45164 SERVICE DATE – SEPTEMBER 14, 2016
EB

SURFACE TRANSPORTATION BOARD

DECISION

Docket No. NOR 42121

TOTAL PETROCHEMICALS & REFINING USA, INC.
v.
CSX TRANSPORTATION, INC.

Digest:[1] The Board finds that the rates challenged by the complaining shipper have not been demonstrated to be unreasonably high.

Decided: September 12, 2016

TABLE OF CONTENTS

TABLE OF CONTENTS 1

ACRONYMS 11

OVERVIEW 13

PROCEDURAL BACKGROUND 15

RATE REASONABLENESS STANDARDS 17
- A. CONSTRAINED MARKET PRICING 17
- B. SAC TEST 18

TPI'S MOTION TO STRIKE 19

STAND-ALONE COST ANALYSIS 20

---

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

A. OPERATING EXPENSES 20
1. Operating Plan 20
a. Classification and Blocking Plan 21
b. Growth Traffic 23
c. Yard Jobs 24
d. Missing Trains 25
i. "Y" Trains 26
ii. Local Trains 27
e. Other Yard and Interchange Track Issues 28
i. Receiving and Departure Tracks 29
ii. Lead Tracks 31
iii. Additional Yard Tracks 32
iv. Locomotive Service and Inspection Stations 34
v. Interchange Tracks 35
2. Discussion of General Internal Cross-Over/Leapfrog Traffic 37
3. Configuration 38
B. ROAD PROPERTY INVESTMENT 39
C. TRAFFIC GROUP AND REVENUES 39
1. High-Priority Leapfrog Traffic 40
2. ATC Methodology for Leapfrog Traffic 42
D. DCF ANALYSIS AND MMM 44

APPENDIX A – OPERATING EXPENSES 49
A. LOCOMOTIVES 50
1. Locomotive Requirements 50
a. Peaking Factor and Spare Margin 51
b. Number of Locomotives 52
c. Repositioning Locomotives 53
d. Locomotive Dwell 53
e. Number of Locomotives on Intermodal Trains 54
f. Locomotives Required to Power Local Trains 54
g. Locomotives Required for Yard Switching Assignments 54
h. Locomotives Required for Distributed Power Trains 55

2. Locomotive Lease Costs 55
a. ES44AC Lease Costs 55
b. SD40 Lease Costs 56
3. Locomotive Maintenance 56
4. Locomotive Servicing 57
a. Fuel Cost 57
b. Fuel Consumption and Other Locomotive Servicing 57
B. RAILCARS 57
1. Railcar Requirements and Lease Expenses 57
a. Railcar Peaking Rates 58
b. Calculation of Railcar Per Diem Time and Mileage Rates 59
c. Railcar Transit Times 59
d. Yard Dwell Times 60
2. Railcar Lease Rates 61
C. OPERATING PERSONNEL 63
1. Train and Engine (T&E) Personnel 63
a. Crew Shift Starts per Year 63
b. Crew Rebalancing 64
c. Local Train Crews 64
d. Yard Crews 65
2. T&E Personnel Compensation 65
a. Salaries 65
b. Fringe Benefits 65
c. Taxi & Hotel Expense 66
D. NON-TRAIN OPERATING PERSONNEL 66
1. Executive Office 66
a. Customer Service 66
2. Transportation Department 68
a. Purchasing and Materials Management 68
b. Intermodal and Automotive Terminals 68
3. Mechanical Department: Car Inspectors 68
E. GENERAL AND ADMINISTRATIVE (G&A) EXPENSES 69
1. Staffing 69

a. Executive....69
i. Corporate Relations/Communications....70
ii. Government Relations....72
iii. Human Resources....74
iv. Board of Directors....77
b. Sales and Marketing....78
c. Finance and Accounting....80
i. Staffing....80
ii. Cost of Outsourced Internal Audit....86
d. Law....86
i. Legal....87
ii. Real Estate....88
iii. Claims and Asset Protection....88
iv. Police....89
v. Environmental....91
e. Information Technology (IT) Department....92
2. Compensation for G&A Personnel....92
a. Executive Compensation....92
b. Outside Board of Directors....94
3. Materials, Supplies, and Equipment....94
4. Other....95
a. IT Systems....95
b. Start-Up and Training Costs....96
c. Travel and Entertainment Expenses....96
d. Bad Debt....97
F. MAINTENANCE-OF-WAY (MOW)....99
1. Staffing....99
a. Track Department—Headquarters (HQ) and General Office Staff....99
i. MOW Maintenance and Operations (M&O) Function....100
ii. MOW Inspection Process Engineering....101
iii. MOW Capital Projects....101
iv. Work Equipment....102
v. Manager of Welding and Grinding....102

vi. General Office Staff 103
b. Track Department—Field Staff 104
i. Roadmasters and Assistant Roadmasters 104
ii. Track Crew 107
iii. Ditching Crew 108
iv. Smoothing Crew 108
v. Welder/Helper/Grinder Crews 109
vi. Rail Lubricator Repairmen 110
vii. Roadway Machine Operators (Backhoe, Speedswing, Dozer) 111
viii. Roadway Equipment Mechanics 112
c. Bridge and Building (B&B) Department—HQ & General Office Staff 113
d. B&B Department—Field Staff 114
e. Communications and Signals (C&S) Department—HQ & General Office Staff 115
i. C&S Testing Staff 115
ii. C&S Design Staff 115
iii. Positive Train Control (PTC) Staff 116
iv. C&S Other Staff 116
v. C&S General Office Staff 117
f. C&S Department—Field Staff 118
i. Signal Supervisors (Managers of Electronics Engineering) and Signal Maintainers 118
ii. Signalmen and Centralized Traffic Control (CTC) Dispatch Center Technicians 119
iii. Electronic Technicians 119
iv. Communications Supervisors and Technicians 119
g. Other HQ Staff 121
i. Office of the Vice President 121
ii. Public Projects Department 121
h. Non-Executive Employee Salaries and Compensation 122
i. Allocation of MOW Personnel to Operations and Maintenance Expense 122
2. Planned Contract Maintenance 122
3. Unplanned Contract Maintenance 124

4. Program Maintenance 124
5. Equipment 125
G. LEASED FACILITIES 126
H. LOSS AND DAMAGE 126
I. INSURANCE 127
J. AD VALOREM TAX 127
K. OTHER MISCELLANEOUS COSTS 128
1. Intermodal Lift Costs 128
a. Clerical Support & Utilities 128
b. Management/Supervisory Positions 129
c. Lift Equipment and Hostlers 129
d. Bedford Park and North Baltimore 130
2. Automotive Handling Costs 130
3. Bulk Transfer Facility Costs 131

APPENDIX B—TPIRR ROAD PROPERTY INVESTMENT 132
A. REAL ESTATE 133
1. Acreage 134
2. Unit Costs 134
3. Real Estate Acquisition Costs 136
B. ROADBED PREPARATION 137
1. Trestle Hollow 137
2. Clearing and Grubbing 139
3. Earthwork 139
a. Right-of-Way Quantities 139
b. Yard Quantities 139
c. Earthwork Unit Costs 140
i. Common Excavation 140
ii. Loose Rock Excavation 140
iii. Solid Rock Excavation 141
iv. Embankment/Borrow 141
v. Land for Waste Excavation 141
vi. Fine Grading 142

vii. Shrinkage and Swell 142
4. Drainage.....143
a. Lateral Drainage.....143
b. Yard Drainage.....143
5. Culverts.....143
a. Culvert Unit Costs.....144
b. Culvert Installation Plans.....144
c. Culvert Quantities.....144
6. Other.....144
a. Ditches 144
b. Retaining Walls.....145
c. Rip Rap 145
d. Relocating and Protecting Utilities 146
e. Seeding/Topsoil Placement.....146
f. Water for Compaction/Subgrade Preparation 146
g. Detour and Access Roads 147
C. TRACK CONSTRUCTION 148
1. Geotextile Fabric..... 148
2. Ballast.....148
3. Subballast.....150
4. Ties.....151
5. Rail.....152
a. Main Line, Yards, and Sidings 152
b. Rail Pricing 152
c. Field Welds 153
d. Insulated Joints.....153
6. Switches (Turnouts) 153
7. Other.....154
a. Rail Lubricators 154
b. Plates, Spikes, and Anchors 155
c. Derails, Wheel Stops, and Switch Heaters.....156
d. Materials Transportation.....156
e. Track Labor and Equipment 156

D. TUNNELS 156
E. BRIDGES 157
1. Bridge Inventory 157
2. Bridge Design and Costs 157
a. Type I Bridges 158
b. Type II Bridges 159
c. Type III Bridges 159
d. Type IV Bridges 159
e. Mixed Span Bridges 160
f. Tall Bridges 160
g. Special Non-Movable Bridges 161
h. Truss Spans 161
i. Oversized Culverts 162
j. Movable Bridges 163
i. Pier Heights 165
k. Highway Overpasses 167
F. SIGNALS AND COMMUNICATION 168
1. Signal System 168
a. Signal Component Inventory 168
i. Omitted or Misapplied Components 168
ii. Incorrect Unit Costs 169
iii. Outdated Unit Costs 169
b. PTC 170
i. PTC Installation in 2010 170
ii. 2010 TPIRR PTC System Investment 173
c. Communications System 179
d. Hump Yard Equipment 181
G. BUILDINGS AND FACILITIES 181
1. Quantity of Intermodal and Automotive Facilities 182
a. Intermodal Facilities 182
b. Automotive Facilities 183
2. Headquarters 184
3. Fueling Facilities 184

4. Locomotive Shops 184
5. Diesel Service and Inspection Shops 185
6. Car Repair Shops 186
7. Crew Change Facilities 186
8. Yard Offices 186
9. Maintenance of Way Buildings 188
10. Guard Booths 188
11. Yardmaster Towers 189
12. Wastewater Treatment 190
13. Turntables 190
14. In and Out Gates 190
15. Maintenance Pads 191
16. Hostler Fueling Area 192
17. Air Compression Buildings and Yard Air Systems 192
18. Hostler Office and Welfare Buildings 193
19. Vehicle Service and Repair Buildings 193
20. Other Facilities 194
a. Yard Lighting 194
b. Yard Paving 195
c. Yard Drainage 196
d. Fencing 197
e. Pavement Marking 198
21. Curtis Bay Coal Facility 198
H. PUBLIC IMPROVEMENTS 199
1. Fences 200
2. Signs and Road Crossing Devices 200
3. Grade-Separated and At-Grade Crossings 200
I. MOBILIZATION 201
J. ENGINEERING 201
K. CONTINGENCIES 201
L. CONSTRUCTION TIME PERIOD 201

APPENDIX C—TRAFFIC VOLUMES AND REVENUES 202

A. STAND-ALONE TRAFFIC GROUP 202
1. Stand-Alone Railroad Traffic 202
a. Rerouted Traffic 202
2. Volumes 204
a. Historical 204
b. Projected 204
i. For the Period from July 1, 2013, through December 31, 2017 204
ii. Overflow Tons from Capped Plants 206
iii. For the Period from January 1, 2018, through June 30, 2020 206
iv. Non-Coal Forecasts 208
3. Revenues (Historical and Projected) 208
a. Historical 208
i. Attribution of Revenues for Movements with No Shipment Key 208
ii. Recalculated On-SARR Mileages 210
b. Projected Revenues 210
i. Fuel Surcharges 211

APPENDIX D—DISCOUNTED CASH FLOW ANALYSIS 215
A. COST OF CAPITAL 216
B. ROAD PROPERTY INVESTMENT VALUES 219
C. INFLATION INDICES 219
D. BONUS DEPRECIATION 221
E. INTEREST SCHEDULE OF ASSETS PURCHASED WITH DEBT CAPITAL 222
F. TERMINAL VALUE ADJUSTMENT 223
G. NORTH BALTIMORE INTERMODAL FACILITY 225
H. TIMING OF PTC INVESTMENT 225
I. MONONGAHELA RAILWAY (MGA) CAPITAL COSTS 226
J. DCF RESULTS 226

ACRONYMS

ATC	Average Total Cost
ATF	Across-the-Fence
CAGR	Compound Annual Growth Rate
CMP	Constrained Market Pricing
CSXT	CSX Transportation, Inc.
CTC	Centralized Traffic Control
DCF	Discounted Cash Flow
ECP	Efficient Component Pricing
EIA	Energy Information Administration
FELA	Federal Employees Liability Act
G&A	General and Administrative
HDF	On-Highway Diesel Fuel
LUH	Locomotive Unit Hours
LUM	Locomotive Unit Mile
MGA	Monongahela Railway
MMM	Maximum Markup Methodology
MOW	Maintenance-of-Way
PTC	Positive Train Control
R-1	Annual Report Form R-1
RCAF	Rail Cost Adjustment Factor
R&D	Receiving and Departure
RIP	Repair in Place
ROW	Right-of-Way
RPI	Road Property Investment
RTC	Rail Traffic Controller
R/VC	Revenue-to-Variable Cost
SAC	Stand-Alone Cost
SARR	Stand-Alone Railroad
SOX	Sarbanes Oxley Act of 2002
STB	Surface Transportation Board

STCC	Standard Transportation Commodity Code
T&E	Train and Engine
TPI	Total Petrochemicals & Refining USA, Inc.
TPIRR	The hypothetical "TPI Stand-Alone Railroad"
URCS	Uniform Railroad Costing System
WP	Workpaper

OVERVIEW

On May 3, 2010, Total Petrochemicals & Refining USA, Inc. (TPI), filed a complaint challenging the reasonableness of rates established by CSX Transportation, Inc. (CSXT), for the transportation of polypropylene, polystyrene, polyethylene, styrene, and base chemicals between 104 origin and destination pairs, located primarily in the Midwestern and Southeastern United States.[2] Since then, TPI has filed four amended complaints in which it has, among other things, added and removed a number of short line defendants. CSXT is the only remaining defendant. TPI now challenges 69 rates that govern 88 lanes of movements.[3] TPI requests that the Surface Transportation Board (Board or STB) prescribe reasonable rates and order reparations for past overcharges.

TPI pursued relief under the agency's stand-alone cost (SAC) test. Under this test, the parties must hypothesize a stand-alone railroad (SARR) that could serve the traffic at issue if the rail industry were free of entry barriers. Under the SAC test, the challenged rates cannot be higher than what the SARR would need to charge to serve the complaining shipper while fully covering all of its costs and earning a reasonable return on investment. This SAC analysis produces simulated competitive rates against which the challenged rates are judged.

For this case, TPI created the hypothetical TPI Stand-Alone Railroad (TPIRR), a 7,357-mile system. TPIRR would carry a significant amount of carload traffic on its system, as well as unit trains and time-sensitive intermodal traffic. Accordingly, TPIRR must have an operating plan that accounts for the movement of each carload from its specific origin to its specific destination. This includes moving cars to and from yards, classifying cars into blocks and trains, and picking up and delivering cars to shipper facilities.

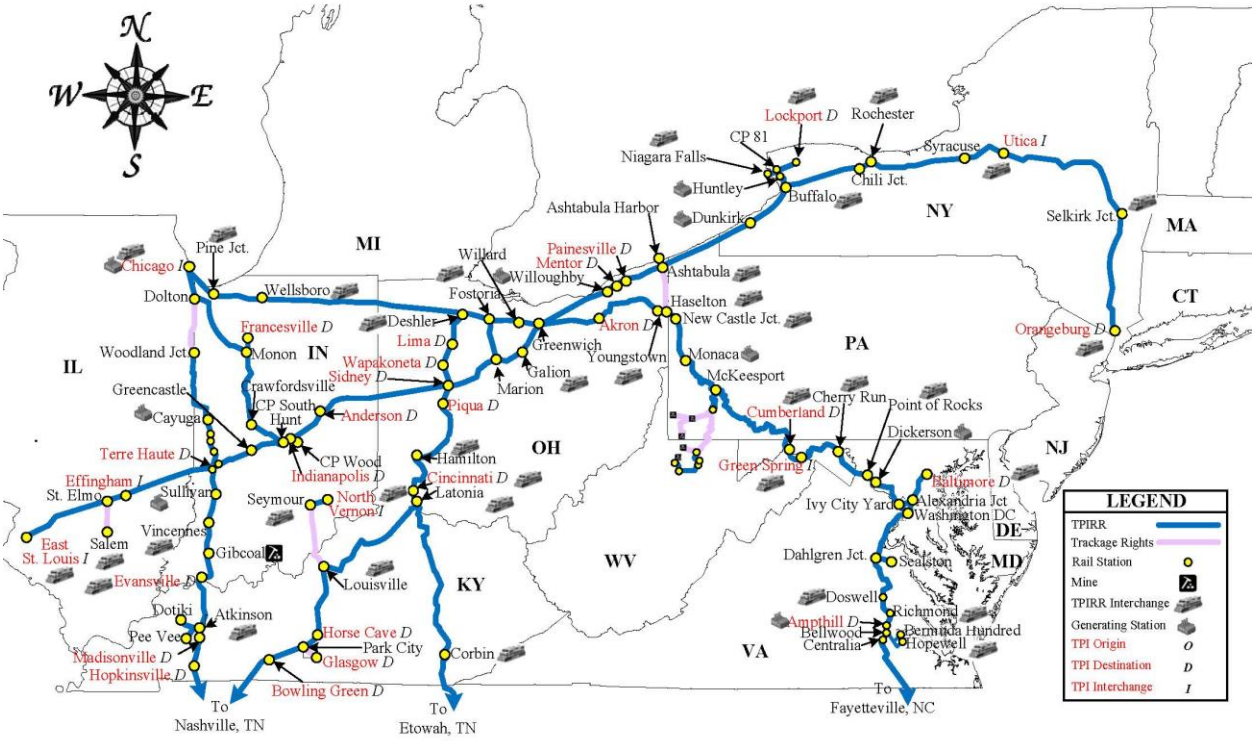
---

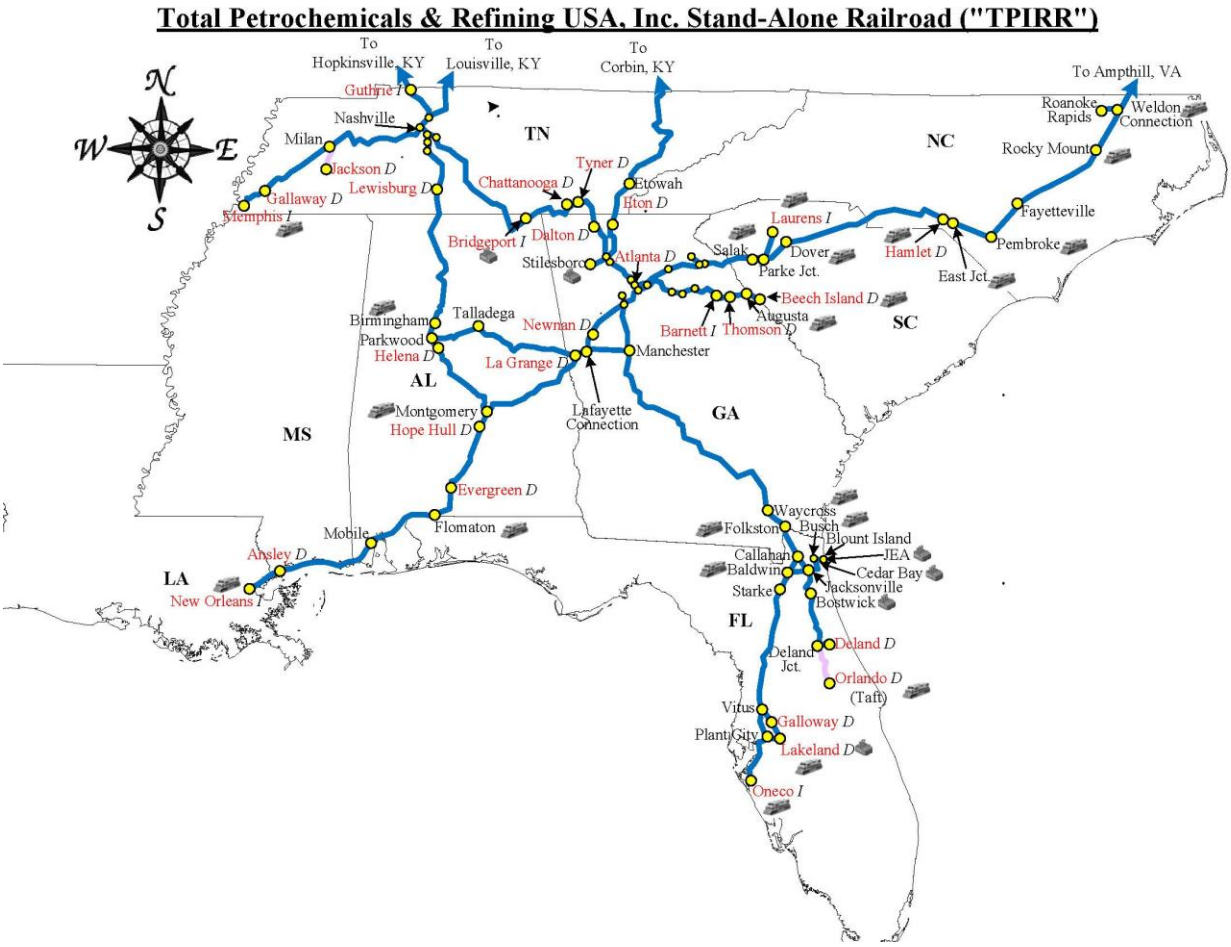
[2] The parties designated certain information in this decision as confidential or highly confidential. While attempting to avoid references to confidential or highly confidential information in Board decisions, the Board reserves the right to rely upon and disclose such information in decisions when necessary. In this case, the Board determined that it could not present its findings with respect to the issues without disclosing certain information.

[3] A lane designates a movement of a particular commodity between an origin and destination. Fewer rates than lanes are referred to because some rates apply to multiple lanes. For example, the New Orleans-Covington rate is considered to apply to both lane J-3, over which polystyrene ships between New Orleans and Covington, and lane J-43, over which polypropylene ships between New Orleans and Covington.

CSXT provides transportation in single-line service for one of the challenged rates. For the other rates, CSXT operates in joint-line service with one or more other railroads. While both parties identify these categories with "A-_" and "B-_" designations, respectively, these categories will be identified with the alternative "SL-_" (for single-line) and "J-_" (for joint-line) designations (e.g., SL-1 rather than A-1, J-1 rather than B-1, etc.).

Total Petrochemicals & Refining USA, Inc. Stand-Alone Railroad ("TPIRR")





In this case, TPI has not demonstrated that the challenged rates are unreasonable under the SAC test. Accordingly, the Board will not prescribe rates for TPI's traffic.

PROCEDURAL BACKGROUND

The default procedural schedule in SAC proceedings provides for evidence on market dominance and rate reasonableness to be submitted simultaneously. See Expedited Procedures for Processing Rail Rate Reasonableness, Exemption & Revocation Proceedings, 1 S.T.B. 754, 760 (1996). However, the Board bifurcated this proceeding into separate market dominance and rate reasonableness phases, directed the parties to confine their initial submissions to the issue of market dominance, and held the rate reasonableness phase of this proceeding in abeyance pending review of the parties' market dominance evidence. Total Petrochems. USA, Inc. v. CSX Transp., Inc., NOR 42121, slip op. at 6-8 (STB served Apr. 5, 2011). TPI originally challenged the rates for 104 lanes. The number of lanes has changed due to TPI's amendment of its original complaint, the Board's decision addressing market dominance in this proceeding, and TPI's decision not to pursue rate relief for certain lanes. (TPI 4th Am. Compl., Ex. A & B, Feb. 3, 2011 (challenging the rates for 105 lanes); Total Petrochems. & Refining USA, Inc. v. CSX Transp., Inc. (Market Dominance Decision), NOR 42121, slip op. at 29 (STB served May 31, 2013) (finding that CSXT lacks market dominance over certain rates challenged by TPI)

reconsideration denied (STB served Dec. 19, 2013) (with Vice Chairman Begeman dissenting in both), petition dismissed sub nom. CSX Transp., Inc. v. STB, 774 F.3d 25 (D.C. Cir. 2014); TPI Opening I-1 to I-2 (stating that TPI was withdrawing its challenge as to six lanes.)) After these changes, 88 lanes and 69 rates remain for the Board's consideration in this decision.

After the parties submitted their rate reasonableness evidence, the Board held a technical conference with the parties regarding their operating plans and Rail Traffic Controller (RTC) model evidence on May 27, 2015. Following that conference, the Board issued a decision in which it found, among other things, that the record was incomplete because neither party had provided the evidence necessary for the Board to complete its regulatory review. Total Petrochems. & Refining USA, Inc. v. CSX Transp., Inc. (Supplemental Evidence Order), NOR 42121, slip op. at 6-7 (STB served July 24, 2015). Accordingly, the Board directed both parties to submit supplemental operating plans and RTC model evidence. Id. at 6-8. TPI's supplemental evidence was to include additional local trains and industrial yard trains, while CSXT was directed to run its RTC model with all trains necessary to provide service to the selected traffic group that had been included in its train list. Id. The Board also ordered the parties to submit evidence both with and without certain contested traffic, referred to as "high-priority leapfrog traffic," in order to allow the Board to resolve the high-priority traffic group issue regardless of which party's operating plan is accepted. Id. at 8. In the same decision, the Board also addressed TPI's petition to supplement the record, granting it in part and denying it in part.[4] Supplemental Evidence Order, slip op. at 4-6. At the same time, the Board also issued an order requiring the parties to submit compliance evidence to facilitate the Board's review of the issues. Total Petrochems. & Refining USA, Inc. v. CSX Transp., Inc. (Compliance Order), NOR 42121 (STB served July 24, 2015). The Board established a procedural schedule under which the parties would each submit opening compliance and supplemental evidence, reply compliance and supplemental evidence, and final briefs. Supplemental Evidence Order, slip op. at 9.

On July 31, 2015, TPI filed a petition for reconsideration and clarification, asking the Board to reconsider aspects of the Supplemental Evidence Order. The Board issued a decision granting that petition in part, and denying it in part. Total Petrochems. & Refining USA, Inc. v. CSX Transp., Inc. (Supplemental Evidence Reconsideration), NOR 42121 (STB served Sept. 4, 2015). In particular, the Board reconsidered its prior order to make it clear that TPI could choose whether to submit the supplemental evidence adding "Y" trains (or industrial yard trains) to its train list and running that revised train list through its RTC model. However, the Board declined

[4] Specifically, the Board (1) permitted TPI to submit an argument challenging the internal cross-subsidy test first announced in Otter Tail Power Co. v. BNSF Railway, NOR 42071, slip op. at 10-11 (STB served Jan. 27, 2006), aff'd sub nom. Otter Tail Power Co. v. STB, 484 F.3d 959 (8th Cir. 2007); (2) rejected TPI's request to eliminate investment costs for certain intermodal facilities that TPI asserted were mistakenly included in its opening evidence; and (3) allowed TPI to change two input errors concerning certain clearing and grubbing and bridge abutment quantities included in its opening evidence workpapers.

to reconsider the reasoning underlying the concerns it expressed in the Supplemental Evidence Order. Id. at 5-8.

In its compliance and supplemental evidence, TPI submitted three alternative sets of evidence, or "scenarios," for the Board's consideration. (TPI Compliance & Suppl. Evid. I-4 to I-7, Oct. 7, 2015.) In Scenario One, TPI does not add any trains that were not included in its rebuttal evidence; rather, it modifies its rebuttal evidence to comply with the Board's decision regarding its petition to supplement. In Scenarios Two and Three, TPI adds disputed industrial yard trains and other local trains, but argues that the Board should accept its rebuttal/Scenario One evidence. The difference between Scenarios Two and Three is that Scenario Three excludes the high-priority leapfrog traffic that the parties dispute, while Scenario Two includes the disputed traffic.[5] (TPI Compliance & Suppl. Evid. I-9 to I-14, Oct. 7, 2015.)

RATE REASONABLENESS STANDARDS

A. CONSTRAINED MARKET PRICING

The Board's general standards for judging the reasonableness of rail freight rates are set forth in Coal Rate Guidelines, Nationwide, 1 I.C.C.2d 520 (1985), aff'd sub nom. Consolidated Rail Corp. v. United States, 812 F.2d 1444 (3d Cir. 1987), as modified in Major Issues in Rail Rate Cases (Major Issues), EP 657 (Sub-No. 1) (STB served Oct. 30, 2006), aff'd sub nom. BNSF Railway v. STB, 526 F.3d 770 (D.C. Cir. 2008), and Rate Regulation Reforms, EP 715 (STB served July 18, 2013), petition granted in part sub nom. CSX Transportation, Inc. v. STB, 754 F.3d 1056 (D.C. Cir. 2014). These guidelines adopt a set of pricing principles known as "constrained market pricing" (CMP). The objectives of CMP can be simply stated. A captive shipper should not be required to pay more than is necessary for the carrier involved to earn adequate revenues. Nor should it pay more than is necessary for efficient service. And a captive shipper should not bear the cost of any facilities or services from which it derives no benefit. Coal Rate Guidelines, Nationwide, 1 I.C.C.2d at 523-24.

CMP contains three main constraints on the extent to which a railroad may charge differentially higher rates on captive traffic. The revenue adequacy constraint is intended to ensure that a captive shipper will "not be required to continue to pay differentially higher rates than other shippers when some or all of that differential is no longer necessary to ensure a financially sound carrier capable of meeting its current and future service needs." Id. at 535-36.

---

[5] TPI filed an errata correcting an error in its Scenario Three evidence on November 20, 2015. TPI explains that trains carrying high-priority traffic also carry non-priority traffic. TPI discovered that its Scenario Three supplemental and compliance evidence had entirely eliminated trains on which high-priority traffic moved but had retained the revenue from the non-priority traffic on those same trains. This resulted in TPIRR receiving revenue for those trains without accounting for the costs of their operation. TPI corrected the error by restoring the trains and calculating the associated costs of operating those trains (although the revenues from the high-priority traffic were removed). (TPI Errata 1-2, Nov. 20, 2015.)

The management efficiency constraint is intended to protect captive shippers from paying for avoidable inefficiencies (whether short-run or long-run) that are shown to increase a railroad's revenue need to a point where the shipper's rate is affected. Id. at 537-42. The SAC constraint is intended to protect a captive shipper from bearing costs of inefficiencies or from cross-subsidizing other traffic by paying more than the revenue needed to replicate rail service to a select subset of the carrier's traffic base. Id. at 542-46. As stated above, TPI seeks relief under the SAC constraint.

B. SAC TEST

A SAC analysis seeks to determine whether a complainant is bearing the cost of any inefficiencies or the cost of any facilities or services from which it derives no benefit; it does this by simulating the competitive rate that would exist in a "contestable market," i.e., a market that is free from barriers to entry. The economic theory of contestable markets does not depend on a large number of competing firms in the marketplace to ensure a competitive outcome. Coal Rate Guidelines, Nationwide, 1 I.C.C.2d at 528. In a contestable market, even a monopolist must offer competitive rates or lose its customers to a new entrant. Id. In other words, contestable markets have competitive characteristics that preclude monopoly pricing.

To simulate the competitive price that would result if the market for rail service were contestable, the costs and other limitations associated with entry barriers must be omitted from the SAC analysis. Id. at 529. This removes any advantages the existing railroad would have over a new entrant that create the existing railroad's monopoly power. The model therefore hypothesizes a SARR that could serve the traffic at issue if the rail industry were free of entry barriers. 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 and earning a reasonable return on investment. This analysis produces a simulated competitive rate against which the challenged rate is judged. Id. at 542.

To make a SAC presentation, a shipper designs a SARR specifically tailored to serve an identified traffic group. Using information on the types and amounts of traffic moving over the defendant's rail system, the complainant selects a subset of that traffic (including its own traffic to which the challenged rate applies) that the SARR would serve.

Based on the traffic group to be served, the level of services to be provided, and the terrain to be traversed, a detailed operating plan must be developed for the SARR. Once an operating plan is developed that would accommodate the traffic group selected by the complainant, the system-wide investment requirements and operating expense requirements (including such expenses as locomotive and car leasing, personnel, material and supplies, and administrative and overhead costs) must be estimated. The parties must provide appropriate documentation to support their estimates.

It is assumed that investments normally would be made prior to the start of service, that the SARR would continue to operate into the indefinite future, and that recovery of the investment costs would occur over the economic life of the assets. The Board's SAC analyses, however, are limited to a finite period of time and examine the revenue requirements for the

SARR based on the operating expenses that would be incurred over that period and the portion of capital costs that would need to be recovered during that period. A computerized discounted cash flow (DCF) model simulates how the SARR would likely recover its capital investments, taking into account inflation, federal and state tax liabilities, and a reasonable rate of return. The annual revenues required to recover the SARR's capital costs (and taxes) are combined with the annual operating costs to calculate the SARR's total annual revenue requirements.

The revenue requirements of the SARR are then compared to the revenues that the defendant railroad is expected to earn from the traffic group, presuming that the revenue contributions from non-issue traffic are based on the revenues produced by the current rates. Traffic and rate level trends for that traffic group are forecast into the future to determine the future revenue contributions from that traffic.

The Board then compares the revenue requirements of the SARR against the total revenues to be generated by the traffic group over the SAC analysis period. A present value analysis is used that takes into account the time value of money, netting annual over-recovery and under-recovery as of a common point in time. If the present value of the revenues that would be generated by the traffic group is less than the present value of the SARR's revenue requirements, then the complainant has failed to demonstrate that the challenged rate levels violate the SAC constraint. If the present value of the revenues from the traffic group exceeds the present value of the revenue requirements of the SARR, then the Board must decide what relief to provide to the complainant by allocating the revenue requirements of the SARR among the traffic group.

TPI'S MOTION TO STRIKE

On November 25, 2015, TPI filed a motion to strike certain portions of CSXT's reply compliance and supplemental evidence. CSXT filed a reply to TPI's motion on December 7, 2015.

TPI argues that the Board should strike pages 5 to 18 of CSXT's supplemental reply, in which CSXT addresses TPI's "Y" train and yard jobs evidence, because it is beyond the scope of permissible supplemental evidence. (TPI Mot. to Strike 1, Nov. 25, 2015.) In the alternative, TPI asks for leave to file a reply. (Id.) Citing the Board's statement that the parties should limit their supplemental evidence changes to those that follow from the Board's order, TPI claims that CSXT improperly included new evidence and arguments in its reply compliance and supplemental filing. (Id. at 1-2 (citing Suppl. Evid. Recons., slip op. at 11).) TPI argues that the objectionable material responds to TPI's opening and rebuttal evidence regarding yard jobs and locomotives and that TPI is prejudiced by CSXT's submission of the material on supplemental reply, to which TPI had no opportunity to respond. (Id. at 2.) TPI argues that, although CSXT may claim that its evidence was responsive to TPI's supplemental Scenario One evidence, that scenario did not change TPI's rebuttal evidence in any way that affected yard jobs or locomotives, and, therefore, CSXT's evidence was improper. (Id. at 2-3.)

CSXT replies that the Board should not strike the evidence to which TPI objects because the evidence responds to TPI's compliance and supplemental evidence. (CSXT Reply 2, Dec. 7,

2015.) CSXT claims that TPI, in that evidence, argues that the Supplemental Evidence Order wrongly expressed concerns regarding the sufficiency of TPI's evidence. (CSXT Reply 2, Dec. 7, 2015.) CSXT also argues that TPI's supplemental evidence included new arguments based on the parties' briefing of TPI's petition for reconsideration and presented new arguments regarding why certain industrial yard trains were unnecessary. (Id. at 2-3.) Therefore, CSXT claims that its reply compliance and supplemental evidence was a proper response to TPI's arguments.

The Board will not strike the CSXT evidence to which TPI objects. The Supplemental Evidence Order, slip op. at 9, provided TPI with the option of arguing "that its unrevised evidence is superior to its supplemental evidence," an option TPI chose to pursue in detail in its opening compliance and supplemental evidence. (See TPI Compliance & Supp. Evid. I-9 to I-15, Oct. 7, 2015.) Following from this choice, CSXT provided counter-arguments in its reply compliance and supplemental evidence directly challenging the assertion that TPI's rebuttal/Scenario One evidence was superior to its Scenario Two/Three evidence. (CSXT Reply 2-3, Nov. 20, 2015.) TPI cannot reasonably have expected to make arguments that CSXT would be prohibited from addressing. Because CSXT's arguments were responsive to claims made by TPI in its compliance and supplemental evidence regarding the superiority of its rebuttal evidence, CSXT's response was proper and CSXT's arguments will not be stricken. Moreover, because the disputed material in CSXT's submission was proper reply evidence, TPI will not be allowed to file a reply.

STAND-ALONE COST ANALYSIS

Set forth below is the Board's analysis of the SAC evidence presented in this case. The evidence does not demonstrate that the challenged rates exceed the level permitted by the SAC test. The more significant issues are discussed in this decision, with more technical issues described in the attached appendices.

A. OPERATING EXPENSES

1. Operating Plan

How a SARR would operate influences both its configuration and annual operating expenses. Ariz. Elec. Power Coop. v. BNSF Ry., NOR 42113, slip op. at 28 (STB served Nov. 22, 2011), petition for review denied sub nom. BNSF Ry. v. STB, 748 F.3d 1295 (D.C. Cir. 2014). Although the operating plan must be able to meet the transportation needs of the traffic to be served, it need not match the existing 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. The assumptions used in the SAC analysis, including the operating plan, nonetheless must be realistic, i.e., consistent with the underlying realities of real-world transportation. Id. at 28.

