particular, Mr. Smith utilized ten different land use categories: Residential, General Commercial, Open Space/Range, Open Space/Agricultural, Open Space/Desert, Open Space/Public, Open Space/General Mountainous, Industrial/Warehouse, Small Town, and Retail. Mr. Smith then examined comparative sales data for each segment and assigned a per acre value to the segment. The analysis was performed assuming a fee simple ownership interest in property in undeveloped and unimproved condition. The appraisal includes the right-of-way for the tracks, the locomotive shop and other facilities shown in Exhibit III-B-1 and as described above.

iii. <u>Costing</u>

The purpose of the costing process herein described is to provide the most probable hypothetical cost to acquire a fee simple interest in the right-of-way for the railroad lines being constructed by the hypothetical IRR. Land was evaluated in its undeveloped condition, without consideration of adjacent ownership boundaries, abutting ownership, or severance damages, with values determined as of January 1, 2011.

The IRR system is comprised of 278.67 miles of railroad right-of-way, covering 3,371 acres. The IRR's land requirements include one locomotive shop facility as described above. As explained above, the right-of-way width varies in different areas based on inspection and other evaluations of the existing

UP rights-of-way being replicated, and Board precedent. An average width of 100 feet was used in rural areas. An average width of 75 feet was used in industrial, commercial, urban, and suburban areas near Provo. Thus, if an area was classified as General Commercial or Industrial/Warehouse, a right-of-way width of 75 feet was typically used.

No assemblage factor was added to Mr. Smith's calculations as UP's predecessors built all of these lines more than 100 years ago, and UP has not asserted that it incurred any assemblage factor for these properties.

e. **<u>Easements and Land Grants</u>**

IPA Witness Phillip Burris has examined the UP's valuation maps, easements and land grants that underlie the route being replicated by the IRR. His analysis of these documents indicates that over 2,200 acres of the IRR's right-of-way were obtained through land grants or easements. UP did not provide any cost data for the relevant easements. 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* e-workpaper "IRR Opening Land.xlsx," tab "100 ft ROW" and supporting workpaper folder "Land Grants." Mr. Smith has, therefore, subtracted the relevant acres and costs from his fee simple land valuation, which reduced Mr. Smith's valuation total by $10.1 million.

f. **<u>Conclusion</u>**

Based on the investigation and analysis undertaken by Mr. Smith, the cost of the fee simple estate and easements in the ROW needed for the IRR's lines as of January 1, 2011, subject to all stated assumptions and limiting conditions delineated in Mr. Smith's Report, is $34.7 million.

2. **Roadbed Preparation**

IPA's expert engineering witnesses, Harvey Stone, Executive Vice President of Stone Consulting, and Timothy Crowley, Vice President of L.E. Peabody & Associates, have developed the IRR's roadbed preparation costs in a manner generally consistent with prior Board decisions including *WFA I, AEP Texas, Xcel I, Duke/CSXT, Duke/NS,* and *Carolina P&L.* Their expert qualifications are set forth in Part IV.

The IRR traverses a variety of terrain. The portion of the IRR system located between Helper and Spanish Fork, UT passes through the Wasatch mountains. Originally constructed in the late 1800s, the majority of this line follows the Price or Spanish Fork Rivers. While there are significant elevation changes between Helper and Spanish Fork, much of the railroad is built through the valleys and passes carved by the two rivers. Several portions of the area between Helper and Spanish Fork do, however, include more mountainous elements. For example, there are one 3,000-foot tunnel and two short tunnels in the area. Moreover, there is a higher quantity of rock excavation in this area as reflected in the categorized grading quantities shown in Table III-F-4 below. However, IPA notes that this more challenging area represents less than 30 percent of the total route miles.

The territory between Spanish Fork and Provo, Provo and Lynndyl, and Price and Helper is similar in grading difficulty to the "high plains" areas that the Board has seen in Powder River Basin ("PRB") coal rate cases. The territory is easily graded because some of the land rests on what used to be part of the Bonneville Lake system and the balance of the territory is on alluvial and colluvium soils that require no special equipment, blasting, scraping or other costly and more complicated activities. There are few trees, and much of the land is covered in scrub grasses. Some of the land is grassland that is used for grazing.

The portion of the IRR between Lynndyl and Milford lies in the Great Basin. This area is generally flat and light on vegetation. The territory is relatively dry as it lies between various mountain ranges.

To illustrate the similarities between the IRR territory from Spanish Fork to Provo, Provo to Lynndyl, Lynndyl to Milford, and Price to Helper and that of the PRB, Mr. Stone developed a series of maps based on the USDA's shallow excavation data. These maps, included as e-workpaper "Shallow Excavation Comparison.pdf," provide a color-coded comparison of the IRR route and the portion of the PRB traversed by the UP/BNSF "Joint Line" and UP's Powder River Subdivision that connects with the Joint Line. These maps demonstrate that the degree of difficulty and the materials encountered are sufficiently similar that the application of unit costs from PRB rail projects is reasonable (except for the areas characterized by larger quantities of solid rock, which is already accounted for in the application of appropriate unit costs for such grading activities, as shown below). Thus, as discussed in detail below, IPA's engineers have used real world excavation costs from a large track construction project undertaken in 2007 on UP's Powder River Subdivision between Jireh and Shawnee, WY and applied those costs to common excavation.

Photographs of the various regions traversed by the IRR are also included as e-workpapers in a folder titled "Photos."

A summary of the IRR's roadbed preparation costs is presented in Table III-F-3 below.

TABLE III-F-3
IRR ROADBED PREPARATION COSTS[1/]

	Item	Cost
1.	Clearing and Grubbing	$1,350,255
2.	Earthwork	
	a. Common	17,095,915
	b. Loose Rock	33,611,855
	c. Solid Rock	61,044,505
	d. Borrow	27,270,835
	e. Land for Waste Excavation	71,471
3.	Drainage[2/]	
	a. Lateral Drainage	121
4.	Culverts[3/]	5,137,976
5.	Retaining Walls	1,012,469
6.	Rip Rap	2,414,804
7.	Relocation of Utilities	29,856
8.	Topsoil Placement/Seeding	748,606
9.	Water for Compaction	573,963
10.	Environmental Compliance	35,987
11.	**Total**	**$150,398,618**

[1/] *See* e-workpaper "IRR Grading Opening.xlsx."
[2/] Yard drainage is included in building site development costs.
[3/] *See* e-workpaper "Culvert List 2011.xls."

a. **Clearing and Grubbing**

i. **Quantities of Clearing and Grubbing**

The UP mainlines being replicated by the IRR were constructed in the 1800s. Thus, these lines were built before the ICC Bureau of Valuation prepared the ICC Engineering Reports. E-workpaper "IRR Grading Opening.xlsx" identifies the data obtained from the ICC Engineering Reports, including the acres per track mile that were cleared for those rail lines being replicated that were originally constructed in the 1800s. The ICC Engineering Reports were obtained from the National Archives and Records Administration. *See* e-workpaper "ICC Engineering Reports.pdf." All of the lines being replicated except for two small spur segments are covered by ICC Engineering Report data.

The 1.7-mile long Castle Valley Industrial Lead ("CV Spur") was constructed by a UP predecessor in 1976. The 0.19 miles of the IPP Industrial Lead (the spur serving IGS) owned by UP (and thus the IRR) was constructed in the late 1980s. For these two segments, IPA's experts used the acres per track mile quantities for the adjacent valuation sections, DRG-1A-UT and SPLASL-16-UT, respectively.

E-workpaper "IRR Grading Opening.xlsx" identifies the acres per track mile that were cleared for the construction of these line segments. The quantities obtained from the ICC Engineering Reports, as shown in e-workpaper "IRR Grading Opening.xlsx," tab"IIIF_2 ER INPUT" and discussed above, are assigned to the IRR's line segments in e-workpaper "IRR Grading Opening.xlsx," tab "IIIF_4 Othr EW."

The clearing quantities (acres per track mile) were then increased by the ratio of the current roadbed specifications to the original construction specifications and applied to the track miles (including yards and sidings) of the IRR's line segments in the same manner as the grading quantities discussed below. E-workpaper "IRR Grading Opening.xlsx," tab "IIIF_4 Othr EW" details the calculation of the IRR acreage requiring clearing.

The acres per track mile of grubbing were also obtained from the ICC Engineering Reports. These figures are included in e-workpaper "IRR Grading Opening.xlsx," tab "IIIF_2 ER INPUT," and applied to the IRR's line segments in e-workpaper "IRR Grading Opening.xlsx," tab "IIIF_4 Othr EW," in the same manner as the acres for clearing.

ii. Clearing & Grubbing Costs

Based on a field trip in April 2011 by John Ludwig, an engineer who works in Mr. Stone's firm, as well as pictures from inspections by Stuart Smith (IPA's land valuation witness), it was determined that much of the IPA route would require minimal clearing and most of the clearing would involve the removal of brush and grasses as opposed to trees. This is supported by the ICC Engineering Reports which show minimal clearing and substantially less grubbing. *See* e-workpaper "IRR Grading Opening.xlsx," tab "IIIF_2 ER INPUT." It is also supported by many photographs taken by IPA's witnesses during the field trips described above.

For the acres that were grubbed (according to the ICC Engineering Reports), IPA's engineers assumed that trees were also cleared and they used both the cost per acre for clearing and the cost per acre for grubbing from the Means Handbook. Therefore, IPA has used the cost per acre for clearing of $5,745.75 (cut and chip medium, trees to 12" in diameter) from the 2011 Means Handbook. This cost reflects the application of the Means Handbook location factors.[2] For these same acres, the IPA engineers have utilized the cost per acre for grubbing of $3,447.45 (associated with cut and chip medium, trees to 12" in diameter), also obtained from the 2011 Means Handbook and including the application of the Means Handbook location factors.

For the remaining acres of clearing (*i.e.*, those acres not requiring grubbing), IPA's engineers applied the cost per acre of $259.17 from the Means Handbook, adjusted by the location factors, for clearing with dozer and brush rake, medium brush to 4" diameter. Based on this accepted methodology, the acres of

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[2] The unit costs from the Means Handbook utilized by IPA's engineers are adjusted by the Means Handbook location factors. The cost figures in the Means Handbook represent national averages. The Means Handbook city cost indexes for site construction are used to develop weighted average factors based on IRR route miles. *See* e-workpaper "IRR Grading Opening.xls," tab "IIIF Loc Factor." The pages from the Means Handbook showing the city cost indexes, as well as the Means Handbook unit costs used in roadbed preparation, are contained in e-workpaper "Means Unit Costs.pdf."

grubbing are a subset of the acres cleared as grubbing stumps is not necessary if trees are not cleared. *See AEP Texas* at 79.

The IRR requires 136.19 acres to be cleared and grubbed, and 379.08 acres to be simply cleared at a total cost of $1.35 million at 1Q11 levels. *See* e-workpaper "IRR Grading Opening.xlsx," tab "IIIF_4 Othr EW."

b. Earthwork

i. Earthwork Quantities from ICC Engineering Reports

As noted above, all of the mainline tracks being replicated by the IRR are covered by ICC Engineering Reports. E-workpaper "IRR Grading Opening.xlsx," tab "IIIF_2 ER INPUT" summarizes the data extracted from the ICC Engineering Reports for each valuation section applicable to the IRR. E-workpaper "IRR Grading Opening.xlsx," tab "IIIF_5 Val sec" contains a list of the ICC Engineering Report valuation sections applicable to the IRR and the lines of the IRR to which they apply. E-workpaper "IRR Grading Opening.xlsx," tab "IIIF_6 Distr" summarizes the distribution of earthwork quantities into the four earthwork categories shown on the ICC Engineering Reports: (1) common excavation; (2) loose rock; (3) solid rock; and (4) borrow. E-workpaper "IRR Grading Opening.xlsx," tab "IIIF_7 Earthwrk" summarizes the grading quantities after adjusting the ICC Engineering report quantities to reflect the IRR's modern roadbed specifications.

Based on a review of the railroad construction literature prevailing at the time, the IPA engineers estimated that the ICC Engineering Report quantities for the UP rail lines comprising the portion of the IRR to be constructed reflect average roadbed widths of 16 feet for fills and 18 feet for cuts. *See* William C. Willard, *Maintenance of Way and Structures*, McGraw-Hill Book Company, 1915, pp. 29-31, included in e-workpaper "Original Roadbed Widths.pdf." The IRR has single-track roadbed widths of 24 feet for fills and 40 feet for cuts and double-track (or passing siding) roadbed widths of 39 feet for fills and 55 feet for cuts based on 15-foot track center spacing, and a side slope of 1.5 to 1. *See WFA I* at 83 (accepting the same roadbed specifications used for the IRR).

ii. Earthwork Quantities for Segments Not Covered by the ICC Engineering Reports

As noted above, all portions of the IRR, except the 0.19 miles of the IPP Industrial Lead and the 1.7 miles of the C.V. Spur are covered by the ICC Engineering Reports. For these two small segments, the IPA's experts used the per-track mile quantities for the adjacent valuation sections, DRG-1A-UT and SPLASL-16-UT, respectively.

iii. IRR Earthwork Quantities and Costs

Once the adjusted earthwork quantities per mile were developed, it was necessary to calculate the total earthwork requirements and costs. The details of the procedures used are explained below.

(a) **<u>IRR Line Segments</u>**

"IRR Grading Opening.xlsx," tab "IIIF_9 CY Grad" details the calculation of the earthwork quantities for all of the IRR's line segments. First, as discussed above, the IRR line segments were matched with the applicable valuation sections. Next, the track miles for each segment were categorized as first main (route miles), second main (double track and passing sidings) and other track (such as interchange tracks and setout tracks) based on the IRR's track configuration as developed by IPA Witness Paul Reistrup and detailed in Exhibit III-B-1. Finally, the number of tracks was multiplied by the applicable cubic yards per mile for the appropriate valuation section.

(b) **<u>IRR Yards</u>**

The IRR has one inspection/interchange yard, three small interchange "yards" and one locomotive shop facility. The inspection yard is located in Provo. The small interchange yards are located at Price, Lynndyl and Milford. The locomotive shop trackage (considered a yard for construction purposes) is located near the Provo Yard. *See* Exhibit III-B-1 for exact locations.

For each yard, IPA's engineering experts calculated the grading requirements based on an assumed average fill height of one foot and 25-foot track centers, applied to the appropriate miles of track in these yards. The interchange yards were also assumed to be an average fill height of one foot, but with 15-foot track centers. The locomotive shop was based on an assumed average fill height of one foot and 25-foot track centers. The one-foot fill height for yards is a technique that has been applied repeatedly to develop SARR yard earthwork calculations. *See Wisconsin P&L*, 5 S.T.B. at 1022; *Xcel I*, 7 S.T.B. at 675; *AEP Texas* at 81; *Otter Tail* at D-10; *Duke/NS*, 7 S.T.B. at 172; *Carolina P&L*, 7 S.T.B. at 310-311; and *Duke/CSXT*, 7 S.T.B. at 477.

(c) Total Earthwork Quantities

In order to properly develop the quantities for grading the IRR's roadbed, it was necessary to separate the earthwork requirements into four types of material – common, loose rock, solid rock and borrow. This was done by distributing the total quantities for the line segments developed in e-workpaper "IRR Grading Opening.xlsx," tab "IIIF_9 CY Grad" based on the distribution percentages obtained from the ICC Engineering Reports.

IPA's engineers classified the yard and interchange location earthwork as excavation because the estimated yard track quantities removed from the ICC Engineering Report total quantities were removed from the excavation quantities for each valuation section. The distribution of the earthwork quantities by type of material for the IRR line segments is shown in e-workpaper "IRR Grading Opening.xlsx," tab "IIIF_11 EW Cost" and summarized in Table III-F-4 below.

TABLE III-F-4 IRR EARTHWORK QUANTITIES BY TYPE OF MATERIAL MOVED		
	Type of Earth Moved	**Cubic Yards (000s)**
1.	Common Excavation	4,417,549
2.	Loose Rock Excavation	2,988,776
3.	Solid Rock Excavation	4,124,304
4.	Borrow	2,786,230
5.	Total	14,316,858

Source: E-workpaper "IRR Grading Opening.xlsx," tab "III_F11 EW Cost"

(d) Earthwork Unit Costs

IPA's engineers' common earthwork unit cost is based on a project undertaken by UP on its Powder River Subdivision between Shawnee and Jireh, WY, which abuts the Joint Line over which UP reaches the PRB mines. This project is described in more detail below.

As discussed below, the "loose rock" excavation category described in the ICC Engineering Reports is no longer an element of modern grading projects. Instead, such costs are subsumed in "common" or unclassified excavation projects. Nevertheless, to be conservative, IPA's engineering experts have retained the standard loose rock excavation category, and costs based on the Means Handbook, that have been repeatedly utilized by shippers and accepted by the Board in SAC rate cases. IPA has also included solid rock excavation costs based on the methodology and cost data accepted by the Board. As for borrow costs, as explained below, the IRR is purchasing additional land from which to obtain borrow where it is needed. For the excavation, hauling and placement of the borrow quantities, IPA has applied the Mean Handbook costs that the Board has accepted in prior cases.

(i) **Common Earthwork**

As noted above, IPA's common earthwork excavation unit cost is based on UP's Shawnee-Jireh Project. This project included the construction of roughly 15 miles of third main track between Jireh (MP 250.3) and Shawnee (MP 264.7). The Shawnee-Jireh project included a large volume of common grading ({ } CY), which is described in the accompanying bid tabulations as "Grading-embankment." The cost per cubic yard for the grading component was ${ }, and the project was bid in 2007 for work to be performed in 2008. This project and its unit cost for grading are very similar in nature and scope to the Walker-Shawnee Project where BNSF built 14 miles of triple track on the PRB Joint Line. The Board accepted the Walker-Shawnee unit cost and its application to common earthwork in *WFA I* at 86.

The unit cost for the Shawnee-Jireh Project was then indexed to January 2011 using the Means Historical Cost Index. Selected invoice pages from the Shawnee-Jireh project (provided by UP in discovery) are included as e-workpaper "UP AFE data.pdf." The Shawnee-Jireh Project bid tabulation is included as e-workpaper "449130.xls." The engineering designs are included as e-workpapers "Jireh to Shawnee - 01 – Plan & Profile 8-23-07.pdf" and "Jireh to Shawnee - 02 – Sections 8-23-07.pdf."

(ii) <u>Loose Rock Excavation</u>

As noted above, loose rock is a classification of earthwork that has no modern analog. Nevertheless, as in prior SAC cases, the IRR would need to excavate loose rock as defined in the ICC Engineering Reports. The definition provides:

> <u>Loose rock</u> shall comprise all detached masses of rock or stone of more than 1 cubic foot and less than 1 cubic yard, and all other rock which can be properly removed by pick and bar and without blasting, although steam shovel or blasting may be resorted to on favorable occasions in order to facilitate the work.

I.C.C. Division of Valuation, *Instructions for Field Work of the Roadway Branch of the Engineering Section*, 110 (1916). The ICC's definition of "loose rock" assumed that the materials could have been moved by pick and bar. Picks and bars are hand-held tools designed to pry rocks loose. The modern, mechanized equipment discussed below is a vast improvement over such tools. Indeed, in the *AEPCO* rate case brought in 2000, UP conceded that modern equipment is far more capable than the equipment available in 1916. *See Arizona Electric Power Cooperative, Inc. v. The Burlington N. & Sante Fe Ry. Co. and Union Pacific R.R. Co.*, Docket No. 42058 (Complaint filed December 29, 2000), Defendants' Supplemental Reply Narrative (Public Version) filed Jan. 26, 2004, at III.F-53. In addition, IPA notes that UP does not even consider loose rock an excavation category. Its construction specifications are limited to common excavation and rock excavation. In particular, UP's construction specifications state that:

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See e-workpaper "Common-Rock Excavation.pdf." All other excavation is considered "Common" under UP's specifications. Thus, IPA's engineers are being extremely conservative in applying a separate loose rock unit cost to such excavation rather than simply including it in the common excavation quantities.

For the loose rock unit costs, IPA's engineers have chosen a combination of two 300 HP dozers for ripping the loose rock and pushing it into piles, a 3 CY power shovel for placing the ripped and dozed rock into the truck (including the Means 15% additive), a 42 CY off highway truck to haul the material to the fill or disposal site, and a dozer to spread the material after it is dumped. Both of the 300 HP dozers are equipped with rock rippers at their rear and with large push blades in front. The 42 CY off highway truck was selected because it is capable of turning in a 27' 11" foot radius and thus suitable for work in a railroad right-of-way. *See* e-workpaper "42 CY Truck.pdf." IPA's development of the loose rock excavation unit cost is consistent with the unit costs developed and accepted in prior SAC proceedings. *See, e.g., AEP Texas* at 81-82.

Material is compacted in fill areas using a combination of sheepsfoot and vibratory steel-wheeled rollers. The average cost for loose rock excavation is $11.25 per CY. *See* e-workpapers "IRR Grading Opening.xlsx," tab "IIIF Unit Costs" and "Means Unit Costs.pdf."