Here, TPI and CSXT each submitted an operating plan that details how the SARR would handle the traffic group. Both use the RTC model to determine the feasibility of TPIRR's operating plan and develop key operating statistics of the SARR; CSXT uses MultiRail to

generate blocking and train service plans to serve the traffic. Because CSXT's operating plan is a series of corrections and adjustments to TPI's plan, the design of each plan is similar, but the plans differ significantly with respect to methodology.

The Board will adopt TPI's operating plan with minor adjustments because TPI has shown that its plan is feasible and supported, and CSXT's criticisms of TPI's evidence do not undermine that determination.[6] The Board will use the Scenario Two version of TPI's evidence, which includes certain disputed trains and high-priority leapfrog traffic, both of which are discussed later in this decision. The Board notes that both parties' operating plans contain flaws, and that CSXT raises a number of issues with TPI's operating plan. But, under TPI's Scenario Two evidence, those issues are not so significant that TPIRR fails to adequately serve its selected traffic group. Furthermore, TPI on rebuttal sufficiently adjusts and corrects for valid deficiencies raised by CSXT.[7]

CSXT's primary arguments about the deficiencies of TPI's operating plan pertain to the classification and blocking plan, growth traffic, yard jobs, and missing trains. The parties also disagree on the inclusion of internal crossover, or leapfrog, traffic in the operating plan. These issues are addressed below.

a. Classification and Blocking Plan

A car classification or blocking plan is used to facilitate an individual carload's movements entering, traversing, and exiting a railroad's system. This includes a carload's

---

[6] The Board's general standard for resolving disputed issues is set forth in Duke Energy Corp. v. Norfolk Southern Railway, 7 S.T.B. 89, 100-01 (2003) (footnotes omitted):

> As to disputed issues, where the shipper's opening evidence is feasible and supported, it is used in the Board's SAC analysis. However, where on reply the railroad both (a) demonstrates that what the shipper presented is infeasible and/or unsupported and (b) offers feasible, realistic alternative evidence that avoids the infirmities in the shipper's evidence and that is itself supported, the Board will use the reply evidence for its SAC analysis.
>
> On rebuttal, as to those issues challenged by the railroad, the shipper may demonstrate that its opening evidence was feasible and supported, it may adopt the railroad's evidence, or in certain circumstances it may offer to refine its evidence to address issues raised by the railroad regarding its opening evidence. Where the railroad has identified flaws in the shipper's evidence but has not provided evidence that can be used in the Board's SAC analysis, or where the shipper shows that the railroad's reply evidence is itself unsupported, infeasible or unrealistic, the shipper may supply corrective evidence.

[7] Because the Board finds TPI's operating plan, as modified, to be feasible and supported, it need not address specific concerns with CSXT's proposed alternative operating plan.

movement to and from various yards, where trains are broken apart and/or pieced together in preparation for delivery to customers or additional movements across the system. How many times a car is classified impacts the facilities and car classification services (e.g., yard crews, departure tracks, and switch locomotives) a railroad requires. Car classification is crucial to the efficient operation of a rail network that handles mostly carload business, such as TPIRR.

CSXT states that TPI's evidence contains no classification and blocking plan for TPIRR, arguing that TPI's adoption of CSXT's real-world blocking and classification plan does not satisfy "the requirement that TPI demonstrate that its operating plan 'would provide for full service from each specific origin, through the network, and to each specific destination for the selected traffic group.'" (CSXT Reply III-C-56, July 21, 2014 (quoting E.I. DuPont de Nemours & Co. v. Norfolk S. Ry., NOR 42125, slip op. at 38 (STB served Mar. 24, 2014), corrected and updated, (STB served Oct. 3, 2014), reconsideration denied, (STB served Dec. 23, 2015) (with Vice Chairman Begeman dissenting on the reconsideration decision).) CSXT also argues that TPI's classification and blocking plan cannot account for the increased block sizes required by TPIRR's peak-year traffic. (Id. at III-C-56 to III-C-57.) Finally, CSXT states that TPI modified the real-world CSXT routes by using crossover traffic and internal crossover traffic, rerouting certain general freight trains, and making certain physical changes to its yards. CSXT argues that TPI failed to analyze how such changes would impact TPIRR's use of CSXT's real-world blocking and classification plan. (Id. at III-C-57 to III-C-59.)

TPI responds that "because its operating plan runs the same trains with the same blocks through the same yards as the real-world CSXT operated in the base year, TPI has adopted CSXT's actual blocking and train service plans during that time period." (TPI Rebuttal III-C-105.) TPI witness Orrison asserts that TPIRR does not need its own unique blocking and classification plan because it mirrors the real-world operations that provide complete service to TPIRR's customer group. (Id.) Orrison also asserts that fluctuating traffic volumes do not necessarily trigger significant changes to the railroad's underlying blocking plans, which generally remain constant over time. (Id. at III-C-107.) TPI argues further that because TPIRR's traffic volumes increase or decrease over time, but customer origin and destinations do not change, the basic flow and traffic patterns remain the same. (Id. at III-C-105 to III-C-106.) TPI claims that, where peak-year volumes require additional trains, TPI adds trains to accommodate overflow traffic. (Id. at III-C-106 to III-C-107.) Finally, TPI argues that its use of internal crossover traffic, crossover traffic, and reroutes have no impact on TPIRR's blocking and classification plan. (Id. at III-C-109 to III-C-110.) According to TPI, all types of crossover traffic are interchanged either in a hook-and-haul operation that requires no re-blocking or classification, or in a classification yard where it is switched between two real-world CSXT trains. (Id. at III-C-109.) TPI also explains that its reroutes are short and still originate and terminate at the same classification yards as on the real-world CSXT. (Id. at III-C-110.)

TPI's classification and blocking plan is feasible and supported by its evidence. In contrast to DuPont, NOR 42125, slip op. at 40, where the Board found that the complainant's car classification counts were substantially understated, TPI essentially takes CSXT's historical trains and runs them through the same yards as the real-world CSXT. TPI's evidence shows that CSXT's real-world historical plans provide complete service to TPIRR's customer group and that, consequently, its real-world blocking plan is feasible here. Despite its arguments that

MultiRail would provide a superior blocking and classification plan, CSXT fails to show that TPI's use of CSXT's historical classification and blocking plan is infeasible or unsupported. As discussed in more detail below in the section on growth traffic, TPI has adequately accounted for increases in peak-year traffic by evaluating train lengths and adding trains where necessary. Finally, CSXT has not shown that TPI's use of internal crossover traffic, crossover traffic, and reroutes would have an impact on the SARR's classification and blocking plan. Crossover and internal crossover traffic will be interchanged between TPIRR and the residual CSXT either as intact trains (requiring no blocking and classification) or at the same classification yards where the trains are switched in the real-world, allowing TPIRR to use the real-world blocking and classification plan. (TPI Rebuttal III-C-109.) For internally rerouted traffic, TPI developed alternative trip plans. (Id. at III-C-109 to III-C-110; TPI Opening WP "Lane B62 and B113 Train Operation Selection.xlsx.") Other physical changes TPI would make to CSXT's real-world yards, including classification tracks, receiving and departure tracks, and yard crews and locomotives are discussed in more detail below and in the accompanying appendix on operating expenses. In sum, CSXT has failed to demonstrate that such changes render TPI's proposed classification and blocking plan unreasonable. Thus, the Board will accept TPI's classification and blocking plan.

b. Growth Traffic

Growth trains are trains that parties must add to their peak-week RTC simulation to ensure that the SARR will be able to handle any projected increase in traffic during the peak year. CSXT argues that TPI's RTC model understates the trains required to handle TPIRR's peak-year traffic because TPI failed to account for growth trains necessary to accommodate projected volumes of unit trains, merchandise road trains, and local trains. (CSXT Reply III-C-7, III-C-174 to III-C-176, July 21, 2014.) CSXT witness Wheeler includes additional road and local trains in the RTC model to accommodate this perceived deficiency in TPI's evidence regarding growth traffic. (Id. at III-C-177.) TPI responds that TPIRR is designed "to enable it to apply CSXT's real-world classification and blocking plan from the Base Year to the TPIRR's Peak Year traffic." (TPI Rebuttal III-C-109.) TPI outlines the process it followed to determine the number of trains required in the peak year, explaining that it compared maximum train sizes to actual train sizes, evaluated where additional trains would be required, and made targeted adjustments to its train list. (Id. at III-C-141.) It also asserts that the only distinction between CSXT's methodology for determining growth traffic and its own is that CSXT shortened the analysis period TPI used to determine carload growth slots from six months to one month. (Id. at III-C-141 to III-C-142.)

TPI's evidence shows that the methodology it used to determine the trains required in the peak year would adequately accommodate projected growth. (See id.) CSXT provides no clear rationale for its conclusion that TPI's growth trains would be inadequate; CSXT's assumptions in this regard seem premised solely on its use of a one-month analysis period, though CSXT neither explains nor justifies its shift from TPI's six-month window. Because CSXT has failed

to show that TPI's methodology and analysis of TPIRR's growth traffic needs was not feasible or supported, the Board will accept TPI's calculation of growth trains.[8]

c. Yard Jobs

Yard job counts are used to determine personnel needs for individual yards. Responsibilities of yard job personnel include the classification of freight cars into blocks and the combination of those blocks to form trains that transport the cars to the next yard or local industries. Yard job personnel also serve customers that are within the confines of or in close proximity to a yard. Both parties use CSXT's 2010 historical yard job numbers as the basis for the SARR's yard job calculations. However, TPI reduces CSXT's historical yard job counts on the basis that TPIRR services less traffic than CSXT did in certain yards in certain years. (TPI Rebuttal III-C-131.) CSXT argues that TPI's proposed yard job counts are unsupported and infeasible, asserting that TPI provides no explanation of the factors it considered to determine its daily yard job counts, which are below that of the real-world CSXT. It claims that TPI's adjustments lead to understaffing at some yards. (CSXT Reply III-C-130 to III-C-132, July 21, 2014.) In contrast, CSXT uses its 2010 actual yard job counts for on-SARR yards to determine the number of yard jobs required by TPIRR. (Id. at III-C-132 to III-C-133.) In its rebuttal, TPI reiterates the argument that, because TPIRR classifies fewer cars each day than the real-world CSXT, it requires fewer yard jobs and yard crews. (TPI Rebuttal III-C-131.)

TPI's yard job calculation is neither feasible nor supported. TPI's operating plan is based on CSXT's historical trains and CSXT's real-world classification and blocking plan, but TPI adjusts its yard job count based on a comparison between TPIRR's and CSXT's real-world traffic volume. (TPI Opening III-C-12; TPI Rebuttal III-C-131.) As CSXT explains, the time required for each switch a yard crew makes is determined by a variety of operational circumstances more related to the specific type of movement and other yard activities occurring at that time rather than the volume of traffic. (CSXT Reply 6, Nov. 20, 2015.) Consequently, modifications to CSXT's historical yard counts would need to account for specific trains, times of day, and movements. (Id. at 5-9.) TPI does not provide evidence that it considered such factors when reducing CSXT's historical yard job counts and fails to explain how it could mirror CSXT's real-world blocking plan while at the same time reducing TPIRR's yard job count based on traffic volume. Furthermore, the Board rejects TPI's claims that its yard jobs count is feasible based on a comparison to CSXT's 2013 historical counts. (TPI Rebuttal III-C-131.) This comparison is not valid. Between 2010 and 2013, the real-world CSXT made significant investments to increase productivity in its yards, such as the use of remote control locomotives and the installation of power switches. (CSXT Reply 11-12, Nov. 20, 2015.) TPI did not make provisions for investment in these or similar technologies for TPIRR.

---

[8] As discussed in Appendix C, the Board accepts certain arguments CSXT makes regarding traffic volumes. The Board will adjust TPI's calculation of growth trains to account for adjustments made to the calculation of TPI's traffic volumes. BNSF Ry. v. STB, 453 F.3d 473, 485 (D.C. Cir. 2006) (explaining Board may reasonably apply its own expertise to fill minor gaps).

As a result, the Board concludes that TPI's yard job counts are not feasible or supported. In contrast, CSXT's use of its 2010 actual yard job counts for on-SARR yards to determine TPIRR's yard job requirements is feasible and supported. As a result, TPI's operating plan will be adjusted to account for the Board's acceptance of CSXT's yard job calculations.[9]

d. Missing Trains

TPI's operating plan is based on trains selected from a variety of CSXT data sources, including CSXT train and car data. (TPI Opening I-16; CSXT Reply III-C-15, July 21, 2014.) According to CSXT, in developing its train list, TPI failed to capture 44,694 CSXT trains on which selected traffic moved during TPIRR's base year. (CSXT Reply III-C-5, III-C-16, July 21, 2014.) CSXT classifies the missing trains in three categories: local trains that the real-world CSXT operated both on- and off-SARR, (id. at III-C-16 to III-C-26); industrial yard trains (or "Y" trains) that pick up and set off cars at customer facilities, (id. at III-C-26 to III-C-31); and other local trains that perform first-mile/last-mile switching at customer facilities (id. at III-C-31 to III-C-36).

On rebuttal, TPI argues that its plan is efficient and does not violate SAC principles or bias the SAC analysis. (TPI Rebuttal III-C-43 to III-C-61.) However, on rebuttal TPI adds a subset of trains to its operating plan.[10] (TPI Rebuttal III-C-44, III-C-74.) Further, as described above, in its compliance and supplemental evidence, TPI includes three scenarios for its operating plan. Scenario One does not add any trains that were not included in TPI's rebuttal evidence, while the other two scenarios add the "Y" trains and 4,461 local trains (with TPI continuing to argue that the Board should accept its rebuttal/Scenario One evidence).[11] (TPI Compliance & Suppl. Evid. I-9, III-C-8 to III-C-13, III-C-19 to III-C-23, Oct. 7, 2015.)

The local trains and industrial yard (or "Y") trains disputed by the parties are trains that operate outside of yards, performing local pickups and delivery of cars at customer facilities. Such trains impact the SARR's configuration by occupying tracks, affecting the operations of other trains, and potentially resulting in the SARR requiring additional infrastructure. Running a train list that includes these trains through the RTC model determines how the trains' use of the mainline would impact the SARR's configuration and operating statistics. Not only does the

[9] For the same reasons, the Board will accept CSXT's yard support job calculations and adjust TPIRR's operating plan accordingly.

[10] TPI states that although it added certain on/off-SARR local trains on rebuttal, it does not concede that the trains are required by SAC principles. (TPI Brief 6 n.5; TPI Rebuttal III-C-44, III-C-53 to III-C-61.) However, because TPI has added the trains, the issue is moot.

[11] Again, the only difference between Scenario Two and Scenario Three is that the former includes high-priority leapfrog traffic while the latter excludes that traffic.

RTC model show the impact of such trains on mainline traffic, but it also provides more accurate information with which to calculate operating statistics such as locomotive unit miles (LUMs).[12]

The parties disagree on the number of local trains and industrial yard trains needed to serve TPIRR. CSXT argues that TPI failed to account for numerous local and "Y" trains because its data source did not include this type of train. It also argues that, based on TPI's operating plan, this service could not be performed using other resources. (CSXT Reply III-C-26 to III-C-29, III-C-30 to III-C-36, July 21, 2014.) In rebuttal TPI asserts that it accounted for all the necessary yard trains and maintains that it need not add any "Y" trains to its local train list. (TPI Rebuttal III-C-61.) Although TPI adds a subset of the local trains CSXT claims are necessary, TPI declines to add an additional 4,461 local trains on rebuttal. (Id. at III-C-74 to III-C-82.)

The Board outlined this dispute in the Supplemental Evidence Order, noting that "[a]n operating plan must provide full service to the selected traffic group, including the trains necessary to move local traffic between yards and shipment origins and destinations." Suppl. Evid. Order, slip op. at 6 (citing DuPont, NOR 42125, slip op. at 38). There, the Board explained that it sought additional evidence to rectify an incomplete record and allow the Board to fully consider the parties' operating plans. Id. The Board stated that TPI's "operating plan should include all historical trains that deliver and pick up SARR traffic at shipper locations" and asked TPI to add those trains to its base year train list. Id. at 7, 8; see also Suppl. Evid. Recons., slip op. at 8.

i. "Y" Trains

As described above, in its compliance and supplemental opening evidence, TPI provided three scenarios for its operating plan. Regarding Scenario One, TPI reiterates that TPIRR requires no additional "Y" trains to provide full service to its selected traffic group, arguing that it fully accounted for the necessary trains in its yard jobs evidence. (TPI Compliance & Suppl. Evid. III-C-3 to III-C-4, Oct. 7, 2015.) TPI further argues that CSXT's historical train and car event data, which the Board asked it to use, is not well-suited to calculate "Y" trains. (Id. at III-C-5 to III-C-12.) However, in Scenarios Two and Three, TPI used that data to develop a list of industrial "Y" trains that provide service outside TPIRR's yards. (Id. at III-C-13 to III-C-14.) TPI argues that, if the Board uses its Scenario Two/Three evidence to develop operating statistics, "the Supplemental Evidence Order would double-count 'Y' train operating costs" because both parties already accounted for those costs in their yard jobs matrices. (Id. at III-C-15.) In its compliance and supplemental opening evidence, CSXT adjusts its train list and modifies the total number of "Y" trains that it claims TPI would need to add. (CSXT Compliance & Suppl. Evid. 11-13, Oct. 7, 2015.) CSXT also identifies the same double-count issue as TPI and adjusts its evidence, but argues that TPI's evidence requires no adjustment

[12] LUMs directly impact operating expenses. In contrast, because yards are outside the scope of the RTC model, LUMs related to yard activity are calculated using a standard formula.

because it did not account for the disputed "Y" trains in the first place. (Id. at 17; CSXT Reply 30-31, Nov. 20, 2015.)

The Board rejects TPI's argument that its rebuttal/Scenario One evidence accounts for all necessary "Y" trains. In its rebuttal evidence, TPI's industrial "Y" train calculations are taken from its yard jobs matrix. As discussed above in the section on yard jobs, TPI made unsupported reductions to CSXT's 2010 historical yard job counts. Those reductions (which the Board rejects above) result in a similarly unsupported reduction in the number of industrial "Y" trains included in TPI's rebuttal/Scenario One evidence. TPI also did not run the rebuttal/Scenario One "Y" trains that it did include through the RTC model and, consequently, did not consider their impact on the SARR's configuration, LUMs, and other operating statistics. Although TPI argues that the Board should conclude that TPI sufficiently accounted for "Y" trains with its yard jobs matrix, TPI does not address the Supplemental Evidence Order, slip op. at 7, and the Supplemental Evidence Reconsideration, slip op. at 7-8, in which the Board explained that "Y" trains must be included on the train list that is run through the RTC model to develop useful RTC model results. TPI argues on rebuttal that the available data is not suited to identifying "Y" trains that operate outside yards, but TPI nonetheless uses that same evidence to develop a train list for its compliance and supplemental evidence that better reflects the historical base year traffic in its Scenario Two/Three evidence.

The Board concludes that TPI's Scenario Two/Three industrial "Y" train evidence is feasible and supported. The primary distinction between the parties' evidence in this regard is that TPI and CSXT used different data sources from different time periods. TPI used car movement data covering a period of 52 weeks while CSXT used crew wage data from a single quarter. (CSXT Compliance & Suppl. Evid. 13, Oct. 7, 2015; TPI Compliance & Suppl. Evid. III-C-13 to III-C-14, Oct. 7, 2015.) TPI's data source, as well as its overall methodology for calculating industrial "Y" trains, is feasible and supported. The use of 52 weeks of car movement data adequately accounts for seasonality, and overall is representative of TPIRR's annual needs. As a result, the Board accepts TPI's industrial "Y" train count, with one modification. TPI's train list includes trains that did not operate on the SARR (CSXT Reply 29, Nov. 20, 2015); TPI's industrial "Y" train count will be adjusted to exclude trains that did not handle SARR traffic. The Board's final calculations also adjust for the double-count of "Y" train operating costs identified by both parties by reducing yard engine mileages from the yard job matrix to account for the inclusion of industrial "Y" trains. Although CSXT argues that this adjustment should not be made to TPI's evidence, the adjustment is necessary because the Board is accepting CSXT's yard jobs evidence and TPI's revised train list from its compliance and supplemental evidence, which together would result in excess operating costs.

ii. Local Trains

In its compliance and supplemental evidence, TPI again maintains that the 4,461 disputed local trains are not necessary, although it adds them to its Scenario Two/Three evidence. (TPI Compliance & Suppl. Evid. III-C-19 to III-C-23, Oct. 7, 2015.) TPI states that its train selection was based on car event data, which it claims CSXT advised was more reliable than the train event data used by CSXT to identify the disputed local trains. (Id. at III-C-21 to III-C-22.) TPI claims that a subset of the disputed local trains that are not in the car event data and are not local

switcher trains cannot be linked to the historical traffic selected for TPIRR. (Id. at III-C-22.) Regarding the remaining disputed local trains, TPI claims that its review of the data shows that they are unnecessary. (Id. at III-C-22 to III-C-23.)

In its reply compliance and supplemental evidence, CSXT argues that the local trains are necessary for TPIRR to provide the same train service as CSXT did in the base year. (CSXT Reply 19-24, Nov. 20, 2015.) CSXT claims that there is sufficient evidence to support the inclusion of about half the trains as switcher trains which, according to CSXT, cannot be identified solely with car event data, and that any switcher train operating exclusively at a TPIRR-served customer location was necessarily involved in handling cars that are part of TPIRR's traffic group. (Id. at 22.) CSXT further claims that additional evidence confirms the need for the remaining disputed trains. (Id. at 22-23.)

The evidence shows that the disputed trains operated on CSXT's system in the base year. (CSXT Reply WP "ExaminingTPITrains.xlsx", July 21, 2014; see also CSXT Reply III-C-31 to III-C-36, July 21, 2014.) Although some of the disputed local trains do not appear in both the train event data and the car event data, the Board concludes that inclusion in one of these sources is sufficient because some work of local switcher trains occurs within the reporting limits of a single industry and a particular train may not handle cars between two event reporting stations. Consequently, standard car event data does not record all of a local switcher train's activities. As for the disputed local trains that do not appear to function as switchers, other record evidence confirms their operation on CSXT's system in the base year. (See CSXT Reply 22-23, Nov. 20, 2015; see also CSXT Reply WP "ExaminingTPITrains.xlsx", July 21, 2014.)

The design of TPI's operating plan therefore requires inclusion of the disputed local trains included in the Scenario Two/Three evidence. TPI argues that there is no evidence that the disputed trains served traffic selected for TPIRR and that it is CSXT's burden to show that the trains did, in fact, serve TPIRR-selected traffic. However, TPI selected virtually all of the real-world CSXT cars moving to or from TPIRR-served event reporting stations. (See CSXT Reply III-C-62, July 21, 2014.) Further, TPI designed its operating plan around base-year traffic "mirroring" the corresponding CSXT traffic for the same time period. (TPI Opening III-C-5 to III-C-6; TPI Rebuttal III-C-7.) These choices by TPI, combined with the requirement that an operating plan must provide full service to the selected traffic group, DuPont, NOR 42125, slip op. at 38, require TPI to show that it included all historical CSXT traffic necessary to serve TPIRR's traffic group. As TPI has not shown the disputed 4,461 local trains should be excluded, the Board will require their inclusion.

e. Other Yard and Interchange Track Issues

The parties argue about a number of other yard issues with an impact on the SARR's operating plan and configuration. They ultimately agree on the numbers and length of classification tracks, car repair in place (RIP) tracks, lead tracks in hump yards, dwell time on receiving and departure (R&D) tracks, and industrial lead tracks. However, they disagree on

TPIRR's requirements for R&D tracks, lead tracks in non-hump yards, additional yard tracks, locomotive service and inspection stations, interchange tracks, and locomotive dwell time in yards.[13] (TPI Rebuttal III-B-16.)

i. Receiving and Departure Tracks

TPI on opening proposes 776 miles of R&D track[14] at its 12 major yards and 68 other yards.[15] TPI states that the number and length of R&D tracks are based on the results of the RTC model. (TPI Opening III-B-9.) In its reply, CSXT states that TPI's proposed quantities of R&D track are significantly understated and increases the amount of such track to 876.84 miles, distributed between the 12 major yards and 10 other yards. (See CSXT Reply III-B-21, July 21, 2014 & CSXT Reply WP "TPIRR Yard Matrix CSXT Reply.xlsx," Tab "Yard Track Length," Columns AF to AK.) CSXT argues that the increase is necessary because TPI's model does not include sufficient time (and thus sufficient space) to account for yard activities such as staging, inspections, classifying and building trains, originating/terminating traffic, local train operations,

[13] Locomotive dwell times in yards is addressed infra in the Operating Expenses Appendix to this decision.

[14] In general, receiving tracks are used to stage inbound trains in preparation for classification based on intermediate or final destinations. Under certain circumstances, they may also be used for interchange traffic from connecting carriers, 1,000/1,500 inspections, refueling, or crew changes. Departure tracks are used to assemble outbound trains including those serving local industries and interchange traffic for connecting carriers.

[15] See TPI Opening WP "TPIRR Yard Matrix Opening Grading.xlsx," tab "Yard Track Length," cell AF89. The parties use different terminology to describe tracks that perform the R&D function. TPI explains that its "running tracks" are those necessary to handle the peak period trains moving through TPIRR's yards. (TPI Opening III-B-9.) CSXT states that TPI incorrectly uses the term "running tracks," which CSXT asserts "generally are not used to hold arriving trains or cuts of cars as they are assembled into an outbound train," but rather "extend the length of the yard and enable trains (or locomotives) to 'run around,' or bypass, other yard tracks." (CSXT Reply III-C-98 n.158, July 21, 2014.) CSXT considers the tracks TPI calls "running tracks" to be simply R&D tracks. (Id. at III-C-98.) On rebuttal, TPI further explains that what it calls "running track" includes "receiving, departure, inspection and interchange track . . . [and] excludes track where non-line haul-related tasks are performed, such as classification track, RIP tracks and locomotive repair and servicing track." (TPI Rebuttal III-B-6 n.13.) TPI's supporting workpapers do not differentiate between the types of tracks it includes in its yards, simply designating the 776 miles of included yard track as "sidings" and treating them as R&D tracks in its RTC model. (See TPI Opening WP "TPIRR Yard Matrix Opening Grading.xlsx," Tab "Yard Track Length," Columns H to AF.) For purposes of discussion here, the Board treats these as R&D tracks.

and use of R&D tracks by light road engines.[16] (CSXT Reply III-B-21, III-C-99 to III-C-100, July 21, 2014.) CSXT also argues that TPI's exclusive use of the RTC model to determine the number and length of R&D tracks does not provide credible support for the tracks it posited because the RTC model is not a yard sizing tool. (Id. at III-C-98 to III-C-99.) CSXT asserts that the model is designed to analyze train movements and does not determine dwell time on R&D tracks, which is instead an input into the model. (Id. at III-C-98.) CSXT explains the multi-step process its witness followed to determine location-specific R&D track requirements. (Id. at III-C-120 to III-C-126.) Finally, CSXT argues that TPI's RTC model understates the time trains would dwell (and therefore occupy R&D tracks) at TPIRR yards. (Id. at III-C-188 to III-C-194.) CSXT increases TPIRR's dwell time input in its reply RTC model. (Id. at III-C-114, III-C-194 to III-C-195.)

On rebuttal, TPI explains that it "determined the number of 'running' tracks and track miles based on the track required by the RTC Model to handle trains in the TPIRR's yards." (TPI Rebuttal III-B-6 (footnote omitted).) TPI agrees that, to produce a reasonable estimate of R&D tracks that can accommodate the full range of posited activities (e.g., light engine movements), the dwell time input into its RTC model should be increased (and TPI increases its dwell times accordingly). (Id. at III-C-116 to III-C-120.) TPI asserts that the RTC model is a better indicator of yard track requirements than CSXT's methodology, and argues that CSXT's methodology for developing the number of tracks in each yard is unrealistic, gold-plated, disconnected from its RTC model, and results in CSXT overbuilding its yards. (Id. at III-B-6 to III-B-7, III-C-115.) TPI further argues that CSXT's reply RTC model has insufficient R&D track capacity at some yards and excessive capacity at other yards. (TPI Rebuttal Ex. III-C-1 at 3-7.) TPI also asserts that CSXT's reply RTC model does not reflect its reply road property investment (RPI) for at least 42 yards. (Id. at 1-2.) TPI explains that its own RTC model demonstrates that TPIRR's "network has a sufficient number of [R&D] tracks of sufficient length in each yard in order to accommodate the simulated traffic based upon the required dwell time estimates for each train." (TPI Rebuttal III-C-118.) Based on its RTC dwell time methodology, TPI on rebuttal increases the amount of R&D track in the 80 yards in question to 835.5 miles.[17]

Both parties provide flawed evidence on the number and length of R&D tracks that TPIRR would require. TPI relies exclusively on the RTC model to confirm the adequacy of its R&D track calculations. But as the Board has stated, the RTC model does not model yard operations. See Sunbelt Chlor Alkali P'ship v. Norfolk S. Ry. (Sunbelt 2014), NOR 42130, slip op. at 16 (STB served June 20, 2014) ("[T]he RTC Model does not model yard operations, and therefore cannot confirm that classification track is properly sized."), petition for reconsideration granted in part and denied in part (Sunbelt 2016) (STB served June 30, 2016) (with

[16] These are road locomotives that have been detached from and are moving without cars. (See CSXT Reply III-C-99, July 21, 2014.) Similarly, the phrase "light engine movement" refers to any locomotive moving without cars.

[17] On rebuttal, TPI accepts the inclusion of the five flat yards added by CSXT, as well as the number and length of tracks proposed for these yards on reply. (TPI Rebuttal III-B-8.)

Commissioner Begeman dissenting in both), appeal docketed sub nom. Sunbelt Chlor Alkali P'ship v. STB, No. 16-15701 (11th Cir. Aug. 26, 2016). Thus, the RTC model cannot confirm that the SARR's configuration includes sufficient track for wholly in-yard activities.

As to CSXT's evidence, CSXT does not demonstrate that TPI's configuration would result in specific operational issues, particularly given TPI's dwell-time-based increase of R&D tracks on rebuttal. As TPI demonstrates, CSXT's own RPI track counts are inconsistent with its RTC model track counts, varying by one to as many as eight tracks in a single yard. CSXT provides no explanation for this discrepancy between the two sets of numbers, and there is no apparent pattern to the differences. Furthermore, although CSXT describes its methodology for determining R&D tracks in its narrative, its RTC model does not appear to reflect that methodology. Finally, while CSXT argues that TPI's opening R&D track calculations do not account for activities such as inspections and classification, the Board notes that CSXT itself (as well as TPI) accounts for these functions with separate (non-R&D) track categories. (CSXT Reply WP "TPIRR Yard Matrix CSXT Reply.xlsx," Tab "Additional Tracks," July 21, 2014.)

The Board will accept TPI's R&D track count and length as the best evidence of record. The Board accepted TPI's RTC model (including its adjusted dwell times), and TPI has provided R&D track evidence that is generally consistent with its RTC model to support its position. However, because in two yards TPI's RTC model includes one R&D track more than shown in its RPI costs, the Board will reconcile that by adding two additional R&D tracks. Also, as discussed below, the Board will make other adjustments to TPI's track counts in particular categories.

ii. Lead Tracks

With respect to lead tracks, CSXT states that TPI built ten terminal facilities located off the TPIRR mainline, but did not build the necessary lead tracks to those facilities. (CSXT Reply III-B-17, July 21, 2014). CSXT explains that these tracks are necessary to make physical connections between the mainline and yards. (Id.) CSXT focuses on the Tampa intermodal facility, which it says is located on a line that TPI did not build but may be accessed from TPIRR's system via a 2.17 mile lead track. (Id.) In its rebuttal, TPI states that CSXT has not supported its assumption that the tracks for these facilities are not included in its opening evidence. (TPI Rebuttal III-B-10.) Regarding the Tampa facility, TPI contends that because TPI included the construction costs for the facility, it would be located adjacent to TPIRR's line making a lead track unnecessary. (Id.) A review of the parties' evidence[18] shows that TPI failed

[18] See, e.g., TPI track charts (TPI Opening WPs "TPI Track Charts Part 1 of 6.pdf," "TPI Track Charts Part 2 of 6.pdf," "TPI Track Charts Part 3 of 6.pdf," "TPI Track Charts Part 4 of 6.pdf," "TPI Track Charts Part 5 of 6.pdf," "TPI Track Charts Part 6 of 6.pdf"), CSXT yard lead track diagrams, photographs, and data (CSXT Reply WPs "2597 – Boyles Yard BB.pdf," "3842 – Hawthorne BB.pdf," "3964 – Hawthorne BB.pdf," "Yard Lead Tracks.xlsx," "Birmingham Auto Facility Connection via Boyles yard.kmz," and nine other Google Earth diagrams of CSXT

(continued . . .)

to include the necessary lead tracks to connect the ten terminal facilities to the TPIRR mainline. Although TPI included costs for constructing the switches that connect the track into the yard, it did not include costs to build the portion of the lines into the yards that the railroad owns, which are essential in the cases that CSXT identifies. Regarding the Tampa facility, TPI's workpapers do not appear to support its statement that it placed the yard adjacent to TPIRR's line. (See TPI Opening WP "Track Charts Part 2 of 6.pdf" at 175; TPI Opening WP "Track Charts Part 6 of 6.pdf" at 141-42; TPI Rebuttal WP "TPIRR Yard Matrix Rebuttal Grading.xlsx," Tab "TPIRR Yards," Lines 73, 114; TPI Rebuttal WP "TPIRR Route Miles Rebuttal Grading.xlsx," Tab "TPIRR Miles," Lines 598-600.) Therefore, the Board cannot conclude that the lead tracks are unnecessary. The Board will accept CSXT's addition of 8.770 miles of yard lead track.

iii. Additional Yard Tracks

On opening, TPI includes yard diagrams showing examples of three types of yards: a hump yard, a large flat yard, and a small flat yard. (TPI Opening WP "TPIRR Yard Templates.pdf.") These layouts are representative rather than specific to any particular TPIRR yard. On reply, CSXT argues that "classification, yard, and additional tracks must be interconnected to provide a fully functioning yard capable of facilitating fluid, real-world car and train movements." (CSXT Reply III-B-22, July 21, 2014.) CSXT claims that while yards constructed with the connecting tracks shown in TPI's yard diagrams would be functional, the yard tracks TPIRR constructs are not consistent with the diagrams TPI provides. (Id.) Therefore, CSXT adds 172.79 miles of track to accomplish this connecting function to 80 of TPIRR's yards (the 12 major yards and the 68 other yards). (Id.; CSXT Reply WP "TPIRR Yard Matrix CSXT Reply.xlsx," Tab "Additional Track Length," July 21, 2014.)

TPI rejects the additional yard track. (TPI Rebuttal III-B-12.) TPI argues that CSXT never identifies the specific track it claims is missing, and objects to CSXT's methodology of adding track that is the length of the longest yard track included by TPI on opening. TPI also claims that the RTC model confirms that TPI built sufficient yard track. TPI argues that CSXT's addition of the track is gold plating and unnecessary for a functioning yard. (Id. at III-C-122.)

The Board will accept CSXT's inclusion of an additional 172.79 miles of yard track. The Board agrees with CSXT that there appears to be track shown on TPI's representative yard diagrams that does not appear to be accounted for in TPI's costs, based on review of TPI's narrative, the diagrams, and workpapers.[19] (See TPI Rebuttal III-B-12, III-C-122; TPI Opening

---

(. . . continued)

yards, July 21, 2014), and TPI stick charts (TPI Compliance & Suppl. Evid. WP "TPIRR Stick Diagrams Rebuttal.pdf, Oct. 7, 2015).

[19] The unaccounted-for track on TPI's hump yard diagram includes the tracks that start on each side of the diagram at the outside of the Main Tracks and extend down to the track that is shown across the top of the section labeled "Inspection and Departure Tracks." Also not included in TPI's costs are the track that that appears directly above the diagram above the label

(continued . . .)

WP "TPIRR Yard Templates.pdf;" TPI Rebuttal WP "TPIRR Yard Matrix Rebuttal Grading.xlsx.") It appears that TPI accounted for the costs of constructing the yard tracks for maintaining and servicing equipment, receiving yard tracks, departure yard tracks, and classification tracks. However, TPI clearly indicates, and its workpapers support, that it separately calculates "track where non-line haul related tasks are performed, such as classification track, RIP tracks and locomotive repair and servicing track." (TPI Rebuttal III-B-6; TPI Rebuttal WP "TPIRR Yard Matrix Rebuttal Grading.xlsx," Tabs "Class Track Length," "Additional Track.") The Board finds no evidence indicating that TPI accounted for the costs of constructing certain additional tracks that are used for "non-line haul-related tasks" around the perimeter of the three yard types and connecting interior yard tracks and that do not fall into the other categories TPI describes.

Without the unaccounted-for track, the Board concludes that TPIRR yards would not include sufficient track for intra-yard services such as light engine movements and movements to and from ancillary facilities such as locomotive shops, RIP tracks, and car maintenance facilities. As CSXT describes, yard tracks must be connected to allow movement within the yard, and TPI has not explained how its yards will function without the missing track. TPI claims that the RTC model confirms that its yards include sufficient track, but as discussed above, the RTC model does not model yard operations, and in particular does not model light engine movements, one of the primary functions of the disputed tracks. See Sunbelt 2014, NOR 42130, slip op. at 16. TPI's witness also claims that the additional track is gold-plating by CSXT because "these various engine movements typically occur on unoccupied receiving and departure tracks or, if

---

(. . . continued)

"Inspection and Departure Tracks" and the track that appears directly above the label "Receiving Tracks" and extends up to the tracks labeled "Main Tracks."

The unaccounted-for track on TPI's large flat yard diagram includes the track that is shown across the top of the page directly above the label "Receiving Tracks." (The Board does not consider the two tracks under the label "Main Tracks" in the group that is unaccounted for.) Also not included in TPI's costs are the tracks that start on each side of the diagram near the ends of the Main Tracks and extend down to the track that runs across the top of the section labeled "Inspection and Departure Tracks." This track, running across the diagram above the label "Inspection and Departure Tracks," is also not included in TPI's costs. Finally, TPI has not included costs for the track shown as starting on the left side of the diagram, running between the labels "Class" and "Tracks," turning, extending toward the top of the page, and then turning back to the right.

The unaccounted-for track on TPI's small flat yard diagram includes the track that is shown across the top of the page directly above the label "Receiving Tracks." Also not included in TPI's costs are the tracks that start on each side of the diagram near the ends of the Main Tracks and extend down to the track that is shown running across the bottom of the diagram. This track shown across the bottom of the diagram is also not accounted for. (See TPI Opening WP "TPIRR Yard Templates.pdf.")

necessary, over the hump." (TPI Rebuttal III-C-122.) This assumes that receiving and departure tracks or the hump are regularly available for that function, but both of those yard areas have different purposes and cannot be relied upon for the frequent light engine movements that must occur for a yard to function.[20] The fact that the tracks at issue are shown on TPI's standard yard diagrams indicates that TPI considers the connecting tracks necessary, and TPI has not adequately explained how its yards will function without the connecting tracks. The Board therefore concludes that the costs of the connecting tracks shown on TPI's yard diagrams must be included.

TPI also objects to CSXT's methodology of adding track that is the length of the longest yard track that TPI included on opening, but the Board concludes that CSXT's approach is a conservative method because review of the yard diagrams indicates that fully accounting for the track in question would require more track than CSXT added.

iv. Locomotive Service and Inspection Stations

On opening, TPI includes four heavy locomotive shops. (TPI Opening III-C-13.) CSXT states that TPIRR would require 12 additional diesel locomotive service and inspection facilities to conduct 92-day inspections and perform minor running repairs at locations throughout the SARR. (CSXT Reply III-C-153 to III-C-154, III-F-196 to III-F-197, July 21, 2014.) CSXT argues that while TPI's proposed heavy repair shops include service and inspection tracks, they are spaced too far apart to provide adequate access for locomotive service and inspection, and performing inspections is not practical at other fixed fueling facilities. (Id. at III-C-153 to III-C-154, III-F-196 to III-F-197.) CSXT states that in the real world, it has 25 of these facilities at on-SARR locations, and conservatively adds 12 on reply. (Id. at III-C-154, III-F-197.) On rebuttal, TPI rejects the addition of these stations because, it claims, CSXT did not provide support for its arguments that TPI's proposed facilities are spaced too far apart and that performing inspections is not practical at existing facilities. (TPI Rebuttal III-F-130 to III-F-131.) TPI argues that existing locomotive repair facilities can handle inspections and locomotives could be efficiently moved to the closest facility when necessary. (Id. at III-F-131.) TPI explains that the scheduled movement of locomotives for 92-day inspections would be handled by transportation department operations control personnel in coordination with the mechanical department. (Id.) TPI also claims that 12 locomotive shops would be excessive because the entire NS system (with more locomotives and route miles than TPIRR) only has eight locomotive shops. (Id. at III-C-150 to III-C-151; TPI Rebuttal WP "NS Locomotive Shops.pdf" at 3-5.) Finally, TPI asserts that CSXT did not include the facilities in its workpapers. (TPI Rebuttal III-C-151.)

With the exception of the Jacksonville, Fla. inspection station, the Board agrees with CSXT's argument that TPI's proposed heavy repair shops are spaced too far apart to provide adequate access for locomotive service inspections. Although TPI argues that its locomotives could be efficiently moved to the closest facility when necessary, it does not account for those movements in its operating plan or expenses. If TPIRR were to shuffle locomotives around its

[20] Further, many of the yards at issue are not hump yards.

system as necessary for inspection and minor running repairs, these movements would need to be reflected in TPI's RTC model. Furthermore, the time that those locomotives would be out of service while in transit should be reflected in the spare margin and locomotive unit hours calculations. TPI does not account for either. Additionally, TPI's comparison to NS's locomotive shop counts is inapposite because the eight NS locomotive shops referenced by TPI are equivalent to the four major locomotive repair facilities upon which the parties agree. The size and function of the additional 12 inspection facilities proposed by CSXT is distinct from the four major locomotive repair shops. Finally, it appears that CSXT included the costs for additional track at 12 locations in its workpapers (CSXT Reply WP "TPIRR Yard Matrix CSXT Reply.xlsx," Tab "Additional Track," Columns I, J, July 21, 2014), but included buildings associated with inspection facilities only at the eight major yards that lacked a locomotive repair shop, and did not include associated buildings at the four other yards at which it provided additional track. Although buildings would be useful at the other yards, they are not required infrastructure for the service and inspection stations that CSXT adds, and the fact that CSXT did not include buildings at those four other yards does not undermine its basic point that additional service and inspection stations are necessary.

The Board finds that CSXT's position is feasible and supported, and will accept its addition of track related to locomotive service and inspection stations at 11 yards. However, the Board rejects the addition of the Jacksonville, Fla. locomotive service and inspection station because CSXT has not shown that its spacing arguments are valid given its proximity to Waycross, Ga., and the fact that all or nearly all road trains traveling through Jacksonville would also pass through Waycross.

v. Interchange Tracks

On opening, TPI states that TPIRR would interchange with six Class I railroads and more than 75 regional and short line railroads. (TPI Opening III-B-4.) It would construct and/or operate 50 branch lines used for various purposes including interchange points; its track configurations for these branches are in TPIRR's stick diagrams. (Id. at III-B-6.) TPI would also construct 229 yards (12 major yards, 68 other yards, 19 intermodal facilities, 20 automotive facilities, 23 bulk transfer facilities, and 87 additional interchange yards) and would use eight of the major yards and many of the other yards for interchange. (Id. at III-B-7 to III-B-9.) The additional interchange yards provide interchange locations where an interchange location would not otherwise exist. (Id. at III-B-7 n.14.)

CSXT argues that TPI's track configurations failed to include sufficient tracks in two categories. First, CSXT argues that TPIRR requires 17 additional interchange locations. (CSXT Reply III-B-22, July 21, 2014.) Second, CSXT argues that TPIRR requires additional interchange track at 12 of TPI's proposed interchange locations. (Id.) CSXT states that TPI's proposed leapfrog traffic creates additional interchanges at intermediate points that do not exist on the real-world CSXT. (Id. at III-C-49 to III-C-50.) CSXT also alleges that TPI neglects to include acreage for its interchange yard locations and adds necessary land for interchanges accordingly. (Id. at III-B-24.)

In its rebuttal, TPI states that it relied on the RTC model to determine the number and length of tracks required in its yards to efficiently move trains during the peak period, and this includes the track needed to interchange trains. (TPI Rebuttal III-B-12.) Based on TPIRR traffic data, TPI also added interchange yards at locations where there were no major or other yards. (Id. at III-B-13.) TPI rejects CSXT's additional interchange tracks at TPI's existing yards, arguing that its analysis included sufficient track for interchange purposes and that CSXT provided no support for its additional track at those locations. (Id. at III-B-13 to III-B-14.) TPI agrees with nine of the 17 interchange locations CSXT adds. It rejects the addition of interchange locations at Deland, Fla.; Decoursey and Madisonville, Ky.; Marion, Hamilton, and Crestline, Ohio; Clinton, S.C.; and Richmond/Fulton, Va. (Id. at III-B-14 to III-B-15.)

With the exception of Flomaton, Ala., the Board agrees that TPI included necessary interchange tracks at its existing yards. Interchange traffic at these yards consists almost entirely of CSXT crossover traffic, which is reflected in TPI's RTC-based calculation of R&D tracks that the Board accepts above. This traffic appears in the RTC model as departing trains for traffic interchanged to the SARR and received trains for traffic forwarded to CSXT. However, at Flomaton, TPIRR also interchanges with the Alabama Railroad. The Alabama Railroad trains that enter the SARR's track are not reflected in TPI's RTC model. This holds true for all short line trains entering the SARR, including stranded CSXT branch lines that take on the role of short line carriers. Interchange trains from short line carriers generally do not run beyond the interchange point on the SARR. Cars from these trains are classified and placed on outbound SARR trains. The Board will add the two interchange tracks at the Flomaton yard proposed by CSXT.

With respect to additional interchange locations, TPI argues that at Deland there are no CSXT lines that connect to TPIRR, and the SARR constructed the branch to the end of CSXT ownership. (TPI Rebuttal III-B-14.) The Board can find no evidence of traffic interchanging at this location. The Board accepts TPI's rebuttal explanation for why no yard should be added at Deland. At Decoursey, TPI argues that no interchange is necessary because the TPIRR and CSXT lines connect at nearby KC Junction, Ky., where TPI included an interchange location. (Id.) The Board finds that using the interchange at KC Junction is a feasible alternative and accepts TPI's rebuttal explanation for why no yard should be added at Decoursey. At Hamilton, TPI again argues that no interchange is necessary because the TPIRR and CSXT lines connect at nearby New River Junction, Ohio, where TPI included an interchange. The Board finds that using the interchange at New River Junction is a feasible alternative and accepts TPI's rebuttal argument for why no yard should be added, but notes that TPI's stick diagrams do not include a connecting turnout from CSXT's line. Because this turnout provides the physical connection necessary for CSXT interchange traffic to enter the SARR, it will be added. Additionally, at Clinton, traffic records indicate that there is one car entering and one car exiting the SARR, but because this traffic is local to the SARR the additional interchange yard is not necessary.

However, the Board will add four new interchange locations to TPI's rebuttal configuration. At Madisonville, Richmond/Fulton, and Crestline, TPI argues that nearby yards at Atkinson, Acca, and Galion/Crestline, respectively, could be used as surrogates for interchange traffic. At Madisonville and Richmond/Fulton, TPIRR would interchange with CSXT; at Crestline it would interchange with NS. If TPIRR were to use the nearby yards for those

interchanges, it would require CSXT to have trackage rights over TPIRR or to modify its current operations. TPI accounts for neither scenario to make use of the nearby yards operationally feasible, nor does it include the traffic in its RTC model from the interchange locations to the yards. Finally, at Marion, traffic records indicate that TPIRR would interchange local CSXT traffic at this location. This traffic would not be included in TPIRR's RTC R&D calculations; therefore, additional tracks at Marion will be added.

2. Discussion of General Internal Cross-Over/Leapfrog Traffic

In SAC cases, complainants have relied extensively on the use of cross-over traffic. Cross-over traffic refers to those movements included in the traffic group that would be routed over the SARR for only a portion of their trip from origin to destination. In such circumstances, the SARR would not replicate all of the defendant railroad's service, but would instead interchange the traffic with the residual portion of that railroad's system. This modeling device, which was first accepted by the agency in 1994 in Bituminous Coal—Hiawatha, Utah, to Moapa, Nev. (Nevada Power), 10 I.C.C.2d 259, 265-68 (1994), is now a well-established practice in SAC cases.[21]

Here, TPI utilizes certain cross-over traffic that travels over, exits, and then reenters the SARR, traversing two or more on-SARR segments—a feature distinct from general cross-over traffic. While TPI and CSXT refer to this as internal cross-over traffic (or just cross-over traffic), this subset of crossover traffic is also referred to as "leapfrog traffic," a term that will be used in this decision.[22]

TPI argues that leapfrog traffic is consistent with SAC principles. (See, e.g., TPI Rebuttal III-A-17 to III-A-20.) CSXT opposes the use of leapfrog traffic, arguing that it unreasonably permits a SARR to capture traffic and revenues for that traffic without requiring the corresponding construction of the expensive portions of the network required to carry that traffic. (CSXT Reply III-C-5, III-C-45 to III-C-54, July 21, 2014.)

As the Board observed in DuPont, "[l]eapfrog traffic would allow a SARR to create infrastructure gaps in its system" and is a "novel way to connect points within [a] system without building facilities to connect those points directly." See DuPont, NOR 42125, slip op. at 44 (footnote omitted). The Board did not rule on the appropriateness of leapfrog traffic in DuPont where neither party presented SAC evidence with the traffic removed. Similarly, the Board does not reach the merits of CSXT's arguments that leapfrog traffic should be categorically excluded because CSXT has failed to support its narrative criticisms of TPI's use of leapfrog traffic with replacement evidence that excludes this traffic. It is the defendant railroad's responsibility to

[21] See, e.g., DuPont, NOR 42125, slip op. at 43-44; Otter Tail, NOR 42071, slip op. at 11-13; Duke Energy Corp. v. CSX Transp., Inc., 7 S.T.B. 402, 422-24 (2004); Tex. Mun. Power Agency v. Burlington N. & Santa Fe Ry., 6 S.T.B. 573, 605 (2003).

[22] Consistent with the parties' presentation of the evidence, high-priority leapfrog traffic is addressed separately below.

support its narrative criticisms of the shipper's evidence with proposed replacement evidence. Id. at 44. Here, CSXT has failed to submit evidence that corrects the alleged deficiencies that CSXT argues exist in TPI's opening evidence; i.e., CSXT has not presented traffic group evidence that excludes the leapfrog traffic included by TPI. As a result, the Board accepts the inclusion of leapfrog traffic in the traffic group as the best evidence of record without reaching a determination on the substantive arguments posited by CSXT.

3. Configuration

Having accepted TPI's operating plan as feasible and supported—after considering CSXT's criticisms thereof and all of the evidence in the record—the Board also accepts TPI's overall configuration because the system configuration forms the basis of an operating plan. See, e.g., DuPont, NOR 42125, slip op. at 46. However, as discussed above in the section on other yard and interchange track issues, the Board makes several minor adjustments to TPI's proposed configuration which are also reflected in the Board's adjustments to the operating plan.

Tables 1 & 2 summarize the Board's conclusions on the route miles and constructed track miles of TPIRR.

TABLE 1
TPIRR Constructed Route Mileage

	TPI	CSXT	STB
Main Lines			
a. Partially Owned Lines			
i. Dolton to Woodland	32.85	32.85	32.85
ii. Belt Railway Chicago	1.20	1.20	1.20
iii. IHB Railway	11.29	11.29	11.29
iv. TRRA	0.29	0.29	0.29
b. East St. Louis Rose Lake Extn	0.30	0.30	0.30
c. Other Main Lines	6,161.93	6,161.93	6,161.93
Other Branch Lines	704.01	704.01	704.01
Total Constructed Route Miles	6,911.87	6,911.87	6,911.87

TABLE 2
TPIRR Constructed Track Mileage

Type and Configuration of Track	TPI	CSXT	STB
Low Density Mainline - 1 Track	782.89	760.39	782.89
Low Density Mainline - 2 Tracks	189.96	181.38	189.96
Low Density Mainline - 3 Tracks	2.70	2.70	2.70
High Density Mainline - 1 Track	2987.17	3008.70	2987.17
High Density Mainline - 2 Tracks	5704.26	5680.34	5704.26
High Density Mainline - 3 Tracks	528.90	580.56	528.90
High Density Mainline - 4 Tracks	70.00	70.00	70.00
Subtotal - Mainlines	10265.88	10284.07	10265.88
Helper	2.40	2.40	2.40
Setout	133.70	133.70	133.70
Customer Lead Track	0.00	63.71	0.00
Yard Track	1879.64	2099.70	2076.65
Subtotal - Other Tracks	2015.74	2299.51	2212.75
Total Constructed Track Miles	12,281.62	12,583.58	12,478.63

B. ROAD PROPERTY INVESTMENT

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

C. TRAFFIC GROUP AND REVENUES

A complainant creates a traffic group by using information on the types and amounts of traffic moving over the defendant's rail system, and selecting a subset of that traffic (including its own traffic to which the challenged rate applies) that the SARR would serve. Ariz. Elec., NOR 42113, slip op. at 16. The selected traffic group is representative of the traffic that would move on the SARR in the future. Id. The composition of the traffic group must be realistic (i.e., consistent with the underlying realities of real-world railroading). Id.

The parties disagree on whether TPIRR's traffic group should include high-priority leapfrog traffic and internally rerouted traffic. The parties also disagree on issues related to the Average Total Cost (ATC) methodology, including the allocation of leapfrog traffic revenues, the appropriate procedure for projecting traffic volumes, and the proper methodology for calculating fuel surcharge revenues. As discussed above, the Board generally accepts the

inclusion of leapfrog traffic in the traffic group as the best evidence of record, but below the inclusion of the high-priority subset of leapfrog traffic is examined. The Board also discusses the method of calculating revenue divisions for leapfrog traffic below, while the remaining traffic and revenue disputes are discussed and resolved in Appendix C.

1. High-Priority Leapfrog Traffic

Apart from its challenge as to the propriety of leapfrog traffic generally, CSXT argues that certain leapfrog traffic that TPI includes in its opening traffic group does not receive adequate service because SARR transit times for this traffic are greater than real-world transit times, and contends that this traffic should be removed from TPI's traffic group. (CSXT Reply III-A-8 to III-A-10, III-A-38, July 21, 2014.) CSXT claims that the contested traffic, which consists of high-priority shipments by UPS and customers of Threads Express, requires expedited service, and that its high-priority customers would cancel their shipments if transit times increased. (Id. at III-A-9.) CSXT asserts that Board precedent requires TPI to design "SARR operations to provide service that is equal to or better than the service that the incumbent carrier provides." (Id. (citing Ariz. Elec., NOR 42113, slip op. at 10; Tex. Mun. Power, 6 S.T.B. at 589).) CSXT states that because TPIRR does not meet the Board's service standard for this subset of leapfrog traffic, CSXT has removed "the [high-priority leapfrog] traffic from the SAC analysis, for purposes of TPIRR traffic volumes, revenues, operating plan and operating expenses." (Id. at III-A-38.)

TPI argues that the Board should accept TPI's inclusion of this high-priority leapfrog traffic. (TPI Rebuttal III-A-5 to III-A-6, III-A-25; TPI Compliance & Suppl. Evid. I-14, Oct. 7, 2015.) First, TPI argues that the exclusion of UPS and Threads Express customers from the TPIRR traffic group is inappropriate because CSXT's assertion regarding additional interchange time is based upon inflated data resulting from CSXT's refusal to agree to a distributed power configuration for these movements. (TPI Rebuttal III-A-5.) To resolve the issue, TPI accepts CSXT's power configuration. (Id. at III-A-6.) Next, TPI argues that its evidence shows that trains that handle the high-priority traffic provide equivalent service to CSXT, and that CSXT has failed to demonstrate otherwise. (Id. at III-A-5 to III-A-6; TPI Compliance & Suppl. Evid. I-14, III-C-25, Oct. 7, 2015.) Next, TPI argues that CSXT has failed to show that the shippers in question would withdraw their business even if transit times increased. (TPI Compliance & Suppl. Evid. I-14, Oct. 7, 2015.) In this regard, TPI argues that CSXT has failed to present evidence of a transit time-based service standard for the disputed traffic, much less one that TPIRR is incapable of satisfying. (Id. at I-14, III-C-26.)

On supplemental reply, CSXT maintains its position that the high-priority traffic should be removed due to a failure to meet the service standard. (CSXT Reply 38-44, Nov. 20, 2015.) CSXT contends that while TPI acknowledged on rebuttal that UPS previously reduced shipments in response to an increase in real-world CSXT transit times,[23] TPI simultaneously maintains that

[23] Both TPI and CSXT cite the same article to support their respective arguments regarding the degree to which the traffic is time-sensitive. (See TPI Rebuttal III-A-6 n.11;

(continued . . .)

CSXT has not proved this traffic is time-sensitive. (CSXT Reply 39-40, Nov. 20, 2015.) CSXT notes that TPI has accepted CSXT's power configuration to obviate the need for configuration changes at interchange points, but argues that this change is insufficient to maintain the service standard. (Id. at 40-41.)

The Board agrees with TPI that CSXT has failed to support the use of a bright-line, exclusively transit time-based service standard for this traffic. The Board's overall service standard requires that "the SARR must meet the transportation needs of the traffic in the group by providing service that is equal to (or better than) the existing service for that traffic." Tex. Mun. Power, 6 S.T.B. at 589. In applying this service standard, the Board considers a variety of factors—such as SARR cycle times, contract-based requirements, and efficiency of the SARR routing—to determine if the transportation needs of the traffic group customers are being met. See Pub. Serv. Co. of Colo. v. Burlington N. & Santa Fe Ry., 7 S.T.B. 589, 608 (2004); Tex. Mun. Power, 6 S.T.B. at 590-91, 595. Even if the Board assumed that transit times are the most relevant consideration in determining whether this particular sub-group of traffic is receiving adequate service, the Board concludes that CSXT has failed to present evidence sufficient to support its arguments about the degree of time sensitivity for this traffic. CSXT's evidence purportedly shows that the TPIRR peak week transit times for the on-SARR portion of the movements are marginally greater than the real-world on-SARR peak week transit times for this traffic.[24] From this, CSXT essentially argues for the application of a bright-line rule under which SARR peak week transit times that are even a single minute greater than real-world peak week transit times would mandate exclusion of the associated traffic. The Board cannot conclude, without more, that such a bright-line rule is appropriate in this case. Here, CSXT provided no evidence of contract or tariff terms that may have demonstrated with specificity how these particular customers measure on-time performance (e.g., service delivery windows, performance benchmarks, or the presence/absence of penalties for not meeting performance goals). In the absence of this or other evidence establishing that real-world peak week transit times are the sole metric by which to measure on-time performance, the Board cannot agree with CSXT that the transportation needs of the customers at issue are not being met under TPI's operating plan. The Board therefore accepts TPI's Scenario Two evidence, which includes the high-priority leapfrog traffic.[25]

(. . . continued)

CSXT Reply III-A-39 n.117, Nov. 20, 2015 (citing Earl Daniels, UPS Lightens CSX's Load, Fla. Times-Union, Aug. 27, 1999).)

[24] See CSXT Reply WP "Transit Time Restated.xlsx," Nov. 20, 2015. The Board notes that CSXT did not compare the TPIRR and real-world transit times for the complete origin-to-destination movements. The Board further notes that CSXT's data suggests (without explanation) that on-SARR real-world transit times during the peak week were actually lower than the average 2012 on-SARR real-world transit times for more than half of the movements at issue.

[25] Given the conclusions above, the Board need not resolve the parties' criticisms of each other's transit time calculations.

2. ATC Methodology for Leapfrog Traffic

On opening, TPI states that total CSXT revenues for each movement, including fuel surcharges, were allocated both on- and off-SARR using the Average Total Cost (ATC) methodology the Board adopted in Rate Regulation Reforms, EP 715, slip op. at 30-34. (TPI Opening III-A-36.) The Board and parties have referred to this methodology as "Alternative ATC." See Sunbelt 2014, NOR 42130, slip op. at 24-25. In applying this methodology, TPI states that it relied upon CSXT traffic data produced in discovery and on its train list and operating plan to identify those points on TPIRR where cross-over traffic from CSXT would enter and exit TPIRR. (TPI Opening III-A-37.) TPI also states that TPIRR revenue division ratios are based upon 2012 traffic and were applied to traffic moving in each year of the DCF model life, regardless of when that movement over TPIRR starts or terminates. (Id.)

On reply, CSXT proposes two alternative revenue allocation approaches for leapfrog traffic. (CSXT Reply III-A-39 to III-A-40, July 21, 2014.) CSXT argues that an adjustment to the ATC methodology is needed for leapfrog traffic because TPIRR relies on such movements to provide end-to-end service for specific customers while ignoring the economic cost of the leapfrog segment necessary to facilitate such movements. (Id. at III-A-39.) Under its first proposal, CSXT would use the Board's standard ATC methodology to allocate revenue between "(i) more standard off-SARR segments (operated by the residual incumbent) beyond the geographic endpoints of the SARR; and (ii) the combined on-SARR and leapfrog segments." (Id.) Then, CSXT would allocate the second group of revenues between on-SARR and off-SARR leapfrog segments as follows:

> [A] pro-rata portion of the full economic cost of the leapfrog segment based on an a pro-rata share of the replacement cost for the SARR-avoided leapfrog segment (allocated based on leapfrog segment gross ton miles) and fully allocated Uniform Rail Costing System ("URCS") operating expenses would be deducted from the ATC allocation for the combined on-SARR and leapfrog segments. The remainder would go to the SARR.

(Id.) CSXT states that this proposal requires additional steps to implement, and absent guidance from the Board, CSXT could not implement this proposal. (Id.) Rather, CSXT states, it implemented its second proposal, which it considers more straightforward. (Id.)

Under its second proposal, CSXT would, in lieu of calculating the full economic cost of the leapfrog segment, use a "movement's available contribution above variable costs for the on-SARR portion, in combination with an ATC-based revenue allocation for the leapfrog segment(s) as a surrogate for full economic costs of the leapfrog segment."[26] (Id.) CSXT argues that under this method, SARR revenue allocation would be the lower of the incumbent's URCS variable costs or the Alternative ATC allocation for on-SARR segments. (Id. at III-A-40.)

[26] CSXT's workpapers reflect this proposal.

On rebuttal, TPI rejects CSXT's proposals on multiple grounds. (TPI Rebuttal III-A-25 to III-A-29.) TPI argues generally that the two proposals are unnecessarily complex and violate both economic and SAC principles. (Id. at III-A-26.) TPI argues further that the ATC methodology employed by the Board already provides the incumbent carrier with sufficient revenue to operate residual lines used by the SARR for leapfrog traffic. (Id.) With respect to CSXT's first proposal, TPI contends that it is not a revenue allocation method, but rather an attempt to increase the costs of the SARR by effectively requiring it to build and operate leapfrog segments. (Id. at III-A-27.) TPI contends that this proposal contemplates "that the SARR will receive whatever revenues are left after subtracting the replacement cost for the internal cross-over segments from the already allocated ATC revenues." (Id.) TPI argues that CSXT's proposal would reject the Board's ATC methodology, which determines how the incumbent carrier would allocate costs to different segments of the network based on the incumbent's costs. (Id.) TPI argues that CSXT's proposal instead would "base revenue divisions on internal cross-over movements solely on the estimated SARR costs." (Id.)

In response to CSXT's second proposal, TPI argues that the proposal is flawed and should be rejected. (TPI Rebuttal III-A-28.) TPI argues that despite CSXT's representations, the second proposed allocation method has "nothing to do with a movement's contribution above variable costs." (Id.) TPI notes that CSXT stated "it would use a movement's contribution above variable costs for the on-SARR portion of the movement." (Id.) TPI argues that CSXT's workpapers did not allocate revenues in this fashion. (Id.) Rather, TPI argues, CSXT "simply provided the lesser of the Alternative ATC division or the URCS variable costs for the entire movement for those movements that included internal cross-over movements." (Id.) TPI contends that CSXT's application of this second proposal is an Efficient Component Pricing (ECP) proposal similar to what the Board rejected in Nevada Power, 10 I.C.C.2d at 266 and Major Issues, EP 657 (Sub-No. 1), slip op at 29. (TPI Rebuttal III-A-29.)

The Board will reject CSXT's proposed revisions to ATC and will use its established methodology to allocate revenue for leapfrog traffic. Where, as here, a complainant has used the Board's established ATC allocation precedent, defendants carry the burden to justify a departure from that methodology. See Ariz. Elec., NOR 42113, slip op. at 33. In the present case, the Board is not convinced by CSXT's argument that a revised methodology is necessary to account for revenues generated by leapfrog traffic given that CSXT does not explain why the Board's current methodology does not adequately allocate leapfrog traffic revenue.

Furthermore, while CSXT's first proposal provides the broad strokes of a revised ATC revenue allocation plan, CSXT fails to provide workpapers that implement the proposal. CSXT admits that "without additional guidance from the Board, [it] has not undertaken these additional steps." (CSXT Reply III-A-39.) The Board has previously addressed a party's failure to provide supporting evidence. In Arizona Electric, NOR 42113, slip op. at 15, the defendants argued that the Board should conduct a cross-subsidy analysis to ensure that a rate reduction would not result in an impermissible cross subsidy. The Board noted, however, that the defendants failed to perform the necessary analysis themselves. Id. at 15-16. As a result, the Board rejected the defendants' unsupported argument. Id. at 16. Here, the Board is in a similar position. CSXT has presented the broad outline of a revised methodology but has not performed the necessary

analysis to demonstrate the results of the proposed alternative. The Board will not address the merits of an incomplete proposal that lacks supporting evidence. Although CSXT claims it seeks additional guidance from the Board regarding the first proposal, it does not specify what guidance it seeks. For these reasons, the Board will not accept CSXT's first proposal.

Nor will the Board accept CSXT's second proposal. According to CSXT, that proposal would use a "movement's available contribution above variable costs for the on-SARR portion, in combination with an ATC-based revenue allocation for the leapfrog segments(s) as a surrogate for [the] full economic cost of [the] leapfrog segment. Under this approach, the SARR revenue allocation would be the lower of the incumbent's URCS variable cost or the Alternative ATC allocation (if revenues are below URCS variable costs) for the on-SARR segments only." (CSXT Reply III-A-39, July 21, 2014.) However, CSXT's narrative description contradicts itself: the contribution above variable costs is not the same as the lower of the SARR's URCS variable cost or the Alternative ATC allocation. Therefore, it is unclear what CSXT intends to propose here, and the Board cannot assess a proposal that is not clearly described in the narrative. Moreover, the Board concludes that this second proposal is substantially similar to the ECP concepts that the Board rejected in Nevada Power, 10 I.C.C.2d at 265-67, Major Issues, EP 657 (Sub-No. 1), slip op. at 36-39, and Rate Regulation Reforms, EP 715, slip op. at 34. The ECP proposals rejected in those decisions limited a revenue division to its incremental cost. Similarly, here, CSXT proposes an approach that would limit the revenue allocation for certain routes based on variable costs (although, as discussed above, the details of CSXT's proposal are unclear). However, CSXT has given us no reason to reassess the Board's repeated rejection of ECP, which has been found to be inconsistent with the nature and purpose of the SAC constraint. See Rate Regulation Reforms, EP 715, slip op. at 34.

Thus, the evidence of record in this case does not support a conclusion that the Board's current ATC methodology fails to accurately allocate revenue to the incumbent railroad for leapfrog movements. As noted, CSXT proposes a departure from established agency precedent. To carry its burden, CSXT would have needed to support this proposal with evidence proving its claim that the current ATC model has a deficiency in allocating revenues for leapfrog segments, and how the proposed alternative methodology would address any such deficiency. For the reasons stated above, the Board is not persuaded by CSXT's arguments in support of its two proposed alternative revenue allocation methodologies. As a result, the Board will apply its current ATC methodology to allocate revenues generated by TPIRR's leapfrog traffic.

D. DCF ANALYSIS AND MMM

A DCF analysis is used to distribute the total capital costs (in current year dollars) of TPIRR over the SAC analysis period (10 years). Operating expenses are calculated for a base year and forecasted into other years by indexing for inflation and forecasted changes in tonnage. TPIRR's total revenue requirements (capital and operating expenses) are then compared against the stream of revenues CSXT is expected to earn from the revised traffic group, discounted to the starting year (2010). Operating expenses are discussed in Appendix A.

To adjust the base-year operating expenses for inflation over the analysis period, the parties use projections of the Rail Cost Adjustment Factor (RCAF), which is an index of railroad

costs that the Board publishes quarterly. There are two versions of the RCAF that are relevant to SAC proceedings: one that does not take into account changes in the rail industry's productivity (the unadjusted RCAF, or RCAF-U); and one that does (the adjusted RCAF, or RCAF-A). See 49 U.S.C. § 10708 (requiring quarterly publication by the Board of both versions). In Major Issues, EP 657 (Sub-No. 1), slip op. at 40-42, the Board decided to phase in the productivity gains projected in RCAF-A incrementally over the analysis period. That approach is applied here.

However, this is not the end of the analysis, as the Maximum Markup Methodology (MMM) must be applied to the excess revenues to determine the relief, if any, that the complainant receives. The Board employs the MMM analysis to determine how much differential pricing the railroad must be permitted in order to recover its total SAC costs and thereby earn a reasonable return on its capital investments. Major Issues, EP 657 (Sub-No. 1), slip op. at 14-15. The MMM begins with the actual distribution of R/VC ratios in the traffic group, which reflects the ability (or inability) of the railroad to recover its costs from this traffic due to the presence of competitive alternatives and real market forces. Id. The MMM rank-orders these R/VC ratios and then, starting with the highest R/VC ratio, reduces the maximum R/VC ratio to the R/VC ratio of the next highest shipper, and repeats this process until it reaches the point at which the stand-alone railroad covers its costs and earns an adequate return on the capital investments required to serve the traffic group.

The parties dispute aspects of the DCF analysis and MMM. The Board's resolution of these disputes is set forth in Appendix D, which demonstrates that TPI has not shown the challenged rates to be unreasonable.[27]

It is ordered:

1. TPI's November 25, 2015 motion to strike, or, in the alternative, for leave to file a reply, is denied as discussed above.

2. The rates CSXT charges for the issue traffic have not been shown to be unreasonable.

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

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

---

[27] As shown in Appendix D, the present value of the revenue stream is less than the SARR's revenue requirements and the Board can conclude without further analysis that TPI has not shown the challenged rates to be unreasonable. Therefore, the issue raised by TPI regarding the Board's internal cross subsidy test is moot because the test is only applied when, among other things, the SARR has positive revenues. (See TPI Rebuttal III-H-34 to III-H-38.) The netting issue and the index for MMM URCS costs issue are moot for the same reason. (See TPI Compliance & Suppl. Evid. III-G-6 to III-G-8, Oct. 7, 2015; CSXT Reply III-H-18 to III-H-21, July 14, 2014.)

Vice Chairman Miller commented with a separate expression and Commissioner Begeman dissented in part with a separate expression.

VICE CHAIRMAN MILLER, commenting:

Although I support this decision, I have significant concerns with the SAC methodology, as I have noted on multiple occasions. My concerns are both practical and substantive. At this point, I will not bother to rehash my views regarding the test's practicality. I think the time and expense that it took for the parties to litigate this case and for the Board to process it speak volumes.

From a substantive perspective, my concern is that the test requires a shipper to construct a "new" hypothetical railroad, whereas the existing railroad contains a mix of new and old assets. This case deepens my concern. A review of the Road Property Investment (RPI) costs here makes my point. In this case, the difference between the shipper's evidence and the railroad's evidence on RPI costs differed by approximately $10 billion. In other words, keeping all other calls the same (including on Traffic Group and Revenues, Operating Expenses, Configuration, etc.), RPI costs alone have the potential to substantially sway rate cases, as they did here.

That is not to suggest that more RPI costs should have been decided in TPI's favor; I support all of the RPI calls. My point is that the outcome of a rate case depends heavily on RPI costs, but shippers seem to be at a disadvantage because the SARR is newly constructed, whereas the incumbent has assets of varying vintages. A real life example of this disparity is shown by Berkshire Hathaway's purchase of BNSF. While BNSF's replacement costs have been estimated at $80 billion, the transaction demonstrated that the market value (including assumed debt) was $44 billion.

Given my concern, this is an area I would like to have considered when the Board reviews its SAC processes.[i] The fact that the foundational approach to the SAC test was laid out in a decision entitled Coal Rate Guidelines over 30 years ago is a clear indication that it is time to take a fresh look at the economic principles that should be applied to railroad rate regulation and the mechanics of applying those principles. The economics of railroading were very different in 1985 when Coal Rate Guidelines was issued than they are today. In addition, the focus of Coal Rate Guidelines was obviously coal shipping, which generally involves unit train shipments, and not the more complicated logistics of carload shipping that is common for the most recent cases brought before the Board. All of this raises the need to fully review Coal Rate Guidelines.

---

[i] As a side note, in future rate case decisions, I would like to see the Board develop explanations and tables that put the significance of the various calls made by the Board into context, so that our stakeholders could have greater insight as to where a case is won and lost.

When the Board finally releases the long-delayed report on SAC alternatives that it has trumpeted for some time now, it can provide the opportunity for the Board to begin a serious consideration of alternatives to SAC. The first step should be allowing our stakeholders to provide their feedback to the report's conclusions, as well as offer their own thoughts and ideas on alternatives. It is my hope that that this can be the beginning of a deep and thoughtful discussion of SAC.

COMMISSIONER BEGEMAN, dissenting in part:

I have already expressed my opposition to the Board's market dominance approach in this case, which was bifurcated at the request of CSXT before I began my service as a Board Member, so I will not address that matter again in great detail. But I will reiterate that the Board needs to conduct a notice and comment rulemaking to determine how market dominance can best be determined going forward. I first made that point in 2013[ii], and the need for a rulemaking remains just as important now, regardless of the Board's pressing workload, given the key role market dominance plays in establishing Board jurisdiction.