(iii) **Solid Rock Excavation**

IPA's engineers developed solid rock excavation costs consistent with recent Board decisions, in particular *WFA I* at 86-87, *AEP Texas* at 82 and *Xcel I*, 7 S.T.B. at 677-78. First, they developed a unit cost for solid rock blasting based on an average of the Means Handbook cost for blasting rock over 1,500 cubic yards and the cost for bulk drilling and blasting. The engineers then added the costs to excavate the blasted rock, load it into trucks, haul it away, and dump it. They also included the cost to spread the material, and the average compaction cost for embankment that was used for the other earthwork categories was also applied. *See* e-workpaper "IRR Grading Opening.xlsx," tab "IIIF Unit Costs." Again, the unit costs and equipment mix developed by IPA's engineers are consistent with those approved in recent Board decisions. *See WFA I* at 86-87; *AEP Texas* at 82-83.

When applying the unit cost to the solid rock earthwork quantities, IPA's engineers used an average of the solid rock unit cost ($18.36 per CY) and the loose rock unit cost ($11.25 per CY). This reflects their expert opinion that at least half of the quantities classified by the ICC as solid rock would be rippable (and therefore classified as loose rock or common excavation) using modern equipment. This 50/50 combination has been repeatedly accepted by the Board. *See WFA I* (parties agreed, not mentioned or altered in decision); *AEP Texas* (parties agreed, not mentioned or altered in decision); *Otter Tail* at D-12; *Xcel I*, 7 S.T.B. at 677 (where BNSF also agreed on this split); *Duke/NS*, 7 S.T.B. at 174; *Carolina P&L* at 80; *Duke/CSXT*, 7 S.T.B. at 478. This 50/50 combination results in a cost per CY of $14.80 for solid rock excavation.

(iv) Embankment/Borrow

IPA's borrow unit cost is based on Means Handbook unit costs for excavating, hauling, placing and compacting the fill material. IPA's engineers then determined, based on the distribution of borrow derived from the ICC Engineering Reports, that additional land would need to be acquired along the Sharp and Lynndyl Subdivisions so that the IRR might readily access fill materials. The average cost per acre in these areas was determined, by Mr. Smith, to vary from as little as $250 per acre to a high of $1,000 per acre, with the majority valued at $250 per acre. Accordingly, the IPA engineers utilized a value of $500 per acre for land for borrow pits. They then applied this per acre cost to their calculation of additional land requirements, which was determined by assuming that the IRR would excavate the top four feet of material per acre, the top foot would be set aside and replaced after the excavation of the fill material, and the remaining three feet would be excavated and utilized as fill.

The IRR requires 2,786,230 CY of borrow, which in turn requires that the IRR purchase an additional 576 acres of land at a cost of $437,282 (including the cost for clearing of $259.17 per acre).[3] IPA's engineers then used the Means Handbook costs for a five cubic yard wheel-mounted front end loader to excavate the material and a 20 CY capacity dump truck to haul the material to the construction site. To these costs, IPA's engineers added the cost of equipment to spread and compact the material. IPA's engineers also included the costs to replace the topsoil after excavation. The borrow unit cost applied to the IRR construction is $9.79 per CY at 1Q11 levels. *See* e-workpapers "IRR Grading Opening.xlsx," tab "IIIF Unit Costs."

(v) **Fine Grading**

The Shawnee-Jireh unit cost includes any necessary fine grading. In particular, contractors are usually responsible for establishing the final grade per the details of the project. *See WFA I* at 88. UP's construction specifications are in accord with the *WFA* scenario as they state that the "Roadbed shall be finished to the lines and grades shown on the Drawings and as staked." *See* e-workpaper "finish grading.pdf." In addition, the bid tabulation and invoices for the project do not include any separate fine grading costs. Thus, IPA has not included additional costs for fine grading.

(e) **Land for Waste Excavation**

Not all of the excavated material is re-used as fill. Consistent with the procedures used in other SAC cases, IPA's excavation calculations assume a

[3] The additional cost for the land is included in e-workpaper "IRR Grading Opening.xlsx," tab "IIIF Unit Costs."

30 percent waste ratio. As this waste material needs to be placed somewhere, the IRR is acquiring additional land along the right-of-way to accommodate the dumping of the waste material. IPA's engineers have assumed an average 15-foot depth for wasted materials. IPA has included an additional 142.9 acres of rural land for this purpose at an estimated $500 per acre for a total cost of $71,471.

(f) Total Earthwork Cost

The total IRR earthwork cost, including land for borrow and waste excavation, is $139.1 million. *See* e-workpaper "IRR Grading Opening.xlsx," tab "IIIF Summary."

c. Drainage

i. Lateral Drainage

The linear feet of pipe per route mile for lateral drainage was obtained from the ICC Engineering Reports and applied to the lateral drainage needs for the IRR's lines. The cost per linear foot for installed drainage pipe, including backfill and compaction, was taken from the 2011 Means Handbook. Based on the ICC Engineering Reports, the IRR requires five linear feet of lateral drainage pipe. The IRR's total investment in lateral drainage equals $121 at the 1Q11 level. *See* e-workpaper "IRR Grading Opening.xlsx," tab "IIIF_4 Othr EW."

ii. Yard Drainage

IPA's engineering experts have included yard drainage facilities for all yards and the locomotive shop. However, before installing any particular drainage facilities, the roadbed for yard tracks is constructed to slope away from the main line. Storm water runoff thus will drain freely through the ballast and be collected by ditch lines around the perimeter of the yards. These ditches will then convey the storm water runoff offsite. Low areas can occur near facilities and between tracks separated by non-typical spacing. In those instances, catch basins are used to collect the water in the low areas. This water is then conveyed under the track to the perimeter ditch. The number of catch basins and the length of pipe installed in the IRR's yards are based on the above design scheme, as well the layout of the facilities. The yard drainage assumed by the IRR's engineers exceeds that of UP's existing yards in the territory, where yard drainage was not observed. Yard drainage details are discussed in Part III-F-7 below.

d. Culverts

Culverts are devices placed in the roadbed to facilitate the movement of water from one side of the track to the other where large drainage areas, typical of bridges, are not required. The culverts specified by IPA's engineers are corrugated aluminized metal pipe ("cmp") except where the size of the opening required for the conditions exceeds the maximum cmp diameter. In such cases, concrete box culverts were used.

Consistent with practice in other SAC cases, culverts replace certain bridges where a culvert is suitable.[4] The list of bridges converted to culverts on the UP lines being replicated is shown in e-workpaper "Culvert List 2011.xls," tab

[4] *See, e.g., AEP Texas* at 93.

"bridge to culvert." In addition, IPA's engineers have converted certain larger culverts to bridges when such an option would be a better choice than a large diameter cmp or concrete box culverts. Therefore, IPA's engineers have substituted 36 culverts for existing UP bridges and three bridges for existing UP culverts. The details of the substitutions are shown in e-workpapers "Culvert List 2011.xls," tab "bridge to culvert" and "IPA Bridge Cost.xls," tab "Bridge Segments."

i. Culvert Unit Costs

Unit costs were developed for the installation of culverts assuming that the open trench placement method would be used. Unit costs for the cmp culverts are driven by the linear feet of the culvert required in a particular location as well as the diameter of the pipe. *See* e-workpaper "Culvert List 2011.xls," tab "Pipe Total Costs" for details of the unit prices and sizes of the cmp utilized on the IRR. Unit costs for the concrete box culverts are driven by the width and height of the opening, as well as the linear feet through the track cross section. Additional unit costs were developed for excavation, furnishing and placing crushed stone for bedding material, rip rap for slope protection, and backfill for both culvert types. These unit costs are detailed in e-workpaper "Culvert List 2011.xls," tab "Installation Reference Cost."

ii. Culvert Installation Plans

All culverts are installed during the early stages of preparation of the railroad subgrade. The sites are easily accessible, in part through the ongoing preparation of the roadbed. Moreover, the culverts can be installed with a minimum of excavation using the open trench method of installation. In particular, culverts are installed after a sufficient depth of compacted roadbed fill has been placed. A trench is excavated to a depth of one foot below the flow line of the culvert, and one foot of bedding stone is placed in two compacted layers. The culvert is laid, and then backfilled in compacted layers back to the top of the trench.

Work production of the crews is consistent with IPA's proposed construction schedule because there are no deep trenches to excavate or work in, and by installing the culverts at this stage of the project, no waterway diversions are required.

Once the base layer of the roadbed is in place, the trench for the cmp or concrete box culvert is excavated one foot wider on each side than the culvert width. The bottom of the excavation is covered with an average depth of 12" of crushed stone bedding material to act as a foundation and cushion for the culvert, providing a means for transferring the load into the ground below the culvert as well as a level surface. The first culvert section is placed on the prepared bedding material. The next section is placed adjacent to the first and a connecting band is installed to connect the two sections. This continues until all sections have been set in place. The culvert is backfilled, and rip rap is placed for slope protection. After the subbase has been prepared, most culverts can be installed in less than one day.

iii. **Culvert Quantities**

IPA's engineers used the culvert inventories provided by UP in discovery, which included the length and diameter of the culvert. The inventory was culled to create a list of the culverts on the lines that the IRR is replicating. IPA's engineers then added additional culverts where a culvert was being substituted for a bridge and removed culverts where a bridge was more economical.

IPA's engineers note that the inventory provided by UP does not reconcile with the culverts shown on UP track charts. The engineers relied on the inventory rather than the track charts because this inventory provided more comprehensive data.

iv. **Total Culvert Costs**

The total cost of the IRR's culverts is $5.14 million. *See* e-workpaper "Culvert List 2011.xls" tab "Culverts Summary Sheet."

e. **Other**

i. **Sideslopes**

The IRR roadbed has average side slopes of 1.5:1. This side slope design has consistently been accepted by the Board. *See AEP Texas* at 80; *WFA I* at 83; *Otter Tail* at D-8; *Xcel I*, 7 S.T.B. at 672; *Duke/NS*, 7 S.T.B. at 171; *Carolina P&L*, 7 S.T.B. at 310; *Duke/CSXT*, 7 S.T.B. at 476; *TMPA*, 6 S.T.B. at 701, n.183; *Wisconsin P&L*, 5 S.T.B. at 1021-22 and *FMC*, 4 S.T.B. at 795. Moreover, use of 1.5:1 side slopes is supported by Hay's definitive *Railroad*

Engineering Manual and The American Railway Engineering and Maintenance of Way Association Manual for Railway Engineering ("AREMA"), §§ 1.2.3.3.2b and 1.2.3.3.3a at 1-1-22.

ii. Ditches

The IRR has side ditches in cuts that are two feet wide and two feet deep and that are trapezoidal in section. In many cases, this size ditch is larger than the existing ditches (where there were any at all) on the antecedent lines, as observed during the recent field inspection by Mr. Ludwig. *See* e-workpaper "ditches.pdf" for photographic examples. Two-foot ditches have repeatedly been accepted by the Board. *See Duke/NS*, 7 S.T.B. at 171; *Carolina P&L*, 7 S.T.B. at 310; *Duke/CSXT*, 7 S.T.B. at 476; *TMPA*, 6 S.T.B. at 701 n.183; *Wisconsin P&L*, 5 S.T.B. at 1023.

iii. Retaining Walls

Retaining wall quantities for the IRR are based on information in the ICC Engineering Reports under the category "Protection of Roadway" included in Account 3, Grading. This includes cubic yards of masonry, timber walls, and walls made from timber ties and pilings. Rather than construct masonry or timber retaining walls, the IRR uses gabions (galvanized steel mesh boxes filled with rock). Gabions are suitable because they can be assembled on site and bent to fit the existing terrain.

Consistent with the *Xcel I* decision, IPA has used the cost for retaining wall gabions (including the rock) and the cost for timber pilings from the

2011 Means Handbook. *Id.*, 7 S.T.B. at 680. Total retaining wall investment for the IRR equals $1.0 million at 1Q11 levels. *See* e-workpaper "IRR Grading Opening.xlsx," tab "IIIF_4 Othr EW." for quantity and unit cost details.

iv. Rip Rap

IPA's engineers developed rip rap quantities for the protection of the roadway from the ICC Engineering Reports and applied the unit cost from the Shawnee-Jireh Project. IPA has included $2.4 million for rip rap investment at 1Q11 levels.[5] *See* e-workpapers "IRR Grading Opening.xlsx," tab "IIIF_4 Othr EW" and "UP AFE data.pdf."

v. Relocating and Protecting Utilities

The main lines and branch line (Pleasant Valley) being replicated by the IRR were constructed by UP and its predecessors in the late 1800s. It is unlikely that any utility lines would have been present at the time. As such, utility relocation costs were not incurred by the incumbent and thus, under the *Coal Rate Guidelines*, would constitute a barrier to entry if imposed on the IRR. *See AEP Texas* at 84; *Xcel I*, 7 S.T.B. at 680; *Duke/CSXT*, 7 S.T.B. at 483.

However, as noted above, two spurs being replicated by the IRR were built subsequent to the existence of utility lines. The first is a 1.7 mile portion of the C.V. Spur, which was built in 1976. The second is a 0.19 portion of the IPP Industrial Lead, which was built in the late 1980s. These segments total

[5] This rip rap investment does not include the rip rap used on culvert faces and for bridge pier and abutment protection. Those costs are included where needed in appropriate investment category.

1.89 route miles. For these line segments, IPA's engineers, consistent with Board precedent,[6] have included a total estimate of $29,856 for the cost to relocate and protect utilities based on the cost per mile accepted by the Board in *WFA* (indexed to 1Q11). *See WFA I* at 90. *See also* e-workpaper "IRR Grading Opening.xlsx," tabs "IIIF_12 Othr Cst" and "Utilities."

vi. Seeding/Topsoil Placement

Consistent with prior Board decisions, IPA's engineering experts included costs for seeding/topsoil placement in the same locations where UP incurred these costs. *See AEP/Texas* at 85; *Xcel I*, 7 S.T.B. at 680-81; *Wisconsin P&L*, 5 S.T.B. at 1024; *TMPA*, 6 S.T.B. at 706; and *Duke/NS*, 7 S.T.B. at 179. For the newly constructed line segments replicated by the IRR, IPA's engineers relied on the cubic yard per route mile quantities from the BNSF's construction of the Orin Line (part of which is the PRB Joint Line) in Wyoming. For the remaining lines of the IRR, IPA's engineers relied on the embankment protection per route mile quantities obtained from the ICC Engineering Reports for the applicable valuation sections. *See* e-workpaper "IRR Grading Opening.xlsx," tab "IIIF_12 Othr Cst."

For topsoil placement costs, IPA's engineers used unit costs from the Means Handbook. For seeding costs, IPA's engineers used the cost per acre from the Shawnee-Jireh Project. *See* e-workpapers "IRR Grading Opening.xlsx" tab

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[6] *See Xcel I*, 7 S.T.B. at 680; *Wisconsin P&L*, 5 S.T.B. at 1024-25; *APS*, 2 S.T.B. at 408.

"IIIF Unit Costs" and "UP AFE data.pdf." The total IRR investment costs for seeding/placing topsoil equal $0.7 million. *See* e-workpaper "IRR Grading Opening.xlsx," tab "IIIF_12 Othr Cst."

vii. Water for Compaction

The IPA engineering witnesses have included an additional cost for water compaction but only for the borrow quantities. By inference, the Shawnee-Jireh project costs include any necessary water compaction costs as no separate costs are included for this function. This is confirmed by the relevant invoices as well. *See* e-workpapers "UP AFE data.pdf" and "449130.xls." Therefore, no additional water costs have been included for the excavation quantities reused for embankment. However, as the Means Handbook costs used for the borrow costs do not include costs for water for compaction, IPA's engineers added these costs based on the quantities needed for the construction of BNSF's Orin Line. The total IRR investment costs for water for compaction equal $0.6 million. *See* e-workpaper "IRR Grading Opening.xlsx," tab "IIIF_12 Othr Cst."

viii. Surfacing for Detour Roads

Consistent with Board precedent, IPA's engineers did not include costs for any road detours for the IRR's lines that are covered by ICC Engineering Reports, as it is unlikely that UP's predecessors incurred any costs for this item when the lines were originally constructed. *See Xcel I*, 7 S.T.B. at 101; *Duke/NS*, 7 S.T.B. at 180; *Carolina P&L*, 7 S.T.B. at 317; *Duke/CSXT*, 7 S.T.B. at 484;

TMPA, 6 S.T.B. at 707-708; *Wisconsin P&L*, 5 S.T.B. at 1024-25; *FMC*, 4 S.T.B. at 802.

For the IRR's two small spur segments constructed after the ICC Engineering Reports were prepared, as identified previously in the section on relocating and protecting utilities, IPA's engineers did not include any monies for road detours during construction as there are no highway crossings on these line segments.

ix. Construction Site Access Roads

In general, the IRR's track subgrade is used for its site construction roads. In addition, most of the IRR right-of-way is accessible from public roads and highways, thereby permitting construction access without building separate access roads. Further, the initial construction activity includes clearing the IRR right-of-way and creating initial site access with the heavy construction equipment. As the site is leveled by either cutting or filling the right-of-way, access roads are created for moving earth, rock and other materials to and from the construction sites. In any event, no additional costs should be incurred for site construction access roads because this is normally not a compensated portion of the grading contractor's requirements. *See Duke/CSXT*, 7 S.T.B. at 476-77; *Duke/NS*, 7 S.T.B. at 172; *Carolina P&L*, 7 S.T.B. at 310; *AEP Texas* at 80.

x. Environmental Compliance

Consistent with prior Board decisions, IPA's engineers did not include any costs for environmental compliance for the IRR's lines that are covered by ICC Engineering Reports because these costs were not incurred when the replicated lines were originally constructed by UP or its predecessors, and to require such costs now would be a barrier to entry. *See Wisconsin P&L*, 5 S.T.B. at 1025 (the parties agreed that environmental mitigation was only required for the recently constructed segments); *Xcel I*, 7 S.T.B. at 682 (the parties agreed on the inapplicability of such costs); *AEP Texas* at 83. The public evidence in *WFA* also indicates that environmental compliance costs were applied only to recently-constructed lines.[7] The IRR's recently-constructed spur segments, for purposes of environmental compliance, are the same as those identified previously in the section on relocating and protecting utilities.

IPA's engineers have included a total of $35,987 for environmental compliance. *See* e-workpaper "IRR Grading Opening.xlsx," tabs "IIIF_12 Othr Cst" and "Environ Comp."

3. **Track Construction**

Track construction encompasses the work needed to lay track once the subgrade has been completed, including placing subballast, ballast, ties, rail, and other track components. The total cost for track construction as determined by IPA's engineers is shown in Table III-F-5 below, and equals $242.1 million. Details are provided in e-workpaper "III-F Total – 2001.xlsx." Development of this cost is discussed in detail below.

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[7] *See* WFA/Basin's Rebuttal Evidence in Docket No. 42088 (Public Version) filed Sept. 30, 2005, at III-F-81-82.

TABLE III-F-5 TRACK CONSTRUCTION COST ($ millions)	
Item	Cost [1/]
1. Geotextile Fabric	0.03
2. Subballast & Ballast	28.7
3. Ties	43.6
4. Rail	63.5
5. Other Track Materials	16.2
6. Turnouts	5.8
7. Track Installation/Labor	84.2
TOTAL	242.1

[1/] Transportation costs are included in individual cost items.

a. Geotextile Fabric

Consistent with the *WFA I* decision, IPA's engineers have placed geotextile fabric only under turnouts and at-grade public crossings. *Id.* at 94-95. The quantities of geotextile reflect the amount needed for turnouts only because the cost per foot for at-grade public crossings already includes geotextile costs. The total IRR geotextile quantity calculations are shown e-workpaper "Track Quantities-2011.xls." The unit cost for geotextile fabric was obtained from Utah Department of Transportation cost data. *See* e-workpaper "UDOT 2009 Page 2 of 17.pdf."

b. Ballast

Consistent with past practice, IPA's engineers have used 20 inches of ballast and subballast, consisting of a 12-inch subballast layer and an 8-inch layer of clean rock ballast for all main tracks. *See WFA I* at 91, 93; *AEP Texas* at

86. Diagrams of the standard IRR main track cross sections are included in e-workpaper "IRR Track Typicals.pdf."

Consistent with *WFA I*, IPA's engineers used 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. Ballast for the IRR is supplied by a quarry located just to the northwest of Milford, UT. This facility supplies ballast to the UP, and UP provided a unit cost from the facility in discovery, which IPA's engineers have used in their calculation of ballast costs. The facility is directly served by rail by a private lead track connected to UP's main line at MP 584.07 on the Lynndyl Subdivision. *See* e-workpaper "Quarry Track Chart Page.pdf." This portion of UP's main line is also being replicated by the IRR. As such, IPA engineers have included the cost of a turnout connection for the express purpose of reaching the private lead track.

As the Milford Quarry is located on the Lynndyl Subdivision at a point being replicated by the IRR, IPA's engineers assumed that the ballast could not be delivered to a railhead using a ballast train until the subballast, ties and rail had been laid. Once, the basic truck structure is down, it is possible to move the ballast train and ballast laying equipment to the quarry. From there, the ballast would be placed directly (*i.e.*, the ballast train will directly access the quarry and move the ballast to any location on the Lynndyl Subdivision where the ballast laying equipment is working). IPA notes that the track construction contractor is responsible for marshaling and moving the ballast as needed once it reaches a railhead (*i.e.*, the Milford Quarry). *See* "Windgate Track Construction.pdf."