While TPI filed one of the first carload traffic rate cases to be considered under the Stand Alone Cost (SAC) rate methodology, two other parties have since filed carload rate cases, lost their cases, sought reconsideration, and lost on reconsideration. In those decisions, I expressed my doubts about the SAC process, and my particular concern over whether carload traffic rates can even be judged under SAC (see Sunbelt dissent[iii] and DuPont reconsideration dissent[iv]). I cannot argue against today's finding that "TPI has not shown the challenged rates to be unreasonable under the SAC test." It remains to be seen, however, if any carload traffic shipper could make such a showing using the SAC methodology.

Although I will not oppose the ultimate finding here despite my strong reservations about SAC, and my disagreement on the market dominance approach used in this case, I cannot agree with all of the calls made in this portion of the case. For example, I strongly disagree with the majority's eleventh hour course change with respect to the so-called "high priority leapfrog traffic." The Board should have determined the issue on the merits rather than opt to avoid doing so by citing problems that existed before the supplemental order was issued. I am embarrassed,

---

[ii] Total Petrochems. & Refining USA, Inc. v. CSX Transp., Inc., NOR 42121, slip op. at 29 (STB served May 31, 2013) (finding that CSXT lacks market dominance over certain rates challenged by TPI) reconsideration denied (STB served Dec. 19, 2013) (Board Member Begeman dissenting in both); see also E.I. DuPont de Nemours & Co. v. Norfolk S. Ry., NOR 42125, slip op. at 38 (STB served Mar. 24, 2014), corrected and updated, (STB served Oct. 3, 2014) (Board Member Begeman separate expression).

[iii] Sunbelt Chlor Alkali Partnership v. Norfolk S. Ry., NOR 42130, slip op. 32 (STB served June 20, 2014).

[iv] E.I. DuPont de Nemours & Co. v. Norfolk S. Ry., NOR 42125, reconsideration denied, (STB served Dec. 23, 2015) (Board Member Begeman dissenting).

frankly, that we would direct TPI to go to the great effort and expense of submitting supplemental evidence both with and without that contested traffic "in order to allow the Board to resolve the high-priority traffic group issue," and then *choose to not resolve it*.

This case was filed in May 2010 and is but one example of how long the SAC rate case process can take. Therefore, it wasn't a surprise that Congress directed the Board to take actions to help expedite the SAC process in the STB Reauthorization Act of 2015. Some progress is being made. We have issued new rules to shorten rate review timelines in future SAC cases. We are also reviewing public comments that we sought at Congress's direction to assess whether procedures to expedite litigation in courts could help expedite SAC cases, in addition to other ideas to improve the SAC process.

But we need to do more than improve the Board's handling of SAC cases. Vice Chairman Miller and I are in agreement that the Board must focus its attention on finding SAC *alternatives*. Despite some economists' views that it is the "gold standard," I have yet to hear from even one rail shipper who believes the SAC methodology is a reasonable way to judge rail rates. After all, the SAC process is too costly, too time consuming, and too unpredictable.

We need to ensure that the Board's rate complaint procedures are accessible to *all* captive shippers of *all* types of commodities—whether large or small and whether shipped by unit train or carload. It may not be easy (or very fast) to ultimately develop a new approach, but it has to be a top Board priority. We finally are seeking comment on procedures that could create a new rate reasonableness methodology for use in very small disputes. We should next seek public comment on ideas for SAC alternatives, and I agree with Vice Chairman Miller that we should do so as soon as the report the Chairman commissioned in 2014 to examine alternatives for rate regulation is made public. Doing so would enable us to best fulfill the Reauthorization Act's mandate to study and report to Congress on whether there are viable alternatives to SAC. Stakeholder input is needed in this effort.

APPENDIX A – OPERATING EXPENSES

This appendix addresses the annual operating expenses that would be incurred by TPIRR, the SARR in this proceeding. The manner in which a railroad operates, and the amount of traffic it handles, are major determinants of the expenses a railroad incurs in its day-to-day operations. As discussed in the body of this decision, we use the complainant's proposed Scenario 3 operating plan from TPI's supplemental evidence for TPIRR. TPI used data provided by CSXT to produce its train information that was then input into the RTC model. CSXT used MultiRail to produce its train information, which CSXT states[28] was then input into the RTC model. Both MultiRail and the RTC model provide service units and other outputs for calculating operating expenses and road property investments. Because we have accepted TPI's operating plan, the outputs developed from its model are used to determine the level of resources TPIRR would need for a given level of traffic, except as specifically discussed and indicated below. Items affecting operating expenses that are not an output from the RTC model, such as unit costs for resources and staffing requirements, are also discussed below.

[28] Whether CSXT ran all of its MultiRail trains through its RTC model is a contested issue. Because the Board has accepted TPI's operating plan as feasible and supported, we need not resolve this issue.

TABLE A-1

TPIRR Operating Costs ($)			
Item	TPI	CSXT	STB
Locomotive Lease	99,793,264	117,341,312	101,615,226
Locomotive Maintenance	139,876,874	188,660,194	143,455,035
Locomotive Operations	874,009,796	857,595,534	884,331,081
Railcar Lease	229,802,134	343,512,942	264,190,241
Materials & Supply Operating	5,088,617	6,724,706	5,256,587
Train and Engine Personnel	403,657,413	457,157,585	425,092,608
Operating Managers	97,663,783	145,038,216	108,238,212
General & Administrative	99,581,799	166,427,629	139,483,561
Loss & Damage	8,556,354	8,188,000	8,556,354
Ad Valorem Tax	41,625,813	61,475,800	41,625,813
Maintenance-of-Way	213,006,195	404,285,637	287,267,868
Trackage Rights	27,691,157	28,226,120	27,765,792
Intermodal Lift and Ramp	65,169,114	104,140,197	74,892,575
Insurance	32,866,185	41,396,262	35,817,084
Startup and Training	82,185,996	105,316,734	92,120,889
Motor Vehicles	22,316,047	22,594,893	22,517,188
BULK Transfer	18,835,692	18,835,692	18,835,692
Total	2,461,726,232	3,076,917,454	2,681,061,807

A. LOCOMOTIVES

1. Locomotive Requirements

The parties agree on the types of locomotives to be used by TPIRR, which they also agree TPIRR will lease. TPIRR will use ES44AC (ES44) locomotives for road and helper service and SD40 locomotives for local train, yard hump service, and yard switching service. (TPI Rebuttal III-D-3.)

The parties' disagreement over other locomotive requirements is primarily due to their disagreements over the operating plan, system configuration, and RTC model. Because we are accepting TPI's operating plan, system configuration,[29] and RTC model, we will also accept TPI's projected locomotive requirements with minor adjustments, as detailed below.

[29] As discussed in the body of this decision, we accept TPI's operating plan and system configuration with minor modifications.

a. Peaking Factor and Spare Margin

Locomotive requirements are impacted by both a "peaking factor" and a "spare margin." To ensure that TPIRR will have sufficient locomotives to handle the peak demands of its traffic group, we require the parties to estimate a peaking factor. The need for a peaking factor to assure that a SARR would have sufficient locomotives to handle its peak year's peak demands was established in Texas Municipal Power Agency v. Burlington Northern & Santa Fe Railway, 6 S.T.B. 573, 660-61 (2003), and clarified in Public Service Co. of Colorado v. Burlington Northern & Santa Fe Railway (Public Service 2005), NOR 42057, slip op. at 13 (STB served Jan. 19, 2005). In recent SAC cases, the peaking factor has been calculated by forecasting the average number of train starts during the peak week of the peak year for traffic volume. This number is divided by the average number of weekly train starts during the forecasted peak year to yield the peaking factor. See Ariz. Elec. Power Coop. v. BNSF Ry., NOR 42113, slip op. at 32 (STB served Nov. 22, 2011), pet. for review denied sub nom. Ariz. Elec. Power Coop. v. STB, 748 F.3d 1295 (D.C. Cir. 2014).

In this case, TPI, in its supplemental evidence, adjusted its peaking factor calculation based on the addition of local trains and historic "Y" trains in its amended train list. (TPI Compliance & Suppl. Evid. I-7.) TPI's workpapers show that it calculated the peaking factor using the methodology described above. (TPI Compliance & Suppl. WP "Peaking Factor_Supplemental.xlsx," Tab "Sheet 1," Cell "H24.") The additional trains reduce the locomotive peaking factor from 5.3% to 3.1% because the additional trains per day in the peak week are less than the additional trains per day in the peak year. (TPI Compliance & Suppl. Evid. III-C-35.) Given the changes necessitated by the submission of supplemental evidence, the Board agrees that TPI's recalculation of the peaking factor based on the additional volume is appropriate.

In its supplemental reply, CSXT asserts that TPI miscalculated the peaking factor leading to an understatement of operating expenses because of two erroneous conclusions by TPI: (1) the number of industry yard trains moving in the peak week is below average; and (2) a below-average number of industry yard trains would impact the road engine peaking factor. (CSXT Reply 32-33, Nov. 20, 2015.) This argument is unpersuasive because the peaking factor is based on a system-wide average that considers all train types. The peak week may vary between train types and across the system and where the same locomotives can be used for different services, those locomotives can be moved around the system; therefore, an argument based solely on yard trains is too narrow to show that the overall system peaking factor is incorrect. Further, CSXT's methodology for calculating a different peaking factor for each type of locomotive unnecessarily complicates the SAC analysis. If time and complexity were no issue, the SAC analysis would attempt to replicate the operations of a real-world railroad exactly, without modeling. In practice, however, it is clear that the burdens of such an enterprise would make the analysis unnecessarily complicated. Accordingly, the Board must incorporate appropriate simplifying assumptions to ensure that the SAC process is manageable. "The pursuit of precision in rate proceedings, as in most things in life, must at some point give way to the constraints of time and expense, and it is the agency's responsibility to mark that point." BNSF Ry. v. STB (BNSF Ry. 2006), 453 F.3d 473, 482 (D.C. Cir. 2006); see also Sunbelt Chlor Alkali P'ship v. Norfolk S. Ry. (Sunbelt 2014), NOR 42130, slip op. at 11, 13 (STB served June 20,

2014), petition for reconsideration granted in part and denied in part (Sunbelt 2016) (STB served June 30, 2016) (with Commissioner Begeman dissenting in both), appeal docketed sub nom. Sunbelt Chlor Alkali P'ship v. STB, No. 16-15701 (11th Cir. Aug. 26, 2016). Requiring parties to perform a calculation of the complexity that would be necessary to carry out CSXT's proposal appropriately would go beyond that point, and therefore, CSXT's proposal will be denied.

While we conclude that the locomotive peaking factor methodology included in TPI's supplemental evidence is feasible and supported, CXST has correctly identified a number of trains that TPI included in its calculations even though those trains do not run on TPIRR, and the Board has identified several more. (CSXT Reply 29, Nov. 20, 2015; STB WP "Y trn 1 on with miles_StatisticsSTB.xlsx.") In addition, the Board could not verify TPI's calculations because TPI hard coded, without explanation, certain inputs in its calculation of the peaking factor that were not supported elsewhere in its evidence. (TPI Reply WP "Y trn 1 on with miles_Statistics v2.xlsx," Tab "Home Station Stats," Nov. 20, 2015; STB WP "Y trn 1 on with miles PEAK GROWTHstb.xlsx," Tab "Peak Train Compilation," Cell "C5.") As a result of these modifications, the Board uses TPI's proposed methodology to recalculate a locomotive peaking factor of 4.3% for TPIRR.

Because individual locomotives cannot be guaranteed to be available at all times, spare locomotives are necessary. The parties disagree on one element of the calculation of the locomotive spare margin factor due to CSXT's objection to TPI's inclusion in its calculation of certain trains that CSXT categorized as "unknown CSXT on-line days." (CSXT Reply III-D-17 to III-D-18, July 21, 2014.) Specifically, CSXT argues that to determine the spare margin, TPI uses a measure of total days on-line that includes a subset of locomotives that may include units that were not actually available for service. (Id. at III-D-18.) CSXT removes that subset of locomotives, which increases the spare margin. (Id.) In its rebuttal, TPI argues that it properly included the data CSXT removed from the spare margin calculation. (TPI Rebuttal III-D-10.) As support, TPI states that the time locomotives are unavailable is "obviously" separately tracked and accounted for by CSXT. (Id.) As TPI also notes, the data that TPI used as the basis in the denominator for its calculations was provided by CSXT in the "on-line" time category. (Id.) The Board finds that CSXT's arguments for excluding the subset of locomotives at issue are unconvincing because TPI's calculations are supported by CSXT's own data and CSXT has not shown that TPI's assumption that the locomotives are available online is either infeasible or unsupported. We therefore accept TPI's spare margin for both ES44AC and SD40 locomotives.

b. Number of Locomotives

Due primarily to disagreements over the operating plan, the parties disagree on the required number of locomotives. As noted above, because we have accepted TPI's operating plan and RTC model, we will accept TPI's number of locomotives; however, as discussed above, we have adjusted the total number based on our recalculation of TPI's rebuttal locomotive peaking factor, and we have made other minor adjustments discussed in the body of this decision. Several other major issues relating to TPIRR's number of locomotives are discussed below.

TABLE A-2

Total TPIRR Locomotive Requirements			
Item	TPI	CSXT	STB
ES44AC	837	918	847
SD40-2	244	530	244
SW 1500	201	0	222
Total	1282	1448	1313

c. Repositioning Locomotives

The parties agree on the factor for repositioning locomotives. (CSXT Reply III-D-11 to III-D-14, July 21, 2014; TPI Rebuttal III-D-7 to III-D-8.) We accept the parties' agreement on this issue.

d. Locomotive Dwell

On opening, TPI included three hours of locomotive dwell time for yard activities (other than time spent on receiving and departure (R&D) tracks). (TPI Opening WP "TPIRR Base Year Manifest Train List_Statistics.xlsx," Tab "Combined Manifest Train List," Column BK.) CSXT claims that TPI did not support its opening proposal for three hours of locomotive dwell time for locomotives on non-unit trains and argues that nine hours of locomotive dwell time is necessary. (CSXT Reply III-D-8 to III-D-11, July 21, 2014.) CSXT claims that TPIRR, as a railroad that would carry primarily carload traffic, must account for the time locomotives would dwell in yards, and that the time that TPI included does not adequately account for all activities that must take place while a locomotive dwells in a yard. (Id. at III-D-8 to III-D-10.)

On rebuttal, TPI argues that CSXT's proposal of nine hours of dwell duplicates the time for repositioning locomotives, which CSXT accounted for in a separate expense for that specific activity. (TPI Rebuttal III-D-5 to III-D-6.) TPI also argues that real-world CSXT locomotive dwell time data shows that the dwell time CSXT proposes here is excessive. (Id. at III-D-6 to III-D-7.)

We conclude that TPI has adequately accounted for the total time a locomotive spends within a yard. This conclusion is based on the time TPI assumes locomotives spend on R&D tracks as well as time locomotives spend in other parts of the yard. In its supplemental and compliance evidence, TPI provides five hours of dwell time on both receiving and departing track (see TPI Errata "TPI Scenario 3 REPORT_Supplemental_v2_Op Stats.xlsx," Tab "Pivot-MPH," Nov. 20, 2015 (showing TPI included the receiving and departure dwell time in its locomotive unit hours (LUH) calculations)), as well as the three hours it proposed on opening for time spent in other parts of the yard. Thus, TPI provides for a total locomotive time in yard of 13 hours. In contrast, CSXT does not assume locomotives will dwell with trains on R&D tracks, (see CSXT Reply WP "TPIRR Reply RTC Results.xlsx," Tab "Lookups," July 21, 2014 (showing CSXT did not include the receiving and departure dwell time in its LUH calculations)), only providing a total of nine hours for time spent in other parts of the yard. As a result, CSXT has failed to demonstrate that the in-yard time TPI allocates for locomotives is unreasonably low, and we will accept TPI's feasible and supported calculations.

e. Number of Locomotives on Intermodal Trains

The parties agree on the number of locomotives on expedited intermodal trains. (CSXT Reply III-D-14 to III-D-15, July 21, 2014; TPI Rebuttal III-D-8.) We will accept the parties' agreement on this issue.

f. Locomotives Required to Power Local Trains

The parties disagree on the total number of locomotives TPIRR would require to power local trains. Their initial disagreements are primarily related to arguments about missing trains, an issue largely resolved in the Board's discussion of TPI's supplemental operating plan. (TPI Opening III-D-3; CSXT Reply III-D-14, July 21, 2014; TPI Rebuttal III-D-8 to III-D-9.) However, they also disagree on the calculations and methodologies for local train power requirements. (TPI Reply 62-63, Nov. 20, 2014; CSXT Reply 34, Nov. 20, 2014.) TPI argues that CSXT's changes to the locomotive requirements included in TPI's supplemental and compliance evidence are unsupported and incorrect. (TPI Reply 62-63, Nov. 20, 2014.) In particular, CSXT notes that TPI's RTC model indicates that TPIRR would require an average of 1.07 locomotives per train, but that TPI used only one unit when calculating the SARR's operating statistics. (CSXT Reply 34, Nov. 20, 2014.) As discussed in the body of the decision, locomotive unit miles and other operating statistics for local trains (or industrial "Y" trains) are calculated based on RTC model outputs. Because we are adopting TPI's operating plan, configuration, and RTC model, we will also use TPI's locomotive requirements for local trains. However, we will use TPI's RTC model's output of an average 1.07 locomotives per train and adjust the total locomotive requirements accordingly because we agree that TPI incorrectly rounded down when calculating the SARR's operating statistics.

g. Locomotives Required for Yard Switching Assignments

The parties disagree on the number of locomotives TPIRR would require for use in hump yards. CSXT argues that TPI failed to provide a sufficient number of yard engines to perform the necessary switching. (CSXT Reply III-D-17, July 21, 2014.) TPI claims that CSXT's calculation is an overstatement because CSXT did not adjust for volume differences between real-world CSXT operations and TPIRR operations, and because CSXT double-counts the number of locomotives required for hump yard jobs in its calculation of TPIRR's locomotive requirements. (TPI Rebuttal III-D-9 to III-D-10; STB WP "TPIRR Yard Operations_Rebuttal_Supplementalstb.xlsx," Tab "sheet 1," Cells AD7-AD17.) The Board agrees with TPI that CSXT's criticisms overstate the number of locomotives required because CSXT did not exclude the additional locomotives required in hump yards from its calculation for non-hump yards. We find that CSXT has failed to show that TPI's locomotive count for hump yards is infeasible or unsupported. The Board will accept TPI's locomotive requirements for yard switching assignments.

h. Locomotives Required for Distributed Power Trains

The parties agree on requirements for distributed power trains on TPIRR that will be interchanging with another carrier. They agree that TPIRR will not use distributed power for trains to be interchanged with the residual incumbent. (TPI Rebuttal III-C-152.) They also agree on the interchange time required for distributed power trains to be interchanged with railroads other than CSXT. (Id. at III-C-147, III-C-152.) We will accept the parties' agreement on these issues.

2. Locomotive Lease Costs

a. ES44AC Lease Costs

The parties disagree on lease costs for ES44AC locomotives. In its opening, TPI explains that it developed the 2010 lease cost of $97,881 for ES44AC locomotives from the Board's decision and the railroad's reply statement in Arizona Electric, Docket No. NOR 42113, which TPI states is also supported by the public version of UP's Reply evidence in Intermountain Power Agency v. Union Pacific Railroad, Docket No. NOR 42127. (TPI Opening III-D-3.)[30] On reply, CSXT argues that TPI's locomotive lease costs are understated and should be rejected for several reasons. (CSXT Reply III-D-19, July 21, 2014.) First, CSXT argues that the Board should not permit TPI to rely on lease costs from Arizona Electric because the railroad in that case did not contest the shipper's proposed lease costs, and neither party here can evaluate those lease terms to test or validate them. (Id. at III-D-19 to III-D-20.) Second, CSXT argues that TPI's lease costs do not account for CSXT's actual 2011 locomotive acquisition costs for ES44AC units. (Id. at III-D-20 to III-D-21.) CSXT further argues that Board decisions finding that the railroads failed to provide evidence of accurate lease rates are inapposite because here, CSXT states, it could not produce such information because CXST has not in fact leased any ES44AC units. (Id. at III-D-21.)

On rebuttal, TPI states that because CSXT did not provide lease information related to the acquisition of high-powered road locomotives in discovery, TPI developed costs from publicly available information. (TPI Rebuttal III-D-11.) TPI argues that CSXT's reply adjustments should be rejected because a review of the average acquisition costs for the 2011-13 period demonstrates that CSXT has "cherry picked" the acquisition price of similar units for 2011, which are not an accurate representation of the 2010 marketplace. (Id. at III-D-12.)

The Board finds that TPI's ES44AC lease costs are feasible and supported. It is reasonable for TPI to rely on Board precedent with regard to ES44AC lease costs, particularly in

[30] See also Ariz. Elec., NOR 42113, slip op. at 40-41 and BNSF Ry. Reply III-D-3, Ariz. Elec., Docket No. 42113.

the absence of evidence relating to locomotive lease costs provided by CSXT in discovery.[31] Although CSXT's reply provides additional purchase information not submitted by the railroad in Arizona Electric, CSXT's selective use of 2011 data calls its analysis into question. While CSXT may have had higher acquisition costs than UP in 2011, its own workpapers show that UP's acquisition costs increased in 2012 and 2013, when CSXT had no corresponding purchases. Therefore, the Board accepts TPI's ES44AC lease costs.

b. SD40 Lease Costs

The parties agree on SD40 locomotive lease costs, which are based on actual lease costs provided by CSXT in discovery. (TPI Opening III-D-4; CSXT Reply III-D 23, July 21, 2014; TPI Rebuttal III-D-13.) We accept the parties' agreement on this issue.

3. Locomotive Maintenance

The parties disagree on whether certain items must be included in locomotive maintenance costs. TPI develops its locomotive maintenance costs from a CSXT maintenance agreement that CSXT provided in discovery. However, because the agreement does not specify SD40-2 locomotive costs, TPI uses costs for similar units. (TPI Opening III-D-5.) In its reply, CSXT disagrees with TPI's opening locomotive maintenance costs, asserting that TPI failed to include five cost items that can be found in the servicing agreement provided in discovery. (CSXT Reply III-D-24 to III-D-26, July 21, 2014.) TPI accepts three of these cost items: the addition of a per-day maintenance fee for ES44 locomotives equipped for distributed power, (id. at III-D-25; TPI Rebuttal III-D-13); the addition of a per-day accident repair cost for repairs that are billed back to CSXT (CSXT Reply III-D-25, July 21, 2014; TPI Rebuttal III-D-14); and the addition of a per-day Event Data Recorder Automated Download charge for the communications management unit of ES44 locomotives (CSXT Reply WP "Locomotive Maintenance.xls," Tab "Unit_Cost," Cells A9 to D9, July 21, 2014; TPI Rebuttal III-D-14). But TPI rejects the remaining two additions proposed by CSXT: a per-day management fee for ES44 and SD40 locomotives (CSXT Reply III-D-24 to III-D-25, July 21, 2014; TPI Rebuttal III-D-14) and additional costs associated with upgrading the ES44 locomotives acquired by TPIRR in 2010 from Tier 2 to Tier 3 emissions compliance (CSXT Reply III-D-25, July 21, 2014; TPI Rebuttal III-D-14 to III-D-15).

The Board rejects the additional locomotive management fee. As TPI notes, CSXT's fleet includes numerous locomotive types, whereas TPI's fleet includes only two types of locomotives, which do not change during the 10-year analysis period, thus obviating the need for

[31] This conclusion is consistent with the Board's decisions in E.I. DuPont de Nemours & Co. v. Norfolk S. Ry., NOR 42125, slip op. at 72-73 (STB served Mar. 24, 2014), corrected and updated, (STB served Oct. 3, 2014), reconsideration denied, (STB served Dec. 23, 2015) (with Vice Chairman Begeman dissenting on the reconsideration decision), and Sunbelt 2014, NOR 42130, slip op. at 35, where the Board accepted locomotive lease costs based on prior cases.

the sort of management fee that CSXT includes. (TPI Rebuttal III-D-13 to III-D-14.) The Board finds that CSXT has failed to adequately support its claim that the management fee is necessary.

The Board also rejects CSXT's added cost for an upgrade from Tier 2 to Tier 3 emissions compliance for TPIRR's ES44 locomotives. CSXT argues that the real-world CSXT incurs the costs for such overhauls, and thus calculates a normalized cost for performing overhauls, discounts it to the base year, and includes the result as an expense. (CSXT Reply III-D-25 to III-D-26, July 21, 2014.) TPI argues that CSXT bases its calculation on its cost of upgrading from Tier 0 to Tier 2 compliance but that CSXT fails to show that the cost of upgrading from Tier 2 to Tier 3 compliance would be similar. TPI maintains that the difference between the two upgrades is indeed significant, and that CSXT's added cost is not supported. (TPI Rebuttal III-D-14.) The Board agrees that CSXT has failed to adequately support its claim that the overhaul fee should be included because it neither provided evidence that the upgrade is required by law, nor explained how the cost of upgrading from Tier 0 to Tier 2 emissions compliance is an adequate proxy for the costs of upgrading from Tier 2 to Tier 3 emissions compliance. The Board accepts TPI's rebuttal evidence on locomotive maintenance costs as feasible and supported.

4. Locomotive Servicing

a. Fuel Cost

On opening, TPI proposes to use CSXT's 3Q 2010 fuel price and then index that cost to determine fuel costs for future quarters. (TPI Opening III-D-6, III-G-9 to III-G-10.) CSXT agrees to the fuel cost for 3Q 2010, but proposes to use additional real-world data for 4Q 2010 through 4Q 2013. (CSXT Reply III-D-26 to III-D-27, July 21, 2014.) CSXT would then index the 4Q 2013 fuel cost to determine costs for future quarters. (Id. at III-D-27 to III-D-28.) CSXT then makes adjustments in the DCF model to implement this approach. (Id. at III-D-26 to III-D-28.) As discussed in DCF appendix of this decision, the Board accepts TPI's approach to calculating fuel costs.

b. Fuel Consumption and Other Locomotive Servicing

The parties agree on fuel consumption and other locomotive servicing costs, with one exception. CSXT argues that TPI failed to provide sufficient facilities for inspecting, fueling, and servicing locomotives. (Id. at III-D-29.) TPI asserts that it included all necessary locomotive fueling facilities for TPIRR's system. (TPI Rebuttal III-D-16.) As discussed in the body of this decision and in the road property investment appendix, the Board accepts eight of CSXT's 12 proposed additional servicing facilities.

B. RAILCARS

1. Railcar Requirements and Lease Expenses

Although the parties generally agree about the methodological approach for estimating TPIRR's freight car requirements and costs, there are several areas where the parties disagree.

a. Railcar Peaking Rates

The parties disagree on whether there is a need for a railcar peaking factor rate, separate and distinct from the peaking factor for locomotives that has been used in past rate cases. On opening, TPI provides only a peaking factor of 5.3% for locomotives. (TPI Opening III-D-4.)

On reply, CSXT contends that TPI's peaking factor does not accurately reflect the fluctuating need for specific freight cars. (CSXT Reply III-D-45, July 21, 2014.) In order to accommodate varying demand, CSXT developed peaking factors for each type of TPIRR freight car. (Id. at III-D-43.) CSXT identified the number of TPIRR carloads by specific car type for each week and determined the "peak week" for each car type that occurred throughout the year, following the approach that TPI used to identify the peak week of TPIRR train movements. (Id. at III-D-44.) CSXT then compared those peak week volumes to the corresponding volumes for the average week for each car type, in order to develop peaking factors that accurately reflect fluctuations in demand for different types of equipment. (Id. at III-D-44.)

On rebuttal, TPI argues that CSXT's peaking factor method requires TPIRR to carry enough railcars by car type to meet a maximum possible demand event for each car type. (TPI Rebuttal III-D-25.) TPI argues that CSXT's method is unreasonable because: (1) it is not consistent with Board precedent, including Public Service 2005[32] (TPI Rebuttal III-D-24 to III-D-27);[33] (2) CSXT's proposed peaking factors, such as the Plain Gondola peaking factor that reaches as high as 146%, are unreasonably high and result in inefficient operations (TPI Rebuttal III-D-27); and (3) CSXT's unreasonably high peaking factors are primarily the result of CSXT's flawed assumption that TPIRR must acquire enough cars by car type to meet 2012 historical demand peaks by car type (id. at III-D-27 to 30). For these reasons, TPI continues to rely on the single locomotive peaking factor it used on opening. (Id. at III-D-30.)

The Board declines to adopt CSXT's proposal to establish a new methodology for calculating railcar peaking factor for carload networks. Although CSXT provides persuasive argument about the differences in car supply requirements between unit train networks and carload networks, proper calculation of such a peaking factor would need to account for differences in distance and time factors, as well as other factors such as seasonality, customer location, and car supply requirements, all of which may also differ between network and car types. If time and complexity were no issue, the SAC analysis would attempt to replicate the operations of a real-world railroad exactly, without modeling. In practice, however, it is clear that the burdens of such an enterprise would make the SAC analysis far too complicated. Accordingly, the Board must incorporate appropriate simplifying assumptions to ensure that the SAC process is manageable. "The pursuit of precision in rate proceedings, as in most things in life, must at some point give way to the constraints of time and expense, and it is the agency's responsibility to mark that point." BNSF Ry. 2006, 453 F.3d at 482; see also Sunbelt 2016,

[32] Pub. Serv. 2005, NOR 42057, slip op. at 13.

[33] TPI also points to Board language in Arizona Electric, NOR 42113, slip op. at 33, DuPont, NOR 42125, slip op. at 71, and Sunbelt 2014, NOR 42130, slip op. at 35.

NOR 42130, slip op. at 11, 13. Requiring parties to perform a calculation of the complexity that would be necessary to carry out CSXT's proposal appropriately would go beyond that point, and therefore, CSXT's proposal will be denied.

b. Calculation of Railcar Per Diem Time and Mileage Rates

The parties disagree about railcar per diem time and mileage rates. On opening, TPI developed its car costs for time and mileage by car type based on CSXT's 2010 R-1. (TPI Opening III-D-7). On reply, CSXT argues that TPI miscalculated the per diem time and mileage rates by incorrectly including in the denominator the miles and hours for all equipment. (CSXT Reply III-D-42 to III-D-43, July 21, 2014.) CSXT corrected this alleged error by analyzing the 2010 car event data produced to TPI in discovery by separating the operating car miles between those incurred by cars owned by CSXT and those generated by foreign cars moving over CSXT. (Id. at III-D-43.) On rebuttal, TPI accepts CSXT's calculation on the split between CSXT-owned and foreign-owned equipment but disagrees with CSXT's calculation of the resulting per diem rates. (TPI Rebuttal III-D-23.) TPI asserts that CSXT makes a formulaic error when calculating the per diem time rates in its "TPIRR Car Cost_CSXT Reply.xlsx" workpaper, and that CSXT's formula incorrectly points to and uses the foreign-owned car percentage for 40-foot boxcars when calculating the per diem times for 50-foot boxcars. (TPI Rebuttal III-D-23.) TPI states that it corrects CSXT's error in calculating the per diem rates. (Id. at III-D-24; see also TPI Rebuttal workpaper "TPIRR Car Costs_CSXT Reply_Formula Corrections.xlsx.") TPI also asserts that CSXT erred by calculating per diem "payable" rates rather than "net" per diem rates for foreign-owned equipment. (TPI Rebuttal III-D-24.) On rebuttal, TPI states that it accepts CSXT's use of only foreign equipment in the denominator of the calculation, but TPI, for the first time, uses the "net" per diem in the numerator rather than CSXT's use of "payable" per diem. (Id. at III-D-24.)

The Board accepts TPI's formulaic corrections to CSXT's reply evidence mileage rate calculation, but rejects TPI's adjustment to the "net" per diem rate. TPI's netting adjustment is improper because TPI incorrectly assumes that TPIRR will incur costs and receive revenue for cars that are offline. Moreover, because TPI used "payable" per diem in the numerator on opening, TPI's proposed netting adjustment constitutes improper rebuttal. (See TPI Opening WP "TPIRR Car Costs_Open.xlsx" using "payable" per diem; TPI Rebuttal WP "TPIRR Car Costs_Rebuttal.xlsx" with TPI's proposed netting adjustment.)

c. Railcar Transit Times

The parties disagree about railcar transit time estimates. On opening, TPI states that transit times are based upon its RTC simulation. (TPI Opening III-D-8.) On reply, CSXT argues that TPI's RTC simulation failed to properly simulate the transit times that trains would experience moving across TPIRR lines. (CSXT Reply III-D-39, July 21, 2014; see also id. at III-C-197 to III-C-203.) On rebuttal, TPI asserts that most of CSXT's claims regarding errors in TPI's RTC simulation are incorrect, and those which have merit have been corrected. (TPI Rebuttal III-D-21.) TPI contends that its TPIRR car requirements on rebuttal rely on the transit times produced by its Rebuttal RTC. (Id. at III-D-21.) Because the Board is accepting TPI's operating plan and RTC, we will likewise accept TPI's railcar transit times.

d. Yard Dwell Times

The parties disagree on dwell times in yards. On opening, TPI states that it includes 15.9 hours per car in yards based on the average dwell time experienced by the most efficient Class I carriers as reported by the AAR and summarized by an Oliver Wyman publication for each quarter from 1Q 2010 through 3Q 2013. (TPI Opening III-D-8; see also e-workpaper "Most Efficient Dwell Times.xlsx.") On reply, CSXT argues that TPI understated dwell times for freight cars at TPIRR yards in two ways: (1) the average yard dwell time for CSXT was 24.3 hours and TPI has not identified any inefficiency in the CSXT operations that would allow TPIRR to achieve a reduction in average yard dwell times from 24.3 hours to 15.9 hours; and (2) TPI understates significantly the number of switching events that a typical car would require in transiting TPIRR's system by assuming that each TPIRR loaded freight car would receive the equivalent of only one intra-train or inter-train switch during each journey across TPIRR's network. CSXT uses the higher average dwell time and increases the number of switching events from one to four. (CSXT Reply III-D-40 to III-D-41.) On rebuttal, TPI argues that CSXT's assumption that each car will experience four yard dwell events in its round trip cycle on TPIRR is unsupported and incorrect for two reasons: (1) CSXT applies four yard dwell events to all traffic but, by definition, unit train traffic does not change trains between origin and destination; and (2) pre-blocked cars received or delivered in interchange from connecting carriers would not incur yard dwell time at interchange. (TPI Rebuttal III-D-22.) On rebuttal, TPI accepts CSXT's assumption of four yard dwell events for local trains on TPIRR's system but applies only two yard dwell events to all interchange-received and interchange-forwarded traffic. (Id.) TPI does not include yard dwell events for unit train traffic. (Id.)

The Board accepts CSXT's proposed dwell times in yards. We are accepting TPI's operating plan, and TPI has stated that its operating plan incorporates CSXT's real-world car blocking plan and its actual car classification and train operations. (See TPI Opening III-C-12 to III-C-13.) TPI must therefore either use CSXT's yard dwell times or convincingly explain why the SARR would experience lower dwell times. Here, TPI's explanation regarding shorter yard dwell times is not persuasive, given that TPI has not adequately demonstrated that a reduction in traffic into TPIRR's yards results in the significant reduction in classification that TPI claims, a claim that is further undercut by the fact that in TPI's own operating plan, trains typically depart around the same times as real-world CSXT trains.

As to the yard dwell events, we accept TPI's proposal to accept CSXT's assumption of four yard-dwell events for local trains but apply only two yard-dwell events to all interchange-received and interchange-forwarded traffic. However, we reject TPI's suggestion that unit trains will experience no yard dwell events because generally a unit train will experience some dwell time when interchanged with the SARR. In its reply, CSXT contends that the number four conservatively assumes that on average, each TPIRR load will traverse the network on a combination of three different trains (a local train originating the shipment and moving it to a TPIRR yard, one road train, and a local train delivering the car at the destination), and that the same would occur in the empty direction. (CSXT Reply III-D-41, July 21, 2014.) However, CSXT has not shown why four yard dwell events should be broadly applied to all traffic. The Board agrees with TPI that not every car will experience four yard dwell events. For example,

interchanged traffic would not have the local train events for pickup and delivery that CSXT assumes. Furthermore, as CSXT recognizes, cars that move as a unit train will only incur two yard dwell events because they will not incur yard dwell events for movement between trains. (Id. at III-C-137.) Thus, we accept TPI's feasible and supported proposal (with a modification for unit trains) regarding yard dwell events.

2. Railcar Lease Rates

The parties agree that TPIRR's lease costs will be based on full service leases for its freight railcars, and agree on the cost of the leases for gondolas and flat cars. (TPI Opening III-D-7 to 9; CSXT Reply III-D-33 to III-D-39, July 21, 2014.) However, they disagree about the lease rates for TPIRR boxcars, covered hoppers, and coal service open-top hoppers, with CSXT claiming that TPI understates these rates. (CSXT Reply III-D-33 to III-D-39, July 21, 2014.) On rebuttal, TPI argues that, in each instance where CSXT rejects TPI's full service lease rate, CSXT uses a railcar lease rate from 2008 rather than 2010, even though 2010 is the start date for TPIRR and CSXT had 2010 lease rate data available. (TPI Rebuttal III-D-17.)

First, as to boxcars, TPI on opening selected a $250 per month full service lease rate for a 50-foot, 100-ton capacity general service boxcar from a 2008 issue of the Railway Age Guide to Equipment Leasing (2008 Railway Age). (TPI Opening WP "III-D-2 Car Costs.pdf.") On reply, CSXT states that it accepts TPI's assumption that 2008 costs are more representative of TPIRR costs than costs during the 2009-2010 economic downturn. But CSXT questions the validity of deriving TPIRR's overall boxcar lease costs based on the data related to only one type of boxcar. (CSXT Reply III-D- 35 to III-D-36, July 21, 2014.) CSXT uses a 2008 full service lease rate of $568 per month derived from a mix of boxcars from the RailSolutions database. (Id. at III-D-36.) On rebuttal, TPI points out that the database upon which CSXT relies does not describe the length of the boxcars for which the rate is given. Nevertheless, TPI accepts CSXT's argument that it would be preferable to base boxcar rates on the two types of boxcars that TPIRR will use. Therefore, on rebuttal, TPI uses an average full service lease rate for 50-foot boxcars and 60-foot boxcars from 2008 Railway Age, weighted by the number of shipments by the size of car, which equals $337 per month. (TPI Rebuttal at III-D-18.)

The Board accepts TPI's rebuttal calculation of the full service lease rate. CSXT criticizes TPI for using on opening only a generic boxcar rate, but similarly uses a rate for unspecified types of boxcars on reply. In contrast, TPI's weighted average rate calculation is based upon the SARR's mix of boxcar types and a methodology CSXT suggested in its reply. While the Board accepts TPI's weighted average rate methodology, the Board's future preference is for actual data that most accurately reflects the SARR's costs during the base year.

As to covered hopper cars, TPI included a full service lease rate for these cars of $299 per car derived from the 2010 Railway Age Guide to Equipment Leasing (2010 Railway Age). (TPI Opening WP "III-D-2 Car Costs.pdf.") On reply, CSXT argues that it is not clear why TPI selected a generic description from 2010 Railway Age for covered hoppers and that TPI's selection is arbitrary and unsupported. Instead, CSXT developed a 2008 lease rate of $574 per month for covered hoppers using information from RailSolutions and the same assumptions that it used in calculating its boxcar rates. (CSXT Reply III-D-36 to III-D-37, July 21, 2014.) On

rebuttal, TPI argues that CSXT's average rate improperly includes lease rates for a covered hopper car type not used by TPIRR; thus, TPI continues to rely on the 2010 lease rate of $299 per month from 2010 Railway Age for covered hoppers. (TPI Rebuttal III-D-19.)

The Board accepts TPI's rate for covered hoppers because it is based upon information from a reasonable source and reflects market conditions from 2010 (the starting year of the SARR). While both parties provide evidence that is overly broad (by using a generic covered hopper rate), TPI at least uses a 2010 rate from 2010 Railway Age while CSXT calculates a generic 2008 rate based on a simple average of different covered hopper types. Because TPI's rate for covered hoppers relies on 2010 data, the Board accepts it as the best evidence of record.

The parties agree on the rate of $433 per month for general service open-top hoppers, which TPI derives from the average full service lease rate for steel and aluminum open-top hoppers from 2008 Railway Age. (See TPI Opening WP "TPIRR Car Costs_Open.xlsx;" see also TPI Opening WP "III-D-2 Car Costs.pdf;" CSXT Reply III-D-38, July 21, 2014.) However, the parties disagree on the lease rate for coal service open-top hoppers. On opening, TPI asserts that it relied on a full service lease rate derived from a lease amendment provided by CSXT in discovery for coal service steel open-top hoppers. (See TPI Opening WP "TPIRR Car Costs_Open.xlsx;" see also TPI Opening WP "III-D-2 Car Costs.pdf.") On reply, CSXT argues that the lease amendment rate used by TPI for the steel open-top hoppers would be not be available to TPIRR and is the lowest rate of all the lease amendments. (CSXT Reply III-D-37 to III-D-38, July 21, 2014.) Instead, CSXT applies TPI's $433 lease rate for open-top hoppers in general merchandise service to all TPIRR open-top hoppers. (Id. at III-D-38.) On rebuttal, TPI argues that CSXT's evidence is flawed because CSXT uses an average lease rate for both steel and aluminum open-top hoppers as the rate for coal service open-top hoppers even though the real-world CSXT owns only steel hoppers. Therefore, TPI asserts, CSXT's proposal does not match the service needs of TPIRR. (TPI Rebuttal III-D-20.) TPI further asserts that the lease amendment rate for the steel open-top hoppers is valid because it was used by the real-world CSXT and thus provides an accurate reflection of the market rate for steel hoppers in 2010. (Id.) TPI continues to rely on the lease amendment rate or suggests, alternatively, that the Board use an average of the various amendments to establish a rate. (Id.)

The Board accepts TPI's use of the lease amendment rate. As explained above, the Board prefers data that accurately reflects market conditions in the first year of the SARR. We find unpersuasive CSXT's argument that TPIRR could not utilize the actual lease rate CSXT used in 2010 for steel open-top hoppers. It is reasonable to assume that the steel open-top hopper rate is the lowest of all the lease amendments because it reflects the 2010 market for those particular cars, and CSXT has not adequately explained why it believes TPIRR would not be entitled to that rate. Therefore, we accept TPI's use of the lease amendment rate for coal service open-top hoppers as feasible and supported.

C. OPERATING PERSONNEL

1. Train and Engine (T&E) Personnel

The parties agree on several issues: annual yard crew shift starts; helper crews; two General Managers-Transportation and their respective staffs; and the calculations for non-train personnel compensation and materials, supplies, and equipment expenses. However, there is considerable difference between the parties' estimates of the number of train crew personnel that TPIRR would require. These differences are based largely on disagreements over train counts, crew shifts per year, crew imbalances, re-crew rates, and yard crew requirements.

As discussed in the body of this decision, the Board is adopting TPI's operating plan, RTC model, and the resulting evidence for TPIRR. We also accept TPI's evidence on the number of trains necessary to handle TPIRR's traffic group, with minor adjustments discussed in the body of this decision. Other differences in the parties' T&E personnel proposals are discussed below.

a. Crew Shift Starts per Year

The parties agree to 270 yard crew shift starts per year. (CSXT Reply III-D-58, July 21, 2014; TPI Rebuttal III-D-30-31.) However, they disagree on the number of road and local crew shift starts per year. (TPI Rebuttal III-D-31.) CSXT asserts that TPI's proposed 270 starts would be difficult to achieve and represents the level of utilization achieved by only a very small percentage of its train crews. (CSXT Reply III-D-53, III-D-58, July 21, 2014.) CSXT argues that legal and regulatory changes have made the 270 goal less achievable than it has been in the past. CSXT explains that the Rail Safety Improvement Act of 2008 establishes limits on the duty hours of train employees, including time of service and time spent waiting for or in deadhead transportation from duty to a point; restricts a train employee to six or seven consecutive days of initiating on-duty periods followed by 48 or 72 consecutive hours off duty; and requires a minimum statutory off-duty period of 10 hours. (Id. at III-D-54.) CSXT states that it uses the number of shifts achieved by the top five percent of the real-world CSXT's train crews. (Id. at III-D-58.) TPI counters that CSXT has failed to show that 270 shifts is infeasible or unsupported because, as TPI notes on opening (TPI Opening III-D-12 to III-D-13), TPI uses actual wages of CSXT crews that worked 270 shifts or more in 2010. In addition, TPI claims that TPIRR's crew districts have been designed "so that crews can get back and forth in the allotted time." (TPI Rebuttal III-D-31.) Finally, TPI notes that its evidence is also consistent with longstanding precedent. (See id. citing FMC Wyo. Corp. v. Union Pac. R.R., 4 S.T.B. 699, 833 (2000); Tex. Mun., 6 S.T.B. at 667; Carolina Power & Light Co. v. Norfolk S. Ry., 7 S.T.B. 235, 291 (2003); Duke Energy Corp. v. CSX Transp. Inc., 7 S.T.B. 402, 456 (2004); Pub. Serv. Co. of Colo. v. Burlington N. & Santa Fe Ry. (Public Service 2004), 7 S.T.B. 589, 644 (2004); W. Fuels Ass'n v. BNSF Ry. (W. Fuels 2007), NOR 42088, slip op. at 40 (STB served Sept. 10, 2007).)

The Board will accept TPI's evidence, which is consistent with longstanding Board precedent. Furthermore, CSXT's evidence is inconsistent. CSXT states in its narrative that it uses the number of shifts achieved by the top five percent of its train crews to calculate its number of crew starts (CSXT Reply III-D-58, July 21, 2014), but bases its workpapers on a

different methodology, which appears to be the average number of crew starts for all train crews, making its evidence internally inconsistent. (See, e.g., CSXT Reply WP "TPIRR Reply Train Lists.xlsx.") Because TPI's evidence is consistent with longstanding precedent, and because CSXT has failed to undermine the application of that precedent in this case, we accept TPI's feasible and supported evidence on road and local crew shift starts per year.

b. Crew Rebalancing

The parties disagree on the crew rebalancing factor. In its opening, TPI adjusted its crew starts to reflect train-flow imbalances using a rebalancing additive of 1.5%. (TPI Opening Ex. III-D-1 at 2.) TPI supports this additive with a diagram created to show all of the crew imbalances on the system. (See TPI Opening WP "Crew Rebalancing Diagram.pdf.") On reply, CSXT claims that TPI underestimates the level of deadheading[34] that TPIRR would require, and argues that TPI's workpapers show that TPI would strand certain train and engine personnel away from home. CSXT then "conservatively" assumes that TPIRR road train crews would require deadheading in the same proportion to its locomotive imbalances and proposes a 3.1% crew rebalancing factor, which it claims is substantially less than the real-world CSXT experiences. CSXT attempts to support this argument with a comparison to the percent of deadheading hours to total crew hours from the 2010 payroll records for CSXT train and engine crews, which were provided to TPI in discovery. (CSXT Reply III-D-48 to III-D-49, July 21, 2014.)

In its rebuttal, TPI argues that CSXT's application of locomotive rebalancing to train crews overstates TPIRR's needs and is unrealistic and unsupported. (TPI Rebuttal, III-D-32.) TPI argues that it is inappropriate to equate locomotive repositioning with crew rebalancing because trains have varying numbers of locomotives, depending on the weight of the train and the terrain traversed.

The Board finds that CSXT's criticisms fail to undermine the support and feasibility of TPI's crew rebalancing evidence. While CSXT claims that in one of TPI's examples TPIRR would strand some personnel, it does not explain how this undermines the re-balancing factor for the entire system. As a result, we will accept TPI's crew rebalancing factor.

c. Local Train Crews

The parties disagree on TPIRR's local train crew requirements. Because we are accepting TPI's local crew annual shift starts, as well as TPI's operating plan and RTC model, we will also accept TPI's local train crew numbers.

[34] Deadheading is the physical relocation of a train employee from one location to another.

d. Yard Crews

The parties disagree on TPIRR's yard crew requirements. As discussed in the body of this decision, we accept TPI's yard crew requirements, with minor adjustments.

2. T&E Personnel Compensation

a. Salaries

The parties agree on the methodology for calculating T&E wages, but their totals differ because of disagreements in the total number of personnel required by TPIRR. (CSXT Reply III-D-42 to III-D-43, July 21, 2014; TPI Rebuttal III-D-78 to III-D-79.) Because TPI bases it wages on personnel working 270 shifts a year or more, which is the number of shifts per year that we accept above, the Board will use TPI's average wage calculation.

b. Fringe Benefits

The parties disagree on the calculation of fringe benefits. TPI proposes to use "the average ratio of fringe benefits to total wages paid in 2010 to employees of all Class I carriers." (TPI Opening III-D-13.) CSXT uses a multi-year average of two Class I railroads that operate in the same territory as TPIRR. (CSXT Reply III-D-60, July 21, 2014.) On reply, CSXT claims that TPI's method fails to follow the Board's established practices for calculating a fringe benefit based on carriers operating in the same area as the SARR. (Id. at III-D-59.) CSXT also challenges TPI's use of a single year of data as less accurate than its approach, which considers multiple years of data. (Id. at III-D-60.) On rebuttal, TPI argues that CSXT's use of only regional data is unreasonable because employees will move for jobs. TPI also argues that the fact that NS offers fringe benefits that are lower than those offered by CXST demonstrates that fringe benefits do not have to be competitive. Finally, TPI argues that CSXT's use of a multiple year average for fringe benefits is inconsistent with its use of 2010 wage data. (TPI Rebuttal III-D-35 to III-D-36.)

We find that TPI's evidence is feasible and supported. TPI's calculation of fringe benefits is consistent with the methodology adopted by the Board in past cases. See e.g., also Sunbelt 2014, NOR 42130, slip op. at 53. Although CSXT argues that the Board prefers a geographically specific fringe benefit ratio such as the one used in DuPont, the Board has also accepted the use of national data to calculate the fringe benefit ratio for SARRs operating in a specific geographic region. See AEP Tex. N. Co. v. BNSF Ry., NOR 41191 (Sub-No. 1), slip op. at 60-61 (STB served Sept. 10, 2007) (accepting the use of information derived from RCAF to calculate the fringe benefit ratio); see also Sunbelt 2014, NOR 42130, slip op. at 53.[35]

[35] Use of a regional average is particularly suspect here, given the significant disparity between the fringe benefit ratios of the two railroads included in CSXT's proposal (NS and CSXT). In fact, NS's 2010 fringe benefit ratio of 45.3% is much closer to the 2010 national average of 43.5% than CSXT's real-world 53.8% ratio. (See CSXT Reply at III-D-61, July 21,

(continued . . .)

We find that TPI's use of national data from a single year for fringe benefits is acceptable in this case because it is consistent with the underlying wage data. While the Board has in the past expressed a general preference for multi-year data, and has on occasion applied this preference to the calculation of fringe benefit ratios, we conclude that the use of multi-year data is inappropriate in this context given that the underlying wage data we accept in this case is from a single year (2010). We conclude that TPI's use of 2010 national data to calculate the fringe benefit ratio is feasible and supported, and that CSXT's criticisms do not undermine the feasibility or support of TPI's evidence in this case. We will accept TPI's calculation of fringe benefits.

c. Taxi & Hotel Expense

The parties agree on the methodology and unit costs for computing taxi and hotel expenses for T&E personnel. (CSXT Reply III-D-61, July 21, 2014; TPI Rebuttal III-D-36.) We will accept the parties' agreement on this issue.

TABLE A-3

Train & Engine Personnel			
Item	TPI	CSXT	STB
Total Trainmen, incl. helpers	3319	3713	3503

D. NON-TRAIN OPERATING PERSONNEL

1. Executive Office

The parties mostly agree on the number of executive personnel and the structure of the executive office. (TPI Rebuttal III-D-37.) However, they disagree on the number of personnel required for customer service and support, joint facilities, operations planning, car inspection, and budgets.

a. Customer Service

The parties disagree on TPIRR's customer service staffing requirements. (TPI Opening Ex. III-D-1 at 3, 6; CSXT Reply III-D-63, July 21, 2014.) CSXT characterizes TPI's proposed staffing of 22 customer service personnel as "ludicrously low," and proposes a "conservative" total of 176 customer service employees, including three Assistant Vice Presidents. (CSXT

(. . . continued)

2014.) Despite this, CSXT never explains why (1) its own fringe benefit ratio is dramatically higher than both NS's and the national average, and (2) it believes a regional average is a more appropriate benchmark than simply using the NS ratio—despite the fact that TPIRR is assumed to be a least-cost, most-efficient railroad.

Reply III-D-63 to III-D-64, July 21, 2014; CSXT Reply WP "TPIRR Operating Expense Reply.xlsx," Tab "Non-Train – Operating," Cell C30, July 21, 2014.) CSXT's count includes customer service staff and additional planning and support staff. (Id. at III-D-64, III-D-67 to III-D-68; CSXT Reply WP "Customer Service Scaling.xlsx," July 21, 2014.) CSXT divides its customer service personnel into Intermodal & Automotive, General Freight & Bulk, and Stations Support groups, and argues that the real-world CSXT's service requirements are likely less complex than TPIRR would encounter for the Intermodal & Automotive and Stations Support groups. (CSXT Reply III-D-64 to III-D-67, July 21, 2014.) CSXT's Planning and Support group would oversee certain functions including budgets, joint facilities, and service planning. (Id. at III-D-67.)

On rebuttal, TPI argues that CSXT's additions are unsupported because it did not adequately describe the responsibilities and activities of the added personnel. (TPI Rebuttal III-D-38 to III-D-40.) TPI asserts that CSXT's proposed customer service staffing is almost identical to CSXT's 2013 actual staffing based on data provided in discovery. (Id. at III-D-38.) TPI explains that many of the functions that CSXT adds in the customer service and planning and support areas are either unnecessary or already covered by positions that TPI has proposed for TPIRR. (Id. at III-D-38 to III-D-39, III-D-41 to III-D-42.) However, TPI agrees to establish Intermodal & Automotive and General Freight customer service teams, and increases its total customer service staff by nine positions on rebuttal. (Id. at III-D-39 to III-D-40.)

Neither party submitted evidence that fully supports its position on the customer service personnel staffing requirements. CSXT does not explain why its "conservative" estimate is almost identical to the 2013 real-world CSXT staffing levels it provided to TPI in discovery, and as TPI correctly describes, CSXT includes positions (such as business systems personnel) that TPI accounts for in other departments. (See id. at III-D-38.) Furthermore, many of the staffing levels that CSXT proposes are based on combined commercial and operating organizations of the real-world CSXT (see CSXT Reply III-D-63, July 21, 2014), which is duplicative because it encompasses positions that are already provided for in the SARR's General and Administrative personnel, as described below in the Sales and Marketing sub-section of General and Administrative personnel. TPI proposes a staff that may be lower than that of the real-world CSXT, but a SARR is not required to duplicate the incumbent's real-world operations. E.g., Ariz. Elec., NOR 42113, slip op. at 10, 16; Sunbelt 2016, NOR 42130, slip op. at 41-42. TPI at least provides some support for its position by describing which roles are unnecessary for TPIRR operations. (TPI Rebuttal III-D-38 to III-D-41.) We will accept TPI's proposed general customer service staffing as the best evidence of record.

Similarly, with respect to customer service planning and support (including joint facilities, budgets, and service planning personnel), CSXT does not adequately explain why the personnel it added is necessary for TPIRR to function and how its proposed positions are not duplicative of other positions in the customer service and transportation departments. For instance, CSXT does not explain why the absence of a single joint facilities employee in TPI's proposal would render TPIRR's ability to function infeasible. (CSXT Reply III-D-67 to III-D-68, July 21, 2014.) Thus, we reject CSXT's added customer service planning and support staffing

2. Transportation Department

a. Purchasing and Materials Management

The parties disagree on the number of personnel TPIRR would require for purchasing and materials management. TPI proposes a staff of nine on opening. (TPI Opening Ex. III-D-1 at 10-11.) CSXT's reply increases the staff to 32, which it argues is necessary because TPIRR handles a vast majority of the real-world CSXT's traffic volume and would have significant consumption requirements. (CSXT Reply III-D-69, July 21, 2014.) CSXT's proposed staff is a substantial reduction from its own staff, and is divided into four specific focus areas. (Id. at III-D-70.) TPI argues that these additions are repetitive and unnecessary, but increases the total staff to 16 on rebuttal. (TPI Rebuttal III-D-44.) While acknowledging that CSXT "properly adjusts the number of managers for the size of the TPIRR," TPI states that it reduces its number of managers to account for "size differences and the lack of development on the TPIRR." (Id. at III-D-44.)

Neither party submits evidence that fully supports its position on purchasing and materials management staffing requirements for TPIRR. One area of disagreement is the actual number of CSXT purchasing personnel derived from the data that CSXT produced in discovery. Despite the fact that TPIRR will carry 80% of CSXT's traffic, TPI proposes a staff that is considerably below the real-world CSXT without explaining how it would be able to adequately serve its customers. CSXT, on the other hand, provides some support for its adjustments. Although TPI acknowledges and adjusts for some of CSXT's criticisms, TPI fails to support its position that its adjustments result in a staffing level that is feasible. Thus, we accept CSXT's evidence on purchasing and materials management staffing as the best evidence of record.

b. Intermodal and Automotive Terminals

The parties disagree about the inclusion of supervisory and management personnel to manage intermodal and automotive terminals. As discussed below in the section on intermodal lift costs, the Board accepts CSXT's addition of these supervisory and management personnel.

3. Mechanical Department: Car Inspectors

The parties agree on TPIRR's staffing of the Mechanical Department, with two exceptions. On opening, TPI states that it based the number of car inspectors on the number of trains to be inspected at each yard. (Opening Ex. III-D-1 at 15.) In its reply, CSXT argues that TPI's car inspector numbers fall considerably below real-world levels without a credible explanation. (CSXT Reply III-D-71, July 21, 2014.) CSXT increases the number of car inspectors and moves the Manager of Testing & Environmental to the G&A environmental group. (Id. at III-D-70 to III-D-71.) On rebuttal, TPI further explains how it scaled the number of car inspectors TPIRR would require based on real-world CSXT numbers, and addresses why it believes CSXT's additions are unnecessary. (TPI Rebuttal III-D-45 to III-D-48.) The Board finds that TPI's evidence on car inspectors is feasible and supported. The scaling approach that TPI includes on opening and further explains in rebuttal is a reasonable methodology, and we agree that CSXT's additions are not warranted. TPI explains based on the number of trains per

day that each yard receives how each yard would have enough inspectors to perform the required inspections. Therefore, the Board will accept TPI's Mechanical Department evidence.[36]

TABLE A-4

TPIRR Non-Train Operating Personnel			
Department	TPI	CSXT	STB
Executive	6	6	6
Customer Service & Support	39	176	39
Transportation	534	624	624
Mechanical	308	468	308
Total	887	1274	977

E. GENERAL AND ADMINISTRATIVE (G&A) EXPENSES

1. Staffing

TABLE A-5

G&A Personnel			
Department	TPI	CSXT	STB
Outside Directors	5	6	5
Executive	28	53	55
Sales & Marketing	60	215	199
Finance & Accounting	109	242	127
Law	73	155	140
IT	73	89	83
Total	348	760	609

The parties fundamentally differ on their G&A staffing requirements. The major differences between the proposed G&A staffing requirements are addressed below.

a. Executive

While the parties agree on staffing for TPIRR's Corporate Quality and Improvement/Assurance group (see TPI Rebuttal Ex. III-D-1 at 30), the parties disagree on several areas of staffing for the Executive Department.

[36] We will address environmental staff in the G&A section of this appendix.

On opening, TPI proposes an Executive Department consisting of 30 people: specifically, the President, the Board of Directors, a Corporate Secretary, Corporate Communications and Government Affairs staff, Human Resources staff, Corporate Quality Improvement/Assurance staff, and a Manager-Planning. (TPI Opening III-D-18; see also TPI Opening Ex. III-D-2 at 12-15.) The Board of Directors includes seven people: the President, the Vice President-Operations, and five outside directors. (TPI Opening Ex. III-D-2 at 13).

On reply, CSXT proposes an Executive Department consisting of 59 people. CSXT argues that TPI's Executive Department staffing is unrealistically structured, and that under TPI's proposal, TPIRR's President will devote only part of his time to managing executive functions with the remainder of his time used to fill a vice president role overseeing executive and human relations functions. (CSXT Reply III-D-91, July 21, 2014.) To address this problem, CSXT provides a Vice President-Executive who would be responsible for all executive functions including Corporate Communications, Human Resources, Federal and State Government Relations, and Quality Assurance. (Id. at III-D-92.)

On rebuttal, TPI increases its Executive Department from 30 people to 33 people. (TPI Rebuttal Ex. III-D-1 at 25.) TPI concedes that its description of the President's responsibilities in the opening was inadequate and proposes adding a Vice President-Administration (rather than a Vice President-Executive, as CSXT suggests). (TPI Rebuttal Ex. III-D-1 at 24.) TPI states that reporting to the Vice President-Administration will be the newly added Assistant Vice President-Corporate Communications and the Assistant Vice President-Human Resources, and a Manager-Administration. (Id.)[37] In its rebuttal, TPI argues that CSXT fails to justify its inclusion of additional personnel by describing the loss of revenue or added cost that supposedly would be incurred by TPIRR if CSXT's proposed additional personnel are not included. (TPI Rebuttal Ex. III-D-1 at 26.)

For ease of discussion, the Board will discuss the parties' staffing proposals for TPIRR's Executive Department in subgroups.

i. Corporate Relations/Communications

On opening, TPI proposes a three-person staff for the Corporate Relations group consisting of two Directors-Corporate Relations and a Manager-Corporate Communications. (TPI Opening Ex. III-D-2 at 13-14.)

On reply, CSXT argues that TPI's proposal of three employees is insufficient for a railroad of TPIRR's size and scope. (CSXT Reply III-D-92, July 21, 2014.) Based on staffing proposals from its expert, CSXT proposes an eight-person staff consisting of an Assistant Vice

[37] TPI states that CSXT proposes an additional Manager-Administration, but that CSXT does not discuss this added Manager in the narrative portion of its evidence. TPI states that it excludes this position. (TPI Rebuttal Ex. III-D-1 at 24; see also CSXT Reply WP "TPIRR Operating Expense_Reply.xlsx," Tab "G&A Personnel, July 21, 2014.")

President, a Director-Messaging, a Director-Implementation, and five Managers. (Id. at III-D-92 to III-D-93.) Of the five managers, one will be a Manager-Messaging and coordinate messaging from various departments, (id. at III-D-93), one will be responsible for branding and advertising of TPIRR (id. at III-D-93 to III-D-94), and one manager will be in charge of social media (id. at III-D-94 to III-D-95).

On rebuttal, TPI points out that CSXT added four managers to the Corporate Relations group, but that CSXT added the personnel without describing the loss of revenue or added cost that will be incurred by TPIRR if the added headcount is not included. (TPI Rebuttal Ex. III-D-1 at 26.) TPI asserts that CSXT cannot simply say a position is needed or that the actual CSXT has a certain amount of positions because this does not provide justification for the need on TPIRR. (Id.) On rebuttal, TPI proposes a Corporate Relations staff of an Assistant Vice President, two Directors, and one Manager.

The Board will accept CSXT's staffing proposal for the Corporate Relations group with the exception of three managers. TPI is correct that a SARR is not required to duplicate the incumbent's real-world operations. E.g., Ariz. Elec., NOR 42113, slip op. at 10, 16, 58-59; Sunbelt 2016, NOR 42130, slip op. at 41-42. Therefore, a defendant carrier does not automatically justify additional costs merely because it has benchmarked those costs against its own. See Sunbelt 2016, NOR 42130, slip op. at 42 ("[T]he proponent of a cost item must provide supporting evidence for its claims that a real-world cost item is necessary and may not rely on the mere fact that the item exists in the real world.") Here, TPI explains the process it followed to develop its proposed G&A staffing and describes the responsibilities of its Corporate Relations group in particular. (TPI Opening Ex. III-D-2 at 2-12, 13-14.) However, CSXT has described responsibilities for several additional employees that undermine the feasibility of TPI's proposal. We conclude that TPI has not adequately explained on rebuttal how its proposed staff could cover these responsibilities, or, alternatively, why these responsibilities are unnecessary.

Specifically, CSXT states that a Director-Messaging and two managers will manage TPIRR messaging and communications. One of the two managers, according to CSXT, will coordinate messaging from the various departments within TPIRR to constituencies such as investors, employees, customers, and local communities. (CSXT Reply III-D-93, July 21, 2014.) According to CSXT, it accepts TPI's proposal for TPIRR departments to have primary responsibility for communications with their respective constituencies, but TPI proposed no communications staffing in any of those departments to handle those communications responsibilities. (Id.) On rebuttal, TPI disagrees, indicating that TPIRR's executives, Assistant Vice Presidents, and directors would talk directly with their constituents, rather than soliciting the aid of a middleman who likely knows much less about the constituents' relationship than the executive, Assistant Vice President, or director who is responsible for the relationship. (TPI Rebuttal Ex. III-D-1 at 27.) We agree with CSXT that TPIRR's executives, Assistant Vice Presidents, and directors would not be able to satisfy the need for communications with their respective constituencies, as many of TPI's descriptions for these positions do not include communications responsibilities. (See, e.g., TPI Opening Ex. III-D-2 at 17 ("The [Assistant Vice President]-Energy and Coal is responsible for managing sales, marketing, pricing, and contracts for transportation services related to energy commodities, including coal.").)

CSXT states that the other manager reporting to the Director-Messaging will be responsible for branding and advertising, because TPIRR would need to compete both with other railroads and alternative modes—particularly for the intermodal and general freight traffic that constitute so much of TPIRR's customer base. (CSXT Reply III-D-93 to 94, July 21, 2014.) On rebuttal, TPI asserts that Class I railroads face less competition today than in 1994 (the year from which TPI draws G&A benchmarking information) because they are larger—meaning that a single long-haul movement has fewer routing options available to it today compared to the same movement in 1994. (See TPI Rebuttal Ex. III-D-1 at 12; see also TPI Opening Ex. III-D-2 at 11-12.) We find that CSXT has supported its position on this record: regardless of declines in competition, a railroad of TPIRR's size and traffic mix—with a large proportion of intermodal and general freight traffic—would need a manager responsible for branding and advertising.

Next, CSXT proposes a Director-Implementation, who will be responsible for executing the TPIRR communications plan. CSXT proposes that one manager reporting to the Director-Implementation would focus on social media. (CSXT Reply III-D-94, July 21, 2014.) CSXT argues that companies the size of TPIRR must maintain a presence on multiple social media platforms, which will allow the company to generate and cultivate a community of supporters that it can then rely on to help in the event of emergencies, crisis, or just regular maintenance programs. (Id. at III-D-94 to III-D-95.) According to CSXT, this function must be managed and controlled daily, given the need to be able to respond rapidly to social media developments. (Id. at III-D-95.) On rebuttal, TPI asserts that this does not sound like much of a job, especially one that could keep a person busy full-time. (TPI Rebuttal Ex. III-D-1 at 26.) TPI further contends that understanding and utilizing social media should be a primary job requirement of any communications professional today—suggesting that the other Corporate Relations employees will already be addressing social media issues in the ordinary course of their work. (See TPI Rebuttal Ex. III-D-1 at 26-27.) Given that the Board has accepted CSXT's proposal of three employees to manage TPIRR's messaging and communication, the Board rejects the proposal for a social media manager because CSXT has not adequately explained how the responsibilities of a social media manager differ from the responsibilities of the employees overseeing the messaging and communication needs of the SARR.

With respect to the remaining two managers in CSXT's proposed Corporate Relations group, CSXT indicates that one would support its proposed Director-Implementation, but CSXT provides no further explanation or evidence for the idea that the Director-Implementation would need such support. (See CSXT Reply III-D-94, July 21, 2014.) CSXT provides no description of the functions or need for the other manager. (See id. at III-D-93 to III-D-95.) Accordingly, the Board rejects CSXT's proposal to include these two managers, resulting in a total of five employees for the Corporate Relations group: an Assistant Vice President, a Director-Messaging, a Director-Implementation, and two managers reporting to the Director-Messaging.

ii. Government Relations

On opening, TPI proposes a staff of two Directors-Government Relations for the Government Relations group. (TPI Opening Ex. III-D-2 at 14.)

On reply, CSXT argues that TPI's two-person Government Relations staff is not sufficient for a Class I railroad that operates in multiple jurisdictions. (CSXT Reply III-D-95, July 21, 2014.) CSXT proposes a seven-person Government Relations group with two of the employees responsible for federal government relations and the remaining five employees focusing on state and local government relations. (Id. at III-D-95, III-D-97.) The employees responsible for state and local government relations will cover 18 states, including the District of Columbia. (Id. at III-D-97.) CSXT compares its proposal to the amount that the real-world CSXT staff and states that its expert conservatively assumes that TPIRR will manage the federal and state government relations functions entirely with in-house staff and would not hire any external lobbyists, even though CSXT goes on to say that this assumption is unrealistic given the amount of money CSXT spends on outside state and federal government relations firms annually. (Id. at III-D-97 to III-D-98 (citing CSXT Reply WPs "2013 SG Lobbying Hours.xlsx.;" "Federal Lobbying Hours.xlsx," Tab "Federal Lobbying Hours;" "CSXT Organization Spreadsheet.xlsx," Tab "Corp Rel & Govt Affairs;" "CSXT Contract Lobbyists.xlsx;" "CSXT Federal Lobbying Hours.xlsx," Tab "Ext Lobbying – Corp," July 21, 2014).) To be conservative, CSXT states that it does not propose these lobbying costs for TPIRR. (Id. at III-D-98 n.227.)

On rebuttal, TPI argues that TPIRR would not need the additional employees proposed by CSXT in part because U.S. railroads have a strong advocate at the federal level in the American Association of Railroads (AAR), which focuses on representing the interests of railroads before Congress and federal regulators. (TPI Rebuttal Ex. III-D-1 at 29.) TPI also argues that because TPIRR is a newly built railroad, many of the state and local issues that affect the railroad would have been dealt with in the design, permitting, and construction of the railroad. (Id.) TPI asserts that the Board should reject CSXT's claim that lobbying is necessary to serve the traffic group and accept TPI's proposal for a two-person government relations department as sufficient for TPIRR. (Id.)

The Board will accept CSXT's staffing proposal for the government relations department. Again, TPI is correct that as long as the SARR meets the needs of the traffic group, the SARR can be designed "in a manner that is different from, and more efficient than, the incumbent carrier's service." McCarty Farms, Inc. v. Burlington N., Inc., 2 S.T.B. 460, 468 (1997); see also Ariz. Elec., NOR 42113, slip op. at 10, 16, 58-59; Sunbelt 2016, NOR 42130, slip op. at 41-42. Thus, merely benchmarking proposed additional costs against the defendant carrier's own costs is not enough to automatically justify those costs. See McCarty Farms, 2 S.T.B. at 468. Here, TPI explains the process it followed to develop its proposed G&A staffing and describes the responsibilities of its Directors–Government Relations in particular. (TPI Opening Ex. III-D-2 at 2-12, 14.) Again, however, CSXT's description of the needs for the additional employees undermines the feasibility of TPI's proposal, and we conclude that TPI has not adequately explained on rebuttal how its proposed staff could cover these responsibilities, or, alternatively, why these responsibilities are unnecessary.

CSXT cites an extensive list of federal legislation that, according to CSXT, required lobbying efforts in a recent representative period. (CSXT Reply III-D-96, July 21, 2014.) CSXT also argues that, because of the many jurisdictions through which TPIRR operates, the state government relations function is even more resource intensive than federal government relations.

(Id. at III-D-97.) On rebuttal, as noted, TPI argues that U.S. railroads have a strong advocate at the federal level in AAR, which focuses on representing the interests of railroads before Congress and federal regulators, and that because TPIRR is a newly built railroad, many of the state and local issues that affect the railroad would have been dealt with in the design, permitting, and construction of the railroad. (TPI Rebuttal Ex. III-D-1 at 29.) While TPI presents a plausible argument regarding federal government relations, it does not support its position that the same two employees could also handle the host of state and local government relations issues that would confront a railroad with the size and geographic distribution of TPIRR. In particular, TPI does not support its claim that state and local government relations issues would mostly not exist after the design, construction, and permitting phase—a position that appears to be at odds with the experience of railroads in the real world that pass through and interact with communities in a variety of ways.[38] Thus, the Board accepts the five additional employees proposed by CSXT to handle state and local government relations, resulting in a seven-person government relations department.

iii. Human Resources

On opening, TPI proposes a 13-person Human Resources (HR) staff consisting of an Assistant Vice President-Human Resources, two Directors-Human Resources, a Director-Labor Relations, four Managers-Human Resources, two Managers-Labor Relations, two Analysts-Labor Relations, and a Claims Administrator. (TPI Opening Ex. III-D-2 at 14 to 15.)

On reply, CSXT argues that the 13-person HR group is insufficient to perform the tasks necessary for a railroad with almost 8,000 employees. (CSXT Reply III-D-98, July 21, 2014.) CSXT asserts that the Board recognized this fact in DuPont when the Board found that a 31-person HR department was reasonable for a SARR similarly-sized to TPIRR. (Id. at III-D-99 (citing DuPont, NOR 42125, slip op. at 93).) CSXT states that its expert developed a least-cost, most-efficient HR group for TPIRR that consists of 32 employees. (Id. at III-D-98.) CSXT's expert developed the HR staffing proposal based on his review of CSXT's staffing level for similar functions and third-party benchmarks. (Id. at III-D-99.) CSXT states that one of the benchmarks provides that an HR group for a company the size of TPIRR has 0.53 HR employees per 100 employees. (Id. (citing CSXT Reply WP "HR Benchmark.pdf" at 20, July 21, 2014).) CSXT argues that TPI's proposal only provides for 0.2 HR employees per 100 employees while CSXT's proposal is 0.41 HR employees per 100 employees. (Id.) CSXT asserts that TPI attempts to justify its 13-person HR staff by claiming that TPIRR would only have a three percent attrition rate and that this attrition rate is derived from a 17-year old magazine article. (Id. (citing TPI Opening WP "Attrition Rate.pdf").) CSXT asserts that the Board has previously held that the attrition rate cited in this article is "outdated and unrealistic." (Id. (citing W. Fuels

[38] See, e.g., Wichita Terminal Ass'n—Pet. for Declaratory Order, FD 35765 (STB served June 23, 2015); Pet. of Norfolk S. Ry. for Expedited Declaratory Order, FD 35949 (STB served Feb. 25, 2016); CSX Transp., Inc. v. Williams, 406 F.3d 667 (D.C. Cir. 2005); CSX Transp., Inc.—Acquis. of Operating Easement—Grand Trunk W. R.R., FD 35522 (STB served June 22, 2016).