Once the Lynndyl Subdivision is complete, IPA engineers provided that the ballast for the Sharp Subdivision would be handled by the contractor directly from the Milford Quarry just as it is for the building of the Lynndyl Subdivision. Ballast for the Provo, Green River and Pleasant Valley is delivered to the IRR railhead in Provo. Specifically, IPA's engineers assumed the ballast would be moved by the contractor to Lynndyl. It would then be taken by UP to Provo via Salt Lake City, where the rail construction contractor would then assume responsibility for handling the ballast along the line being constructed from Provo to Price.[8]

Details of the unit cost and necessary transportation additives for ballast are detailed in e-workpaper "Ballast & subballast Worksheet.xls."

The IRR's subballast is also sourced from the Milford Quarry. The cost per ton of the subballast is based on a quote provided by the Milford Quarry. The subballast consists of similar parent materials crushed to provide a well-graded, dense layer of crushed rock similar to road base material. The subballast selected also meets AREMA standards for such materials. *See* e-workpaper "AREMA 18-2-3.pdf."

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[8] For the ballast and subballast transported over UP from Lynndyl, via Salt Lake City to Provo, IPA's engineers included a per ton transportation additive of $0.035 cents per mile based on the shipping charge used for inter-railroad transportation from *Wisconsin P&L*, 5 S.T.B. at 1029-30.

The subballast for the Lynndyl Subdivision is moved by truck to the turnout for the Milford Quarry. From there the contractor places the subballast as needed along the subdivision. Subballast for the Sharp, Provo, Green River and Pleasant Valley Subdivisions is transported in the same manner as the ballast being used for these subdivisions. *See* e-workpaper "Ballast & subballast Worksheet.xls" for details of the subballast unit cost.

Ballast and subballast quantities were developed for all sections of track based on the lengths of single and double track sections, and the roadbed sections referenced above. As noted above, the IPA engineers have included cross-sections of the IRR track designs in e-workpaper "IRR Track Typicals.pdf." E-workpaper "Ballast & subballast Worksheet.xls" includes the volume per foot of track for ballast and subballast. The quantities were calculated by multiplying the sectional area in square feet by one foot in length and then dividing by 27 to obtain cubic yards. The volume of rock displaced by the volume of the ties being used in particular locations was removed from the total volume calculation.

Ballast and subballast quantities for yards were calculated assuming each track in the yard is a single track and using six inches of subballast and six inches of ballast. IPA's experts also used the standard conversion factor of 1.5 tons/CY in determining the ballast and subballast quantities, a figure approved by the Board in *WFA I* at 93.

c. **Ties**

IPA's engineers selected wood ties with a tie spacing of 20.5 inches for all main track, passing sidings, and branch lines. This is consistent with railroad industry standards for mainline track, and the Board has also accepted SARR wood tie spacing of 20.5 inches. *See WFA I* at 96; *West Texas Utilities*, 1 S.T.B. at 707. Because of the lighter traffic and slower train speeds, IPA's engineers used wood ties with 24" spacing in yards, set-out tracks and interchange tracks. *See WFA I* at 96 (accepting this spacing in yards).

IPA's engineers selected standard Grade 5 treated hardwood railroad ties. The unit cost for Grade 5 ties is based on a work order for a UP project undertaken on the Provo Subdivision. *See* e-workpaper "WO 03907 Page 13.pdf."

The IRR is constructing its bridges with ballast decks, thereby obviating the need for transition ties. *See WFA I* at 97. Similarly, the Board has recognized that transition ties are not needed at turnouts. *Id.* Transition ties are included at road crossings, but those particular costs are reflected in the road crossing unit prices.

d. **Track (Rail)**

i. **Main Line**

As discussed in Part III-B, new 136-pound standard CWR is used for the IRR's main tracks and passing sidings. For the Pleasant Valley Branch, 115-lb relay CWR is used.

The IRR's cost per linear foot for 136-pound standard rail was derived from information provided by UP in discovery. *See* e-workpapers "Rail Worksheet - 2011.xls" and "WO 54409 – Page 11 of 22.pdf." The rail UP uses is produced by Progress Rail at two primary locations, one in Pueblo, CO and one near Cheyenne, WY. IPA's engineers determined, based on a phone call with Progress Rail, that most of the rail that Progress produces is rolled in its Pueblo facility. As such, IPA's engineers added transportation costs to deliver the rail from Pueblo to Provo or Lynndyl via Salt Lake City.[9]

The rail is welded together into approximately 1600-foot lengths and then placed on a rail train. The rail is distributed by the rail installation contractor, which costs are covered in IPA's track construction labor costs.

ii. Yard and Other Tracks

As discussed in Part III-B, the IRR is using 115-pound relay CWR for yard, interchange, origin and destination spurs, helper pocket tracks, and set-out tracks. The unit price per foot for the 115-pound relay rail is based on a quote from Progress Rail. *See* e-workpaper "IPA_Progress Rail_PhoneLog.pdf." The 115-lb relay rail is also being delivered from Pueblo to Lynndyl or Provo via Salt Lake City. *See* e-workpaper "Rail Worksheet - 2011.xls."

iii. Field Welds

The cost of material for field welds was derived from a work order provided by UP in discovery. *See* e-workpaper "WO 03907 Page 14.pdf." Field

[9] Transportation distances by rail were determined using PC*Miler 17.

welds are required to connect the 1600-foot strings of welded rail produced by the manufacturer as well as to insert insulated joints, make connections to turnouts and span grade crossings. The calculations for the number of field welds are shown in e-workpaper "Track Quantities-2011.xls," tab "Track Quantities."

The cost of labor for field welds is included in the bid provided by Windgate Constructors and indexed to 1Q11. In particular, the Windgate quote states that Windgate is providing the labor to both lay and field weld CWR track sections. *See* e-workpaper file "Windgate Track Construction.pdf."

iv. <u>Insulated Joints</u>

Insulated joint costs are included in the signals and communications costs described in Part III-F-6 below.

v. <u>Switches (Turnouts)</u>

IPA's engineers included the number and size of turnouts specified in the IRR's track diagrams (Exhibit III-B-1). Unit costs for turnouts are based on a quote obtained by IPA's engineers and indexed to 1Q11 (the same quote was accepted in *WFA*). *See* e-workpapers "III-F Total – 2011, xlsx" tab "Material Unit Cost" and "Koppers.pdf." Turnouts include all the materials listed in e-workpaper "Turnout Materials.pdf." Switch stands are also included as needed. The unit costs for switch stands are based on a quote obtained by IPA's engineers and indexed to 1Q11. *See* e-workpaper "Switch Stands Hand.pdf" and "Switch Stands Powered.pdf." Switch heaters and related propane tanks are also included at each mainline turnout. The unit costs for the switch heaters and propone tanks are based on quotes obtained by IPA's engineers and indexed to 1Q11. *See* e-workpapers "Switch heaters.pdf" and "Propane Tank.pdf." Switch machines are included in the signals costs where applicable.

e. **Other**

i. **Rail Lubrication**

Rail lubricators are used by the IRR to distribute grease to the wheel/flangeway interface where the degree of curve of the track is four degrees or greater on mainlines and branches. Spacing of lubricators is based on the coverage of the grease as defined by the supplier, and as warranted by track conditions. Details of the lubricator count are shown in e-workpaper "Curve Data Worksheet-2011.xlsx." The unit cost for rail lubricators is based on a quote from A&K Rail Materials indexed to 1Q11. *See* e-workpaper "A&K Pandrol Clips, Lubricators.pdf."

ii. **Plates, Spikes and Anchors**

On tangents and curves less than three degrees, the IRR is using wood ties with cut spikes that will be used to hold the rail to the tie plate and the tie plate to the ties, and to provide lateral restraint to hold the rail to gauge (4'-8½" inside dimension between the railheads). Two spikes per tie plate (four spikes per tie) are used on all tracks with timber ties and less than 3-degree curves. This spiking pattern is standard practice for U.S. railroads, is used by UP in the territory being replicated, and was approved by the Board in *WFA I* at 103. AREMA standards also support two spikes per plate. *See* e-workpaper "Spiking.pdf."

For curves three degrees or greater, pandrol plates and clips are used with four screw spikes per pandrol plate. This pattern is consistent with industry practice and AREMA. *Id.*

Rail anchors are drive-on or spring clip-on devices that clamp under the base of the rail and bear against the sides of the timber ties. Anchorage of the rail prevents the rail from running, or moving in a longitudinal direction down the track due to thermal expansion or train acceleration/braking loads. The anchors transmit the longitudinal stress forces in the rail to the ties, which then transmit the forces to the ballast thereby restraining movement of the track structure. Anchors are used on both sides of every other tie on main track, branch lines, yard tracks, set-out tracks and interchange tracks where the curvature does not exceed three degrees (no anchors are required where pandrol clips are used). Anchors are used on both sides of every tie for 200 feet on each end of grade crossings and turnouts (those costs are included in the grade crossing and turnout costs). The anchoring pattern being used on the IRR is consistent with AREMA. *See* e-workpaper "Anchoring.pdf."

The unit costs for plates, spikes, anchors, and clips are detailed in e-workpapers "III – F Total – 2011.xlsx" tab "Material Unit Cost," "WO 03907 Page 13.pdf," "WO 03907 Page 14.pdf," and "A&K Pandrol Clips, Lubricators.pdf."

iii. **Derails and Wheel Stops**

Derails are used to keep cars from rolling from a spur track or side track through a turnout and onto the main track. Derails are included at all FED set-out track turnouts and at yard turnouts at the four yard locations where cars are set out from trains and stored. Wheel stops are used at the end of single ended tracks to keep the cars from rolling off the end of the track. The unit cost for a derail is based on the Means Handbook cost from 2011. *See* e-workpaper "RSMeans Derail and Wheel Stop.pdf." The total costs are described in e-workpapers "III – F Total – 2011.xlsx" and "Track Quantities-2011.xls."

iv. **Materials Transportation**

Specific transportation costs associated with a given item are addressed in the relevant portions of this Subpart, or in the applicable e-workpapers. Therefore, no additional transportation costs have been added for those items.

v. **Track Labor and Equipment**

The IRR's track laying and related costs were derived from a quote obtained by IPA's engineering experts and indexed to 1Q11. *See* e-workpaper "Windgate Track Construction.pdf." This is the same quote relied upon and accepted in the *WFA* case. *See WFA I* at 106-07.

4. **Tunnels**

There are three tunnels on the lines that the IRR is replicating. All of the tunnels are located on the Provo Subdivision. The Thistle Tunnel is the longest tunnel at 3,009 feet in length. The Nolan Tunnel is 403 feet long, and the Kyune Tunnel is 410 feet long. *See* e-workpaper "IPA Tunnel Cost.xls."

The Thistle Tunnel was built in 1983, but UP could not provide any cost data in response to IPA's requests. UP did, however, provide information indicating that the Thistle Tunnel is concrete and steel lined. The Nolan and Kyune Tunnels appear to have been constructed when the replicated lines were originally built. UP did not provide any data regarding these tunnel structures, other than the length. IPA engineering experts could not get close enough to the two older tunnels to determine whether they are lined, and if so, with what materials.

In light of the dearth of data, and consistent with Board precedent, IRR's engineers utilized the base unit cost of $2,561 per linear foot developed in *Coal Trading*, 6 I.C.C.2d at 422, and then indexed this cost from 1980 to 1Q11. This procedure yields a unit cost of $7,561 per linear foot. The unit cost was multiplied by the total feet of tunnels (3,822 linear feet) to yield a cost of $28.9 million. *See* e-workpaper "IPA Tunnel Cost.xls" for details of the Means Handbook indexing and total cost development.

As the Board is aware, in *AEPCO* and *Seminole*, the railroads attempted to undermine this well established unit cost and indexing methodology. In each case, the complainant refuted the proposed deviations. However, as the Board has not yet addressed this possible issue, IPA recaps the pertinent information.

In *WFA*, the Board accepted the unit cost for tunnels as described above, but it also accepted a tunnel-related additive to MOW costs proposed by BNSF. *See WFA I* at 107. Specifically, BNSF argued that the tunnels being replicated were timber-lined tunnels rather than the typical concrete and steel tunnels built today, and that such tunnels required additional upkeep. *Id.* WFA responded that the unit cost utilized for tunnels did not specify the tunnel type (*e.g.*, timber-lined or concrete and steel). However, WFA did note that its MOW witness had been involved with the construction of a tunnel during the early 1980s (about the same time period that the *Coal Trading* unit cost was derived from) where the unit cost was similar to the *Coal Trading* unit cost, and that tunnel was concrete-lined and steel reinforced. Therefore, WFA argued that the tunnel from the *Coal Trading* case was likely to have been a concrete and steel tunnel and not a timber-lined tunnel.[10] The Board rejected WFA's assertion on the grounds that a witness' recollection was not sufficient, and as the tunnels being replicated were timber-lined, WFA was stuck with the additive since it could not show that the tunnel cost would include concrete and steel construction techniques. *Id.*

In *AEPCO* and *Seminole*, the railroads argued that the Board had definitively concluded that the *Coal Trading* unit cost must represent the cost for timber lined tunnels, and the railroads then proposed even more expensive, and largely unsupported, tunnels that included concrete and steel linings. IPA's

[10] *See WFA*, Complainant's Reb. Narr. (Public Version) filed October 3, 2005, at III-F-119.

engineers disagree, and they have assumed that the tunnels being constructed are concrete-lined and steel reinforced for the additional reasons set forth below.

First, any tunnel built in recent periods would not have been timber-lined. Such construction techniques are no longer utilized. Indeed, as early as 1902, treatises were already addressing how to swap out timber-lined supports for more durable materials. *See* Charles Prelini, *Tunneling: A Practical Treatise* 280 (1902). Second, information from the *AEPCO* proceeding indicates that AEPCO's engineers were directly involved with a railroad tunneling project from 1993 where the unit cost for a concrete-lined tunnel was $2,490 per linear foot – as indexed to 1Q09. Likewise, AEPCO noted that another tunnel project undertaken that same year was also concrete-lined and less per linear foot ($4,853) than IPA's unit cost in 1Q09 dollars. Apparently, the second project also involved particularly challenging fractured rock formations.[11] As such, IPA has not included any additional MOW costs for the tunnels it is constructing, and it has used the *Coal Trading* linear foot cost.

Finally, in the mid-1980s, Canadian Pacific built two single-track tunnels as part of a $420 million expansion that was located in difficult terrain deep in the Canadian Rockies and in the middle of a national park. *See* e-workpaper "CP Project Article.pdf." The tunnels were horseshoe-shaped and excavated to almost 19 feet wide and 29 feet high. The tunnels included concrete

[11] *See AEPCO*, Complainant's Reb. Narr. (Public Version) filed July 1, 2010, at III-F-68-70.

wall and crown linings as well as 13-inch thick floor slabs. According to an *Engineering News-Record* article, the tunnel boring accounted for approximately one-third of the cost of the project, and the two tunnels, when combined, totaled approximately 10.1 miles. *Id.* When the total tunnel feet are divided into 1/3 of the project cost (the cost for the tunnels), the cost per linear foot comes to $2,358 in 1986 dollars ($5,200 when indexed to 1Q11), which is also less than the indexed 1980 *Coal Trading* unit cost.

5. <u>Bridges</u>

IPA's engineers have inspected the lines being replicated by the IRR and reviewed the specific information contained in UP's bridge inventory and other documentation produced by UP. From their inspection and review, IPA's engineering witnesses have developed bridge quantities and costs consistent with the IRR's needs. Bridge design and unit costs are derived from a real-world source as described below. Thus, the IRR's bridges are consistent with real-world costs and designs.

a. <u>Bridge Inventory</u>

IPA's engineers prepared the IRR bridge inventory based on a review of the bridge information provided by UP in discovery. The bridge inventory includes milepost, feature crossed, number of spans, structure type, height and total length. The inventory is provided in e-workpaper "IPA Bridge Costs.xls." As noted above certain bridges were converted to culverts and vice-versa.

b. <u>Bridge Design and Cost Overview</u>

The bridge inventory being replicated by the IRR is somewhat different from that in past SAC rate cases in that there are no "large" bridges on this railroad. Indeed, the longest bridge is only 150 feet long and the tallest bridge is a mere 28 feet high. Consequently, IPA's engineers determined that multiple bridge types were not necessary. Instead, IPA's bridge designs and costs are based on a single bridge project undertaken by UP, which was then scaled as needed for the particular bridge being built.

i. <u>Bridge Design</u>

When the lines replicated by the IRR were constructed, a variety of bridge types and lengths were used. However, when constructing a series of bridges from scratch, it is far simpler and more efficient to use modern bridge building techniques and a standard design if possible. Thus, the IRR's bridges have the same lengths as the real-world bridges on the lines being replicated, but IPA's engineers have designed and costed those bridges using more efficient concrete deck spans. As no information was provided in discovery on the hydraulic area of the bridges, water flow increase/decrease was not taken into consideration in the engineers' methodology as this is negligible due to the fact that each IRR bridge either has the same number of spans, or has a decrease in span number, while keeping the length the same as the existing bridge.

As noted above, the IRR is utilizing a single bridge type. The design of the bridge is based on a project undertaken by the UP on its Lufkin Subdivision near Caney, TX. The project was a multiphase replacement/refurbishment of a large bridge that was built with several span types and supporting structures. For the IRR's purposes, IPA engineers adopted the design and components for Phase I of the replacement, wherein a timber trestle approach structure was replaced with a concrete deck bridge supported by steel piles. UP's designs for this structure are included as e-workpaper "WO 59631_luf02860-Segment AB (Rev.2) - Drawing 117467.pdf."

Using UP's materials list and designs for the Lufkin project, IPA's engineers determined the quantities/costs[12] that would be needed for any given bridge structure. Specifically, IPA's engineers categorized the various materials and related labor into one of three categories: abutments, columns (piles, bracing and pile caps) or spans. The UP material list included all the necessary bridge items, as shown in the designs, including, but not limited to, piling materials, endcaps, backwalls, wingwalls, bearing pads, plate, rip rap, pile caps, channel braces, box beams, beam stops, handrails, deck plates and filler materials. Span material quantities/costs were further broken down to derive a per foot cost/quantity figure.

[12] The exact quantities of materials are not necessarily detailed in each instance. Instead, UP's cost for each item was categorized and broken down into abutments, piles or spans. Thus, in making the cost calculations for each IRR bridge, IPA's engineers are directly making only a cost calculation, the necessary materials are implicitly included via the cost structure.

To calculate the necessary material, labor and transportation cost for each bridge in the inventory, IPA's engineers provided an abutment for each end of the bridge, column (steel pile) structure(s) necessary to support the number of spans, and then the per linear foot cost for spans were multiplied by the length of the bridge as reported in the UP inventory. The specifics of the procedures are shown in the individual bridge calculations included in e-workpaper "IPA Bridge Costs.xls."

ii. <u>Bridge Costs</u>

As already noted, the bridge design and costs were derived from a UP project on its Lufkin Subdivision. The material costs were included in data provided by UP. *See* e-workpaper "WO 59631.pdf." In addition, UP provided details on the necessary labor costs to install the bridge, including the costs for pile driving, installing the abutments and placing the bridge girders. *See* e-workpaper "514842.xls." Finally, UP provided details on the cost to transport the bridge materials { } miles by truck to the work site. *See* e-workpaper "WO 59631 Transportation.pdf." IPA's engineers determined that the transportation cost additives were reasonable in this instance because there is a major manufacturer of pre-cast concrete structures located in Salt Lake City (Hanson Structural Precast). As all of the IRR system is located less than 200 miles from Salt Lake City, the transportation costs should be adequate to move the bridge materials to any location on the IRR. Details of the particular unit costs as applied are shown in e-workpaper "Base cost bridge.xlsx."

c. **Highway Overpasses**

As noted in Part III-F-8-c below, grade-separated crossings are included in the bridge calculations. In discovery, UP produced information regarding a highway overpass constructed on the Sharp Subdivision at MP 747.59, which is being replicated by the IRR. *See* e-workpaper "WO 07379.pdf." While UP provided few details of the project, from the documents provided it appears that the actual construction was undertaken by the Utah DOT and that UP paid { }% of the total project cost or ${ }. This figure is higher than the typical overhead bridge cost submitted by complainants in SAC cases, but upon examination, it appears the overhead bridge in issue here is unusually large. A picture is included as e-workpaper "747.59 aerial.pdf."

IPA engineers made a further examination of the other 21 overhead bridges in 16 locations that the IRR needs to include in its costs. The other projects also include large highway overpasses (*e.g.*, I-15 crosses over the railroad at several points). As such, IPA's engineers included the cost from the previously-described Sharp Subdivision overhead bridge for each overhead bridge that it identified. *See* e-workpaper "Highway Overpasses Costs.xlsx." IPA further notes that the { }% portion of the project cost that UP included in the work order "WO 07379.pdf" is inconsistent with the draft contract that is publicly available from the UDOT. In the draft contract, UP was not expected to pay any portion of the costs. *See* e-workpaper "UDOT Draft Contract."[13] Thus, IPA believes it has been conservative in using the per bridge cost from the Sharp Subdivision project.

The total investment cost for the IRR's bridges is $26.5 million. *See* e-workpapers "IPA Bridge Costs.xls" and "Highway Overpasses Costs.xlsx."