2007, NOR 42088, slip op. at 54.).) CSXT instead proposes an attrition rate based on actual CSXT employees by job type. (Id. (citing CSXT Reply WP "CSXT Attrition.pdf," July 21, 2014).) CSXT contends that by using its more realistic attrition rate, TPIRR will hire almost 800 new employees per year. On reply, CSXT proposes an HR group of 33 people consisting of an Assistant Vice President, one Administrative Assistant, Manager-Communications, one Director-Human Resources Planning, three Managers- Human Resources Planning, Director-Diversity, one Manager-Diversity, one Director-Training, four Staff Members-Training, one Director-Benefits and Compensation, six Managers-Benefits and Compensation, Director-Medical, six Technicians-Medical, three Clerks/Analysts-Medical, Director-Ethics, and a Manager-Ethics. (Id. at III-D-99 to III-D-106.)

On rebuttal, TPI rejects CSXT's proposal for 10 medical HR staff members because TPI deems these employees' responsibilities as unnecessary or duplicative. (TPI Rebuttal Ex. III-D-1 at 30 to 32.) TPI accepts CSXT's non-medical staffing proposals with two exceptions: (1) TPI excludes the Manager-Communications because the communications for the group is handled by management with coordinating assistance from the Corporate Communications group; and (2) TPI excludes the Training group consisting of four staff members because the Operations department includes a staff of 17 people in its Rules, Safety, and Training group that are responsible for onboard new Operations personnel. (Id. at 30.) As to the attrition rate, TPI states that CSXT proposes an attrition rate of 6.8% to 13.3%, depending on the job but its support for these attrition rates is a list of numbers that should be entitled to little or no weight. (Id. at 30-31 (citing Ariz. Elec., NOR 42113, slip op. at 46).) TPI also argues that the Board should use its 3% attrition rate proposal because CSXT's view misreads Western Fuels 2007 and because the 3% rate used by TPI is much closer to the figures that have been used in prior cases as well as independent real-world sources. (TPI Rebuttal Ex. III-D-1 at 31 (citing W. Fuels 2007, NOR 42088, slip op. 54).) Overall, TPI increases its HR staff to 17.

The Board accepts CSXT's staffing proposal for the HR group, with three exceptions discussed below. On opening, TPI explains the process it followed to develop its proposed G&A staffing and describes the responsibilities of its HR group in particular. (See TPI Opening Ex. III-D-2 at 2-12, 14-15.) On reply, CSXT argues that TPI's 13-person proposal is not feasible and proposes a 32-person HR staff, explaining that its proposal is based on third-party benchmarking and the size of the HR group in a recent rate case involving a SARR of similar size.

As noted above, CSXT argued that the Corporate Relations group needs a manager to help the Director-Messaging with communications on behalf of TPIRR's departments, including the HR Department's communications with employees, because "TPI proposed no communications staffing in any of those departments to handle those communications responsibilities." (CSXT Reply III-D-93, July 21, 2014.) The Board has accepted CSXT's addition of a manager in Corporate Relations to perform these functions. In discussing the HR group, however, CSXT proposes to include a Manager of Communications, who would be responsible for all messaging to employees. (Id. at III-D-100.) Based on CSXT's own rationale, adding this position would duplicate the functions of the manager for messaging in the Corporate Relations group, and we will therefore reject it.

TPI's argument that CSXT's proposed Training group is duplicative of TPI's Rules, Safety and Training group is not supported by the record given the different responsibilities for each group. The directors of TPI's Rules, Safety and Training group are "responsible for safety, rules, and training on the TPIRR system," and the managers of that group "monitor safety, conduct rules and training classes for transportation, maintenance, and mechanical operating personnel in their respective territories." (TPI Opening Ex. III-D-1 at 10.) Although TPI does not state such a limitation, we interpret that to mean training regarding operational issues and practices, given the location of that group within TPIRR's operating personnel. In contrast, the Training Group that CSXT proposes would train TPIRR employees on a different set of subjects, such as basic business skills, communications, technology, workplace subjects such as harassment, ethics, and antitrust issues. (See CSXT Reply III-D-101 to III-D-102, July 21, 2014.) The Training group is also responsible for a basic orientation program for new hires to become familiar with TPIRR's functions and policies and will coordinate any training and certification programs required under federal law. (Id. at III-D-102.)

CSXT's description of the responsibilities for the 10 medical employees it adds undermines the feasibility of TPI's approach, and TPI has not adequately explained on rebuttal how its proposed staff could cover these responsibilities, or, alternatively, why these responsibilities are unnecessary. CSXT states that the Medical group will be responsible for assisting non-railroad medical staff with rehabilitation and return-to-work processing following medical treatment, providing workplace health management, and coordinating FRA mandatory drug testing. (Id. at III-D-103 to III-D-104.) With respect to assisting non-railroad medical staff with rehabilitation and return-to-work processing following medical treatment, TPI claims that non-railroad medical staff could satisfy these needs without assistance from the railroad. (TPI Rebuttal Ex. III-D-1 at 31.) We agree with CSXT, however, that after non-railroad medical staff make an initial return to work determination, TPIRR would want to retain some responsibility for ensuring that return to work physicals occurred and giving the final approval for the employee to return to work. (CSXT Reply III-D-103 to III-D-104, July 21, 2014.)

Second, CSXT proposes that the medical staff would provide workplace health management, which includes measuring health hazards (such as air quality, noise, and exposure to hazardous materials), ensuring compliance with Occupational Safety and Health Administration requirements, and ensuring that appropriate health and safety equipment is available for all employees. (Id. at III-D-104.) TPI argues that TPIRR's Rules, Safety and Training group already handles these responsibilities. (TPI Rebuttal Ex. III-D-1 at 31 to 32.) But TPI's description of the Rules, Safety and Training group does not include anything similar to these responsibilities. (See TPI Opening Ex. III-D-1 at 10.)

Third, CSXT proposes that the medical staff would coordinate FRA mandatory drug testing. (CSXT Reply III-D-104, July 21, 2014.) CSXT explains that this team does not handle the actual testing—which can be done by non-railroad personnel or frontline operations managers—but does design and implement the programs; monitor implementation; track results; and report to necessary regulatory agencies as required. (Id. at III-D-104 to III-D-105.) TPI again argues that these functions are handled by TPIRR's Rules, Safety and Training group personnel, even if such functions are not clearly delineated. (TPI Rebuttal Ex. III-D-1 at 32.) Because we conclude that the record supports the inclusion of a Medical group for the two

reasons discussed above, we need not address whether the Medical group overlaps with the Rules, Safety, and Training group with regard to drug testing.

On opening, TPI proposes a Director-Labor Relations, supported by two Managers-Labor Relations, two Analysts-Labor Relations, and a Claims Administrator. TPI states that the group's responsibilities include ensuring compliance with labor regulations and coordinating legal activities related to labor. Since TPIRR is a non-union railroad, TPI adds, activities for this group will be less than for existing Class I Railroads. (TPI Opening Ex. III-D-2 at 15.) TPI also states that this group works with the Law Department to resolve Federal Employees Liability Act (FELA) claims. (Id. at 29.) On reply, CSXT rejects the inclusion of a Labor Relations group, arguing that TPI has posited that TPIRR would be non-union, and labor relations staff typically deal with unionized employees. (CSXT Reply III-D-98 n.228, July 21, 2014.) CSXT does not support this assertion, and it does not specifically address any of the duties that TPI proposed for this group—for example, CSXT fails to account for the role that TPI's proposed Labor Relations group would play in resolving FELA claims. Therefore, CSXT has not undermined the feasibility of TPI's proposal, and we will include these employees.

Finally, we will not include one position—an Administrative Assistant—because CSXT failed to include the costs for this position in its workpapers. (See CSXT Reply WP "TPIRR Operating Expense_Reply.xlsx," Tab "G&A Personnel," July 21, 2014.)

The Board also adopts CSXT's proposed attrition rates. TPI does not adequately support its use of an across-the-board 3% attrition rate—a level that has never been endorsed by the Board. As TPI acknowledges, the cases that it cites (see TPI Rebuttal Ex. III-D-1 at 31) used attrition rate figures that are almost double the figure it proposes here. See W. Fuels 2007, NOR 42088, slip op. at 54; Otter Tail, NOR 42071, slip op. at C-18. Also, we are concerned that TPI relies solely on an article from 1998 for its attrition proposal, without explaining why the rate in that article is still an appropriate benchmark today. CSXT's approach takes into account the recent real-world attrition rates for actual CSXT employees broken down by job type, an approach which is consistent with our most recent rate cases. See DuPont, NOR 42125, slip op. 98-99; Sunbelt, NOR 42130, slip op. at 28-29. While TPI argues that its attrition rate is closer to the rates used in prior cases than CSXT's, TPI's figures are far below those prior cases without sufficient justification, whereas CSXT's rates are at least grounded in CSXT's own attrition experience by job type. Thus, the Board adopts CSXT's proposed method for calculating attrition rates. We calculate the cost of start-up and training by assuming that these attrition rates apply to the number of TPIRR personnel by job type that we are accepting elsewhere in this appendix. And, because we have accepted TPI's fringe benefit ratio of 43.5%, we add fringe benefits at that ratio where training salaries include benefits.

iv. Board of Directors

On opening, TPI proposes a seven-person Board of Directors consisting of two railroad executives and five outside directors. (TPI Opening Ex. III-D-2 at 13.) TPI proposes that the outside directors will likely include two representatives from TPIRR's customer group, two representatives of its investors, and an independent director with no connection to TPIRR.

On reply, CSXT proposes a 10-member Board to oversee TPIRR, consisting of the President, the Vice President-Operations, two additional internal executives, and six outside directors. (CSXT Reply III-D-106, July 21, 2014.) CSXT contends that the Board accepted a 10-member Board as reasonable to oversee a railroad similar in size to TPIRR in DuPont. (CSXT Reply III-D-106, July 21, 2014.) On rebuttal, TPI states that it will adopt a 10-member Board to be consistent with DuPont and include the use of five railroad executives and five outside members. (TPI Rebuttal Ex. III-D-1 at 32.) The Board will accept TPI's rebuttal evidence on the size and composition of the Board of Directors.

b. Sales and Marketing

The parties disagree on TPIRR's staffing needs for sales and marketing.

On opening, TPI proposes a Marketing Department consisting of 56 people, headed by the Vice President-Sales and Marketing, who is assisted by eight Assistant Vice Presidents. (TPI Opening III-D-18; see also TPI Opening Ex. III-D-2 at 15-24.) TPI organizes its sales and marketing effort into six commodity groups: (1) Consumer, Forest, and Paper Products; (2) Aggregates, Minerals, Metals, and Scrap; (3) Chemicals and Petroleum; (4) Energy and Coal; (5) Intermodal and Autos; and (6) Food and Grain. (TPI Opening Ex. III-D-2 at 15-16.) TPI contends that its Sales and Marketing staff is smaller than existing Class I railroads because a large percentage of TPIRR's traffic does not originate on TPIRR; rather it is received in interchange from other carriers. (Id. at 16.)[39]

On reply, CSXT proposes a Marketing Department consisting of 215 people. (See CSXT Reply III-D-109 to III-D-119, July 21, 2014.) CSXT challenges TPI's contention that TPIRR would spend less on marketing because most of TPIRR's traffic is cross-over traffic and that it could rely on the residual CSXT and other connecting carriers to handle most of the marketing expense for that traffic. (Id. at III-D-107 (citing TPI Opening Ex. III-D-2 at 16).) CSXT argues that in past cases, the Board has held that a complainant cannot assume that other carriers will market traffic for the SARR. (Id. (citing Ariz. Elec., NOR 42113, slip op. at 57; DuPont, NOR 42125, slip op. at 84-86; Sunbelt 2014, NOR 42130, slip op. at 53-54).) CSXT argues that TPI fails to identify inefficiencies in CSXT's real-world marketing staffing, and fails to adequately explain why TPI believes TPIRR could handle marketing responsibilities in a less labor-intensive manner. (Id. at III-D-108.) CSXT contends that its proposed marketing staff is based on a review of TPIRR's traffic base and market needs, along with the staffing and technology that CSXT currently uses to support its marketing efforts. (Id.) CSXT uses its own staffing as a benchmark for TPIRR's staffing requirements, after making adjustments for TPIRR's relative revenues and assumptions that TPIRR would be a least-cost, most-efficient carrier. (Id. at III-D-107 (citing DuPont, NOR 42125, slip op. at 84-86).) CSXT states that its proposal for a total marketing staff of 215 employees assumes that TPIRR could be more

[39] TPI posits that only 35.7% of TPIRR's carload traffic is originated and terminated/forwarded. (TPI Opening Ex. III-D-2 at 16.) Of the remaining carload traffic, 38% is overhead and 26.3% is received and terminated. (Id.)

efficient than CSXT, even though TPIRR would have virtually none of the technological programs and applications used by CSXT's Marketing Department. (Id. at III-D-108; see also CSXT Reply WP "Maintenance Cost of Software.pdf," July 21, 2014.)

On rebuttal, TPI proposes a Marketing Department consisting of 60 people, increasing the size of this department in its opening by a net of four personnel. (TPI Rebuttal Ex. III-D-1 at 35.) TPI argues that, as with staffing elsewhere across TPIRR, CSXT's reliance on the actual CSXT as a benchmark for TPIRR's Sales and Marketing staff is inappropriate because CSXT is not efficient. (Id. at 33, 35 (citing CSXT Reply III-D-108).) TPI contends that CSXT relies on a large, outdated Sales staff to serve TPIRR. (TPI Rebuttal III-D-33). TPI further argues that CSXT's proposal for significant personnel assigned specifically to sales functions is outdated and inefficient because very few direct sales calls are made by modern railroads. (TPI Rebuttal Ex. III-D-1 at 33.) And, TPI argues that many of the responsibilities of CSXT's proposed 77 sales professionals are covered by staff elsewhere at TPIRR. (Id. at 33-34.) TPI contends that its traffic makeup has few major online customers; that customers would have access to posted tariffs and rate quotes; that unless a customer is shipping a unit train or high volume move, there is no need for direct consultations on rates with railroad personnel; and that 65% of TPI's traffic is coal, auto, and intermodal traffic that is handled under contract with the remaining movements falling under pre-established tariffs and rate quotes. (Id. at 34.) Therefore, TPI argues that its proposal of nine Sales personnel would be sufficient. (Id. at 33-34.)

The Board accepts CSXT's staffing levels for TPIRR's Sales and Marketing Department with two exceptions. As TPI points out, CSXT included eight employees in its workpaper that it did not reference in its narrative: an Assistant Vice President-Equipment Management, a Director-Car Distribution, and six Managers. (TPI Rebuttal Ex. III-D-1 at 43 (citing CSXT Reply WP "TPIRR Operating Expense_Reply.xls," July 21, 2014).) The Board will not include these eight positions because CSXT has failed to provide support. TPI also rejects CSXT's proposal of 11 e-business employees, arguing that all of its employees will be versed in e-commerce; therefore, it only includes three e-commerce employees. (Id. at 45-46.) While CSXT explains how the real-world CSXT uses its marketing services employees in general, it does not explain why or how 11 e-commerce professionals are specifically necessary for TPIRR. (See CSXT Reply III-D-115 to III-D-116, July 21, 2014.) The Board will accept TPI's proposal of three e-commerce employees.

With respect to the rest of the Sales and Marketing Department employees, the Board will accept CSXT's evidence. TPI's main claim—that TPIRR's marketing needs are minimal compared to other Class I railroads—is unconvincing. As the Board explained in prior cases, see, e.g., DuPont, NOR 42125, slip op. at 85, even if the SARR's traffic originates with connecting carriers, interline rates must still be negotiated and the originating carrier does not unilaterally establish rates for the movements. Thus, there would be a need for consultation with other carriers and pricing determinations.

As to TPI's argument that the real-world CSXT is inefficient with regard to sales and marketing (as compared to NS), TPI does not demonstrate that CSXT's alleged inefficiency supports the specific staffing level proposed by TPI—which appears to depend in large part on TPI's argument involving TPIRR's receipt of most traffic in interchange from other carriers,

which the Board has rejected in this and other cases. Even if CSXT is inefficient, as TPI argues, that does not demonstrate that the efficient number is equal (or even close) to the number TPI proposes.

TPI offers a persuasive argument that, qualitatively, the responsibilities of some of CSXT's sales positions are covered by other TPIRR employees. TPI starts with CSXT's description of the responsibilities of its proposed sales staff, and then describes in detail the work functions that are already covered by staff elsewhere on TPIRR. (TPI Rebuttal Ex. III-D-1 at 33-34.) Quantitatively, however, TPI's proposal appears to rest substantially on its argument involving TPIRR's receipt of most traffic in interchange from other carriers, which has been rejected. Even if some of the additional sales staff would have responsibilities that overlap with those of other employees, TPI has not shown that it provides enough people to satisfy those responsibilities, system-wide, given that TPIRR will not be able to rely on its interchange partners to provide sales functions to the extent TPI proposes. For these reasons, the Board accepts CSXT's staffing levels for TPIRR's Sales and Marketing department with the exceptions noted above.

c. Finance and Accounting

The parties agree that the department will be headed by a Vice President, and they also agree on the staffing for Disbursements/Accounts Payable, Internal Audit, and Property Accounting. (CSXT Reply III-D-122, III-D-130, III-D-133, July 21, 2014.) But the parties disagree on the other staffing needs for TPIRR's Finance and Accounting (F&A) Department and the cost of Internal Audit outsourcing, as detailed below.

i. Staffing

On opening, TPI proposes an F&A Department consisting of 100 employees. (TPI Opening III-D-19; see also TPI Opening Ex. III-D-2 at 24 to 29.) In support of this overall staffing proposal, TPI references the Finance and Accounting departments accepted by the Board in W. Fuels 2007 and AEP Texas II and indicates that its proposed staffing "reflects certain additions due to TPIRR's more varied traffic base and larger number of carload transactions." (TPI Opening Ex. III-D-2 at 24.)

On reply, CSXT argues that TPI's staffing is far from sufficient for a railroad of TPIRR's size and proposes an F&A Department consisting of 242 employees. (CSXT Reply III-D-120, July 21, 2014.) In support of this argument, CSXT demonstrates that TPI's proposed F&A staffing is three to six times smaller on an employee-to-revenue[40] basis than the staffing of the Board-accepted F&A Departments in nine of the past 10 rate cases. (Id. at Table III-D-21

[40] CSXT states that "[e]mployee-to-revenue ratios are a particularly relevant means to judge accounting staff levels, because most accounting tasks are a function of the amount of a railroad's incoming revenue and the amount of its corresponding expenses." (CSXT Reply III-D-120 n.274, July 21, 2014.)

"Comparison of TPIRR Finance Staffing to Board-Approved Staffing in Past Cases.") CSXT posits that the only exception was a case in which the Board criticized the complainant for failing to provide benchmark analysis or other comparable data to support its proposed staffing levels and only adopted the complainant's proposal because the defendants' evidence was "no better." (Id. at III-D-121 to III-D-122 (citing Ariz. Elec., NOR 42113, slip op. at 58.)) In particular, CSXT notes that TPI's proposed staff of 100 is almost a third of the accounting staff the Board held was required in DuPont for a SARR with less revenue than TPIRR. (Id. at III-D-120 (citing DuPont, NOR 42125, slip op. at 86, 90 (289 accounting staff)).)

Specifically, CSXT proposes a Treasurer staff of 13, (id. at III-D-123 to III-D-126); a Controller staff that includes 141 people for the Revenue group and 10 employees in the Financial Reporting group, (id. at III-D-130 to III-D-133); a Tax group of 24 employees, (id. at III-D-133 to III-D-135); and an Economics and Planning group of 16 people, (id. at III-D-135 to III-D-137).

On rebuttal, TPI does not challenge CSXT's interpretation of Arizona Electric, but argues that CSXT has not shown the relevance of the other cases to the facts in this case. In addition, TPI uses the same metric referenced by CSXT (staff per $100 million in revenue) to demonstrate that CSXT's proposed F&A staffing (which computes to 3.73 per $100 million in TPIRR revenue) is almost twice as large as the F&A staffing for the "entire" real-world CSXT, which TPI states was 251 in 2013 (or 2.1 employees per $100 million), based on $11,706 million in revenue, as reported in the 2013 R-1. (TPI Rebuttal Ex. III-D-1 at 46.) TPI's rebuttal F&A staffing of 109 provides for 1.50 employees per $100 million in TPIRR revenue, according to TPI. (Id. at 46-47.) TPI deems CSXT's proposal of 13 Treasurer employees as unnecessary and excessive because the proposal includes a Director-Communications with duplicative responsibilities and a staff of 12 employees, a number higher than the real-world CSXT number, which is 10, to manage cash, debts, investments, credit, and insurance. (Id. at 48-49.) TPI argues that CSXT double counts the personnel necessary to address state tax issues by including, in addition to the agreed-upon Property Tax group, a redundant State Tax group. (Id. at 55.) TPI contends that the additional Financial Reporting staff and the Financial Planning group added by CSXT are unnecessary because other groups are already handling that function. (Id. at 54-58.) TPI rejects CSXT's proposal of 16 people for the Cost and Economic group, asserting that it is unnecessary to dedicate staff within the Finance and Accounting group to develop all of the departmental budgets for TPIRR. (Id. at 56-57.) Overall, TPI argues that the real-world CSXT suffers from staffing inefficiencies and that TPI's rebuttal proposal of 109 people is reasonable. (Id. at 46-47.)

The Board accepts some of CSXT's proposed additions to the Finance and Accounting staff proposal, as described below.

With respect to Treasury, CSXT proposes to increase staffing to 13 (the Treasurer plus 12 staff) from the four proposed by TPI. (CSXT Reply III-D-123, July 21, 2014.) First, CSXT argues that TPIRR requires a four-person cash management staff, given its average daily cash intake of over $15 million and the need to forecast and manage cash flow based on season, business trends and expenditure needs, including the shifting of funds around various short and medium-term investment options as funds become available or are needed; maintaining lines of

credit with several banks to guard against emergency funding needs, such as repairs after a natural disaster or derailment; and making long-term investments to manage capital programs and employee pensions. (Id. at III-D-123 to III-D-124.) Second, CSXT proposes a staff of five (one director and four credit analysts) to handle customer credit and collections. (Id. at III-D-124.) CSXT argues that TPI's proposed Manager-Risk Management would not be able to handle, on his or her own, all of TPIRR's customer credit issues and supplier credit and managing insurance policies, given TPIRR's revenue levels and number of customers. (Id.) CSXT next argues that TPIRR requires a director and a manager to maintain accounts with a variety of banks across its territory to facilitate collections, as well as other purposes such as emergency funding needs, including lockboxes, lines of credit, purchase business, and investments. (Id. at III-D-125.) Finally, CSXT argues that because of TPI's proposal for TPIRR departments to have primary responsibility for communications with their respective constituencies, TPIRR requires a Director of Communications and Investor Relations to address communications with investors. (Id. at III-D-125 to III-D-126.)

On rebuttal, TPI points out that the overall Treasury staff proposed by CSXT (12 in addition to the Treasurer) is larger than CSXT's real-world Finance group, which has 10 employees excluding Vice Presidents and Assistant Vice Presidents. (TPI Rebuttal Ex. III-D-1 at 49.) However, TPI does not specifically address the responsibilities proposed for 11 of the 12 employees included in CSXT's evidence. Without any explanation from TPI as to how its proposed staff could cover these responsibilities, or, alternatively, why these responsibilities are unnecessary, CSXT has undermined the feasibility of TPI's proposed staffing and has presented corrective evidence that is feasible and supported. But there is one exception. As noted above, CSXT argued that the Corporate Relations group needs a manager to help the Director-Messaging with communications on behalf of TPIRR's departments, including the Finance Department's communications with investors, because "TPI proposed no communications staffing in any of those departments to handle those communications responsibilities." (CSXT Reply III-D-93, July 21, 2014.) The Board has accepted CSXT's addition of a manager in Corporate Relations to perform these functions. In discussing the Treasury group, however, CSXT proposes to include a Director of Communications and Investor Relations because "TPI has proposed that communications responsibilities will be distributed among the TPIRR's departments." (Id. at III-D-125.) Thus, although we otherwise accept CSXT's proposed Treasury group, we will reject CSXT's addition of a Director of Communications and Investor Relations, because this addition would directly contradict CSXT's rationale for adding a manager in Corporate Relations to perform the same functions.

The Board accepts TPI's proposal of 39 employees for the Revenue group. With respect to Freight Revenue Accounting, CSXT argues that because TPIRR will "handle 90% of CSXT's carloads, including 99% of CSXT's intermodal carloads and 98% of its General Freight carloads," but "only 62% of CSXT's coal carloads," TPIRR will have a revenue accounting workload comparable to the real-world CSXT. (Id. at III-D-126.) Furthermore, CSXT argues that TPIRR will have a more complex revenue accounting workload than the real-world CSXT for several reasons, including a lower percentage of direct-billed traffic and unit-train coal traffic, and thousands of "leapfrog" cars, for which the billing resolution process will be unusually complex. (Id. at III-D-126 to III-D-128.) CSXT states that the real-world CSXT has a total freight revenue accounting staff of 131. (Id. at III-D-128.) CSXT scales the TPIRR

revenue accounting to the real-world CSXT on the basis of carloads and proposes a staff of 116 for TPIRR's freight revenue accounting function. (Id.) And CSXT adds staff specifically dedicated to Car Accounting and Miscellaneous Billing, explaining the duties of each group and how it determined the number of staff required. (Id. at III-D-128 to III-D-130.)

Countering CSXT's arguments that TPIRR will need more staff to handle Freight Revenue than the real-world CSXT, TPI argues that TPIRR will need fewer employees because it has a higher percentage of interline traffic than CSXT. (TPI Rebuttal Ex. III-D-1 at 51 (citing DuPont, NOR 42125, slip op. at 85-86).) And, TPI argues that CSXT's other arguments in this regard are unsupported. (Id. at 51-52.) TPI argues that its Freight Revenue group of 39 is consistent with CSXT's actual 2013 staffing of 68. (Id. at 52.) TPI rejects CSXT's added staff for Car Accounting and Miscellaneous Billing, claiming that these functions are already handled by other TPIRR staff. (Id. at 51-52.)

TPI has explained the process it followed to develop its proposed G&A staffing and described the responsibilities of its Revenue group in particular. (TPI Opening Ex. III-D-2 at 2-12, 26-27.) CSXT does not sufficiently support the drastic scaling up in employees from TPI's proposed 39 to CSXT's proposed 141—CSXT acknowledges that 141 is even higher than that of the real-world CSXT's Revenue group. CSXT's support for this proposal consists of mere assertions with regard to the increased difficulty associated with TPIRR's revenue functions given TPIRR's lower percentage of direct-billed traffic, TPIRR's smaller portion of CSXT's coal traffic, and TPIRR's leapfrog traffic. Thus, CSXT has not undermined the feasibility or support of TPI's proposal, which the Board will accept.

Regarding Accounts Payable, CSXT accepts TPI's proposed 21 employees, and the Board will accept the parties' agreement on this issue. (Id. at 26; CSXT Reply III-D-130, July 21, 2014.)

As to Accounting Systems, CSXT also accepts TPI's proposed six employees, and the Board will accept the parties' agreement on this issue. (TPI Opening Ex. III-D-2 at 27-28; CSXT Reply III-D-135, July 21, 2014.)

With respect to Financial Reporting, CSXT increases the number of staff from four to 10. CSXT argues that TPIRR needs more financial reporting work than four employees would be able to accomplish, including monthly closing of books, STB reporting, financial statement audit, benefit plan reporting, external financial reporting, compliance with the Sarbanes Oxley Act of 2002 (SOX), and accounting and technical research. (CSXT Reply III-D-130 to III-D-133, July 21, 2014.) On rebuttal, TPI accepts two of the additional employees proposed by CSXT. (See TPI Rebuttal Ex. III-D-1 at 54.) TPI rejects CSXT's addition of a manager and two accountants responsible for accounting and technical research, which, according to CSXT, would consist of monitoring new pronouncements by accounting standards setters and developing accounting policies and procedures to comply with the new standards. (CSXT Reply III-D-132, July 21, 2014.) TPI argues that every accounting professional needs to stay informed of these issues, CSXT's 2013 organization did not include accounting research job titles, and TPI's proposed Cost and Economic Analysis group would include an analysis function which need not be duplicated in the Financial Reporting group. (See TPI Rebuttal Ex. III-D-1 at 54.) Because

CSXT has failed to show that these three employees would satisfy responsibilities that are necessary and not already covered by TPI's proposed staffing—and because even the real-world CSXT appears not to have employees serving these functions—we will reject their inclusion. TPI also rejects CSXT's proposed addition of a manager to oversee SOX compliance. CSXT argues that an organization of TPIRR's size would require compliance with SOX requirements on matters such as internal controls, and the five-person Internal Audit group is not large enough to handle these responsibilities. (CSXT Reply III-D-132 to III-D-133, July 21, 2014.) In response, TPI contends that between the inclusion in Financial Reporting of a manager and an accountant responsible for external and regulatory filings (which TPI accepts) and the Internal Audit staff, SOX compliance is already covered without the addition of this manager. (TPI Rebuttal Ex. III-D-1 at 54-55.) We agree with TPI; CSXT has not supported its claim that SOX compliance would require a quantity of work beyond what could be handled by the manager and accountant responsible for external and regulatory filings, plus the Internal Audit staff. Therefore, we reject CSXT's proposed addition of a manager for SOX compliance, and we accept TPI's rebuttal staffing of six Financial Reporting employees.

In the Tax group, TPI initially proposed an Assistant Vice President-Taxes; a Director-Property, Sales and Use Tax supported by two Managers-Tax and two tax accountants; and a Director-Property Accounting supported by two Managers-Property Accounting and two property accountants, for a total staff of 11. (TPI Opening Ex. III-D-2 at 28 to 29.) CSXT accepts TPI's proposed five-person staff for property accounting. (CSXT Reply III-D-133, July 21, 2014.) However, CSXT argues that TPI's other proposed five-person team, led by the Director-Property, Sales and Use Tax, is not large enough to handle TPIRR's tax issues. CSXT asserts that taxation for railroads is more complex than for most other businesses because railroads traverse multiple jurisdictions with different tax regimes, and because 14 of the 18 states in which TPIRR operates use a unit valuation methodology to calculate ad valorem taxes, which requires particularly intensive work from a railroad's in-house staff. (Id. at III-D-133 to III-D-134 (describing the labor-intensive process required for ad valorem taxes).) CSXT further argues that converting book income to tax income in accordance with federal accounting standards is a major undertaking, given the capital-intensive nature of the rail industry. Finally, CSXT argues that a Class I railroad like TPIRR can expect focused attention from the IRS, and will need personnel available to answer questions and provide information for IRS officials at any time. (Id. at III-D-134 to III-D-135.) Therefore, CSXT proposes a staff of 18 to handle tax issues: a Director-Income Tax supported by three managers and six accountants; a Director-Sales Tax supported by a manager; and a Director-State Tax supported by two managers and three accountants. Combined with the agreed-upon Property Accounting staff (five employees) and the Assistant Vice President-Taxes, CSXT proposes a total staff of 24 for the Tax group.

On rebuttal, TPI accepts CSXT's proposed increase in tax staffing, except for the Director-State Tax and the two managers and three accountants supporting the Director-State Tax. TPI refers to the overlap between the responsibilities of CSXT's proposed State Tax group and Property Tax group, arguing that it would be redundant to add both. Accordingly, on rebuttal, TPI proposes a Tax group of 18. (TPI Rebuttal Ex. III-D-1 at 55.) We agree with TPI; CSXT's description of TPIRR's state tax work relates entirely to ad valorem taxes (CSXT Reply III-D-134, July 21, 2014), which are property taxes. See, e.g., Sunbelt 2016, NOR 42130, slip

op. at 12 (defining ad valorem taxes as "a state property tax"). Therefore, we will accept TPI's rebuttal staffing of 18 for the Tax group.

Next, TPI proposes an Internal Auditing group comprising a Director-Internal Auditing supported by two Managers-Internal Audit, a senior auditor, and three auditors, for a total of seven employees. (TPI Opening Ex. III-D-2 at 29.) CSXT accepts TPI's proposed staffing (CSXT Reply III-D-133, July 21, 2014), and the Board will accept the parties' agreement on this issue.

TPI also proposes a Director-Cost and Economic Analysis, supported by two Managers-Cost and Economic Analysis, a senior analyst, and an analyst, for a total of five employees. (TPI Opening Ex. III-D-2 at 29.) In addition to those employees,[41] CSXT proposes a Financial Planning staff as part of the Cost and Economic Analysis group. CSXT states that the Financial Planning group would be responsible for creating and managing financial plans that can support budgeting in the other TPIRR departments. Specifically, CSXT proposes an Assistant Vice President-Economics and Planning, a director of financial planning for operations, supported by three managers and two analysts, and a director of financial planning for commercial issues, supported by one manager and two analysts. (CSXT Reply III-D-136 to III-D-137, July 21, 2014.) This results in a total Cost and Economic Analysis group of 16 employees. On rebuttal, TPI rejects CSXT's addition of Financial Planning staff, arguing that CSXT incorrectly assumes TPIRR departmental management are unable or not qualified to develop their own departmental budgets for submission to the Cost and Economic Analysis group for consolidation into a corporate budget. (TPI Rebuttal Ex. III-D-1 at 55.) According to TPI, this duplicates the inclusion of departmental planning personnel whose responsibility it is to develop departmental budgets. (Id.)

But CSXT did not propose Financial Planning staff to develop departmental budgets. CSXT states that while the Operations Group will have primary responsibility for developing operating budgets and while the Marketing Group will have primary responsibility for revenue forecasts, Financial Planning staff in Finance and Accounting need to coordinate budgets and plans to ensure that adequate resources are available for the railroad's needs. (CSXT Reply III-D-136, July 21, 2014.) This coordination would require consideration of a continual flow of information from across the organization. For example, as CSXT states, the Cash Management Group will need to know what maintenance of way project work is scheduled in which month and when materials need to be purchased; business forecast levels will drive crew and equipment requirements; and train operations will be an input to planning fuel purchases. (Id.) Contrary to TPI's suggestion, departmental staff developing budgets would not serve this function, and therefore, we accept CSXT's addition of Financial Planning staff. However, as noted above, CSXT states that it is removing two managers from the group supporting the Director-Cost and

[41] CSXT states that it removes two managers from the Cost Analysis Group as unnecessary. (CSXT Reply III-D-135, July 21, 2014.) But its workpaper includes the full five-person group proposed by TPI, including the two managers. (CSXT Reply WP "TPIRR Operating Expense_Reply.xlsx," Tab "G&A Personnel," Row 121, July 21, 2104.)

Economic Analysis, but its workpapers still include these two managers. We will adjust CSXT's evidence to remove the two managers, resulting in a total Cost and Economic Analysis group of 14 employees.

ii. Cost of Outsourced Internal Audit

Railroads may outsource some of their Internal Audit work and maintain an in-house staff to work with the outsourced auditors and perform other auditing tasks. The parties agree on the size of the in-house staff for the audit function, but disagree on the cost of the outsourced Internal Audit. TPI proposes to outsource the Internal Audit at a cost of 0.03% of revenue, citing the Journal of Accountancy in support. (TPI Opening Ex. III-D-2 at 53 (citing TPI Opening WP "TPI Internal Audit.pdf.").) CSXT argues that the piece TPI cites from the Journal of Accountancy suggests a range between 0.03% and 0.2%, and that the same article states that companies that pay at the top of the range typically are highly regulated. (CSXT Reply III-D-133, July 21, 2014.) CSXT argues that a regulated entity like TPIRR could not expect to pay the lowest percentage projected by the benchmark; therefore, CSXT proposes that TPIRR's internal audit costs should be 0.04% of its revenues. (Id.) On rebuttal, TPI maintains that 0.03% of revenues for internal TPIRR audit costs is appropriate because: (1) CSXT's argument to use 0.04% relies on a misleading quote taken out of context; (2) TPIRR is entitled to use the lowest feasible price (TPI Rebuttal Ex. III-D-1 at 56 (citing AEP Tex., NOR 41191 (Sub-No. 1), slip op. at 100, Ariz. Elec., NOR 42113, slip op. at 46)); and (3) the Board relied on 0.03% of revenues for outsourced internal audit costs in DuPont (TPI Rebuttal Ex. III-D-1 at 56 (citing DuPont, NOR 42125, slip op. at 97)). In addition, TPI points out inconsistencies in the evidence provided by CSXT in support of its proposed cost of 0.04% of revenue. For example, TPI points out that CSXT calculates the outsourced Audit to be $3.237 million, which is 0.05% of revenues, and that CSXT deviated from its own assertion of 0.04% by using 0.03% of revenues in calculations used to feed total outsourced costs. (Id. at 55-56 n.160 (citing CSXT Reply WP "TPIRR G&A Outsourcing_Reply.xls," July 21, 2014).)

TPI's proposal of 0.03% is feasible and supported. TPI is correct that, in general, it is entitled to use the lowest feasible price, and accurately points to the DuPont decision to show that 0.03% of revenues for internal audit costs have been previously accepted by the Board. Furthermore, TPI is correct that CSXT's argument selectively quotes from the relevant Journal of Accountancy section, which states in full that "[c]ompanies that pay at the top of the range are highly regulated, decentralized entities with facilities spread across the globe." (TPI Opening WP "TPI Internal Audit.pdf.") TPIRR clearly would not meet this description. The Board accepts TPI's proposal of 0.03% of revenues for internal audit costs.

d. Law

The parties disagree on the staffing levels for TPIRR's Law and Administration Department.

On opening, TPI proposes a Legal and Administrative Department consisting of 45 employees. (TPI Opening III-D-19.) The department includes TPIRR's legal resources, labor relations, real estate, claims, and security functions (TPI Opening Ex. III-D-2 at 29), and is

headed by the Vice President-Law. (TPI Opening III-D-19.) TPI posits that much of the legal work would be handled by outside counsel, who is supervised by the Vice President with the assistance of three Associate General Counsels, a General Solicitor, and two in-house General Attorneys. (TPI Opening Ex. III-D-2 at 29.)

On reply, CSXT proposes a Law Department consisting of 155 employees. CSXT argues that TPI understaffed the Law Department and neglected the need for an Environmental group. (CSXT Reply III-D-137, July 21, 2014.) CSXT also contends that the Vice President-Legal and Administrative cannot supervise all of the diverse functions of the Law Department; therefore, it adds an Assistant Vice President for Law and Claims, an Assistant Vice President for Asset Protection, and an Administrative Assistant. (Id.)

On rebuttal, TPI proposes a Law Department consisting of 73 employees.

For ease of discussion, the Board will discuss the parties' staffing proposals for TPIRR's Law department in subgroups: Legal, Claims, Asset Protection, and Environment.

i. Legal

The parties agree on staffing for the in-house legal function, and they agree on the basic approach to determining outsourced legal spending. But they disagree on the proper benchmark for calculating the total cost for legal expenses.

TPI states that it bases TPIRR's outside legal budget on a percent of revenue calculation. (TPI Opening Ex. III-D-2 at 29.) Specifically, TPI explains that it looked at several benchmarks, which show that companies with revenues greater than $5 billion typically spend between 0.14% and 0.20% of revenues on legal expenses, (id. at 30; see also TPI Opening WP "TPIRR Legal Benchmarks.pdf"), and elected to rely on the 2010 ALM Legal Intelligence benchmark of 0.1482% of revenues to calculate TPIRR's legal expense figure. (TPI Opening Ex. III-D-2 at 30.) TPI contends that, when applying this benchmark to TPIRR's revenues of $6.5679 billion, its total legal-related spending is $9.7 million and that proposed in-house legal costs are subtracted from this amount to yield a total for outsourced legal spending. (Id. at 30; see also TPI Opening WP "TPIRR G&A Outsourcing_Opening.xlsx.")

On reply, CSXT disputes that TPIRR can expect to pay the lowest available percent-of-revenue benchmark. (CSXT Reply III-D-138, July 21, 2014 (citing TPI Opening WP "TPIRR Legal Benchmarks.pdf" at 8).) In support, CSXT points to the fact that the other benchmarks for companies of TPIRR's size included in TPI's evidence were 0.2% and 0.19%. (Id. (citing TPI Opening WP "TPIRR Legal Benchmarks.pdf" at 8).) CSXT also provides a benchmarking study of its own to show that companies of TPIRR's size can expect to pay 0.41% of revenue. (Id. (citing CSXT Reply WP "CSXT Legal Benchmarking Survey.pdf" at 5, July 21, 2014).) Based upon all of the benchmarks entered into the record, CSXT proposes a total of 0.24% for inside and outside legal services because (1) TPIRR is in a regulated industry and cannot expect to pay the minimum in legal costs, and (2) the 0.24% figure represents a simple average of all the benchmarks put into evidence. (Id. at III-D-138 to III-D-139; see also CSXT Reply WP "TPIRR G&A Outsourcing Reply.xlsx," July 21, 2014.)

On rebuttal, TPI argues that it provided third-party benchmarks in its opening, that TPI is entitled to use the lowest benchmark, and that there is no justification for ignoring the lowest feasible cost. (TPI Rebuttal Ex. III-D-1 at 59-60 (citing Ariz. Elec., NOR 42113, slip op. at 46).) TPI also argues that CSXT commits errors in the calculation of its 0.24% figure for outside legal expenses and that the average of all the benchmarks is 0.23%, not 0.24% as CSXT suggests. (Id. at 60.) TPI states that, because it is entitled to use the lowest feasible cost and because CSXT made an error in calculating its legal costs, TPI maintains its proposal from opening that legal costs will be 0.1482% of TPIRR's revenue. (Id.)

We accept TPI's proposed legal cost as feasible and supported. It is not improper for TPI to use the lowest appropriate benchmark for this issue. (Id. (citing Ariz. Elec., NOR 42113, slip op. at 46).) TPI relied on a benchmark study of companies of a similar size to TPIRR. While CSXT argues that TPI's study is not relevant to a company that is regulated, CSXT's own corrective evidence did not include a study that benchmarked only regulated companies of TPIRR's size. Therefore, the Board will accept the figure of 0.1482% of TPIRR's revenues for total legal expenses.

ii. Real Estate

On opening, TPI proposes a Real Estate group that is headed by a Director, assisted by a Real Estate Counsel and a Manager. (TPI Opening Ex. III-D-2 at 30.) On reply, CSXT accepts TPI's three-person staff proposal for administrative issues but argues that TPI has not provided sufficient engineering capability to support TPIRR's real estate function. (CSXT Reply III-D-142, July 21, 2014.) CSXT asserts that TPIRR must have staffing sufficient to handle basic property development activities such as design and engineering, permitting, and scheduling of construction and proposes two Development Managers to fulfill this purpose. (Id.) On rebuttal, TPI argues that design and construction staff is not needed because the railroad is fully constructed and any unexpected needs will be handled by the Engineering Department; thus, TPI rejects the two Development Managers. (TPI Rebuttal Ex. III-D-I at 60-61.)

The Board accepts TPI's proposal of three Real Estate employees instead of CSXT's proposal of five. TPI adequately supported the position that design and construction staff are not needed in the G&A Department of TPIRR during the 10-year SAC analysis period because the railroad is completely designed and newly constructed to meet the peak year traffic of that 10-year period, and that any unexpected needs would be handled by the "Structures" office in the Engineering Department. (Id. at 61.)

iii. Claims and Asset Protection

The parties dispute the size of the Claims group that TPIRR will require within the Law Department.

On opening, TPI proposes a Claims and Asset Protection group staffed by a total of eight employees: a Director, a Manager, four Claims Agents, a Manager-Environmental Services, and an Administrative Assistant. (TPI Opening Ex. III-D-2 at 30-31.) TPI states that this group is

responsible for the administration of claims on a system-wide basis, and the Claims Agents in particular provide assistance in investigating claims, and are also responsible for government safety reporting and representing TPIRR in industry associations and safety forums. (Id.) TPI also explains that this group works with Labor Relations, Human Resources, and outside counsel to resolve FELA claims which become lawsuits. (Id. at 29.) On reply, CSXT argues that TPI's staffing is not adequate to handle the volume of claims that a railroad the size of TPIRR can expect. In particular, CSXT suggests that four Claims Agents would not be enough to address the volume of FELA issues that would arise, considering the number of such claims that the real-world CSXT faces. (CSXT Reply III-D-139 to III-D-140, July 21, 2014.) Therefore, CSXT increases the number of Claims Agents to 15. (Id.)[42] CSXT structures its Claims department by region, with each of the three regions headed by a Regional Manager, and its entire department headed by a Director and supported by an Administrative Assistant for a total of 20 employees.

On rebuttal, TPI argues that CSXT incorrectly assumed the Claims and Asset Protection group would handle all claims by itself. TPI points out that, on opening, it also proposed a Labor Relations group in the HR Department that would work on these issues.[43] (TPI Rebuttal Ex. III-D-1 at 61; see also TPI Opening Ex. III-D-2 at 15, 29.) As noted above, in reference to the HR Department, CSXT removed the Labor Relations group on reply, but it failed to undermine the feasibility of TPI's proposal, and we accepted the inclusion of Labor Relations staff. Here, as TPI notes, CSXT relies heavily on the assumption that the Claims and Asset Protection group is too small to handle the number of FELA claims that TPIRR would face. (CSXT Reply III-D-139 to III-D-140, July 21, 2014.) But CSXT overlooks the fact that the Labor Relations staff would also work on FELA claims—in total, claims would be addressed by seven employees in the Claims and Asset Protection group (excluding the Manager-Environmental Services, addressed below in connection with the Environmental group) and six employees in the Labor Relations group. Thus, CSXT mischaracterizes TPI's proposal, and it fails to undermine the feasibility of that proposal. We will accept TPI's Claims and Asset Protection group, excluding the Manager-Environmental Services.

iv. Police

On opening, TPI proposes a police force that is located in the Atlanta headquarters and consists of a Director, two Assistant Directors, two Sergeants, and 20 Special Agents located throughout the system. (TPI Opening Ex. III-D-2 at 31.)

---

[42] The method CSXT's expert uses to determine the need for the number of claim agents takes CSXT's actual average casualty events from 2012 and 2013 and divides them by the number of CSXT's route miles. (CSXT Reply III-D-140, July 21, 2014.)

[43] TPI also takes issue with CSXT's methodology for calculating the number of Claims Agents (TPI Rebuttal Ex. III-D-1 at 62), but these arguments are moot for the reasons discussed above. We note that one of TPI's arguments—that the use of track miles is a more appropriate benchmark than route miles, which CSXT used—is improper rebuttal. TPI did not rely on track miles to support its own staffing proposal and may not adopt a new methodology on rebuttal.

On reply, CSXT argues that TPI's proposal of a 25-person police force is insufficient to cover the responsibilities that a real-world railroad must address, as required by industry practice and government regulation for a railroad that geographically covers 6,911 route miles and 18 states. (CSXT Reply III-D-142 to III-D-143, July 21, 2014.) CSXT's expert reviewed the security requirements for railroads with CSXT police personnel and determined that TPI failed to account for several functions. (Id. at III-D-143.) In reply, CSXT proposes a police force headed by an Assistant Vice President and supported by a staff of 90 that is divided into four groups: Special Agents; Communications Center; Security; and Technical, with two administrative personnel. (Id. at III-D-144.) Specifically, there will be 50 Special Agents, managed by 12 Sergeants with two Superintendents and organized geographically into two regions; the Communications Center will have two Managers and a staff of nine people to allow the call center to operate 24/7; a security staff of five people headed by a manager; and a technical staff of six people headed by a Director. (Id. at III-D-145 to III-D-147.) CSXT also proposes that all TPIRR police officers be issued a Harris Unity XG-100P Full-Spectrum multiband portable radio, which CSXT asserts is the same equipment used by real-world Class I railroads such as CSXT. (Id. at III-D-148.)

On rebuttal, TPI agrees with the need for a Communications Center and includes two Managers and a staff of five to staff the Center (compared to CSXT's 11-person Communications Center). (TPI Rebuttal Ex. III-D-1 at 65-66.) TPI accepts CSXT's staffing of the Security group. (Id. at 66.) As to the technical staff that CSXT proposes to assist and support other police functions, TPI argues that these employees will have duplicated responsibilities to other TPIRR employees and excludes them. (Id.)

TPI retains its staffing level of 25 for TPIRR's Special Agents and managers. (Id. at 65.) TPI argues that CSXT's contention that a Special Agent staff of 65 is necessary to engage in tasks such as protecting certain hazmat trains is belied by CSXT's tariffs, which state that CSXT does not furnish security, escort, or guard services for Hazardous Commodities. (Id. at 63 (quoting CSXT Tariff 4049 at 6).) TPI further argues that under SAC principles, TPIRR should not be required to incur costs for police escorts because CSXT itself does not incur such costs and that, as a tax-paying entity, TPIRR is entitled to the support and cooperation of local and state police forces when assistance is required. (Id. at 64.) Furthermore, TPI contends that TPIRR is a smaller railroad than real-world CSXT, that there will be fewer opportunities for incidents to occur with less originating and terminating traffic on TPIRR compared to CSXT, and that CSXT's large real-world police force is a model more in line with older railroads. (Id. at 64-65.)

The Board accepts CSXT's staffing proposal for TPI's police force. While TPI argues that TPIRR would be entitled to local and state police forces when assistance is required, TPI does not point to the inclusion of any costs to reflect the payments TPIRR would need to make in return for such services. See Sunbelt 2014, NOR 42130, slip op. at 60. TPI's rebuttal evidence seeking to reduce the CSXT's proposed Communications Center staff is also not persuasive. TPI's argues that one person per shift (plus a Manager) is adequate, but it provides no further explanation or support for this claim (TPI Rebuttal Ex. III-D-1 at 66), and it does not challenge the call volume CSXT presented on reply. (CSXT Reply III-D-143, July 21, 2014.) Likewise, TPI argues that CSXT's proposed Technical staff is duplicative of other TPIRR employees but

does not specifically indicate where or how those functions will be covered. (TPI Rebuttal Ex. III-D-1 at 66.) Thus CSXT has successfully undermined the feasibility of TPI's proposal, and the Board accepts CSXT's police staffing proposal.

v. Environmental

On opening, TPI included one environmental employee in the Claims and Asset Protection group: a Manager–Environmental Services, who is responsible for working with all federal agencies for compliance with regulations and reporting, response to spills, non-accident reporting, and other incidents. (TPI Opening Ex. III-D-2 at 31.) TPI also included five other environmental personnel within Operations and G&A, including two Directors-Environmental Controls from the Transportation Department, a Manager-Testing and Environmental from the Mechanical Department, and a Director-Environmental Operations and an Environmental Engineer from MOW. (See TPI Rebuttal Ex. III-D-1 at 66-67.)

On reply, CSXT argues that although TPPIR will transport 333,875 carloads of hazardous materials (hazmat) traffic, TPI claims TPIRR revenues for this hazmat traffic without accounting for the full costs TPIRR would incur to transport it. (CSXT Reply III-D-149, July 21, 2014.) CSXT states that its expert developed environmental staffing for TPIRR in light of real-world legal and practical requirements, such as hazmat rules and environmental laws. (Id. at III-D-150 to III-D-153.) CSXT proposes a 30-person Environmental department headed by a Director and divided into three major groups: Field Services, Remediation and Technology, and Hazardous Materials. (Id. at III-D-155.) Each group will headed by a Manager, and CSXT also includes a Manager of Project Administration. (Id.)

On rebuttal, TPI accepts 16 of the 30 environmental positions CSXT proposes, instead of the environmental personnel TPI proposed on opening. (TPI Rebuttal Ex. III-D-1 at 67.) TPI argues that while CSXT presented support for the organization and responsibilities of TPIRR's Environmental group, CSXT does not provide support for the 15 Field Services Engineers, which TPI reduces to four. (Id.) TPI accepts CSXT's inclusion of Director-Environmental and a Manager each for Field Services, Remediation and Technology, and Hazardous Materials, accepts CSXT's three Remediation and Technology Engineers, reduces CSXT's Hazardous Materials Compliance Officers from seven to five, and rejects CSXT's proposal for a Manager-Project Administration. (Id.)

CSXT states its proposal is based on real-world CSXT staffing scaled to TPIRR on the basis of route miles, which appears to be a reasonable methodology. (CSXT Reply III-D-155, July 21, 2014; see also id. at III-D-157.) While TPI argues that CSXT's proposal for 15 Field Service Engineers is excessive because "this many field engineers would be stepping over each other as they inspect and monitor air, water and ground quality" (TPI Rebuttal Ex. III-D-1 at 67), it does not explain why that would be the case. TPI reduces the Hazardous Materials Compliance Officers from seven to five because it believes five "will be sufficient coverage for the TPIRR," but again, it does not explain why. (Id.) Likewise, TPI rejects the proposal for a Manager-Project Administration as unnecessary because the other 16 personnel in TPIRR's Environmental Group are adequate, but does not indicate why. (See id.) Therefore, we accept CSXT's proposal for environmental staff.

e. Information Technology (IT) Department

The parties' disagreement over the number of employees required for TPIRR's IT Department centers primarily on the difference in the overall number of TPIRR staff that each party proposes. On opening, TPI proposes an IT Department of 73 employees. (TPI Opening III-D-19.) On reply, CSXT assumes that TPI's proposed IT staff will suffice for TPI's proposed 5,427 employee railroad, but increases the IT Department to 89 employees to correlate with CSXT's proposal for an across-the-board workforce increase, a scaling method that CSXT states was accepted by the Board in a previous case. (CSXT Reply III-D-158; DuPont, NOR 42125, slip op. at 96-97.) CSXT notes that TPI's proposed IT staffing equates to 1.3% of its total workforce and that CSXT's proposed IT staffing equates to 1.2%.

On rebuttal, because TPI accepts only a minimal number of CSXT's proposed total TPIRR staffing increases, TPI retains its opening staffing levels for the IT group. (TPI Rebuttal Ex. III-D-1 at 68.)

The Board accepts CSXT's lower ratio but, consistent with the Board's decision in DuPont, we apply this ratio to the total number of Board-accepted TPIRR staff. Thus, the Board accepts an IT staff that is 1.2% of the total number of staff that the Board accepts for TPIRR and 83 employees.

2. Compensation for G&A Personnel

The parties agree to accept Wage Forms A and B for non-executive employees but disagree on the areas of executive compensation, outside Board of Director compensation and fringe ratio. The fringe benefit ratio has been addressed in the Operating Expenses Appendix.

a. Executive Compensation

The parties disagree as to compensation for the President and Vice Presidents. (TPI Opening Ex. III-D-2 at 36; CSXT Reply III-D-159.) On opening, TPI asserts that its annual salaries for the President and Vice Presidents are based on the salaries, including bonuses, paid for similar positions by the Kansas City Southern Lines (KCS), a holding company, which owns and operates the Kansas City Southern Railway and the Kansas City Southern de Mexico. (TPI Opening Ex. III-D-2 at 36.) TPI contends that TPI is similar to KCS in its number of route miles, which is smaller than CSXT's. (Id. at 37.) TPI states that its executive compensation for TPIRR includes salary and short-term incentives in the form of cash bonuses, but excludes long-term incentives in the form of stock and options awards. (Id.) TPI contends that stock and options awards are excluded in part because TPIRR will be a private company. (Id.)

CSXT argues that TPI significantly understated compensation for TPIRR's President and Vice Presidents. First, CSXT argues that TPI ignored the stock-based compensation that is the primary element of KCS's executive compensation structure. (CSXT Reply III-D-160, July 21, 2014.) Second, CSXT asserts that TPI artificially lowered the cost of executive compensation by using a short two-year average that includes the recession year of 2009—the year before TPIRR

begins operation. (Id.) CSXT contends that it corrects these errors by using an average for all executive compensation for 2010-2013 including salary, bonus, stock awards, stock options, non-equity incentive plan compensation, and all other compensation, all of which KCS counts as an expense. (Id. at III-D-161.) In making this argument, CSXT states that Board precedent requires TPI to count stock options and other deferred compensation as a SARR expense. (Id. (citing DuPont, NOR 42125, slip op. at 82; Sunbelt 2014, NOR 42130, slip op. at 61.) CSXT also argues that a fringe benefit ratio should not be applied to TPIRR's executives because doing so may overstate the cost of benefits for executives. (Id. at III-D-162.) Instead, CSXT proposes that TPIRR use a more tailored method of determining benefits—specifically, the "All Other Compensation" category of executive pay as reported in KCS's annual proxy statement. (Id.; see also CSXT Reply WP "KCS Proxy Statement 2011.pdf" at 24-25, July 21, 2014.) CSXT suggests a total average of $4,721,030 as a reasonable approximation of executive compensation for TPIRR's President and a total average of $1,511,744.78 for TPIRR Vice Presidents. (CSXT Reply III-D-162 to 163, July 21, 2014.)

On rebuttal,[44] TPI argues that CSXT makes several errors when calculating executive compensation. (TPI Rebuttal Ex. III-D-1 at 70.) First, TPI argues that CSXT develops an average compensation based on three KCS Executive Vice Presidents and then inappropriately applies the average to 10 TPIRR Vice Presidents. (Id.) TPI agrees with the use of KCS data for Executive Vice Presidents being applied to the COO, CFO, and Executive Vice President Sales & Marketing, but rejects the use of KCS's Executive Vice President compensation being applied to regular Vice Presidents because TPI asserts that this is not supported by CSXT's evidence. (Id. at 70-71.) Second, TPI argues that CSXT makes an error by using the 2010 through 2013 average of Executive Vice President compensation for base year salaries, which CSXT escalates from 2010 in its DCF model. (Id. at 71.) TPI asserts that this approach overstates Executive Vice President compensation and is inconsistent with the salaries for non-executives. (Id.) To remedy this error, TPI relies on the Executive Vice President compensation developed by CSXT, but only 2010 compensation. (Id. (citing CSXT Reply Table III-D-28 and Table III-D-29).) For the President/CEO, TPI uses base-year compensation of $3,992,796, and for three Executive Vice Presidents, TPI uses base-year compensation of $1,336,747. (Id.)

The Board accepts TPI's rebuttal evidence on the President/CEO and Executive Vice President compensation. While CSXT is correct that TPI's opening compensation evidence did not reflect stock compensation, CSXT made a number of calculation errors in its reply evidence that resulted in inflated compensation for these positions. TPI's adjustments to CSXT's evidence on rebuttal will be accepted in light of those errors. Contrary to TPI's rebuttal evidence,

---

[44] On rebuttal, TPI acknowledges that in light of the DuPont and Sunbelt 2014 decisions, the Board now allows non-salary compensation for executives in the form of stock awards and stock options. (TPI Rebuttal Ex. III-D-1 at 70 (citing Sunbelt 2014, NOR 42130, slip op. at 53; DuPont, NOR 42125, slip op. at 82).) Because the decision to allow additional non-executive compensation was determined after TPI's Opening Evidence was submitted, TPI asserts that it relies on evidence provided by CSXT in discovery and in reply to develop fair and representative compensation structures for certain TPIRR executives. (Id. at 69-70.)

however, we will also apply the Executive Vice President salary to the other TPIRR Vice Presidents. TPI's suggestion in its rebuttal that it was improper for CSXT to base the other TPIRR Vice Presidents' salaries on the average of KCS's Executive Vice President salaries is inconsistent with TPI's own statement on opening that it did just that. (See TPI Opening Ex. III-D-2 at 36 n.7.)

b. Outside Board of Directors

TPI proposes that the Board of Directors will meet once per quarter and will be compensated $10,000 per meeting attended. (TPI Opening Ex. III-D-2 at 37.) CSXT disagrees with TPI's proposed compensation of $40,000 for outside board members. (CSXT Reply III-D-163, July 21, 2014.) CSXT argues that TPI did not provide support for the $40,000 figure and asserts that outside directors at comparable real-world railroads are compensated at significantly higher levels. (Id. at III-D-163 to III-D-164.) Based on KCS's average outside director compensation from 2010 to 2013, CSXT asserts that TPIRR must pay each of its outside directors at least $198,887 a year to remain competitive. (Id. at III-D-164.)

On rebuttal, TPI agrees to compensate the one independent director at the 2010 value of $203,391 derived by CSXT, but continues to include compensation of $40,000 per year for other outside directors (investors and shipper representatives) to cover the costs of meeting, travel and entertainment, and other incidental costs associated with serving on TPIRR's Board of Directors. (TPI Rebuttal Ex. III-D-1 at 71 to 72.)

The Board accepts TPI's compensation evidence for outside directors. In past cases, the Board has accepted the complainant's argument that outside directors who are shipper or investor representatives would be willing to serve with only compensation for travel expenses. See Sunbelt 2014, NOR 42130, slip op. at 62; Pub. Serv. 2004, 7 S.T.B. at 653; Duke Energy Corp. v. CSX Transp., Inc., 7 S.T.B. 402, 462 (2004); Duke Energy Corp. v. Norfolk S. Ry. (Duke/NS), 7 S.T.B. 89, 159 (2003). Consistent with that precedent, we accept TPI's proposal that outside directors who are shipper or investor representatives are willing to work with compensation only to cover the costs of meeting, travel and entertainment, and other incidental costs—as opposed to paying each of those directors the full compensation for an independent director.

3. Materials, Supplies, and Equipment

The parties generally agree on the unit costs for various materials, supplies, and equipment, but they disagree on the number of units based on differences in the overall TPIRR headcount. On reply, CSXT makes adjustments to the expenses based on its reply TPIRR headcount. (CSXT Reply III-D-165, July 21, 2014; see also CSXT Reply WP "TPIRR Operating Expenses_Reply.xlsx," Tab "Summary," July 21, 2014.) On rebuttal, TPI also makes adjustments based on its rebuttal TPIRR headcount. (TPI Rebuttal Ex. III-D-1 at 72.) TPI also asserts that CSXT's significantly increased number of automobiles for G&A staff is disproportionate even for CSXT's increased headcount. Specifically, CSXT included a total of 103 Ford Explorers and 144 Ford Tauruses for a total annual cost of $2.5 million, (id. (citing CSXT Reply WP "TPIRR Operating Expenses_Reply.xlsx," July 21, 2014)), compared to TPI's

opening evidence of five Ford Explorers and 31 Ford Tauruses for a total annual cost of $0.3 million. (Id. (citing TPI Op. WP "TPIRR Operating Expense_Open.xls").) TPI asserts that, although CSXT claims that the added vehicles are needed for employees who travel as claims agents and police, (id. at 73 (citing CSXT Reply III-D-170 n. 387)), CSXT has double-counted vehicles because these personnel were already assigned travel expenses. (Id. (citing CSXT Reply WP "Runzheimer White Paper.pdf," July 21, 2014).)

The Board will use the G&A personnel headcount that it is consistent with the positions it has accepted in order to determine materials, supplies, and equipment. With regard to automobiles, because the Board has accepted CSXT's proposal for additional Special Agent positions in the TPIRR police force, we will increase TPI's opening automobile count by 40 vehicles to account for that staffing change. TPI argues that these employees would already have access to vehicles because CSXT's proposed travel costs include a component for rental cars. (TPI Rebuttal Ex. III-D-1 at 73.) As discussed below, however, the Board accepts TPI's proposed travel costs, not CSXT's. Thus, the Board accepts 103 Ford Explorers and 66 Ford Tauruses for a total annual cost of $1,808,021.

4. Other

a. IT Systems

The parties agree on the types of IT systems and equipment that TPIRR requires, but they disagree about the quantity of certain equipment required. (Id. at 73-76.) On reply, CSXT increases the total amount of computer equipment by 40% to provide equipment for the additional staff that CSXT proposes. (CSXT Reply III-D-165, July 21, 2014; see CSXT Reply WP "Operating Expense_Reply.xlsx," Tab "IT," July 21, 2014; see also CSXT Reply WP "IT Staff Scaling.xlsx," July 21, 2014.) On rebuttal, TPI increases the computer equipment cost from opening based on its rebuttal G&A personnel proposals. (TPI Rebuttal Ex. III-D-1 at 73-74.) The parties also disagree on whether TPIRR needs a back-up desktop printer (in addition to the agreed upon line printer) at each location where TPIRR crews would go on duty. On reply, CSXT provides desktop printers so that the crews have the ability to print work orders and train manifests without delay if the line printer is not in service. (CSXT Reply III-D-166, July 21, 2014.) On rebuttal, TPI accepts CSXT's total count of 172 line printers, which includes 155 line printers at crew change points, but disagrees that a backup desktop printer is also needed at all the crew change locations. (TPI Rebuttal Ex. III-D-1 at 75.)

The Board accepts the parties' agreed-upon IT systems and equipment in the number that is consistent with the personnel that we accept elsewhere in this appendix. The Board also accepts CSXT's proposal to have desktop printers as well as line printers at each location given the impact that a non-working printer would have on operations. CSXT argues persuasively that the additional capital expense of back-up printers is less than the expense of delaying trains due to the inability to print out workpapers. TPI rejection of this argument is limited to a statement that its expert "feels that a line printer should be sufficient at all the crew change locations," without further explanation or support. (TPI Rebuttal Ex. III-D-1 at 75.)

b. Start-Up and Training Costs

The parties generally agree on the methodology for calculating start-up and training costs, but they disagree about certain assumptions that are required to do the calculation. (TPI Opening Ex. III-D-2 at 54; CSXT Reply III-D-167 to III-D-168, July 21, 2014.)

On opening, TPI proposes a 3% attrition rate based on a magazine article from 1998, which quotes a CSXT spokeswoman for the proposition that such an attrition rate was "normal . . . at CSX." (See TPI Opening WP "Attrition Rates.pdf.") On reply, CSXT generally accepts TPI's proposed training and recruitment costs but corrects three "methodological errors." (CSXT Reply III-D-167, July 21, 2014.) First, CSXT adjusts total training costs to incorporate the additional TPIRR staff positions identified by CSXT in its reply evidence. (Id.) Second, where training salaries include benefits, CSXT uses its proposed fringe benefit ratio of 50.2%. (Id. at III-D-168.) Third, CSXT proposes different attrition rates, which range from 6.8% to 13.3% and are the job-specific attrition rates of the real-world CSXT. (Id. at 168, 100; CSXT Reply WP "CSXT Attrition.pdf," July 21, 2014.) CSXT argues that TPI's proposed 3% attrition rate is absurd and that the Board rejected the article cited by TPI as "outdated and unrealistic" in 2007. (CSXT Reply III-D-99, July 21, 2014 (citing W. Fuels Ass'n v. BNSF Ry. (W. Fuels 2009), NOR 42088, slip op. 54 (STB served Feb. 18, 2009)).) On rebuttal, TPI continues to develop start-up and training costs in the same manner as it did on opening, but adjusts the costs to reflect TPIRR's headcount developed on rebuttal. (TPI Rebuttal Ex. III-D-1 at 76.) TPI rebuts CSXT's attrition rate argument by pointing out that it was the defendant—not the Board—that described the 3% attrition rate as being outdated and unrealistic in Western Fuels 2009. Therefore, TPI argues that the Board should accept the 3% rate because it is closer to figures that have been used in prior rate cases as well as independent real-world sources. (TPI Rebuttal Ex. III-D-1 at 31 (citing W. Fuels 2009, NOR 42088, slip op. 54; Otter Tail, NOR 42071, slip op. at C-18.)

As previously discussed in the Executive Department section of G&A, the Board accepts CSXT's attrition rate proposal. As previously discussed in the Operating Expenses Appendix, the Board accepts TPI's proposed fringe benefit ratio. We will also make adjustments based on the TPIRR staff positions that the Board has accepted.

c. Travel and Entertainment Expenses

The parties agree on the types of TPIRR employees whose jobs will require travel. (TPI Rebuttal Ex. III-D-1 at 77.) But they disagree on the total cost of travel because of the differences in the staffing that they propose (as described elsewhere) and because of the different ways that they calculate the cost of travel and entertainment per person. TPI bases its annual travel expenses of $10,475 per employee on what it asserts is the most recent available annual survey of corporate travel managers performed by Runzheimer International. (TPI Opening Ex. III-D-2 at 55.)

On reply, CSXT proposes a multi-year average of travel expenses based on three years of Runzheimer International surveys, from 2010 to 2012, resulting in an average cost of $10,573 per traveler. (CSXT Reply III-D-170 to III-D-171, July 21, 2014.) And CSXT points out that

TPI omitted entertainment expenses. CSXT argues that the Board has previously held that a SARR must account for entertainment expenses. (Id. at III-D-171 (citing DuPont, NOR 42125, slip op. at 100).) CSXT contends that its own 2011 and 2012 entertainment costs are approximately 5.4% of total travel costs and proposes the same number be applied to TPIRR, amounting to $571 additional dollars per traveler. (CSXT Reply III-D-171 to III-D-172, July 21, 2014 (citing CSXT Reply WP "Proposed TPIRR Travelers.xlsx," Tab "CSXT Actual Travel & Entertain," July 21, 2014.). Overall, CSXT proposes a budget for travel and entertainment of $3.7 million: $3.5 million for travel expenses and $0.2 million for entertainment expenses. (CSXT Reply III-D-172, July 21, 2014; see also id. at Table III-D-32.)

On rebuttal, TPI increases its traveling employees from 98 to 148, consistent with TPI's rebuttal staffing. (TPI Rebuttal Ex. III-D-1 at 77.) TPI continues to rely on the 2010 Runzheimer International survey cost of $10,475 per employee for travel expenses. (Id. at 78.) As for entertainment expenses, TPI calculates entertainment as 2.95% of travel expenses, using averages from a 2009 Runzheimer study. (Id.) TPI argues that CSXT was required to rely on the 2009 study because it referenced it in its reply argument. (Id.) Overall, TPI's rebuttal travel and entertainment expenses increase to $2.1 million. (Id.)

The Board accepts TPI's annual travel expense of $10,475 per traveling employee, which will be applied consistent with the G&A personnel the Board has accepted above. Both parties, in part, use Runzheimer International surveys to support their travel expense costs. Although the Board favors use of an average of multiple years over using data from a single year, thus reducing the chance that an expense estimate will be based on an aberrational year, here CSXT has not identified any particular aberration with the year used by TPI.

As to entertainment expenses, we will accept CSXT's evidence. TPI failed to include any entertainment expenses on opening and has not shown that CSXT's entertainment expenses are infeasible or unsupported. We disagree with TPI's argument that CSXT was required to rely on the Runzheimer study for entertainment expenses because it referenced it in its reply. CSXT simply refers to the 2009 study to state that the study did not consider entertainment costs. CSXT does not use the 2009 study to calculate entertainment costs, as it uses its actual 2011 and 2012 entertainment costs. (See CSXT Reply III-D-171, July 21, 2014.)

d. Bad Debt

The parties disagree on TPIRR's bad debt expenses. On opening, TPI states that it assumes TPIRR will not have expenses for bad debt resulting from the write down of doubtful accounts. (TPI Opening Ex. III-D-2 at 55.) TPI asserts that its assumption is based on CSXT's actual experience which, according to its R-1 Annual Reports, shows a range of uncollectable amounts as a percent of revenue from negative 0.15% to 0.09%, with a three-year (2009 – 2011) average write down of uncollectable debt equal to negative 0.01%. On reply, CSXT argues that TPI is attempting to avoid the required bad debt analysis by using a one-time CSXT write down of its bad debt expenses. (CSXT Reply III-D-173, July 21, 2014.) CSXT contends that it has had an average bed debt expense of 0.13% over 2004-2013, and reported negative bad debt expense in only one year, 2009. (Id.) CSXT explains that the negative bad debt expense was due to a one-time adjustment to CSXT's allowance for doubtful accounts. (Id.) CSXT states

that its bad debt average for 2010 through 2012, the first three years of the SARR, was approximately 0.08%; thus, the bad debt expense for TPIRR should be 0.08%. (Id. at III-D-174.) On rebuttal, TPI argues that CSXT should have included 2013, the most recent year available, and TPI recalculates TPIRR's bad debt expense to 0.07% using CSXT's actual experience from 2010 to 2013. (TPI Rebuttal Ex. III-D-1 at 79.)

The Board accepts CSXT's bad debt evidence, with one adjustment. On reply, CSXT explains why TPI's opening bad debt proposal was infeasible and proposed a bad debt average of 0.08% using data from 2010 to 2012. On rebuttal, TPI appears to concede CSXT's basic argument regarding inclusion of the 2009 recession year but recalculates CSXT's figure to include data from 2013, resulting in 0.07%. While CSXT's evidence excluding 2009 is more appropriate, CSXT fails to explain why it did not include 2013 in its analysis. Accordingly, we will make that adjustment to CSXT's evidence, resulting in 0.07% for bad debt.

F. MAINTENANCE-OF-WAY (MOW)

A summary of the MOW costs used here is set forth below in Table A-6. Disputed components of these costs are then discussed.