6. Signals and Communications

The IRR's signals and communications costs are summarized in Table III-F-6 below. As described in Part III-B and Part III-C, the IRR uses a CTC traffic control system to govern train movements on two portions of its mainlines (the Lynndyl Subdivision and the heavy-grade portion of the Provo Subdivision that passes through the Wasatch Mountains). The remaining territory is "dark," but remote switches are included for mainline passing sidings in the dark territory. Communications needs are met through a combination of fiber optic trunk lines, microwave towers and land mobile radio stations. The systems and associated costs are described below.

TABLE III-F-6
SIGNALS AND COMMUNICATIONS SYSTEM COSTS
($ millions)

Item	Cost
1. CTC, Remote Switches, FEDs, AEI Scanners, and Related Equipment	$ 19.0
2. Communications	$ 7.4
Total	**$26.4**

[13] IPA's engineers were unable to locate the final contract.

a. Centralized Traffic Control & Remote Switches

The IRR's signal and communications systems were designed and costed by IPA Witness Victor Grappone. The various component quantities were developed by reviewing the IRR system diagram included in Exhibit III-B-1.

Unit costs were derived from various quotes developed by Mr. Grappone. The costs developed for the CTC system include all of the materials necessary for the operation of each signal, including vital control equipment, power distribution, cables, switch mechanisms, wayside signals, internal wiring, huts, batteries, power drops and insulated joints. *See* e-workpaper "IPA Signals and Communications.xls." Intelligent electronic track circuit technology is applied for the automatic signal locations between interlockings. Insulated joint costs are included in the signal system unit prices.

Automatic signals have been spaced to provide a maximum block length of 13,000 feet, which is within the capability of the equipment. Interlocking huts employ vital microprocessor technology. These huts provide far greater capability for complex logic than relay-based systems, thereby making it possible to employ advanced functionality, including the independent control and indication of the switches comprising a crossover. Sufficient switch cabling has been provided to support this feature.

IPA's engineers also provided for both manual and machine trench digging and cable installation as required to interconnect the equipment huts and wayside appliances. In the areas covered by fiber optic communications, each interlocking and other CTC device includes fiber optic link equipment as required to link them to the IRR's communication system. In the areas covered by microwave communications, each of these locations includes the data radios necessary to provide this link. The entire system is linked into the dispatching center at the IRR's Lynndyl headquarters, which is also costed in this section.[14]

The dispatching center cost of $250,000 was based on previous dispatching center costs accepted by the Board, but scaled to reflect the smaller level of traffic on this SARR and the single dispatching desk. *See, e.g.*, *WFA I* at 114 (accepting, by incorporation, the dispatching center unit cost). The *WFA* cost was based on information provided by Alstom.

Remotely controlled switches are used in the IRR's dark (non-CTC) territory. The Fail Safe Audible Signal-Power Activated Switches ("FAS-PAS") are sold by Global Rail Systems. This is a vital system that provides operational safety through switch control and indication circuitry, time locking and wayside signals. Mr. Grappone conferred with the vendor, and determined that the switches would meet the operating needs of the IRR as defined by Mr. Reistrup. In addition, Global Rail Systems indicated that the FAS-PAS system is in use on the Kansas City Southern, a Class I railroad. Specifically, KCS uses the switches on its so-called "Meridian Speedway," which is used by approximately 25 trains a

[14] Mr. Grappone also developed the total number of AAR signal units for the IRR system (4,181), and provided this number to IPA's MOW witness, Gene Davis, for use in developing annual maintenance costs for the IRR's signals and communications system.

day according to the vendor. The vendor also provided an estimate of the delivered cost for each switch, as well as the necessary labor time to install it, which costs Mr. Grappone has included in his estimate. Details of the FAS-PAS system and costs and are included e-workpapers "FAS-PAS Remote Switch Notes.doc" and "IPA Signals and Communications.xls."

b. **Detectors**

Automatic roll-by failed equipment detectors ("FEDs") are included along the IRR main lines as required by operations and consistent with the current industry standard: AREMA 2001 Standards, Chapter 16, Section 5.3.1, Items j & k. These FEDs are located approximately every 25 miles along the main line. In addition, the detectors have been strategically located to minimize the traffic back-ups should a train be required to stop for inspection and/or to remove a bad order car. A bad order setout track has been sited within three miles of each failed equipment detector to provide for train stopping distances and allow removal of bad order cars to the setout track. All setout tracks near the detectors are 600-foot clear length (860 feet between switches) double-ended tracks.

The IRR also has four AEI scanners. Details of the costs and components for the FEDs and AEI scanners are shown in e-workpaper "IPA Signals and Communications.xls."

The IRR also has slide detectors where such devices were shown on UP's track charts, as a specific inventory was not provided. IPA notes, however, that the track charts do not indicate the length of slide detector at a particular location. As such, Mr. Grappone had to estimate the volume based on the terrain. Thus, he included 2,500 feet of slide fence with detectors. The unit cost per linear foot of slide fence was developed from a UP work order. *See* e-workpaper "IPA Signals and Communications.xls."

c. **Communications System**

The IRR's railroad radio system enables locomotive communications, two-way radio communications, general voice communications, general data communications, and FED alerts. A combination of fiber optic and microwave radio technology is used for the communications system backbone, and land mobile radio technology is used to facilitate communications between end user applications and the radio system backbone. Land mobile radio ("LMR") technologies provide communication access (via fixed, mobile and portable radios) to the radio system backbone for operating crews, supervisory and track maintenance personnel that need to communicate with the railroad's operating headquarters and central dispatching facility at Lynndyl. LMR technologies are co-located with microwave radio technologies at network (tower) sites if appropriate. LMR technologies operate in Very High Frequency ("VHF") mode to accommodate railroad operational frequencies assigned by the AAR.

The backbone of the IRR's railroad radio system includes fiber optic cable and microwave towers along the IRR route. The split between territories served by fiber optic and those served with microwave towers is shown in e-workpaper "Utah Fiber.xls."

IPA's engineers opted to use fiber optic cable for the IRR's communications backbone where it has been installed on the UP lines being replicated. The typical arrangement between a telecom provider and a railroad grants the telecom provider the right to lay fiber optic cable along the railroad's right-of-way, and then operate that cable for a contracted period of years. In exchange, the railroad is often paid fees for such access, and more importantly for present purposes, the railroad is typically allowed to use a portion of the available bandwidth free of charge. Accordingly, IPA's engineers have assumed that the telecom provider would install the fiber optic cable at its cost and that the IRR and the provider would enter a contract on terms that would entail no cost to the IRR to use it.

IPA's engineers have included the equipment costs required to access the relevant fiber optic facilities. Each wayside control cabinet includes a fiber modem and related fiber node costs, which replace the data radio. The equipment selected is based on other projects with fiber data transmission. The unit costs for the equipment are derived from publicly available sources. *See* e-workpaper "Fiber Node Costs.pdf." These fiber modems also act as repeaters, so additional repeater locations are not required.

Only some of the lines being replicated are served by fiber optic cable. For those areas where fiber is not presently in place, Mr. Grappone has included microwave tower facilities in the same locations where UP currently has microwave facilities. *See* e-workpaper "Telecom Site Map.pdf." In total, the IRR has nine microwave facilities.

Microwave site costs are based on documents UP provided in discovery for standard microwave facilities and smaller stations. Eight of the nine microwave facilities are standard facilities as defined by UP and the ninth is a smaller station facility. UP's microwave site costs are comprehensive. They include, but are not limited to: a 200 foot tower, microwave terminals, VHF radio base stations, a shed, various antennas, and fencing. *See, e.g.*, e-workpaper "STATIONMWutahFeb2011.xls." Labor costs are also included.

Mr. Grappone also included additional LMR facilities to ensure the consistency of radio communications between fiber nodes and/or microwave towers. *See* e-workpaper "IPA Signals and Communications.xls."

7. <u>Buildings and Facilities</u>

The IRR is a Class II railroad. It requires only a few facilities to serve its needs, including a headquarters facility, a small locomotive shop, and several crew change and MOW buildings. The details for the various facilities are discussed below. The total building costs are summarized in Table III-F-7.

TABLE III-F-7 **BUILDINGS AND FACILITIES** ($ millions)	
Facility	**Cost**
1. Headquarters Building	$1.85
2. Locomotive Shop	3.03
3. Crew, MOW/Roadway Buildings	2.21
4. Yard Site Costs (Roads, Lighting, Drainage, Wastewater, etc.)	3.35
Total	**$10.44**

a. Headquarters Building

The IRR headquarters is located 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 60 people. *See* e-workpaper "Headquarters.pdf." This building design, accepted in *WFA I*, was modified here to reflect the smaller number of IRR personnel housed in the building. *See* e-workpaper "Buildings and Sites.xls." The total cost of the headquarters building, indexed to 1Q11, is $1.5 million.

b. Fueling Facilities

The IRR has no fixed fueling facilities. Locomotive fueling is performed by trucks, *i.e.*, direct-to-locomotive ("DTL") fueling as needed, at the IRR's locomotive shop located at N. Springville. Separate fueling tracks are provided at the facility, and all fueling will be performed track-side. IPA's engineers also provided for construction of a road to reach the locomotive facility thereby simplify the fueling operations.

c. <u>Locomotive Shop</u>

The IRR has one small locomotive shop located at N. Springville. It is shown in Exhibit III-B-3. The IRR has only 15 road locomotives and one switch locomotive. Thus, the locomotive shop needs to service a small number of locomotives at any given time. Nevertheless, IPA's engineers have provided an 18,500 foot square foot pre-engineered metal building. The structural elements of the facility are based on a quote from Kessel Construction, which the Board accepted in *WFA I* at 126. *See also* e-workpaper "Kessel Locomotive Shop.pdf." This quote was scaled for the facility required here and indexed to 1Q11.

This shop will not perform major component repairs such as rebuilding engines. As is typical of most railroads, these major repairs will be contracted out to vendor shops that specialize in this work. Thus, the components are repaired on a repair-and-return or unit-exchange basis. The locomotive shop is, however, set up to remove such components from the locomotive and reinstall the repaired or replaced part. In other words, the LRR shop would change out components that are rebuilt off site (contracted out), as opposed to removing and rebuilding all the individual components in-house. Consequently, the locomotive shop does not need the equipment that might be found in a major repair facility, such as an engine block washer, traction motor stands, traction motor gearcase racks, or air brake test racks.

In addition to the structure, IPA's engineers have included a full complement of equipment. Consistent with *WFA I*, IPA's engineers have included, *inter alia*, a wheel truing machine, a 35-ton crane, 3 ton jib cranes, a drop table, and elevated stair rails. A locomotive wash facility is also provided. The design and costs for the locomotive shop are detailed in e-workpapers "Buildings and Sites.xls" and "All Buildings - Locomotive Repair Shop.pdf."

d. <u>Car Repair Shop</u>

Under the relevant IRR (UP) car maintenance agreements, a contractor is responsible for providing all necessary shops. *See* Part III-D-2. Thus, IPA has not included a separate car shop. Running car repairs are performed at IPA's Springville car repair facility, where 1,500-mile inspections of certain empty IRR coal trains are also performed.

e. <u>Crew Change Facilities/Yard Offices</u>

The IRR has five crew change locations. Each location includes a crew change building. The facilities are generally sized to meet the needs of the number of personnel for which a given station is considered to be his/her home terminal. In addition, "guest" lockers are also provided for away-from-home crews. These buildings are pre-engineered metal building shells. The interiors are finished with sheet rock wall coverings, painted, hard wearing floor surfaces, one walled in office and a unisex restroom. The four facilities located at the IRR's yards also serve as yard offices. Details of the design and costs are included in e-workpapers "Building and Site.xls," "All Buildings - Small Crew Change.pdf," "MOW & CREW BUILDINGS.pdf."

f. Maintenance of Way Buildings (Roadway Buildings)

The IRR has four MOW buildings. Each building is similar in office space and design to the crew change facilities. However, additional area is provided for garaging certain vehicles as necessary and storing certain supplies. IPA's engineers developed the space requirements based on the typical MOW crew located in each location as well as the need to house signal maintainers. Details of the design and costs are included in e-workpapers "Building and Site.xls," "All Buildings – M.O.W.pdf," "MOW & CREW BUILDINGS.pdf."

g. Wastewater Treatment

The IRR's Provo Yard and the locomotive shop are located near public sewer service, and IPA's engineers assumed that a connection would be made for those facilities. For the locomotive shop, an oil/water separator system was included.

IPA's engineers also included a 5,000 gallon wastewater treatment facility for the IPA headquarters at Lynndyl. Smaller 400 gallon facilities were included at Milford, Price and the Sharp Loadout. The costs for the various items are detailed in "Buildings and Sites.xls," "Waste Water Treatment Plants.xls," and "Septic System Quote.pdf."

h. **Yard Air, Yard Lighting and Yard Drainage**

Yard lighting is included at each of the IRR's four yards and the locomotive shop. Lighting is provided by 40 foot light poles, with dual 30 foot arms. Each arm has a 400 watt HPS cobra head luminaire. Lights were spaced every 300 feet. The costs and details of these items are included in the general yard development costs shown for each yard in e-workpapers "Building and Sites.xls," "Building Site Development Costs.xlsx," "Lights1.pdf," and "All Buildings - Yard Lighting and Drainage.pdf."

Yard drainage was not observed in any of the UP facilities on the lines replicated by the IRR that were inspected by IPA's engineers. Nevertheless, yard drainage is included in IPA's yard site development costs. A diagram of the yard drainage configuration is shown e-workpaper "All Buildings - Yard Lighting and Drainage.pdf." Details of the cost calculation are shown in e-workpaper "Building Site Development Costs.xlsx."

No yard air is included as the IRR's yard activity is light. Trains normally are not broken apart at the IRR's yards except in connection with inspection and associated bad-order switching of a maximum of one train per day at Provo Yard.

8. **Public Improvements**

a. **Fences**

UP provided no data concerning the quantities or locations of fencing on any of the lines being replicated by the IRR. As such, IPA engineers observed the UP right-of-way during their field inspection, and determined where the UP right-of-way appeared to have fencing that was placed by the railroad or perhaps an adjacent landowner. To be conservative, IPA's engineers included fencing costs for those areas as well.

IPA's experts observed that the UP right-of-way is fenced in the agricultural areas that abut the railroad. Conversely, the Provo area, the Wasatch Mountain area, and the arid areas near Milford did not appear to include fencing. In other words, the fenced areas appear to be designed to protect the right-of-way from wandering animals. However, IPA's engineers rarely observed cattle or other animals along the right-of-way, and it does not appear that the UP has installed cattle guards. Regardless, the IPA engineers' developed a map that shows where they observed such fences, and they have included right-of-way fences accordingly. This map is included as e-workpaper "ROW Fence Agriculture.pdf." In total, IPA has fenced 82 miles of the IRR's right-of-way. *See* e-workpaper "Row Fence Length.xls."

b. <u>Signs and Road Crossing Devices</u>

IPA's operating and engineering experts have included a standard package of railroad signs, including milepost, whistle post, yard limit, and cross-buck signs and posts. A complete count of the included signs is included in e-workpaper "Grade Crossings - 2011.xlsx," with the unit costs shown in e-workpaper "III - F TOTAL - 2011.xlsx."

c. Grade-Separated and At-Grade Crossings

Consistent with *AEP Texas* at 102 and *Xcel I*, 7 S.T.B. at 115-16, the IRR is building all at-grade crossings, and paying 100 percent of the cost for the crossing materials. *See* e-workpapers "Grade Crossings - 2011.xlsx" and "III - F TOTAL - 2011.xlsx." Details of the unit costs and quantities for grade crossing materials are included in e-workpapers "III-F Total – 2011.xlsx," and "Grade Crossings - 2011.xlsx."

Consistent with *AEP Texas*, IPA's engineers have not included the cost for crossing protection, such as gates, flashers, and related signal elements such as crossing predictor huts because the lines being replicated predate the roads in the area, and such signal upgrades as may be done at a later date are generally funded through state and federal contributions. *See AEP Texas* at 103.[15]

Grade separated crossing costs are discussed in Part III-F-5 above.

9. Mobilization

Consistent with the *Xcel I* and *WFA I* decisions, which both involved relatively small SARRs in largely rural areas, IPA's engineers have added a 3.5% mobilization factor for all items where mobilization is not already included in the contractor's bid. *See WFA I* at 132; *Xcel I*, 7 S.T.B. at 696.

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[15] IPA's signals expert, Mr. Grappone, did include the unit costs and quantities for such systems as part of his analysis of the IRR's signaling requirements.

10. Engineering

In *Xcel I*, the Board advised that, in that case and future SAC cases, a 10 percent estimate for all engineering cost components would be used. *Id.*, 7 S.T.B. at 697. The Board followed its precedent in *Otter Tail* (at D-41), *AEP Texas* (at 104) and *WFA I* (at 132). Thus, IPA's engineers have used a 10 percent additive here to cover all engineering, construction management, and resident inspection costs, as well as other items such as soil testing.

11. Contingencies

Consistent with prior Board decisions in other SAC cases,[16] IPA's engineering experts have used a 10 percent contingency factor and applied it to the construction subtotal excluding land. *See* e-workpaper "III-F Total – 2011.xlsx."

12. Other

a. Construction Time Period

The construction time period for the IRR is based on a 30 month construction schedule, which is more than ample given the size and complexity of the facilities to be built. The work begins with the start of surveying and aerial mapping operations. A three-month period is allocated to obtain sufficient information to allow preliminary planning and engineering design to begin. Design of the railroad and appurtenances requires a ten-month period including the three-month start-up/surveying period.

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[16] *See WFA I* at 132-33; *AEP Texas* at 104-05; *Xcel I*, 7 S.T.B. at 698 (parties agreed to a 10 percent contingency); *TMPA*, 6 S.T.B. at 746-47; *West Texas Utilities*, 1 S.T.B. at 710; *APS*, 2 S.T.B. at 402.

Land acquisition takes approximately seven months to complete. It commences five months after project initiation. Test borings are timed to coincide with land acquisition so sufficient test borings can be made during the design process.

By the ninth month, grading of the Lynndyl Subdivision begins, and, as explained above, the Lynndyl Subdivision is to be completed first in order to aid in moving ballast and subballast to other subdivisions.

In general, the construction work has been planned by subdivision. The work has been structured so that all site work, bridges and tunnels can be completed prior to installation of track and signals. Total design and construction time for this project is 26 months with four months available at the end of construction for final operational testing. Thus a 30-month overall construction period has been provided.

The LRR construction project will be divided into three track packages (the Provo track package will build the Green River and Pleasant Valley Subdivisions as well), 14 grading packages, 35 bridge packages, four tunnel packages and six building packages. *See* e-workpaper "Construction Schedule.xls."

Finally, material prices have been obtained for most track materials delivered to railheads at Provo or Lynndyl. Because of the numerous road access points along the lines, and interstate and larger state roads paralleling most of the line segments (*e.g.*, US-6 parallels the route of the Provo and Green River

Subdivisions), materials that cannot be shipped by rail have been priced with shipping by truck (*e.g*, the subballast for the Lynndyl Subdivision is delivered by truck). The Windgate proposal to install the rail materials includes moving those materials from the various rail heads to where they are required along the line.

III-G Discounted Cash Flow Analysis

III. G. DISCOUNTED CASH FLOW ANALYSIS

The Board's SAC constraint rests on the premise that a captive shipper should pay no more than the minimum necessary to receive service from a least-cost, most-efficient replacement for the incumbent railroad and, in particular, the shipper should not bear the cost of any facilities or services from which it derives no benefit. *WFA I* at 7; *Coal Rate Guidelines* at 523-24.[1] The SAC constraint is derived from and constitutes an application of the theory of contestable markets.

In the Board's contestable market structure, the threat of entry by the hypothetical stand-alone entity, typically, as here, a stand-alone railroad ("SARR"), constrains the rates of the incumbent. The SARR, which faces no barriers to entry or exit, has an incentive to enter the incumbent's market if it can sustain itself by charging a rate below that of the incumbent. The presence of that incentive demonstrates that the incumbent's rates are causing the shipper to subsidize the defendant's rates, meaning that the shipper is contributing to (subsidizing) the cost of services that it does not use and/or monopoly profits for the incumbent.

SAC thus provides a regulatory ceiling on rates where a carrier has market dominance, and if the incumbent's rates exceed those that would be

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

charged by the SARR (the IRR in this case), then the existing rates are unreasonable. As the Board summarized in *Carolina P&L*:

> A SAC analysis seeks to determine the lowest cost at which a hypothetical, optimally efficient carrier could provide the service at issue free from any costs associated with inefficiencies or cross-subsidization of other traffic. A stand-alone railroad is hypothesized that could serve the traffic if the rail industry were free of barriers to entry or exit. (It is such barriers that can make it possible for railroads to engage in monopoly pricing absent regulatory constraint.) Under the SAC constraint, the rate at issue cannot be higher than what the SARR would need to charge to serve the complaining shipper while fully covering all of its costs, including a reasonable return on investment.

Carolina P&L, 7 S.T.B. at 244-45.

Since the function of a SAC analysis is to identify the cost associated with providing most-efficient, least-cost service to the captive shipper, it follows that the SAC test should be applied in a manner that reflects rational economic behavior by the SARR. In particular, the SARR should pay no more than is necessary for its inputs. Moreover, while the IRR is considered to be a substitute or replacement for UP to the extent of the scope of the IRR's planned services, SAC does not require that the IRR replicate the UP system, operations, policies, or practices in their entirety or even any single respect. As the Board's predecessor established in *Coal Rate Guidelines*, the design of the stand-alone system and the traffic it carries are chosen to achieve the goals of maximizing revenues and minimizing service costs to the shipper, regardless of the actual circumstances of the incumbent railroad. *Coal Rate Guidelines*, 1 I.C.C.2d at 543-

44. The IRR must thus be considered a replacement for the relevant portions of the UP system, not a rival that is subject to retaliation from the incumbents, and it must be afforded the flexibility to configure its system and service scope in a manner that maximizes efficiency and cost effectiveness. *See, e.g.*, *Bituminous Coal - Hiawatha, Utah to Moapa, Nevada,* 10 I.C.C.2d 259, 280-81 (1994) (Chairman McDonald, commenting) ("*Nevada Power II*").

These core principles guide the IRR's traffic group, design, configuration, and planned operation, as detailed in the previous Parts of this Narrative. They also guide the proper treatment of inflation, taxes, and capital cost recovery, as addressed next.

1. Cost of Capital

Calculation of the capital recovery charge for the IRR necessarily reflects the IRR's assumed cost of capital ("COC"). While the Board has indicated, at least in theory, a willingness to consider alternative approaches to estimate this assumed cost, past cases have consistently utilized the general (sample Class I) railroad industry's average costs of common equity ("COE"), debt capital, and preferred equity capital (if any), and their percentage mix within the capital structure for the industry, as determined by the Board in its annual cost of capital proceedings, in calculating the COC elements for the SARR over the relevant construction period (2008-2010 in this case) and operating period (2011-2020). *See WFA I* at 135; *Duke/NS*, 7 S.T.B. at 123; *Carolina P&L*, 7 S.T.B. at 261-62; *Duke Energy Corp. v. Norfolk Southern Ry.*, 7 S.T.B. 862, 878-79 (2004).

The IRR's cost of debt ("COD") and preferred equity[2] during the 10-year DCF period is assumed to equal the weighted average railroad industry cost of debt or preferred equity over the IRR's construction period, weighted by the IRR's investment by construction year. The COE during the construction period is based upon the Board's annual COE during each applicable year of the construction period. The IRR's capital structure reflects the industry average during each year of the construction period, is also weighted by the IRR's investment by construction year, and is thus effectively frozen as of the end of the construction period.

The COE for the IRR during each operating year reflects the COE for the railroad industry as determined by the Board, if that value has been determined. When the value has not been determined (which is presently the case for all years of the IRR's operation, 2011-2020), the simple average of the COE values for the years in which a railroad cost of equity is utilized, which means 2008-2010 in the present circumstances.

IPA has followed the Board's prior approach in developing capital costs for the IRR with one exception, discussed further below. The Board established the 2008 and 2009 railroad costs of capital, and their constituent components, in *Railroad Cost of Capital – 2008*, STB Ex Parte No. 558 (Sub-No. 12) (STB served September 25, 2009) ("*2008 Cost of Capital*") and *Railroad Cost*

[2] In fact, the railroad industry has no preferred equity over the relevant years, and thus the IRR also has no preferred equity in its capital structure.

of Capital – 2009, STB Ex Parte No. 558 (Sub-No. 13) (STB served September 30, 2010) ("*2009 Cost of Capital*"), respectively. The STB has received evidence in its *Railroad Cost of Capital – 2010* ("*2010 Cost of Capital*"), STB Ex Parte No. 558 (Sub-No. 14), proceeding from WCTL and the AAR, but has not yet issued a final determination. WCTL and the AAR agreed upon the railroad industry 2010 Capital Asset Pricing Model ("CAPM") COE, the 2010 COD and the 2010 industry capital structure, but WCTL's evidence showed that the Multi-Stage Discounted Cash Flow ("MS-DCF") COE calculated by the AAR relied upon stale earnings estimates and overstated the COE estimate.[3] IPA has therefore used WCTL's 2010 COE estimate in its DCF model.

In addition, IPA made one additional change as indicted above. For 2008 through 2010, IPA utilized the industry average capital structure and COD determined using the Board's procedures, but IPA used only the COE determined under the CAPM and did not use the figure determined under the Board's new MSDCF.[4] The Board's CAPM COE was 10.39%, its MSDCF COE was 15.95%, and the resulting average was 13.17%.

IPA's position here does not require that the Board conclude that its use of the hybrid CAPM/MSDCF approach results in a less accurate estimate of

[3] *See 2010 Cost of Capital* Reply Verified Statement of Thomas D. Crowley and Daniel L. Fapp at pages 8-15.

[4] IPA's electronic workpapers contain an alternate DCF calculation that utilizes the Board's hybrid 2008 to 2010 CAMP/MSDCF COE value.

the COE for the railroad industry than use of CAPM alone.[5] Instead, the key question is whether the MSDCF analysis produces an accurate estimate or surrogate for the COE of the IRR. The answer is that it most certainly does not, as explained *infra*.

The Board's MSDCF COE analysis rests upon the relationship between the initial (normalized) level of cash flow, the projected level of growth in that cash flow, and the stock price. The COE is then the discount rate that is implied to have the net present value (the stock price) equal the stream of future cash flows.

The key driver in the Board's 2008 MSDCF COE calculation is the use of an average growth rate for the first ten years or the first two stages of the MSDCF model.[6] The 2008 to 2010 COE determinations reflect the conclusion that the largest Class I railroads will achieve compound annual growth rates of 13.61 percent, 12.18 percent and 9.63 percent in earnings in the years 2008 to 2010, respectively. Even if that projection is reasonable, what should be beyond

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[5] The comments that the Western Coal Traffic League ("WCTL") filed in *Railroad Cost of Capital – 2008* on May 20, 2009, do demonstrate substantial infirmities in the growth projections adopted and utilized by the Board in its MSDCF analysis. A copy of those comments is included in IPA's e-workpaper "WCTL 2008 EP 558 (Sub-No. 12).pdf."

[6] *See Railroad Cost of Capital – 2008* at 18 (Table 11). In the first stage, each railroad's individual five-year (which may consist of three-to-five year growth rates) rate applies to that railroad and the railroads are weighted by market capitalization. In the second five years, the weighted average of the four railroads applies to each railroad. In substance, the same growth rate applies throughout the first ten years.

reasonable dispute is that the IRR simply does not begin to have prospects to achieve anywhere near that level of growth.

The MSDCF COE is largely a function of the growth rate in earnings, and the growth rates utilized in the MS-DCF calculations are beyond that available to a SARR in a contestable market.[7] For the reasons previously explained by WCTL in its comments in the STB Ex Parte No. 558 proceeding, the MSDCF growth projections appear to be driven primarily by rate increases rather than increases in volumes or productivity. In any event, the IRR is not projected to experience such high rate of growth in its prices or productivity. The IRR's projected traffic growth is modest, it is not projected to have the rate increases that appear to form the predicate for the MSDCF growth projections, and the IRR will also, by virtue of the Board's decision in *Major Issues*, achieve only a fraction of the projected productivity growth of the Class I's, especially over the ten-year DCF period. There is thus no plausible reason to expect that the IRR will achieve the growth rate of the Class I's.

[7] The other constituents of the MSDCF calculation are the current stock price and the initial level of free cash flow. The IRR is a hypothetical entity, and it has no stock price. Defining its free cash flow would also be a speculative exercise, particularly as it would not be linked to any stock price. That said, the IRR is, by definition, required to yield a sustainable return to enable it to achieve revenue adequacy, a result which cannot be said of the Class I's (as defined by the Board's standards). Accordingly, the IRR should constitute a less risky enterprise, especially as its success is not premised on its achieving a high level of growth. These characteristics should translate into a lower COE, all other things being equal. (Of course, things are not equal. In particular, the IRR does not share the Class I's growth prospects.)

Revenue growth is not a perfect surrogate for earnings growth in that it does not address the change in output relative to the change in input (costs), otherwise known as productivity, by which revenues, sales, or output is converted into earnings, profits, or cash flow. However, revenue growth does become a very good proxy for earnings growth when productivity growth is expected to be very low. There is substantial reason to conclude that the MSDCF COE calculation for 2008 through 2010 (which utilizes the five-year projection for effectively a ten-year period) is vastly overstated.[8]

Applying the Board's overstated MSDCF COE to the IRR would thus be unfair and contrary to SAC theory. Under SAC principles, as discussed above, the SARR should pay no more than is necessary for an input as doing so would cause the SARR and its shippers, including IPA, either to bestow monopoly profits on UP or to subsidize other traffic. Requiring the IRR to pay more than necessary for the imputed equity portion of its capital would thus violate that principle and impose an unwarranted hardship on IPA and the IRR's other shippers.

Additionally, even if the Board still believes that its MS-DCF growth rate projections have any plausibility as an overall estimate, the projected growth in earnings for UP must be attributable to other aspects of its operations

[8] The Board's *2008 Cost of Capital* determination utilizes a 17.45 percent growth projection for UP, while the *2009 Cost of Capital* determination utilizes a 13.1 percent growth projection. Finally, WCTL's evidence for the *2010 Cost of Capital* shows UP's projected growth rate has sky-rocketed to 18.5 percent.

that are not encompassed in the IRR. The IRR's revenues, operations, and associated earnings were derived directly from data, including projections, produced by UP in discovery as well as from publicly available projections that similarly impact the railroads, *e.g.*, EIA coal production forecasts. Accordingly, to the extent that UP is projected and/or does experience growth at the level projected in the MSDCF COE calculations, that growth can only come from business, operational, and/or track segments that are not encompassed within the IRR.

Using the MSDCF COE figure (assuming, contrary to fact, that the calculation accurately reflects the earnings growth rates for the four Class I railroads as a whole) thus amounts to requiring the SARR to pay for a cost (in this case, the COE) associated with operations that are not encompassed within the SARR. Because this growth is not associated with the SARR, it provides no benefit to the SARR or to the issue (and other) traffic served by the SARR. Requiring the SARR to pay a higher cost (in this case, a higher COE) associated with serving traffic not handled by the SARR violates fundamental SAC principles. As explained *supra*, a captive shipper should not be forced to pay for facilities or operations from which it derives no benefit. Requiring the IRR to pay a higher cost of capital because UP is projected to experience greater growth on facilities or operations that are not part of those subsumed into the IRR violates the principle that the SARR should pay no more than is necessary for its inputs. Such a requirement would force the SARR and its shippers, including IPA, to subsidize

UP's other traffic and operations. Accordingly, the MSDCF COE is a particularly inappropriate proxy for the IRR.

The CAPM COE calculation reflects observations of changes in the railroads' stock prices relative to changes in the market as a whole, and not perceived changes in subparts or segments of the individual railroads. Nonetheless, CAPM has several virtues relative to MSDCF. In particular, unlike MSDCF, CAPM does not depend directly on the accuracy of earning growth projections, but instead seeks to determine the amount of risk (or lack thereof) for which investors seek compensation to induce them to invest in railroads (or at least purchase and hold onto their stock) relative to competing investments. In this sense, CAPM more directly reflects the opportunity cost of capital, as directly reflected in the market itself. CAPM thus comports well with the revenue-adequacy foundation of SAC and CMP generally.

Nonetheless, CAPM retains some potential to overstate the COE for a SARR. In particular, stock price fluctuations will likely reflect, among other things, the extent the carriers appear to be achieving the lofty growth projections or not. The CAPM may thus overstate the IRR's COE, albeit to a lesser extent than MSDCF under current conditions. There is also the potential that the MSDCF COE could be lower than the CAPM COE, although such an outcome would seem to require considerably lower growth rate projections, a higher stock price, or a more realistic MSDCF model itself, *e.g.*, one that does not assume that a five-year growth rate more than triple that of the general economy will continue for ten years. Should that occur, the possibility should be reserved for the affected shipper to argue that the COE should be based on the lower MSDCF figure, consistent with the principle that the SARR should pay no more than is necessary for any input.

2. **Inflation Indices**

The prices of goods and services used by the IRR will change over the 10-year DCF period.[9] It is therefore necessary to forecast rates of inflation for application to the capital assets and operating expenses over the timeline covered by the SAC analysis; *i.e.* 2011 through 2020. The time path of capital recovery charges for the IRR likewise must maintain the real purchasing power of those charges.

The annual inflation forecast that is used to calculate the value of the IRR's road property assets is based on actual railroad chargeout prices and wage rate indexes calculated by the AAR for materials and supplies, wage rates and supplements, and materials prices, wage rates, and supplements combined (excluding fuel) ("MWSExFuel") for western railroads, and the current Global Insight March 2011 forecast for rail labor and rail materials and supplies.[10] Board precedent endorses this approach. *See AEP Texas* at 109; *Duke/NS*, 7 S.T.B. at

[9] The overall change is likely to be an increase, but there is a possibility of deflation, especially for a portion of the period.

[10] Global Insight does not develop a forecast of the AAR's MWSExFuel index. IPA therefore uses a proxy that weights Global Insight's materials and supplies and labor rate index forecasts, which the Board has relied upon for purposes of execution of the DCF model.

123; *Carolina P&L*, 7 S.T.B. at 261. For land assets, the annual forecast inflation rate is based on a weighted combination of indices that reflect rural and urban land prices in proportion to the mix of these types on the IRR system routes. Rural and urban land indexes were developed from rural land values reported by the U.S. Department of Agriculture.[11] This is consistent with prior cases as well. *See, e.g.*, *Duke/NS*, 7 S.T.B. at 123; *Carolina P&L*, 7 S.T.B. at 261. This collection of forecasts and their application is shown on Exhibit III-H-1.

In *Major Issues*, the Board adopted a convention for the indexing of operating expenses for a SARR under which expenses for the first year would adjust based on 100% of the change in the RCAF-U; expenses for the second year would adjust based on 95% of the change in the RCAF-U and 5% of the change in the RCAF-A; and each succeeding year of the DCF period would use a mix reflecting increasing shares of the RCAF-A in 5% increments.[12] *Id.* at 40. IPA applies the Board's method to the indexing of operating expenses for the IRR. IPA's model uses actual RCAF-U and RCAF-A indexes through 3Q 2011, the latest quarter available, and applies Global Insight's March 2011 RCAF-U and RCAF-A forecasted indexes thereafter. IPA reserves the right to supplement this data on rebuttal.

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[11] *See* e-workpaper "IRR Land Appreciation.xlsx."

[12] Under the Board's hybrid approach, operating expenses for the tenth and final year of the DCF period would be determined using an index comprised of 55% of the change in the RCAF-U, and 45% of the change in the RCAF-A.

3. Tax Liability

Federal taxes for the IRR are calculated on the assumption that it pays taxes at the 35% corporate rate, with all payments for debt interest, state income taxes and depreciation expenses treated as reductions in taxable income. *See FMC*, 4 S.T.B. at 847-48. Consistent with Board precedent, interest expense is calculated over a 20-year period. Depreciation expenses for tax purposes use accounting lives from the Modified Accelerated Cost Recovery System ("MACRS") with investments placed in service in the first quarter using a mid-quarter convention. In addition, as described in Part III-H-1-f, the IRR calculated bonus depreciation available under 2008, 2009 and 2010 tax laws.

The IRR also must account for any income tax liability accruing in Utah. As detailed in Exhibit III-H-1, the state tax rate applicable to the IRR is 5.0%. *See* Exhibit III-H-1.

4. Capital Cost Recovery

The Board's DCF methodology uses economic depreciation to calculate the capital recovery cost of the IRR's property. Economic depreciation effectively represents an asset's loss of earning power as it approaches the end of its life and/or its replacement date. As a result of *Major Issues*, a 10-year analysis period is used to benchmark the IRR's asset value. However, the IRR's investments would not be retired at the end of the 10-year DCF period, and it is instead assumed that IRR will make continuing investments to enable it to operate, hypothetically, in perpetuity. IPA's calculation of SAC in III-H-1 thus accounts for the costs associated with the renewed investments in and continued operation of the IRR after 2020, using the approach approved by the Board in previous cases. *See, e.g., AEP Texas* at 105-06.

Beginning with *FMC*, the Board requires an equal capital carrying charge in real terms in each year of the DCF period, regardless of changes in the SARR's volume. Accordingly, annual changes in volumes, rates, and associated revenues produce changes in the SAC results and the measure of SAC relief. *See WFA I* at 134-35. IPA's computations of the pattern of capital recovery apply this approach. *See* Exhibit III-H-1.

III-H Results of SAC Analysis

III. H. RESULTS OF SAC ANALYSIS

1. Results of SAC DCF Analysis

The results of the SAC DCF analysis conducted by IPA are shown in Exhibit III-H-1. The calculations shown in each table of Exhibits III-H-1 are summarized below.[1]

a. Cost of Capital

The cost of capital for the IRR reflects the Board's annual cost of capital determinations for 2008 through 2009 and the AAR's calculation of the 2010 cost of capital, except for the exclusion of the MSDCF COE figures for reasons explained in Part III-G. The weighted average of the available years' capital costs is used through the remaining years of the DCF model.

b. Road Property Investment Values

The calculation of road property investment costs is summarized in Table C of Exhibits III-H-1.

c. Interest During Construction

Interest During Construction ("IDC") accrues on the road property assets of the IRR. Table D of Exhibit III-H-1 shows the total IDC amount and the portion that is debt-related. IDC is calculated based on the investment values in Table C, the composite cost of capital by year from Table A, and the assumed length of the finance period for each account. The construction schedule

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[1] IPA addresses the cost of capital (Table A) and inflation indices (Table B) in Part III-G.

described in Part III-F-12 is used as the basis for the length of the finance period for the DCF model. The portion of IDC that is debt-related is calculated by multiplying the investment by the length of the finance period, the IRR's debt percentage, and the annual cost of debt for the year of investment. Debt-related IDC is shown as an interest deduction for tax purposes during the construction period.

d. <u>Interest On Debt Capital</u>

Parties in prior SAC proceedings have assumed that the hypothetical SARR's debt capital would mirror the debt issued by the U.S. Class I railroads included in the Board's annual cost of capital determination. *See West Texas Utilities*, 1 S.T.B. at 712. While the parties had incorporated the cost of the railroad industry debt reflected in the Board's annual determination, they implicitly deviated from the type of debt the railroad industry utilized in its capital structure. Both shippers and railroads assumed that the SARR would issue debt structured similar to a typical home mortgage loan, e.g., the SARR would make quarterly payments that contained a principal repayment component and an interest component. Over time as the debt was amortized, the interest component portion of the payment declined as larger amounts of the principal were repaid until, after 20 years, the debt was assumed to be completely repaid.

While such a payment stream is consistent with a typical home mortgage, it is contradictory to the payment schemes of the vast majority of railroad industry debt. Railroad companies, like other large corporations, do not customarily make periodic payments that contain constantly changing principal and interest components, but rather make coupon payments, on the debt consisting of fixed interest payments. The AAR's filing in the 2010 cost of capital determination shows that nearly 90 percent of railroad industry debt consists of corporate bonds, notes and debentures that incorporate such periodic coupon payments.[2]

If Board precedent assumes that the SARR's cost of debt should mirror the railroad industry cost of debt, the SARR debt should also mirror the composition of that debt and how the interest and principal is returned to the debt holders. To that end, instead of amortizing the debt in a mortgage-style approach over a 20-year schedule, IPA has developed the quarterly coupon payments associated with the SARR's debt as depicted in Table E of Exhibit III-H-1.[3] The quarterly interest payment is developed by multiplying the fourth-root of the appropriate Table A cost of debt by the sum of the total investment and IDC for the year. Consistent with *Major Issues* and previous Board decisions, the debt for

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[2] See the Verified Statement of John T. Gray in Ex Parte No. 558 (Sub No. 14), Railroad Cost of Capital – 2010, submitted April 29, 2011 at page 10 and Appendix A, which discuss the pricing of bonds based in part on their coupon payments and shows the coupon payments for the railroads' long-term notes and debentures. Mr. Gray submitted verified statements in the 2008 and 2009 Railroad Cost of Capital proceedings that show that the debt issued by the railroads in those years also primarily consisted of notes and debentures with coupon provisions.

[3] Most railroad companies pay interest semi-annually, but to remain consistent with the structure of the Board's DCF model, IPA has assumed the SARR will make coupon payments on a quarterly basis.

road property investment is assumed to be financed over 20 years. The amount of interest is deducted from taxable income for federal and state income tax purposes.

e. Present Value of Replacement Cost

Table F of Exhibit III-H-1 shows the additional investment (on a present value basis) required to make each of the IRR's assets (excluding land) continue indefinitely at the end of its useful life. The 2008-2010 average cost of capital values are used to calculate replacement value for road property assets. This calculated investment is added to the initial investment in Table I prior to determining the quarterly cash flows.[4]

f. Tax Depreciation Schedules

Table G of Exhibit III-H-1 displays the tax depreciation required under the Federal Tax Code as currently in effect.[5] Depreciation was calculated assuming a mid-quarter convention, with assets placed in service in the first quarter. Investments in communications (Account 26), signals and interlockers (Account 27), and the track accounts (Accounts 8-12) were depreciated over seven years employing a 200 percent declining balance methodology, then switching to straight-line depreciation when the straight line percentage exceeds the declining

[4] Consistent with the calculation of the interest on debt discussed above, debt used to acquire replacement assets is assumed to make periodic coupon payments.

[5] The mandatory method for depreciating most tangible property placed in service after December 31, 1986 is MACRS. In addition, Engineering Costs have been amortized over a 60-month period, starting with the month in which the business begins.

balance percentage. Investments in bridges and culverts (Account 6), public improvements (Account 39), fences and roadway signs (Account 13), station and office buildings (Account 16), roadway buildings (Account 17), and shops and engine houses (Account 20) were depreciated over 15 years using a 150 percent declining balance method, and then switching to straight-line depreciation at the same point. Investments in grading (Account 3) and tunnels (Account 5) were amortized over 50 years using straight-line amortization. Investments in engineering (Account 1) were amortized over five (5) years using straight-line amortization. These reflect the MACRS schedules and asset lives used and accepted by the Board in prior SAC proceedings.

The IRR will take advantage of additional or "bonus" depreciation provisions enacted in 2008, 2009 and 2010 as part of federal economic stimulus legislation. The Economic Stimulus Act of 2008 ("Stimulus Act") provided bonus depreciation on capital investments with MACRS recovery periods of 20 years or less.[6] The American Reinvestment and Recovery Act ("ARRA") extended this bonus depreciation into 2009, while the Small Business Jobs Act ("SBJA") did so through September 2010.[7] Under the Stimulus Act, ARRA, and the SBJA,

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[6] UP took advantage of the Stimulus Act's bonus depreciation provision in 2008, 2009 and 2010 to defer significant taxes to later years. *See* UP's 2010 SEC Form 10-K at 69.

[7] Additionally, the Tax Relief, Unemployment Insurance Reauthorization and Job Creation Act of 2010 provides 100 percent depreciation bonus for capital investments placed in service after September 8, 2010 through December 31, 2011. For equipment placed in service after December 31, 2011 and through December 31, 2012, the bill provides for 50 percent depreciation bonus. However,

qualifying investments are allowed a 50 percent depreciation bonus in the year that they are placed into service. Tax depreciation for the remaining 50 percent of the cost, or the remaining cost basis, is calculated using the standard MACRS schedules.[8] Because the DCF model assumes that the IRR's assets are placed into service in the first year of the 10-year DCF period, which is in this case is 2011, the IRR's investment qualifies for the bonus depreciation.[9] Table G of Exhibit III-H-1 displays the amount of bonus depreciation available to the IRR in 2008 through 2010.[10]

g. **Average Annual Inflation in Asset Prices**

Table H of Exhibit III-H-1 computes the average annual inflation rate by which the capital recovery charge in Table I is indexed. The weighted average inflation rate was used because Table H calculates the required capital

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since the IRR completes its initial investments prior to September 2010, it only avails itself of the 50 percent bonus depreciation.

[8] For example, a $1 million asset with a five year MACRS life would accrue $500,000 in bonus depreciation in year 1 ($1 million x 50 percent bonus factor), plus $100,000 in standard MACRS depreciation ($500,000 remaining cost basis x 20% Year 1 MACRS factor for a 5-year asset) for a total of $600,000 in first year depreciation. *See* http://www.depreciationbonus.org/ for a description and example of bonus depreciation under the Stimulus Act and ARRA.

[9] The IRR begins calculating depreciation on all assets in the first year of railroad operations. This is consistent with the fact that no depreciation charges are incurred during the 30-month construction and testing period.

[10] Additionally, in calculating the replacement cost of future assets, STB precedent holds that the depreciation methodologies available to companies the year the SARR entered service are assumed to continue into the future. Consistent with this precedent, IPA has adjusted the replacement level to calculate the bonus depreciation available on future asset replacements.

recovery necessary to return the investment. All road property and equipment accounts are indexed at the quarterly rates shown in Table B of Exhibit III-H-1. The weighted average inflation rates are based on the inflation indexes discussed in Part III-G.

h. <u>Discounted Cash Flow</u>

Table I of Exhibit III-H-1shows the calculation of the capital carrying charge and associated flow of funds required to recover the total road property investment and equipment investment. Inputs to this spreadsheet were taken from the Tables described *supra.* Table I calculates the quarterly capital carrying charge required over the 40 quarters of the DCF period, after consideration of the applicable tax liability.

The total start-up investment is comprised of the road property and equipment investment shown in Table C, the road property IDC calculated in Table D, and the present value of replacement investment calculated in Table F.[11] The result equals the total investment to be recovered over the life of the IRR from the quarterly capital recovery stream. The quarterly capital recovery stream reflects the tax benefits associated with interest on the investment financed with debt from Table E and the asset tax depreciation from Table G.

The cash flow shown in Column (8) of Table I is the amount remaining each quarter after the payment of federal and state tax liabilities. This

[11] In addition, capitalized rail grinding maintenance of way expenses are included in the discounted cash flow calculation.

cash flow is used for payment of return on total investment in the IRR. For road property investment included in the DCF, this quarterly figure is then discounted by the fourth root of the composite annual cost of capital from Table A. The present value cash flow is then summed for each quarter along with the future cash flow; the total equals the total cost that must be recovered. The future cash flow is the residual value of the IRR's unconsumed assets, unamortized debt and remaining tax liabilities (remaining interest and depreciation), and serves to reflect the cash flow required to account for the value of the assets not consumed during the 10-year life of the DCF model.

The development of the quarterly levelized capital carrying charge requirement is a relatively simple calculation, *i.e.*, starting capital carrying charge requirement times the quarterly index factor from Table H, which will recover total investment during the 10-year DCF model period. The starting capital carrying charge requirement which recovers the total investment is developed through an iterative process. The DCF model begins with a specified amount and then runs through the calculation described above to develop the cumulative present value of the cash flow. If this cumulative number does not equal the total costs to be recovered from the quarterly revenue flow (start-up investment plus the present value of the replacement investment), the starting cost is adjusted upward or downward as necessary and the DCF model runs through the calculations again. The process is repeated until the starting quarterly charge yields a cumulative present value cash flow which equals the required investment to be recovered from the quarterly capital recovery flow.

i. Computation of Tax Liability -- Taxable Income

Table J, Part 1 of Exhibit III-H-1 displays the calculation of the IRR's federal tax liability. The procedures followed to develop the federal tax liability are discussed in Part III-G. Table J, Part 2 shows the calculation of the IRR's state income tax liability.

j. Operating Expenses

Table K of the DCF model displays the operating expenses incurred in each year of the DCF period based on the traffic levels described in Part III-A. In previous cases involving application of the SAC test, annual operating expenses that change with the level of traffic volumes tended to be adjusted annually by the change in the net tons transported by the SARR. However, this approach implicitly assumes a static mix of origin-destination pairs over the DCF model period, which in many cases would not reflect the actual changes in the SARR's traffic. A better approach is to adjust this group of costs by the annual change in ton-miles, which takes into consideration the shifting nature of a SARR's traffic.[12]

[12] For example, assume that in Year 1 of the 10-year period Movement A transports 1,000 tons of product over 1,000 miles of the SARR, producing 1 million net ton-miles of traffic. In Year 2, Movement A is forecasted to be discontinued, but is replaced in the SARR traffic group by Movement B. Movement B also transports 1,000 tons of product, but only moves over 100 miles of the SARR, producing 100,000 net ton-miles. Movement B will be less expensive than Movement A, given the lower aggregate costs associated with a shorter movement and the 90 percent reduction in net ton-miles. However, under

In this case, IPA has adjusted train and engine personnel expenses, locomotive related expenses, railcar lease costs, loss and damage expenses, and maintenance of way expenses annually by the change in IRR net ton-miles. Table K states the annual operating costs on a quarterly basis, and indexes them to reflect inflation over the 10-year analysis period based on the inflation rates shown in Table B.

k. Summary of SAC

Total SAC for the IRR based on investment and operating costs is summarized in Table L of Exhibit III-H-1. The capital requirement from Table I and the annual operating expenses from Table K are presented and summed in Table L for each year of the IRR's operation.

2. Maximum Rate Calculations

The SAC analysis summarized in Parts III-A through III-G and the accompanying Exhibits, and displayed in Exhibit III-H-1, demonstrates that over the 10-year DCF period the revenues generated by the IRR exceed its total capital and operating costs. Table III-H-1 below shows the measure of excess revenue over SAC in each year of the DCF period for this case.

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the methodology used in prior SAC cases wherein certain operating costs were adjusted solely based on changes in total tons, the annual operating costs would remain unchanged (before accounting for the change in the wage and price levels) when Movement B replaces Movement A. Adjusting costs by the change in ton-miles instead of the change in tons reflects the shifting nature of the SARR's traffic mix and its actual impact on the SARR's operating costs.

TABLE III-H-1 **Summary of DCF Results – 2011 to 2020** ($ in millions)					
Year (1)	Annual Stand-Alone Requirement (2)	Stand-Alone Revenues (3)	Overpayments or Shortfalls (4)	PV Difference (5)	Cumulative PV Difference (6)
2011	106.55	130.56	24.01	22.92	22.92
2012	107.42	130.10	22.68	19.75	42.68
2013	112.92	139.12	26.20	20.81	63.49
2014	115.74	143.97	28.22	20.44	83.93
2015	119.30	149.32	30.03	19.84	103.77
2016	124.43	155.47	31.04	18.70	122.47
2017	128.69	162.74	34.04	18.70	141.17
2018	131.25	162.82	31.56	15.82	156.99
2019	134.62	167.23	32.61	14.90	171.89
2020	138.13	172.84	34.70	14.46	186.35
Source: Exhibit III-H-1.					

Where, as in this case, stand-alone revenues are shown to exceed 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* 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 ATC methodology detailed in Part III-A-3. 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 2010 Phase III URCS costs applied to the nine cost inputs identified in *Major Issues*.[13]

A threshold issue related to the execution of MMM in this case concerns the projection of the UP Phase III variable costs for each of the movements in the IRR traffic group. In *WFA II*, the Board directed use of the RCAFA for this purpose on the grounds that it would "properly forecast the defendant carrier's variable costs" to calculate the degree of differential pricing needed to cover total SAC. *Id.* at 30. More recently, however, the Board determined that in calculating variable costs to implement an R/VC ratio rate standard, the Board's standard URCS indexing approach would produce more accurate results. *OG&E* at 11. As it obviously would be inappropriate to use two different indices to accomplish the same, singular purpose, 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

[13] Consistent with Board precedent, a tenth variable, service type, was used when developing URCS unit costs for intermodal traffic.

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 June 2010 Global Insight and most recent EIA forecasts of its components. Weighting factors are taken from UP's Annual Report Form R-1 data.

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.[14] *Major Issues* at 14. [15]

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[14] 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* at 14.

Application of MMM yields the following maximum R/VC ratios for each year of the DCF model:

TABLE III-H-2 MMM Results	
Year	**Maximum R/VC**
2011	250.2
2012	251.4
2013	244.4
2014	241.8
2015	238.8
2016	240.1
2017	236.2
2018	245.2
2019	246.6
2020	245.5
Source: Exhibit III-H-2.	

As indicated in Table III-H-2, the maximum R/VC ranges from 236.2% to 251.4% over the 10-year DCF period.

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 from the various origins at the 1Q11 through 2Q11 wage and price levels:

[15] In addition to its own traffic, the IRR also hosts BNSF trains under an existing trackage rights agreement. IPA incorporated the revenues available from the BNSF trackage rights trains into its MMM calculations.

TABLE III-H-3 IPA MMM Rates per Ton – 1Q11 Through 2Q11 Maximum Reasonable Rates for Coal Movements to IGS				
Origin/Interchange	**Car Type**	**Minimum Car Lading**	**1Q11**	**2Q11**
Provo, UT	Gen. Svc. Hopper	100	$4.55	$4.78
Provo, UT	Gen. Svc. Hopper	115	$4.25	$4.48
Provo, UT	Spec. Svc. Hopper	100	$4.45	$4.70
Provo, UT	Spec. Svc. Hopper	115	$4.18	$4.40
Skyline, UT	Gen. Svc. Hopper	100	$6.90	$7.28
Skyline, UT	Gen. Svc. Hopper	115	$6.53	$6.88
Skyline, UT	Spec. Svc. Hopper	100	$6.78	$7.13
Skyline, UT	Spec. Svc. Hopper	115	$6.40	$6.75
Savage, UT	Gen. Svc. Hopper	100	$7.28	$7.68
Savage, UT	Gen. Svc. Hopper	115	$6.88	$7.25
Savage, UT	Spec. Svc. Hopper	100	$7.13	$7.50
Savage, UT	Spec. Svc. Hopper	115	$6.75	$7.10
Source: "IGSMMM 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-4 compares UP rates to IPA as of January 1, 2011, to the jurisdictional threshold and the MMM maximum. The issue rates are greater than both the jurisdictional threshold and the MMM rates for all origins.

TABLE III-H-4 Maximum Rate Summary for 1Q11				
Origin	**January 1, 2011 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	$3.01-$3.28	$4.18-$4.55	$4.18-$4.55
Skyline, UT	$10.60-$10.79	$4.61-$4.97	$6.40-$6.90	$6.40-$6.90
Savage, UT	$10.20-$10.40	$4.86-$5.24	$6.75-$7.28	$6.75-$7.28

[1/] The Maximum Rate Per Ton equals the greater of the Jurisdictional Threshold or MMM Rate per ton.

Source: Electronic workpaper "IGS MMM Rates.xlsx."

3. Reparations

As described in Part I, IPA has been paying rates under UP Tariff 4222 in excess of the maximum reasonable per ton since January 1, 2011. 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 rate described in Part I-D-2, 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 very low, approximately 0.04% per year, less than 1/260th of most recent (2009) annual cost of capital. 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 effect, IPA is forced to lend funds to or invest capital with UP, but IPA receives a much lower return than UP's other investors, even though IPA's investment is forced, rather than voluntary. The arrangement also provides UP with little incentive to set its rates at a reasonable level initially, that is, the worst that happens is that UP receives the temporary use of capital at a nearly interest-free rate. IPA respectfully submits that the Board has the discretion under the present circumstances to depart from its regulations and grant IPA interest on reparations at a reasonable rate.

IV Witness Qualifications

PART IV

WITNESS QUALIFICATIONS AND VERIFICATIONS

This Part contains the Statements of Qualifications of the witnesses who are responsible for the Narrative portions of IPA's Opening Evidence (and the exhibits and workpapers referred to therein) identified with respect to each witness.

1. <u>PAUL H. REISTRUP</u>

Mr. Reistrup is a nationally recognized expert on rail operations and engineering matters. His address is 8614 Brook Road, McLean, VA 22102. Mr. Reistrup is sponsoring IPA's evidence with respect to the SARR system, operating plan and operating/general & administrative personnel (Parts III-B, III-C and part of Part III-D). He also developed the operating inputs for the RTC Model simulation of the SARR's peak-period operations, and worked with IPA Witnesses Timothy Crowley and William Humphrey who conducted the RTC Model simulation itself.

Mr. Reistrup has over 50 years of experience in railroad engineering, operations and management, and has served as President of two railroads, the Monongahela Railway (a large regional coal-carrying railroad) and Amtrak. He has also served as a consultant on rail operations and management matters, including service with R.L. Banks & Associates, Inc. and as Vice President of the rail division of Parsons Brinckerhoff, an international engineering firm.

Mr. Reistrup's railroad career began in 1959, following his graduation from the United States Military Academy at West Point, NY with a B.S. in Civil Engineering and service in the United States Army, with the Baltimore & Ohio Railroad ("B&O").

He held various engineering and operating positions with the B&O and its successor, Chessie System until 1967. From 1967 to 1970 Mr. Reistrup held several senior management positions with the Illinois Central railroad and its successor, including Vice President Passenger Services, Vice President Intermodal Services, and Senior Vice President and a Director of the Illinois Central Gulf Railroad in charge of marketing, sales, pricing, piggyback, coal and industrial development. During Mr. Reistrup's tenure at IC, that carrier was the largest rail originator of Midwestern coal, and it also terminated large quantities of Western coal originated by the Union Pacific and Burlington Northern Railroads.

From early 1975 until 1978, Mr. Reistrup served as Amtrak's second President and Chief Executive Officer. During his tenure, Amtrak was transformed from primarily a contracting entity to an operating railroad that had the highest-density mix of freight, commuter and inter-city passenger trains in the nation in what is known as the Northeast Corridor between Washington, D.C. and Boston through New York City. Amtrak acquired the Northeast Corridor from Conrail in 1976.

From 1978 to 1988 Mr. Reistrup was Vice President of R.L. Banks & Associates, Inc. of Washington, D.C. ("RLBA"), a transportation consulting firm. There, he directed a wide variety of railroad projects related to operations, engineering, marketing and costing for a number of private clients and government entities. He directed the firm's coal transportation work on IPA's Intermountain Power Project ("IPP") from 1980 to 1988, during which period IPP constructed IGS. In connection with this assignment Mr. Reistrup designed the track layout at IGS, including the loop track used to unload coal trains, and consulted on the design of the rapid-discharge railcar unloading system at IGS. He also designed the track layout at IPA's new Springville railcar maintenance facility near Provo, UT.

Mr. Reistrup also led the RLBA team that developed alternative rail corridors to route coal and other freight traffic away from downtown Denver on behalf of the Colorado Department of Transportation. In particular, Mr. Reistrup's team recommended the consolidation of three separate rail routes extending south of Denver into one joint, multiple-track route through Littleton, CO, a recommendation that was largely adopted by the three Class I rail carriers involved.

In 1982, while still at RLBA, Mr. Reistrup was engaged to be Chief Traffic Officer of the Monongahela Railway ("MGA"), a regional coal-hauling railroad in southwestern Pennsylvania and northern West Virginia originating approximately 23 million tons of coal annually. In 1988, Mr. Reistrup was elected President of the MGA, and continued to serve in that position until 1992, when the MGA was merged into Conrail. While at MGA, Mr. Reistrup became familiar with all aspects of MGA's coal transportation services and the operation of MGA's coal trains. During his Presidency of the MGA, Mr. Reistrup was NORAC Rules-qualified and ran as a conductor on MGA coal trains ten times during strike situations. As a conductor, Mr. Reistrup handled brake tests and on at least one occasion loaded a coal train in the engineer's stead.

From mid-1992 to mid-1994, Mr. Reistrup served as Principal of the Railroad Development Corporation, a Pittsburgh-based railway investment and management company, where he served as General Manager of the firm's project to privatize two railroads consisting of 5,000 route-miles in Argentina. In 1994, Mr. Reistrup joined Parsons Brinckerhoff as a Vice President. Mr. Reistrup was responsible for all of Parsons Brinckerhoff's activities involving railroad operations and worked closely with another Parson Brinckerhoff Vice President, Robert Pattison, on rail engineering matters.

On July 1, 1997, Mr. Reistrup left Parson Brinckerhoff and joined CSX Transportation as Vice President-Passenger Integration, with offices in Washington, D.C. In this position, Mr. Reistrup was responsible for overseeing CSXT's relations with all public and quasi-public rail transportation agencies (including but not limited to Amtrak, VRE, MARC, SEPTA, Metro North and MBTA) that operate passenger and commuter trains on CSXT's lines and vice versa. He was also responsible for negotiating settlements with these entities on behalf of CSXT during the Conrail Control proceeding, and for the successful integration of CSXT's freight and passenger operations on the Northeast Corridor (which was new passenger territory for CSXT) following consummation of the acquisition of Conrail by CSXT and Norfolk Southern.

Mr. Reistrup retired from CSXT in early 2003, and returned to his consulting work. At that time he embarked on a six-month consulting arrangement with CSXT, under which he was on call to furnish consulting services relating to passenger/commuter and freight integration issues and to provide advice as requested by CSXT's CEO and other senior officers. That consulting agreement terminated later in 2003.

Mr. Reistrup was an active member of the Transportation Research Board ("TRB"), a unit of the National Research Council of the National Academy of Sciences, from 1980 to 1998. In 1981, Mr. Reistrup was appointed a member of the Transportation Research Board ("TRB")'s Committee A2M02, which dealt with electrification and Train Control systems (signals, grade crossing protection, etc.). From 1997 to 1992, Mr. Reistrup served as Chairman of the TRB's A2M02 Committee, focusing on Train Control systems including Positive Train Control ("PTC") evolving from ATS/Cab Signals/ATC/speed control, *etc.* Mr. Reistrup was appointed Chairman of the TRB's AR030 Railroad Operating Technologies Committee, effective April 15, 2005. This committee is charged with exploration of innovative strategies and application of new technologies to enhance rail operations in the areas of command, control, communications, and information systems; energy supply distribution and efficiency; and propulsion systems. Mr. Reistrup continues to serve on this committee as Chairman *Emeritus*, and has participated in committee meetings addressing the complex issue of PTC implementation including, most recently, a meeting on January 12, 2010.

Mr. Reistrup is the author of an article in the Fall 2002 issue of the *Journal of Transportation Law, Logistics and Policy* (Vol. 70, Number 1, p. 57), entitled "Passenger Trains on Freight Railroads: A View From Both Sides of the Track" in which, *inter alia*, he discusses freight/passenger train use of the same lines during his tenure as Vice President-Passenger Integration at CSXT.

Mr. Reistrup is familiar with the UP lines being replicated by the SARR in this case. He has observed the rail lines, facilities and operations in this area of Utah on several occasions in connection with his previous consulting work for IPA. In connection with his work on this case, on April 20-22, 2011, Mr. Reistrup conducted a field trip in which he again visited IGS and IPA's Springville car repair facility and observed the rail facilities and operations at both locations. Mr. Reistrup also observed UP's and the Utah Railway's operations between Price and Provo and UP's operations between Provo and Lynndyl/IGS, as well as the Utah coal loading facilities from which IPA purchases coal for IGS.

VERIFICATION

I, Paul H. Reistrup, verify under penalty of perjury that I have read the Opening Evidence of Intermountain Power Agency in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Paul H. Reistrup

Executed on: 4 Aug 2011

2. THOMAS D. CROWLEY

Mr. Crowley is an economist and President of L.E. Peabody & Associates, Inc., an economic consulting firm that specializes in solving economic, marketing, and transportation problems. The Firm's offices are located at 1501 Duke Street, Suite 200, Alexandria, VA, 22314, 10445 N. Oracle Road, Suite 151, Tucson, AZ 85737 and 21 Founders Way, Queensbury, NY 12804.

Mr. Crowley is sponsoring portions of IPA's Opening Evidence in Parts II and III. Specifically, Mr. Crowley is sponsoring the portions of IPA's Opening Evidence 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).

Mr. Crowley is a graduate of the University of Maine from which he obtained a Bachelor of Science degree in Economics. He has also taken graduate courses in transportation at The George Washington University in Washington, D.C. He spent three years in the United States Army and has been employed by L.E. Peabody & Associates, Inc. since February, 1971. He is a member of the American Economic Association, the Transportation Research Forum, and the American Railway Engineering Association.

As an economic consultant, Mr. Crowley has organized and directed economic studies and prepared reports for railroads, freight forwarders and other carriers, shippers, associations, and state governments and other public bodies dealing with transportation and related economic and financial matters. Examples of studies in which he has participated include organizing and directing traffic, operational and cost analyses in connection with multiple car movements, unit train operations for coal and other commodities, freight forwarder facilities, TOFC/COFC rail facilities, divisions of through rail rates, operating commuter passenger service, and other studies dealing with markets and the transportation by different modes of various commodities from both eastern and western origins to various destinations in the United States. The nature of these studies has enabled Mr. Crowley to become familiar with the operating and accounting procedures utilized by railroads in the normal course of business.

Additionally, Mr. Crowley has inspected both railroad terminal and line-haul facilities used in handling general freight, intermodal and unit train movements of coal and other commodities in all portions of the United States. The determination of the traffic and operating characteristics for specific movements was based, in part, on these field trips.

In addition to utilizing the methodology for developing a maximum rail rate based on stand-alone costs, Mr. Crowley also presented testimony before the ICC in Ex Parte No. 347 (Sub-No. 1), *Coal Rate Guidelines - Nationwide*, the proceeding that established this methodology and before the STB in Ex Parte No. 657 (Sub-No. 1), *Major Issues In Rail Rate Cases*, the proceeding that modified the application of the stand-alone cost test. Mr. Crowley also presented testimony in a number of the annual proceedings at the STB to determine the railroad industry current cost of capital, i.e., STB Ex Parte No. 558, *Railroad Cost of Capital*. He has submitted evidence applying ICC (now the STB) stand-alone cost procedures in numerous rail rate cases. He has also developed and presented numerous calculations utilizing the various formulas employed by the ICC and STB (both Rail Form A and Uniform Railroad Costing System ("URCS")) to develop variable costs for rail common carriers. In this regard, Mr. Crowley was actively involved in the development of the URCS formula, and presented evidence to the ICC analyzing the formula in Ex Parte No. 431, *Adoption of the Uniform Railroad Costing System for Determining Variable Costs for the Purposes of Surcharge and Jurisdictional Threshold Calculations*.

As a result of his extensive economic consulting practice since 1971 and his participating in maximum-rate, rail merger, and rule-making proceedings before the ICC and the STB, Mr. Crowley has become thoroughly familiar with the operations, practices and costs of the rail carriers that move traffic over the major rail routes in the United States.

VERIFICATION

I, Thomas D. Crowley, verify under penalty of perjury that I have read the Opening Evidence of Intermountain Power Agency in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Thomas D. Crowley

Executed on: August 4, 2011

3. **PHILIP H. BURRIS**

Mr. Burris is a Senior Vice President of L.E. Peabody & Associates, Inc. The specific evidence Mr. Burris is sponsoring relates 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.

Mr. Burris received his Bachelors in Science in Business Administration from Virginia Polytechnic Institute and State University in 1971. He was awarded a Masters in Business Administration, specializing in transportation economics, from American University in 1978. Mr. Burris has worked in the consulting industry for over 30 years. In addition to his current position as a Senior Vice President of L.E. Peabody & Associates, Inc., Mr. Burris has been an employee of the following consulting firms: A. T. Kearney, Wyer Dick & Associates, Inc. and George C. Shaffer & Associates.

Mr. Burris has extensive experience in the field of transportation economics as it pertains to transportation supply alternatives, plant location analysis, regulatory policy and dispute resolution before regulatory agencies as well as state and federal courts. He has designed, directed and executed analyses of the costs of moving various commodities by different modes of transportation including rail, barge, truck, pipeline and intermodal. He has also performed economic analyses of maximum reasonable rate levels for the movement of coal and other commodities using the Board's CMP methodology, and specifically the stand-alone cost constraint. Mr. Burris has submitted evidence regarding maximum reasonable rate levels using the stand-alone cost constraint to the Board and its predecessor and testified before the Railroad Commission of Texas, the Colorado Public Utilities Commission, the Illinois Commerce Commission, the Public Service Commission of Nevada and various state and federal courts.

In the public sector, Mr. Burris has performed studies and written draft reports for the Railroad Accounting Principles Board, an independent body created by Congress to establish cost accounting principles for use in implementing the regulatory provisions of the Staggers Act of 1980.

VERIFICATION

I, Philip H. Burris, verify under penalty of perjury that I have read the Opening Evidence of Intermountain Power Agency in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Philip H. Burris

Executed on: Aug 4, 2011

4. **DANIEL L. FAPP**

Mr. Fapp is a Vice President of L.E. Peabody & Associates, Inc. Together with Mr. Crowley, Mr. Fapp is co-sponsoring Part III-A of IPA's Opening Evidence 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.

Mr. Fapp received a Bachelor of Science degree in Business Administration with an option in Marketing (cum laude) from the California State University, Northridge in 1987. In 1993, he received a Master of Business Administration degree specializing in finance and operations management from the University of Arizona's Eller College of Management. He is also a member of Beta Gamma Sigma, the national honor society for collegiate schools of business.

Mr. Fapp has been employed by L. E. Peabody & Associates, Inc. since December 1997. Prior to joining L. E. Peabody & Associates, Inc., he was employed by BHP Copper Inc. in the role of Transportation Manager - Finance and Administration, where he also served as an officer of the three BHP Copper Inc. subsidiary railroads: The San Manual Arizona Railroad, the Magma Arizona Railroad (also known as the BHP Arizona Railroad) and the BHP Nevada Railroad. Mr. Fapp has also held operations management positions with Arizona Lithographers in Tucson, AZ and MCA-Universal Studios in Universal City, CA.

While at BHP Copper Inc., Mr. Fapp was responsible for all financial and administrative functions of the company's transportation group. He also directed the BHP Copper Inc. subsidiary railroads' cost and revenue accounting staff, and managed the San Manuel Arizona Railroad's and BHP Arizona Railroad's dispatchers and the railroad dispatching functions. He served on the company's Commercial and Transportation Management Team and the company's Railroad Acquisition Team, where he was responsible for evaluating the acquisition of new railroads, including developing financial and economic assessment models. During his time with MCA-Universal Studios, Mr. Fapp held several operations management positions, including Tour Operations Manager, where his duties included vehicle routing and scheduling, personnel scheduling, forecasting facilities utilization, and designing and performing queuing analyses.

As part of his work for L.E. Peabody & Associates, Inc., Mr. Fapp has performed and directed numerous projects and analyses undertaken on behalf of utility companies, short line railroads, bulk shippers, and industry and trade associations. Examples of studies which he has participated in organizing and directing include, traffic, operational and cost analyses in connection with the rail movement of coal, metallic ores, pulp and paper products, and other commodities. He has also analyzed multiple car movements, unit train operations, divisions of through rail rates and switching operations throughout the United States. The nature of these studies enabled him to become familiar with the operating procedures utilized by railroads in the normal course of business.

Since 1997, Mr. Fapp has participated in the development of cost of service analyses for the movement of coal over the major eastern and western coal-hauling railroads. He has conducted on-site studies of switching, detention and line-haul activities relating to the handling of coal. He has also participated in and managed several projects assisting short-line railroads. In these engagements, he assisted short-line railroads in their negotiations with connecting Class I carriers, performed railroad property and business evaluations, and worked on rail line abandonment projects.

Mr. Fapp has been frequently called upon to perform financial analyses and assessments of Class I, Class II and Class III railroad companies. In addition, he has developed various financial models exploring alternative methods of transportation contracting and cost assessment, developed corporate profitability and cost studies, and evaluated capital expenditure requirements. He has also determined the Going Concern Value of privately held freight and passenger railroads, including developing company specific costs of debt and equity for use in discounting future company cash flows.

His consulting assignments regularly involve working with and determining various facets of railroad financial issues, including cost of capital determinations. In these assignments, Mr. Fapp has calculated railroad capital structures, market values, cost of railroad debt, cost of preferred railroad equity and common railroad equity. He is also well acquainted with and has used the commonly accepted models for determining a firm's cost of equity, including single-stage and multi-stage Discounted Cash Flow models ("DCF"), Capital Asset Pricing Model ("CAPM"), Farma-French Three Factor Model and Arbitrage Pricing Model.

In his tenure with L. E. Peabody & Associates, Inc., Mr. Fapp has assisted in the development and presentation of traffic and revenue forecasts, operating expense forecasts, and DCF, which were presented in numerous proceedings before the STB. He presented evidence applying the STB's stand-alone cost procedures in a number of rail proceedings before the STB. He has also presented evidence before the STB in Ex Parte No. 661, *Rail Fuel Surcharges,* in Ex Parte No. 664, *Methodology To Be Employed In Determining the Rail Road Industry's Cost of Capital,* in Ex Parte No. 664 (Sub-No. 1), *Use Of A Multi-Stage Discounted Cash Flow Model In Determining The Railroad Industry's Cost of Capital*, and in Ex Parte No. 558 (Sub-No. 10), *Railroad Cost of Capital – 2006*, Ex Parte No. 661 (Sub No. 11), *Railroad Cost of Capital – 2007,* and Ex Parte No. 661 (Sub No. 12), *Railroad Cost of Capital – 2008.* In addition, his reports have been used as evidence before the Nevada State Tax Commission.

VERIFICATION

I, Daniel L. Fapp, verify under penalty of perjury that I have read the Opening Evidence of Intermountain Power Agency in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Daniel L. Fapp

Executed on: July 8, 2011

5. TIMOTHY D. CROWLEY

Mr. Timothy Crowley is a Vice President of L.E. Peabody & Associates, Inc. Mr. Crowley is sponsoring IPA's opening evidence related to grading in Part III-F and Part III-E related to investment in non-road property. Mr. Crowley is also co-sponsoring IPA's opening evidence in Part II-A (quantitative market dominance) and 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.

Mr. Crowley received a Bachelor of Science degree in Management with a concentration in Finance from Boston College in 2001. He graduated cum laude. He has been employed by L.E. Peabody & Associates, Inc. since 2002.

Mr. Crowley has provided analytical support for both marketplace and litigation projects sponsored by L. E. Peabody & Associates, Inc. The analytical support included the gathering, reviewing and analyzing of data from the major Class I railroads, the Surface Transportation Board ("STB") and various other government and public sources. The analyses conducted by Mr. Crowley have included the development of the transportation costs associated with the movement of chemicals, coal and other products to different destinations located throughout the country.

Mr. Crowley is intimately familiar with the component parts of the STB's stand-alone cost constraint including the RTC Model, the track grading model, the equipment investment model, the average total cost ("ATC") model used to separate revenues between the incumbent and the stand-alone railroad, the discounted cash flow ("DCF") model and the maximum mark-up ("MMM") model used to calculate the maximum revenue to variable cost ratio. Mr. Crowley has also assisted in developing the return on road property investment realized by major western railroads for specific rail lines. These studies were used in variable, avoidable, and stand-alone cost analyses. He has forecasted transportation revenues included in transportation contracts entered into by major companies, taking into account the adjustment factors used in specific contracts. Additionally, Mr. Crowley has reviewed virtually all major transportation coal contracts between eastern and western railroads and the major consumers of coal in the United States. The results of this review were presented to the STB in various maximum rate cases.

Mr. Crowley has experience with the STB's Simplified Standards For Rail Rate Cases issued in Ex Parte 646 (Sub No. 1). He has undertaken extensive analyses related to the revised guidelines for Non-Coal Proceedings, which incorporates a three benchmark methodology. This methodology includes calculations using the Revenue Shortfall Allocation Method (RSAM), in which Mr. Crowley was trained by members of the STB.

Mr. Crowley sponsored the quantitative market dominance evidence in STB Docket No. NOR 42121, *Total Petrochemicals USA, Inc. v. CSXT Transportation, Inc.* and in STB Docket No. NOR 42123, *M&G Polymers USA, LLC v. CSX Transportation, Inc.*

VERIFICATION

I, Timothy D. Crowley, verify under penalty of perjury that I have read the Opening Evidence of Intermountain Power Agency in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Timothy D. Crowley

Executed on: August 4, 2011

6. WILLIAM W. HUMPHREY

Mr. Humphrey is a Project Manager of L. E. Peabody & Associates, Inc. Mr. Humphrey is co-sponsoring IPA's opening evidence in Part III-C with respect to the simulation of the SARR's operations using the Rail Traffic Controller ("RTC") Model with Mr. Timothy D. Crowley.

Mr. Humphrey received a Bachelor of Science degree in Sociology with a minor in Computer Science from Boston College in 2001. He has been employed by L. E. Peabody & Associates, Inc. since 2002.

Mr. Humphrey has been the lead programmer for numerous cases utilizing the industry-standard RTC Model to simulate various real-world railroad operations over multiple railroads in all parts of the United States. He has used the RTC model to create and analyze railroad systems for capacity analyses, rate cases, infrastructure investment analyses, and various other studies.

Mr. Humphrey has developed Microsoft Visual Studio applications including the Railroad Operations Simulator ("ROS") program used to model railroad operations by using advanced physics models which utilize highly detailed track information, train specific train characteristics, and detailed operational guidelines. He has designed programs that update, analyze, and summarize data originating at the Energy Information Administration. Mr. Humphrey has written programs that organize, analyze, manipulate, and summarize mainframe databases containing various industry data.

Mr. Humphrey has provided analytical support for testimony sponsored by L. E. Peabody & Associates, Inc. through the gathering and manipulation of data originating at the Energy Information Administration, the Surface Transportation Board, the Federal Railroad Administration and other publicly available sources. Specifically, these analyses include the development of the delivered costs of fuels to electric utilities and development of detailed track statistics for various railroads located throughout the United States. Mr. Humphrey has conducted extensive research which has been used to support both fuel supply and transportation analyses developed by L. E. Peabody & Associates, Inc.

VERIFICATION

I, William W. Humphrey, verify under penalty of perjury that I have read the Opening Evidence of Intermountain Power Agency in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

William W. Humphrey

Executed on: 8/4, 2011

7. <u>JOSEPH A. KRUZICH</u>

Mr. Kruzich is President of J&A Business Consulting, Inc., a firm specializing in information technology and communications. His business address is 209 Violet Drive, Sanibel, FL 33957. Mr. Kruzich is sponsoring evidence related to Information Technology personnel and hardware/software (Part III-D-3-c).

Mr. Kruzich has 37 years of experience in railroad accounting, executive administration and information technology. He began his railroad career with the Chicago, Burlington and Quincy Railroad ("CB&Q") in 1963 as a tax accountant and was promoted to an internal auditor in 1965. In June of 1968, he joined the Atchison, Topeka and Santa Fe Railroad ("ATSF") as a manager of work control procedures. His job responsibilities included reviewing various work procedures and providing recommendations on how the work processes could be improved to achieve a high degree of efficiency. This position provided him an opportunity to become very familiar with various work processes involved in running a railroad.

From 1973 through 1994, Mr. Kruzich held various positions of increasing responsibility at ATSF and its parent. As Acting Controller of Santa Fe Air Freight Company and head of industrial engineering at ATSF he performed various efficiency studies in the operating, engineering and mechanical departments. Mr. Kruzich also held the position of Director of Budgets for the entire ATSF operating department including engineering, mechanical, transportation and all support groups, and as such was responsible for coordination of all information technology issues with the Information Systems Department that related to the Operating Department. He was responsible for all administration duties related to the Vice President of Operations office as General Director of Administration and as Assistant to the President of ATSF and Assistant Vice President of Administration in the Information Technology Group he was oversaw all budget, administration, special studies and the corporate measurements systems. These positions provided him with the opportunity to manage a complete process in developing new systems from beginning to end.

In 1995, Mr. Kruzich joined the Kansas City Southern Railway ("KCS") as Vice President of Administration, where he designed profitability, corporate measurement, revenue forecasting and corporate policy systems. In January 1997, he was promoted to Vice President Telecommunications and CIO. As CIO, Mr. Kruzich led the effort in developing the state-of-the-art railroad transportation system known as MCS ("Management Control System"). This system uses some of the most advanced technology such as MQ workflow, Citrix Metaframe, the latest version of Visual Basic and many other technologies and is designed around the business process.

In January 2000, Mr. Kruzich left KCS and formed Forging Ahead Associates, LLC, renamed J&A Business Consulting, Inc. This company provides state-of-the-art services in the areas of strategic planning and the development of web sites and e-business initiatives, evaluates the benefits of outsourcing information technology and business processes, and works with clients to make the initial contacts in developing global market opportunities.

Mr. Kruzich graduated from Northeast Missouri State University (Truman University) in 1962 with a Bachelor of Science degree in Business. In 1984, he received a Masters of Business Administration in Finance from the Keller Graduate School of Management in Chicago, Illinois.

VERIFICATION

I, Joseph A. Kruzich, verify under penalty of perjury that I have read the Opening Evidence of Intermountain Power Agency in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Joseph A. Kruzich

Executed on: Jul/27, 2011

8. VICTOR F. GRAPPONE

Mr. Grappone is President of Grappone Technologies P.E. P.C., a consulting firm that specializes in rail signaling and communications including train control systems, technical support and systems integration. His business address is 20 Jerusalem Avenue, Suite 201, Hicksville, NY 11801. Mr. Grappone is sponsoring the signals and communications plan and cost evidence in Part III-F-6.

Mr. Grappone obtained a B.S. degree in Electrical Engineering from Rensselaer Polytechnic Institute in 1978. Mr. Grappone has over 32 years of experience with railroad and transit signal and communications systems. His career in this field began in 1978, when he was hired by the Long Island Rail Road ("LIRR") as a Junior Engineer. In early 1981 Mr. Grappone was appointed Assistant Supervisor-Signals for the LIRR, where he was involved in the direct supervision of approximately 50 signal construction employees engaged in the installation and revision of signal systems as part of the LIRR's capital program. His responsibilities included task scheduling, personnel evaluation, on-site supervision and material ordering.

In mid-1984, Mr. Grappone was named Staff Engineer-Projects for the LIRR. In this position he was responsible for providing technical support for signal projects. In early 1987 Mr. Grappone was appointed to the position of Signal Circuit Designer for the LIRR, a position he held until late 1995. As Signal Circuit Designer, Mr. Grappone managed the technical aspects of the LIRR's recently-completed computer-based system that controlled the signal system at Penn Station (New York) and in the adjacent territory. This position also involved the direct supervision of a design team consisting of Signal Circuit Designers, Assistant Signal Circuit Designers and Draftsmen. In this position, Mr. Grappone was also responsible for the application of new technology to signal systems. Specific tasks included:

- Development of specifications for vital microprocessor-based systems for signal applications;
- Implementation of formalized procedures for performing FRA-mandated tests for signal systems;
- Development of a PC-based graphical control system; and
- Implementation of the first use of programmable logic controllers (PLC's) for the supervisory control functions.

From late 1995 to early 2001, Mr. Grappone held other positions involving signal and communications controls systems at the LIRR, including Acting Engineer – Signal Design, Project Manager responsible for developing and implementing a corporate signal strategy to direct all LIRR signaling efforts over a 20-year period, Principal Engineer – Signal Maintenance and Construction, and Principal Engineer – CBTC. In the latter position Mr. Grappone was responsible for the management and technical direction of the LIRR's Communications Based Train Control (CBTC) program. In all of these positions, Mr. Grappone was responsible for signal and communications matters involving LIRR's lines that had heavy volumes of both passenger and freight rail traffic.

In May of 2001, Mr. Grappone left the LIRR and formed his own consulting firm, Grappone Technologies, Inc. GTI was reincorporated as Grappone Technologies PE PC in 2007. Major projects Mr. Grappone and his firm have undertaken include:

- Signal design for the New York City Transit Canarsie Line CBTC project, Auxiliary Wayside System.

- Design of office route verification logic for New York City's ATS (Automatic Train Supervision) project.

- Signal circuit checking for the reconfiguration of Harold interlocking on the Long Island Rail Road under the East Side Access project.

- Preparation of specifications and provision of technical and field support for other signal and communications projects for heavy rail and light rail transit systems in the Northeast.

- Circuit design for signal system revisions associated with the reconstruction of five stations on New York City Transit's Brighton Line.

During the course of his consulting work Mr. Grappone has applied for and obtained two patents involving train control systems, including U.S. Patent #6,381,506 for a programmable logic controller-based vital interlocking system (issued April 30, 2002) and U.S. Patent #6,655,639 for a broken rail detector for Positive Train Control (PTC)/CBTC applications (issued December 2, 2003).

Mr. Grappone has been a member of the Eastern Signal Engineers association since June 1999 (inactive member since June 2001). He is presently a member of the Institute of Electrical and Electronics Engineers, Rapid Transit Vehicle Interface Committee Working Group 2: CBTC; the Communications-Based Train Control User Group; and the FRA's Rail Safety Advisory Committee, Positive Train Control Working Group.

VERIFICATION

I, Victor F. Grappone, verify under penalty of perjury that I have read the Opening Evidence of Intermountain Power Agency in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Victor F. Grappone

Executed on 7/29, 2011

9. **GENE A. DAVIS**

Mr. Davis is Director, Transportation Engineering of R.L. Banks & Associates, Inc. ("RLBA"). His business address is 2494 Turnstone Drive, Soddy Daisy, TN 37379. Mr. Davis is sponsoring IPA's Opening Evidence in Part III-D-4 related to the SARR's maintenance-of-way ("MOW") plan and annual MOW operating expenses.

Mr. Davis joined RLBA in 2002, after 18 years of experience with Norfolk Sothern Railway ("NS"). Mr. Davis held positions of increasing responsibility within the NS Engineering Department spanning management and engineering of railroad track structures, bridge and building inspection, track/facilities condition assessment, maintenance, rehabilitation, design and construction, as well as railroad operations. Mr. Davis has planned, scheduled and supervised numerous large track projects, such as tie renewals, rail installation, track resurfacing, shoulder cleaning and undercutting operations, structure upgrading and grade/subgrade stabilization. He has supervised numerous bridge and culvert rehabilitation projects including complete renewals, extensive tunnel repairs and tunnel portal reconfigurations. He was responsible for creating capital and operating budgets at NS, and working within them. He has managed tasks at all levels of engineering responsibility, including third party contract work on many projects as well as emergency response and repair.

Mr. Davis's specific positions at NS included Assistant Track Supervisor on the Pocahontas and Virginia Divisions from 1985 to 1987, in which position he performed FRA track inspections and remedial repairs to track structures, and coordinated program maintenance work and contract service work on the track structure. His territory on the Pocahontas Division encompassed trackage used to transport a high volume of coal and other traffic in the Bluefield and Welch areas of West Virginia; specifically, he was responsible for 34 miles of double and triple track mainline as well as Bluefield Yard. His Virginia Division responsibilities included seven miles of double track mainline and NS's key export coal terminal at Lamberts Point, VA as well as Portlock Yard in the Norfolk terminal.

From 1987 to 1994, Mr. Davis was a Track Supervisor on NS's Lake and Pocahontas Divisions, and his territories encompassed substantial mainline trackage in Ohio (Lake Division) and West Virginia (Pocahontas Division). As track Supervisor Mr. Davis performed FRA track inspections and supervised daily MOW activities as well as maintenance and remedial repairs to the track structure via rail gang, tie and surfacing work, and he coordinated contract work including rail grinding and undercutting.

From 1994 to 2000, Mr. Davis served as Bridge and Building Supervisor on NS's Georgia Division. In a territory spanning 500 miles, including the terminals at Savannah and Augusta, GA, he performed inspections and supervised maintenance repairs and new construction by company forces of drainage structures including bridges and culverts as well as NS-owned buildings in his territory.

From 2000 to 2002, Mr. Davis served as Assistant Division Engineer-Bridges on NS's Pocahontas Division, in which position he was responsible for drainage structures (bridges and culverts) in a 1,300-mile (route) territory covering parts of Virginia, West Virginia, Kentucky and Ohio. He coordinated and facilitated new construction (when applicable), inspection and maintenance of existing drainage structures, remedial repairs to tunnel structures including portal upgrades, solicited bids for repairs by contractors, and performed repairs to roadway buildings using company forces. His territory included over 24 total miles of various bridge types, 8,000 culverts of varying types, 20 total miles of tunnels, and 16 total miles of slide fences.

Since joining RLBA Mr. Davis has worked on various railroad engineering projects for private and public entities in various states. Among other projects, he was recently engaged by the Oregon International Port of Coos Bay (OIPCB) to conduct a physical inspection of the right of way and estimated rehabilitation and maintenance costs of a Rail America Subsidiary, Central Oregon and Pacific Railroad ("CORP"), in connection with the Port's successful feeder line application to the STB to acquire the CORP's line and facilities between Coos Bay and Eugene, OR. Subsequently, after OIPCB acquired the corridor, Mr. Davis has been assisting OIPCB to return the line to active rail service.

In addition to working full-time with RLBA, Mr. Davis works part-time for the Western New York & Pennsylvania Railroad (WNYP) as its Engineer of Bridges and Structures. Mr. Davis' primary duties are to assist the WNYP in the implementation of its Bridge Management Program as well as other routine daily and capital WNYP maintenance activities.

Mr. Davis obtained a Bachelor of Science degree in Civil Engineering from Tennessee Technological University in 1983, and a Master of Business Administration from Georgia Southern University in 1997. He is a Registered Professional Civil

Engineer in Virginia, and continues to be an FRA-certified track inspector. He has been a member of the American Railway Engineering and Maintenance of Way Association ("AREMA") since 1996 and one of its predecessor organizations (the Roadmasters' Association), and is currently serving as Chairman of AREMA Committee 18 (Light Density & Short Line Railways) as well as being a member of Committee 12 (Rail Transit).

VERIFICATION

I, Gene A. Davis, verify under penalty of perjury that I have read the Opening Evidence of Intermountain Power Agency in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Gene A. Davis

Gene A. Davis

Executed on: July 28, 2011

10. HARVEY H. STONE

Mr. Stone is founder and President of Stone Consulting, Inc., with offices at 324 Pennsylvania Avenue West, Warren, PA 16365. Mr. Stone is sponsoring IPA's Opening Evidence in Part III-F regarding SARR construction costs (other than for earthworks/grading and signals/communications).

Stone Consulting is a consulting firm providing comprehensive engineering design services to railroad and other industries on a nationwide basis. Mr. Stone began his career working for the U.S. Army Corps of Engineers in permitting, design and construction inspection. He then worked for two years for a construction contractor and 28 years for a regional engineering firm. He was president of that firm for 16 years. He formed Stone Consulting & Design, Inc., a national firm specializing in railroad design and operations in 1996. Mr. Stone sold the company to TranSystems Corporation in 2007 and was employed by TranSystems until repurchasing the company in 2010.

Mr. Stone and his firm have handled large projects involving railroad freight and passenger feasibility studies, railroad track and structure design, and civil works projects in more than 20 states. He is frequently called upon to prepare preliminary engineering feasibility studies for industrial development and rail construction projects involving federal and state grants; most of the projects he has recommended as feasible have been funded and constructed. Stone Consulting, Inc. recently assisted in the start-up of the Saratoga & North Creek Railroad, under passenger compliance FRA 238 and 239 standards. Mr. Stone was responsible for all track inspections and repairs as the chief engineer for the railroad.

Mr. Stone has a Bachelor of Science degree in civil engineering from Rensselaer Polytechnic Institute. He is a registered Professional Engineer in 31 states. He is a member of the American Council of Engineering Companies (ACEC), the American Railway Engineering and Maintenance of Way Association (AREMA) and the American Society of Highway Engineers through which he has obtained invaluable exposure to the many changes in engineering technology and standards over the years. Mr. Stone is the former chairman of ACEC's Quality Management Committee and a past president of the Bucktails Chapter of the Pennsylvania Society of Professional Engineers.

VERIFICATION

I, Harvey H. Stone, verify under penalty of perjury that I have read the Opening Evidence of Intermountain Power Agency in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Harvey H. Stone

Executed on Aug 3, 2011

11. JOHN L. AGUILAR

Mr. Aguilar is a Civil Engineering Associate with the Los Angeles Department of Water and Power. Mr. Aguilar is sponsoring portions of IPA's Opening Evidence in Part I, Part II, Part III-C-2 and Part V. Specifically, Mr. Aguilar is sponsoring the portions of IPA's Opening Evidence that relate to certain background facts (Part I-B), qualitative market dominance (Part II-B), certain SARR operations and the facts concerning UP's refusal to provide common carrier rates in accordance with the Board's regulations.

Mr. Aguilar is a coal transportation specialist. As a Civil Engineering Associate for the Los Angeles Department of Water and Power, Mr. Aguilar's primary responsibilities for the past ten years have consisted of negotiating, managing and administering contracts for the delivery of coal to IPP. In this capacity, Mr. Aguilar has extensive experience with securing new coal transportation and supply contracts, administering the contracts on a daily basis, and resolving issues that arise relating to such contracts.

VERIFICATION

I, John L. Aguilar, verify under penalty of perjury that I have read the Opening Evidence of Intermountain Power Agency in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

John L. Aguilar

Executed on August 3, 2011

12. LANCE LEE

Mr. Lee is a Fuel Supply Engineer for the Intermountain Power Agency, and is employed by the Los Angeles Department of Water and Power. Mr. Lee is sponsoring portions of IPA's Opening Evidence in Part II. Specifically, Mr. Lee is sponsoring the portions of IPA's Opening Evidence that relate to qualitative market dominance (Part II-B).

Mr. Lee has over twenty five years of experience working at electric utilities and has held various positions including oil and gas plant engineer, coal supply engineer, coal asset manager and fuel supply engineer.

Mr. Lee's past responsibilities have included the negotiation and management of coal supply contracts. In that context, Mr. Lee has been routinely involved in all aspects of the process -- from determining IPA's coal requirements to issuing Requests For Proposals, evaluating bids and negotiating terms for new contracts, to their day-to-day administration. Mr. Lee has also acted as the management liaison for mines which have been co-owned by the Intermountain Power Agency. In addition, Mr. Lee has assisted with negotiating new rail transportation contracts or amendments and is familiar with the significant terms of each of IPA's rail transportation arrangements.

In his current position, Mr. Lee continues to be extensively involved in negotiating, managing and administering coal supply contracts and is engaged in all aspects of IPA's fuel supply matters.

VERIFICATION

I, Lance Lee, verify under penalty of perjury that I have read the Opening Evidence of Intermountain Power Agency in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Lance Lee

Lance Lee

Executed on August 2, 2011

13. STUART I. SMITH

Mr. Smith is a principal of MillenniuM Real Estate Advisors, Inc., a real estate appraisal and consulting firm with offices at 3204 Tower Oaks Boulevard, Suite 100, Rockville, MD 20852. The specific portions of IPA's Opening Evidence that Mr. Smith is sponsoring relate to the appraisal and determination of unit-land values for the right-of-way for the SARR (Part III-F-1). Mr. Smith's Report setting forth his methodology, procedures and conclusions is included in the e-workpapers for Part III-F.

Mr. Smith is a Licensed Certified General Appraiser for the District of Columbia, Virginia, Maryland, and Nevada. He has also received a temporary Utah State license for work on this project. He also holds the MAI designation from the American Institute of Real Estate Appraisers, is a member of the Royal Institution of Chartered Surveyors (MRICS), and is a licensed real estate broker.

Mr. Smith has over 25 years of experience in public and private real estate. He has been with MillenniuM Real Estate Advisors since 1993 and, in that time, he has provided market value appraisals of commercial office buildings, shopping centers, time-share projects, apartments, hotels, mixed-use projects, congregate housing, industrial properties and special use properties. He has also conducted market studies and highest and best use analyses. Additionally, Mr. Smith has consulted with both private sector clients and Federal agencies regarding a variety of real estate matters.

From 1986 to 1993, Mr. Smith was the Co-Manager of the Appraisal Division at the Washington, D.C. office of Cushman & Wakefield. As Manager, Mr. Stuart conducted market value appraisals and offered consulting and brokerage services.

His brokerage transactions included leases to the Peace Corps, the Small Business Administration, the National Science Foundation, and the General Services Administration.

Mr. Smith was Executive Director of the GSA/Public Building Service from 1984 to 1986. In this position, he was responsible for nation-wide activities regarding financial reporting, the GSA-rent program, capital budgeting, performance management, and administration. Prior to that, from 1983 to 1984, Mr. Smith was Director of the Office of Budget and Finance of the U.S. Customs Service. In his capacity as Director, Mr. Smith was responsible for Service-wide financial activities.

From 1977 to 1983, Mr. Smith served as Senior Examiner, Office of Management and Budget, Executive Office of the President of the United States. As Senior Examiner, Mr. Smith was responsible for government-wide civilian real estate issues and for reviewing and making recommendations on the nationwide operations of the General Services Administration. Prior to working at the Office of Management and Budget, Mr. Smith held various positions with the U.S. Treasury Department.

In addition to his valuation experience, Mr. Smith received a Bachelor of Science in Business and Economics from the University of Maryland. He also did some graduate work in Economics at Georgetown University and received his Masters in Business Administration, Corporate Finance, from American University.

VERIFICATION

I, Stuart I. Smith, verify under penalty of perjury that I have read the Opening Evidence of Intermountain Power Agency in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Stuart I. Smith

Executed on August 8, 2011

V Unreasonable Practices
Claim

PART V

UNREASONABLE PRACTICES CLAIM

UP violated its common carrier obligation to establish common carrier rates and service terms in accordance with Title 49 and the Surface Transportation Board's ("STB" or "Board") regulations. UP's failure to provide common carrier rates in accordance with the Board's regulations constitutes an unreasonable practice in violation of 49 U.S.C. §§ 10702 and 11101(b) and 49 C.F.R. Part 1300. In support hereof, IPA includes the following Verified Statement of John Aguilar.

VERIFIED STATEMENT
OF
JOHN L. AGUILAR

My name is John L. Aguilar. I am a member of the Coal Business Unit of Los Angeles Department of Water and Power (LADWP). LADWP is a participant in and power purchaser from, and the operating agent for, the Intermountain Power Project (IPP). I have been in my current position for 10 years. My responsibilities in the Coal Business Unit include participation in planning, negotiating and administering for IPP both coal supply contracts and coal transportation arrangements, whether by contract or under common carrier tariffs. In performing these activities I work closely with Lance Lee who is also employed by the LADWP and works out of Salt Lake City, Utah.

The purpose of this statement is to relate facts concerning Intermountain Power Agency's (IPA's) efforts to obtain new rates from UP for the movement of coal to the Intermountain Generating Station (IGS) after the expiration of contracts ending on December 31, 2010. Specifically, I will describe IPA's efforts to negotiate an extension of, or successor agreements to, its coal transportation contracts with UP as they approached expiration. I will also provide a chronology of IPA's requests for common carrier rates and terms from UP and the responses, or lack thereof, received from the railroad. I have personal knowledge of the parties' contract negotiations and communications regarding IPA's request for common carrier rates and terms.

IPA's Structure and Power Distribution

IPA is a political subdivision of the State of Utah and is the owner of IPP. IPP's generating station, IGS, is located in the Great Basin of western Utah near Lynndyl, Millard County, Utah. IGS generates more than 13 million megawatt hours of energy each year from its two coal-fired units and serves approximately 2 million customers. The two IGS generating units have a total capacity of 1,800 MW and consume approximately 5 to 6 million tons of coal per year.

IGS's output is provided to 36 utilities located in Utah and California, which in turn serve customers in Utah, California, Colorado, Wyoming, Arizona, Nevada and Idaho. IGS's generation rights are held by LADWP (44.6%), five California cities (30%), twenty-three municipal Utah purchasers (14%), six cooperative Utah purchasers (7%), and one investor-owned Utah purchaser (4%). In addition to being the largest consumer of the electricity generated at IPP, LADWP also acts as the fuels purchasing and operating agent for IGS. The operation of IGS is performed by the Intermountain Power Service Corporation.

Attempted Negotiations and Requests for Common Carrier Rates

For many years, UP has transported coal to IGS pursuant to a series of contracts negotiated by the parties. The most recent UP transportation contracts, UP-C-5270 and UP-C-53328, expired on December 31, 2010. As the contracts approached expiration, IPA attempted to negotiate a new contract, or an extension of the then-existing contracts, with UP. I and Lance Lee requested a meeting with Jeff Maier and Franklin Sams of UP in early 2009 to initiate discussions about new contract arrangements, but we were told that it would have to wait until 2010. Eventually, Mr. Lee and I were able to schedule a meeting with Mr. Maier and Mr. Sams on May 12, 2010 at UP's offices in Omaha. At this meeting we were advised that UP would develop proposed terms for a new contract and forward them to IPA for our review. As 2010 progressed, however, UP failed to propose new terms to IPA. I made inquiries on several occasions to Mr. Sams to determine when we should expect to receive UP's contract proposal and was told each time that a proposal should be ready in the near future.

IPA finally received UP's proposal on September 8, 2010. The proposal was not complete, however, as it failed to respond to our request for a rate that would apply to the substantial volumes of coal traffic we originate on the Utah Railway Company (URC), which is interchanged with UP at Provo. As a result, IPA immediately renewed its request for a rate for the URC-originated coal. After several such requests and associated discussions with UP, UP provided IPA with a Provo interchange rate proposal on October 14, 2010.

Mr. Lee and I met with Mr. Maier and Mr. Sams at IPA's offices in Salt Lake City on October 27, 2010 to discuss UP's proposed contract terms. At that meeting, we expressed our disappointment with the rate levels UP was demanding, but Mr. Maier and Mr. Sams gave no indication that UP was willing to negotiate lower rates.

IPA found UP's contract proposal to be very unsatisfactory, primarily because of the high level of the proposed rates. With the end of the existing contracts' terms rapidly approaching, on October 29, 2010, Nick Kezman of LADWP, as Operating Agent for IPA, made a written request to UP's Mr. Maier for common carrier rates that

UP would apply to our coal transportation requirements beginning on January 1, 2011. IPA asked that '[i]f you require clarification of any aspect of our request, please contact [IPA] in writing at your convenience." Exhibit V-1. UP did not seek any clarification of IPA's request.

On November 4, 2010, I received an email from Mr. Maier explaining that UP would not be providing common carrier rates and terms at that time because "[c]urrently rail transportation contracts with you are in effect until the end of 2010 and they supply the applicable rates and terms." Exhibit V-2. Mr. Maier also stated that UP would provide common carrier rates and terms by December 1, 2010 if the parties were unable to reach an agreement on new rail contract rates and terms by that time.

On November 8, 2010, Mr. Kezman responded to Mr. Maier, pointing out that UP's refusal to provide common carrier rates and terms was contrary to the STB's regulations, and noting that UP's delay in quoting the common carrier rates was hampering IPA's ability to plan for post-2010 coal deliveries. Exhibit V-3. The existence of the then-current contract rates and terms was of no value to IPA in terms of providing any indication of the level of the common carrier rates that would be established by UP to govern our transportation requirements on and after January 1, 2011. Mr. Kezman renewed his request for common carrier rates and explained that if UP did not comply, IPA was prepared to seek the STB's assistance in resolving the matter.

On November 10, 2010, I received an email from Mr. Maier in response to IPA's November 8, 2010 renewed request. Exhibit V-4. Mr. Maier stated that UP was exempt from providing common carrier rates and terms since the parties had a contract in effect and that, in any event, IPA would not be able to use the rates until after December 31, 2010. He stated further that "Under STB rules, Union Pacific is permitted to change its common carrier rates and applicable service terms on 20 days notice. In other words, even if STB rules required Union Pacific to provide common carrier rates by November 12, we could still establish new rates after that date and put them into effect on January 1, 2011." Mr. Maier again stated that UP would provide common carrier rates for IPA's traffic by December 1, 2010.

We were surprised by UP's suggestion that even if they provided us rates by November 12, 2010, they might then change the rates a few weeks later so that we would be no better off than if we just waited for their December 1 date. It seemed to us that this would not be acting in good faith, unless something new happened to justify whatever changes they made in the rates. In any event, we understood the Board's regulations to be obligatory on the railroads, not optional. Since IPA was not making any progress with UP, IPA's counsel contacted the STB's Rail Customer & Public Assistance Program, but IPA failed to receive any relief through that process.

On December 1, 2010, UP finally provided common carrier rates to IPA in a letter addressed to Mr. Kezman. Exhibit V-5. On December 10, 2010, Mr. Kezman followed up with Mr. Maier and requested UP's rates for Skyline Mine (Exhibit V-6), which Mr. Maier subsequently provided on December 14, 2010. Exhibit V-7.

VERIFICATION

I, John L. Aguilar, verify under penalty of perjury that I have provided the foregoing Verified Statement, 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.

John L. Aguilar

Executed on August 3, 2011

CERTIFIFCATE OF SERVICE

I hereby certify that this 10th day of August, 2011, I have caused both Highly Confidential and Public versions of the Opening Evidence of Complainant Intermountain Power Agency to be served by hand delivery upon:

Michael L. Rosenthal, Esq.
Covington & Burling
1201 Pennsylvania Avenue, N.W.
Washington, D.C. 20004-2401

I further certify that I have caused a Public version of this Opening Evidence to be served by overnight courier upon:

Louise A. Rinn, Esq.
Associate General Counsel
Union Pacific Railroad Company
1400 Douglas Street STOP 1580
Omaha, NE 68179

Stephanie P. Lyons