TABLE A-6

MOW Costs ($)			
Maintenance Of Way	TPI	CSXT	STB Restated
MOW Staff	143,547,137	266,241,872	195,627,598
Annualized Equipment Cost	32,935,970	69,409,251	48,195,548
Geometry Testing	748,265	748,265	748,265
Ultrasonic Rail Testing	3,095,310	3,095,310	3,095,310
Rail Grinding	0	6,009,055	6,009,055
Yard Cleaning	400,516	398,072	400,516
Vegetation Control	5,777,734	5,739,340	5,777,734
Major Bridge Inspection	72,923	72,923	72,923
Ditch Cleaning	471,360	468,228	471,360
Snow Removal	0	750,000	750,000
Storm Debris Removal	100,000	100,000	100,000
Derailment	10,077,518	10,077,518	10,077,518
Clearing Wrecks	4,351,707	4,351,707	4,351,707
Washouts	10,000	100,000	100,000
Environmental Cleanup	10,000	100,000	100,000
Annual Bridge Maintenance	0	56,000	56,000
Building Maintenance (2% of RPI restated cost)	4,384,293	27,405,825	4,445,699
Communications System (2% of RPI restated cost)	6,843,460	7,922,664	6,888,635
Total Maintenance Of Way Costs	212,826,193	403,046,030	287,267,868

1. Staffing

a. Track Department—Headquarters (HQ) and General Office Staff

The parties agree on the following positions for track department HQ and general office personnel: one Chief Engineer-Track, one Engineer of Programs & Contracts (CSXT's Manager of Contract Services), one Manager of Work Equipment, and one Manager of Welding & Grinding (CSXT's Welding Manager). (CSXT Reply III-D-191, July 21, 2014; TPI Rebuttal Ex. III-D-2 at 27.) However, they disagree on the total number of HQ and general office personnel that TPIRR's track department would require. TPI includes only the four positions listed above. (TPI Rebuttal Ex. III-D-2 at 27.) CSXT adds 34 positions, all of which TPI rejects. (CSXT Reply III-D-191, July 21, 2014; TPI Rebuttal Ex. III-D-2 at 27.) Those 34 contested positions

are addressed below. In addition, the parties' disputes regarding the total number of Managers of Work Equipment and Managers of Welding & Grinding are addressed below.

i. MOW Maintenance and Operations (M&O) Function

The parties agree that TPIRR will have a Chief Engineer-Track located at HQ who will oversee the M&O function. On reply, CSXT adds 18 positions under the MOW M&O function: the Director of Operations Support, two General Engineering Inspectors, two Managers of Systems Engineering, and 13 Engineering (or MOW) Trainees. (CSXT Reply III-D-191, July 21, 2014.) CSXT generally describes the duties of the M&O functions, (CSXT Reply WP "CSXT MOW HQ and Divisional Management Details.xlsx," Tab "CSXT Eng. Job Descriptions," July 21, 2014), and demonstrates the methodology it used to develop its MOW staffing level generally, (CSXT Reply WP "Note on TPIRR Engineering Management Functions and Structure.docx," July 21, 2014). TPI does not include these positions in rebuttal, arguing that because CSXT fails to provide support for the addition of the Director of Operations Support, General Engineering Inspectors, and the Managers of Systems Engineering, TPI cannot determine if they are needed. (TPI Rebuttal Ex. III-D-2 at 27.) TPI also argues that CSXT does not adequately explain why the trainees are needed or what they will do, and does not support its claim that trainees are cheaper than recruiting. Finally, TPI notes that the Board rejected proposed trainee positions in both DuPont and Sunbelt 2014. (Id. at 27-28.)

CSXT presents evidence that the duties covered by the M&O function are more than could be accomplished by one Chief Engineer-Track. Specifically, CSXT proposes that the Director of Operations Support would be responsible for duties that include, among other things, supervising contract employees; supporting the MOW organization with respect to management reports and final review and reporting of all safety and derailment incidents; and serving as strategic liaison with other departments. (CSXT Reply WP "CSXT MOW HQ and Divisional Management Details.xlsx," Tab "CSXT Eng. Job Descriptions," July 21, 2014.) CSXT proposes that the General Engineering Inspectors would be responsible for duties such as inspecting and evaluating the physical condition of the rail structure with respect to service requirements and capital planning; assisting in the development of the system capital rail program by evaluating and prioritizing rail projects system-wide; and assisting in safety audits. (Id.) CSXT proposes that the Managers of Systems Engineering would be responsible, among other things, for maintaining and updating engineering databases; running analyses of any engineering or operating parameter to provide information for decision-making; and training field personnel in the use of engineering applications. (Id.) TPI does not explain on rebuttal how its proposed Chief Engineer-Track could cover these responsibilities, or, alternatively, why these responsibilities are unnecessary or would be covered by other employees. As a result, TPI's proposal on this issue is infeasible. Therefore, the Board will accept CSXT's proposal to add these five professional positions, which is feasible and supported.

Regarding MOW Trainees, CSXT explains the general utility of a trainee program, but provides no evidence to support its statements that such a program would be less expensive than the recruiting efforts that TPI proposes in lieu of a trainee program. And even if CSXT had shown that its trainee program would be less expensive, that still would not undermine the feasibility of TPI's alternative recruiting proposal. Furthermore, TPI's position that the trainee

positions are unnecessary is supported by Board precedent. See Sunbelt 2014, NOR 42130, slip op. at 86-88; DuPont, NOR 42125, slip op. at 122. Thus, we reject CSXT's addition of 13 Engineering (or MOW) Trainees.

ii. MOW Inspection Process Engineering

On reply, CSXT adds six positions under the MOW Inspection Process Engineering function: one Assistant Chief Engineer (ACE) Inspection Process Engineer, one Director of Track Testing, two Engineers of Track Analysis & Scheduling, and two Managers of Inspection & Records. (CSXT Reply III-D-191 to III-D-193, July 21, 2014.) As noted above, the parties agree on one Engineer of Programs & Contracts (Manager of Contract Services), which CSXT classifies under this function. CSXT states that this group is responsible for asset condition monitoring and assessment, including collecting and interpreting data regarding asset conditions and track strength as well as recommending capital replacement programs and maintenance expenditures, and ensuring compliance with FRA inspection and record retention policies. (Id. at III-D-192.) TPI argues that CSXT fails to describe the duties and responsibilities of the positions it proposes to add, that the general functions CSXT describes are covered by TPI staffing proposals at the division level, and that the Division Engineer is responsible for assessing inspection data. (TPI Rebuttal Ex. III-D-2 at 28.)

TPI fails to support its position that its proposed staffing would adequately oversee asset monitoring and condition assessment. Specifically, TPI states but does not show that the responsibilities outlined by CSXT would be covered elsewhere under its proposed TPIRR staffing. In contrast, CSXT provides some support for its addition of the ACE Inspection Process Engineer, Director of Track Testing, two Engineers of Track Analysis & Scheduling, and two Managers of Inspection & Records, and demonstrates that these employees satisfy operational requirements. We will accept CSXT's additional Inspection Process Engineering positions.

iii. MOW Capital Projects

On reply, CSXT adds five positions under the MOW Capital Projects function: one ACE Capital Projects Manager and four Capital Projects Managers. (CSXT Reply III-D-191, July 21, 2014.) CSXT argues that outsourced capital projects need in-house employees to plan, manage, and coordinate those projects. (Id. at III-D-193.) It states that the group would define projects and special conditions for each contract and establish project location, duration, and daily track occupancy commitments in conjunction with the SARR's Transportation Department. It argues that this work would be necessary to support TPIRR's $667 million annual MOW capital program. (Id. at III-D-193 to III-D-194.) TPI asserts that it provided for this type of project planning and administration to be completed at the division level. (TPI Rebuttal Ex. III-D-2 at 29.) TPI also states that large capital programs would be infrequent on the newly designed and constructed SARR and that the costs of these programs are included in the DCF model in any event. (Id.)

In this case, the parties have agreed (and the Board has accepted the agreement below in the corresponding sub-sections) to capitalize contract maintenance projects such as surfacing,

crossing repaving, and bridge sub- and super-structure repair. The Board accepts such a proposal only where the parties agree to capitalize such costs. See DuPont, NOR 42125, slip op. at 124 (citing Ariz. Elec., NOR 42113, slip op. at 77). CSXT raises valid criticisms of TPI's opening evidence, namely that TPIRR's significant capital projects program would need at least some central oversight. TPI's rebuttal does not point to supporting evidence for its assertion that responsibility for capital project oversight could be held by division personnel who have significant other responsibilities. Thus, we accept CSXT's addition of one ACE Capital Projects Manager and four Capital Projects Managers.

iv. Work Equipment

Under the MOW Work Equipment function, CSXT adds three Managers of Work Equipment to the one TPI proposed on opening (for a total of four)—one Manager for each division—and one Director of Work Equipment, responsible for oversight and administrative duties. (CSXT Reply III-D-191, July 21, 2014.) CSXT explains that these employees would be responsible for the fleet of maintenance equipment and equipment engaged in program capital. (Id. at III-D-194.) Because TPIRR contracts out program maintenance and will have a much smaller workforce, CSXT reduces its proposed staffing from that of the real-world CSXT. (Id.) With CSXT's additional personnel, each Manager would be responsible for a territory of 1,716 route miles and nine mechanics rather than having only one Manager who would be responsible for 6,866 route miles and 36 mechanics under TPI's proposal. (Id.) TPI argues that CSXT's proposal overstates TPIRR's needs because the railroad has a much lower volume of roadway equipment than the real-world CSXT. In its rebuttal, TPI retains just one Manager of Work Equipment. (TPI Rebuttal Ex. III-D-2 at 30.)

We agree with CSXT's argument that it would be impossible for one manager to cover a territory of 6,866 route miles and 36 mechanics. In addition, the need for most MOW work equipment is directly related to the MOW workforce, which is driven by the size and complexity of the railroad. TPI's argument is partially based on the low number of MOW equipment it proposes, and it acknowledges, (id. at 29), that the need for work equipment supervisors is based on the volume of equipment and the size of the workforce they would need to manage. As explained elsewhere in this appendix, the Board has largely accepted CSXT's MOW workforce numbers and its corresponding equipment counts. Therefore, the Board will also accept CSXT's four Managers of Work Equipment and one Director of Work Equipment.

v. Manager of Welding and Grinding

The parties disagree on the number of Managers of Welding and Grinding TPIRR would require. TPI includes one on opening and rebuttal, whereas CSXT includes two positions. (TPI Rebuttal Ex. III-D-2 at 30.) CSXT argues that one manager is inadequate for this essential maintenance and safety function, stating that one manager would not be able to handle the administrative and supervisory responsibilities. (CSXT Reply III-D-194, July 21, 2014.) TPI references the number of Managers of Welding and Grinding for the entire real-world CSXT and shows that it has scaled down that number based on the relative size of TPIRR, thereby rejecting the additional manager. (TPI Rebuttal Ex. III-D-2 at 30.) TPI has shown that, based on the size of TPIRR relative to CSXT, one manager should be sufficient, and CSXT has failed to

undermine the feasibility and support of TPI's position. We accept TPI's one Manager of Welding and Grinding.

vi. General Office Staff

The parties agree that TPIRR would require one Track (or Division) Engineer per division. However, they disagree on the number of Assistant Track (or Division) Engineers, Administrative Assistants/Clerks, and Staff Engineers that TPIRR would require. In its opening, TPI proposes four Assistant Track Engineers (one per division). (TPI Opening Ex. III-D-3 at 10.) In its reply, CSXT proposes 16 Assistant Track Engineers (four per division) and four Staff Engineers. (CSXT Reply WP "Reply Exhibit III-D-3 CSX TPI MOW.xlsx," July 21, 2014.) CSXT argues that TPI's staffing is insufficient, that Assistant Track Engineers are the "backbone" of division management, and that one engineer could not feasibly manage the contract work and Roadmasters on a 1,716-mile long division. (CSXT Reply III-D-204, July 21, 2014.) In its rebuttal, TPI states that its proposed four Assistant Track Engineers would each cover an area smaller than that covered by Assistant Division Engineers on the real-world CSXT. (TPI Rebuttal Ex. III-D-2 at 31-32; TPI Rebuttal WP "TPIRR Rebuttal Comp MOW.xlsx.") CSXT does not provide support for its position that TPIRR would require 16 Assistant Track Engineers that would each be responsible for far less track mileage than CSXT's actual real-world staff in a similar position. We will accept TPI's evidence of one Assistant Track Engineer per division.

With respect to Administrative Assistants/Clerks and Staff Engineers, on opening TPI proposes eight Administrative Assistant/Clerk positions in Track Department General Office Staff. (TPI Opening Ex. III-D-3 at 12.) CSXT states that its actual practice is to assign only one Administrative Assistant to each division, which is less than the two per division proposed by TPI. (CSXT Reply III-D-204, July 21, 2014.) CSXT then proposes four Staff Engineers in place of TPI's eight Administrative Assistants, with no explanation for this change in position/title. (Id. at III-D-205.) TPI rejects this proposal, arguing that CSXT fails to provide an explanation of the necessity for these positions and why engineers should replace Administrative Assistants/Clerks. (TPI Rebuttal Ex. III-D-2 at 32.) TPI argues that CSXT does not explain what these engineers' responsibilities would be or the value added by their positions. (Id.) TPI also explains that since CSXT accounts for MOW Administrative Assistants in the Office of the Vice President, TPI moves all of its Administrative Assistants/Clerks to HQ. (Id. at 25 n.33.) Because CSXT fails to explain the responsibilities of its proposed Staff Engineers or the necessity of the positions, we will reject CSXT's four Staff Engineers. We will accept the parties' agreement regarding the placement of MOW Administrative Assistants at HQ.[45]

[45] MOW Administrative Assistants are further discussed below in the section on the Office of the Vice President.

TABLE A-7

Track Department – Headquarters & General Office Staff			
Headquarters Staff	**TPI**	**CSXT**	**STB**
Chief Engineer - Track	1	1	1
Engineer of Programs and Contracts	1	1	1
MOW Maintenance & Operations Functions			
Director Operations Support	0	1	1
Gen. Engineering Inspector	0	2	2
Manager of Systems Engineering	0	2	2
Engineering Trainee	0	13	0
MOW Inspection Process Engineering			
ACE Inspection Process Engineering	0	1	1
Director of Track Testing	0	1	1
Engineer of Track Analysis and Scheduling	0	2	2
Mgr. Inspection & Records	0	2	2
MOW Capital Projects			
ACE Capital Projects Manager	0	1	1
Capital Project Manager	0	4	4
Work Equipment			
Manager of Work Equipment	1	4	4
Director of Work Equipment	0	1	1
Manager of Welding & Grinding			
Manager of Welding & Grinding	1	2	1
General Office Staff			
Track Engineer	4	4	4
Asst. Track Engineer (Field Prod.)	4	16	4
Staff Engineer	0	4	0

b. Track Department—Field Staff

i. Roadmasters and Assistant Roadmasters

The parties disagree on the number of Roadmasters and Assistant Roadmasters required by TPIRR and the appropriate size of TPIRR's Roadmaster territories. On opening, TPI proposes 51 Roadmaster territories, which is between 109 and 150 route miles each, depending on traffic density and geography. (TPI Opening Ex. III-D-3 at 13.) TPI would assign one Roadmaster and one Assistant Roadmaster to an average territory of approximately 135 route miles. (Id. at 13-14.) Thus, TPI proposes a total of 51 Roadmaster territories, 51 Roadmasters, and 51 Assistant Roadmasters.

CSXT argues that Roadmaster forces are devoted almost entirely to maintaining track, so track miles per Roadmaster is a more important metric than route miles. (CSXT Reply III-D-205

n.446, July 21, 2014.) It calculates that TPI's Roadmaster territories average approximately 200 main track miles, which it argues is infeasible based on comparisons to real-world CSXT, which it states averages 142 main track miles (or 113 route miles per territory). (Id. at III-D-205.) CSXT also asserts that TPI's proposed Roadmaster territory sizes are out of line with those accepted in recent SAC cases, which CSXT states ranged from 143 to 166 track miles. (Id. at III-D-206 (citing DuPont, NOR 42125; Sunbelt 2014, NOR 42130; and Ariz. Elec., NOR 42113).) To develop TPIRR's Roadmaster territories, CSXT first places a Roadmaster at each of the 12 major yards and then assigns Roadmasters and Assistant Roadmasters to main line territory sized to permit them to complete FRA inspection requirements. (Id. at III-D-205 to III-D-206.) CSXT assigns two Assistant Roadmasters to each Roadmaster who is responsible for both a major yard and main line territory. It assigns one Assistant Roadmaster to each Roadmaster who is not responsible for a major yard. (Id. at III-D-207.) Thus, CSXT proposes a total of 72 Roadmaster territories, 72 Roadmasters, and 84 Assistant Roadmasters.

TPI counters that CSXT miscalculated its real-world average Roadmaster territory size by using the incorrect number of CSXT track miles in its calculations; it asserts that the actual CSXT real-world average Roadmaster territory size is closer to 203 track miles when one considers total track miles rather than simply main track miles. (TPI Rebuttal Ex. III-D-2 at 34.) TPI states that the average size of its proposed Roadmaster territories is closer to the average size of real-world CSXT Roadmaster territories than CSXT's proposal for TPIRR. (Id. at 33-34, 35.) TPI also seeks to justify the size of its Roadmaster territories by claiming that TPIRR maintenance needs would be lower than the real-world CSXT because TPIRR is newly constructed (resulting in a lower rate of welding and rail replacement) and because real-world CSXT local maintenance crew work is used to prepare for, assist, support, and clean up after program maintenance and capital project work that is performed by contractors on TPIRR. (Id. at 34-35.)

In its brief, CSXT states that the distinction between using total track miles or main track miles as a metric to gauge the size of Roadmaster territories is immaterial, because even when the former is used, CSXT's proposal for TPIRR—averaging 175 total track miles per Roadmaster territory—is in line with those accepted by the Board in past cases. (CSXT Brief at 36 (citing Ariz. Elec., NOR 42113, slip op. at 32, Table 2, 66; DuPont, NOR 42125, slip op. at 46, 102; Sunbelt 2014, NOR 42130, slip op. at 20, 73).) CSXT notes that TPI on rebuttal increased its total track miles but did not increase its Roadmaster number, so that its final proposal averages 240 total track miles per Roadmaster. (Id.)

We conclude that the appropriate sizing metric for Roadmaster territories in this case is total track miles. On reply, CSXT acknowledges that a Roadmaster's responsibilities include the maintenance of yard track. (See, e.g., CSXT Reply III-D-206 ("All Roadmasters who maintain a major yard are assigned two Assistant Roadmasters to assist with inspection and maintenance of

the yard track.”).) It therefore is more appropriate to rely on a Roadmaster territory sizing metric that includes this category of track.[46]

We also conclude that neither party has adequately supported its Roadmaster territory sizing or number of Roadmasters. The real-world CSXT employs 150 Roadmasters[47] responsible for maintaining 30,500 total track miles,[48] for an average real-world Roadmaster territory size of approximately 204 total track miles. CSXT provides for an average TPIRR Roadmaster territory size that is approximately 29 track miles smaller than its real-world average without addressing this discrepancy or otherwise justifying its smaller average territory size. In contrast, TPI on rebuttal provides for an average Roadmaster territory size approximately 36 track miles larger than the real-world CSXT, but does not adequately explain why such a larger size is feasible. Arguments similar to TPI’s that SARR Roadmaster territories can be larger because the SARR is newly constructed have been rejected in past cases. See, e.g., Sunbelt 2014, NOR 42130, slip op. at 73. And while TPI’s argument that internal TPIRR maintenance crew needs would be lower than CSXT’s given TPIRR’s relatively high percentage of contracted program maintenance and capital project work certainly seems plausible, TPI has failed to adequately support its assertions. However, given that TPI has at least provided some justification for its larger proposed territory size, we will accept its proposal as the best evidence of record. Because TPI has not convinced us that its proposal is adequate, though, we adjust its number of Roadmaster territories and Roadmasters to 60 to more closely approximate CSXT’s real-world numbers. See BNSF Ry. 2006, 453 F.3d at 485 (explaining Board may reasonably apply its own experience to fill minor gaps).

We further conclude that based on the evidence in the record, TPI’s proposal to include 51 Assistant Roadmasters is feasible and supported. The evidence shows that real-world CSXT employs 44 Assistant Roadmasters,[49] or approximately one for every 3.5 Roadmasters.[50] Because TPI’s proposal exceeds this ratio, and because CSXT has failed to adequately justify its

---

[46] We also note that CSXT in its brief does not disagree with the use of total track miles for this purpose. (See CSXT Brief at 36 (asserting its position that using main track miles or total track miles “makes no difference”).)

[47] See CSXT Reply WP “Reply CSXT Data from 2010 Sorted.xls,” Tab “Reply Pivot 2010 Sorted for TPI,” July 21, 2014.

[48] Based on a 2010 figure of 30,500 total track miles (exclusive of trackage rights). See CSXT Reply WP “Note on Management Workforce—Analysis of Class 1 Railroads 2010.xlsx,” Tab “_Data,” Cell 438E, July 21, 2014.

[49] See CSXT Reply WP “Reply CSXT Data from 2010 Sorted.xls,” Tab “Reply Pivot 2010 Sorted for TPI,” July 21, 2014.

[50] These numbers were provided by CSXT to TPI in discovery. To the extent that these numbers do not accurately reflect real-world CSXT staffing levels, TPI on opening was entitled to rely on the data CSXT provided in discovery. See, e.g., Ariz. Elec., NOR 42113, slip op. at 103 (parties are entitled to reasonably rely on evidence the other side provides in discovery).

assumption that TPIRR would need almost twice as many Assistant Roadmasters as the real-world CSXT, we accept TPI's 51 Assistant Roadmasters.

ii. Track Crew

The parties agree that each Track Crew should consist of one foreman and three members, but they disagree on the total number of Track Crews that TPIRR would require. In its opening and rebuttal, TPI proposes 102 Track Crews where each crew would be responsible for day-to-day maintenance of the track in a defined territory, with lengths between 50 and 75 route miles. (TPI Opening Ex. III-D-3 at 14; TPI Rebuttal Ex. III-D-2 at 36.) TPI asserts that its approach is consistent with the territory assigned, the crew size, and the responsibilities on Class I railroads, regional railroads, and the approach approved by the Board in W. Fuels 2007. TPI also argues that its Track Crews could maintain a greater territory than may otherwise be possible because they do not perform program maintenance and TPIRR's need for Track Crew personnel is low because Roadmasters have backhoes and dump trucks available. (TPI Opening Ex. III-D-3 at 14.)

In its reply, CSXT proposes 156 Track Crews, and states that TPI's proposal of 102 field Track Crews for TPIRR would require each crew to maintain an average of over 104 track miles, which it argues, significantly exceeds industry standards. (CSXT Reply III-D-207 to 208, July 21, 2014.) CSXT develops its Track Crews using a two-step process: (1) defining factors (such as traffic density, curvature of main line track, and number of switches and crossings) that determine the amount of work a crew must perform; and (2) defining the conditions (such as train traffic, rainfall, and population density) under which the work must be performed. (Id. at III-D-207 to III-D-209.) CSXT proposes main line crews responsible for territories averaging 72 track miles and 51 route miles on main lines and 100 track miles on branch lines. (Id. at III-D-208.) It also notes that its staffing is consistent with W. Fuels 2007, NOR 42088, slip op. at 25, 58; DuPont, NOR 42125, slip op. at 103; Sunbelt 2014, NOR 42130, slip op. at 73; and Ariz. Elec., NOR 42113, slip op. at 68.

On rebuttal, TPI argues that CSXT's approach is subjective and relies on metrics that are flawed and infeasible. (TPI Rebuttal Ex. III-D-2 at 37-39.) First, TPI asserts that two of the metrics CSXT uses are useless for determining crew sizes because related maintenance activities are not handled by TPIRR local crews. (Id. at III-D-2 at 37.) Second, TPI states that two other metrics CSXT uses are improper because they lead to absurd results, specifically incorrect traffic densities. (Id.) TPI also asserts that CSXT uses an overinflated and excessive number of crews for its TPIRR staffing. (Id. at 38.)

Neither party provides adequate support for its Track Crew assertions. As an initial matter, TPI relies on route miles to measure each Track Crew's territory. Because there can be multiple sets of track on a particular line segment and Track Crews are devoted to maintaining track, the number of Track Crews is more closely related to track miles rather than route miles. CSXT uses track miles to support the feasibility of its Track Crew staffing, and also references TPIRR's anticipated workload. The Board has previously recognized the relationship between Track Crew staffing and anticipated workload, and it has also recognized that workload is determined by factors such as traffic density, track curvature, and number of switches. See

DuPont, NOR 42125, slip op. at 104. We accept CSXT's proposed number of Track Crews as the best evidence of record. We also accept the parties' agreement regarding Track Crew size.

iii. Ditching Crew

The parties agree on Ditching Crew size and equipment requirements. However, they disagree on the number of crews that TPIRR would need. On opening, TPI includes 16 Ditching Crews, and explains that the primary function of such crews is to keep TPIRR's ditches flowing freely and to clean culvert inlets periodically. (TPI Opening Ex. III-D-3 at 19.) TPI claims that its Ditching Crew plan reflects that the newly constructed SARR will have relatively few ditching needs based on new construction, proper seeding and mulching, and proper ditch slopes. (Id. at 20.) On reply, CSXT explains the importance of keeping ditches clear, and explains that its expert proposes 35 two-person Ditching Crews, each averaging 200 route miles and 200 miles of ditch. (CSXT Reply III-D-216, July 21, 2014.) CSXT asserts that this is consistent with the approach the Board accepted in DuPont for a SARR that covered much of the same territory and was subject to the same soil and rainfall conditions as TPIRR. (Id. (citing DuPont, NOR 42125, slip op. at 106).) On rebuttal, TPI reiterates its position that TPIRR's need for ditching would be minimal because it is newly constructed. (TPI Rebuttal Ex. III-D-2 at 46.)

Although neither party provides significant supporting evidence for its expert's opinions, TPI persuasively explains that its overall MOW budget includes the full cost of all-new railroad roadbed and slope stabilization techniques (in the form of improved drainage structures and all new seeding and mulching), and that TPIRR should not be responsible for these costs as well as ditch maintenance costs premised on those faced by the real-world CSXT. While CSXT does provide some explanation as to how it developed its own proposal, it neglects to discuss the specific reasons it believes TPI's proposal is deficient and fails to specifically address TPI's arguments regarding modern drainage structures and seeding and mulching techniques. Unlike in DuPont, the shipper here has reasonably explained its position on these points. The Board will accept TPI's estimate for the number of Ditching Crews as the best evidence of record. The Board also accepts the parties' agreement on Ditching Crew size and equipment requirements.

iv. Smoothing Crew

The parties agree on Smoothing Crew size. However, they disagree on the number of crews that TPIRR would need. In its opening, TPI argues that TPIRR would require 17 three-person smoothing crews (one foreman and two machine operators per crew) each covering roughly 400 route miles[51], which it claims is typical for Class I railroads. (TPI Opening Ex. III-D-3 at 20.) CSXT argues that TPIRR would need 43 three-person Smoothing Crews; forty-one crews would each be responsible for approximately 250 main line track miles and two crews would support the needs of TPIRR's yard track and switches. (CSXT Reply III-D-217 to III-D-218, July 21, 2014.) CSXT also points to Board precedent to support its expert testimony,

[51] CSXT states that 400 route miles is the equivalent of 601 main track miles. (CSXT Reply III-D-217, July 21, 2014.)

arguing that its position is consistent with the smoothing gang-to-roadmaster ratio approved in recent Board decisions. (Id. (citing DuPont, NOR 42125, slip op. at 107; Sunbelt 2014, NOR 42130, slip op. at 76; Ariz. Elec., NOR 42113, slip op. at 70).)

Both parties rely on their expert testimony to support their positions on Smoothing Crews. While CSXT does provide an explanation as to how it developed its own proposal, it neglects to discuss the specific reasons it believes TPI's proposal is deficient, other than to say that TPI's witness does not fully explain his opinion and that his opinion is at odds with Board findings in past cases. (CSXT Reply III-D-217 to III-D-218, July 21, 2014.) However, Board precedent in Arizona Electric undercuts CSXT's position here.[52] In Arizona Electric, the Board accepted the shipper's proposal to have two or three roadmasters share one smoothing gang (but adjusted the shipper's proposed number upward to meet what it considered the minimum three-to-one ratio). Here, CSXT's proposal would require one or two roadmasters per smoothing gang. Based on the ratio accepted by the Board in Arizona Electric, and consistent with TPI's expert testimony, we accept TPI's proposal but adjust it to accord with Arizona Electric's minimum three-to-one ratio. See BNSF Ry. 2006, 453 F.3d at 485 (explaining Board may reasonably apply its own expertise to fill minor gaps). Based on our acceptance of 60 roadmaster territories, we will accept 20 three-person Smoothing Crews. We will also accept the parties' agreement regarding Smoothing Crew size.

v. Welder/Helper/Grinder Crews

The parties agree that each Welder/Helper/Grinder Crew consists of two employees, but disagree on the number of crews that TPIRR would require. On opening, TPI proposes 26 crews, arguing that because TPIRR would be newly constructed and program maintenance work would be contracted, one crew can easily maintain two roadmaster territories—or an average of 264 route miles per crew—which TPI argues is smaller than CSXT's real-world average. (TPI Opening Ex. III-D-3 at 17.) TPI also argues that because TPIRR has low tonnage track, there is a very low probability of rail defects in its first ten years. (Id.) CSXT counters that in recent decisions the Board has accepted one welding crew-per-roadmaster territory, which is consistent with its own practice. (CSXT Reply III-D-211, July 21, 2014 (citing DuPont, NOR 42125, slip op. at 103; Sunbelt 2014, NOR 42130, slip op. at 75).) CSXT further argues that TPI relied on glaringly unreliable worker counts that should have been apparent and should not be a basis to understaff TPIRR. (Id. at III-D-212.)[53] Thus, CSXT proposes a total of 72 two-person crews.

---

[52] Although CSXT also cites DuPont and Sunbelt 2014, neither decision is particularly instructive here. In DuPont, the Board found that neither party provided sufficient supporting evidence and accepted the defendant's 34 two-person Smoothing Crews for its 69 roadmaster territories. See DuPont, NOR 42125, slip op. at 107. In Sunbelt 2014, the Board accepted the inclusion of one additional Smoothing Crew based on the defendant's arguments about the specific soil characteristics and traffic density on the SARR at issue in that case. See Sunbelt 2014, NOR 42130, slip op. at 76.

[53] While CSXT notes that TPI chose less expensive Poly joints to construct track, and suggests that such an approach might require more frequent welding than the type of joints

(continued . . .)

(CSXT Reply III-D-213, July 21, 2014.) On rebuttal, TPI continues to rely on the same CSXT real-world workforce numbers despite CSXT's argument that those numbers are erroneous. (TPI Rebuttal Ex. III-D-2 at 40-41 (citing CSXT Reply WP "Reply CSXT from Data from 2010 Sorted.xls," Tab "Reply Pivot 2010 sorted for TPI," July 21, 2014).) It also continues to rely on the claim that welding needs would be very low on TPIRR. (Id.)

We agree that TPI on opening was entitled to rely on the data CSXT provided in discovery regarding its real-world staffing numbers. See, e.g., Ariz. Elec., NOR 42113, slip op. at 103 (parties are entitled to reasonably rely on evidence the other side provides in discovery). Based on this data, CSXT's total of 127 Welder/Helper/Grinder personnel[54]—or 64 two-person Welder/Helper/Grinder Crews—equates to a ratio of approximately one crew for every 2.5 Roadmasters.[55] Because we are accepting 60 roadmaster territories in this case, TPI's proposal to include 26 two-person Welder/Helper/Grinder Crews accords with this ratio, and we will accept this number as a result.

vi. Rail Lubricator Repairmen

The parties agree that the number of rail lubricators on TPIRR is 1,795, but disagree on the number of Rail Lubricator Repairmen required. TPI proposes 14 Rail Lubricator Repairmen, so that each repairman would be responsible for 128 lubricators. (TPI Opening Ex. III-D-3 at 18.) CSXT states that TPI's proposal is unrealistic and that, using its own real-world practices and DuPont as a benchmark, TPIRR would require 36 repairmen, each covering 50 lubricators. (CSXT Reply III-D-214, July 21, 2014 (citing DuPont, NOR 42125, slip op. at 105).) While CSXT provides some support for its position that TPI's estimate is understated (id.), TPI convincingly details and supports how it determined TPIRR's maintenance needs and the total number of repairmen required by explaining TPIRR's rail lubrication needs. TPI explains its anticipated grease consumption rate for TPIRR lubricators by calculating the gross weight over each lubricator between fillings, concluding that lubricators would require filling once a year or less and translates this to the anticipated workload per lubricator. (TPI Rebuttal Ex. III-D-2 at

---

(. . . continued)

CSXT uses, CSXT ultimately concedes that its expert "assumes that TPIRR will have welding needs similar to those of railroads like CSXT that use higher-quality joints." (CSXT Reply III-D-211 to III-D-212, July 21, 2014.)

[54] See CSXT Reply WP "Reply CSXT Data from 2010 Sorted.xls," Tab "Reply Pivot 2010 sorted for TPI," July 21, 2014.

[55] This is based on a 2010 figure of 30,500 total track miles (exclusive of trackage rights). (See CSXT Reply WP "Note on Management Workforce—Analysis of Class 1 Railroads 2010.xlsx," Tab "_Data," Cell 438E, July 21, 2014.)

41-42.) CSXT fails to undermine this rationale.[56] We will accept TPI's feasible and supported number of Rail Lubricator Repairmen.

vii. Roadway Machine Operators (Backhoe, Speedswing, Dozer)

The parties agree that each Roadmaster should have one backhoe and Backhoe Operator. (TPI Opening Ex. III-D-3 at 16; CSXT Reply III-D-210, July 21, 2014.) However, due to the difference in the parties' Roadmaster territories, their total number of backhoes and Backhoe Operators differ. Because we accept 60 Roadmaster territories, we will also accept a total of 60 backhoes and Backhoe Operators.

TPI does not provide for speedswings or Speedswing Operators. CSXT adds one speedswing and operator for general maintenance in each hump yard for a total of 12 of each, and explains that speedswings and operators are needed to support maintenance gangs with general lifting of switch and other track material, and to assist signal maintenance gangs with maintaining retarders. (CSXT Reply III-D-211, July 21, 2014.) TPI states that many railroads use other equipment for the same tasks a speedswing completes, that a rubber-tired backhoe is more versatile than a speedswing, and that hump yard maintenance demands will be low compared to the older rail on CSXT's system. (TPI Rebuttal Ex. III-D-2 at 39-40.)

With respect to the speedswings and operators, neither party has provided extensive evidence. CSXT's criticisms of TPI's failure to include speedswings are limited. Although TPI offers a reasonable response to some of CSXT's criticisms, it fails to explain how its proposed number of rubber-tired backhoes would be sufficient to complete the maintenance support CSXT describes. Furthermore, TPI does not sufficiently explain how other equipment would be able to handle a speedswing's specialized work in an efficient manner. As the Board recently stated, it is inefficient to use another type of equipment to perform similar tasks as the speedswing because of the differences in the speedswing's overall design. See DuPont, NOR 42125, slip op. at 107. However, despite CSXT's narrative arguments, CSXT fails to include a cost in its workpapers for speedswings. As a result, we will reject CSXT's addition of 12 speedswings. The Board's exclusion of the equipment is due to CSXT's omission of evidentiary support and not because we find the equipment to be unnecessary. See id. For this reason, and because we find that CSXT's evidence on Speedswing Operators is feasible and supported, we will accept CSXT's addition of Speedswing Operators.

The parties agree that one dozer and Dozer Operator per division is sufficient. (TPI Opening Ex. III-D-3 at 16; CSXT Reply III-D-210, July 21, 2014.) We will accept the parties' agreement on this issue.

[56] We note that in DuPont, NOR 42125, slip op. at 105, the Board accepted the parties' agreement on the required number of Rail Lubricator Repairmen.

viii. Roadway Equipment Mechanics

TPI proposes four Roadway Equipment Mechanics (REMs), which is one per MOW division. Each mechanic would work on 20 to 30 machines over the course of a year. (TPI Opening Ex. III-D-3 at 18-19.) CSXT states that TPI's four proposed REMs amounts to one mechanic per 1,716 route miles, which it calls "patently infeasible" based on drive times. CSXT proposes 36 REMs, or one per two Roadmaster territories (the equivalent of nine per MOW division), which CSXT states is the industry standard and in line with recent Board decisions. (CSXT Reply III-D-214, July 21, 2014 (citing DuPont, NOR 42125, slip op. at 105; Sunbelt 2014, NOR 42130, slip op. at 76).) CSXT claims that TPI's only support for its REM number is "the plainly erroneous job code data" provided by CSXT in discovery "suggesting only 11 REMs for the entire CSXT system." (Id.) On rebuttal, TPI states that based on the actual equipment maintained by TPIRR and the fact that it does not keep equipment for more than five years, its maintenance requirements for roadway equipment will be low. (TPI Rebuttal Ex. III-D-2 at 43.) It argues that CSXT significantly over-estimated the drive times required for REMs, and that based on where TPIRR places its REMs within their territories, the large territories are quite realistic. (Id. at 44.) TPI further argues that its proposed number of REMs accords with the real-world CSXT average based on materials CSXT produced in discovery. (Id. at 44-45.)

We agree that TPI on opening was entitled to rely on the data CSXT provided in discovery regarding its real-world staffing numbers. See, e.g., Ariz. Elec., NOR 42113, slip op. at 103 (parties are entitled to reasonably rely on evidence the other side provides in discovery). Based on this data, CSXT's total of 11 REMs equates to a ratio of approximately one REM per 15 Roadmasters. Because we are accepting 60 Roadmasters in this case, TPI's proposal to include four REMs accords with this ratio, and we will accept this number as a result.

TABLE A-8

Track Department – Field Staff			
Track Department - Field Staff	TPI	CSXT	STB
Roadmaster (Field Maint. Supv.)	51	72	60
Assistant Roadmaster (Asst. Field Maint. Supv.)	51	84	51
Track Crew Foreman	102	156	156
Track Crew Member	306	468	468
Ditching Crew Foreman	16	35	16
Ditching Crew Member	16	35	16
Smoothing Crew Foreman	17	43	20
Smoothing Crew Member	34	86	40
Welders/Helper/Grinder Foreman	0	72	0
Welders/Helper/Grinder Crew Member	52	72	52
Rail Lubricator Repairman/Maintainer	14	36	14
Roadway Machine Operator (Backhoes and Operator)	51	72	60
Roadway Machine Operator (Operator)	0	12	12
Roadway Machine Operator (Dozer and Operator)	4	4	4
Roadway Equipment Mechanic	4	36	4

c. Bridge and Building (B&B) Department—HQ & General Office Staff

The parties agree that TPIRR would require one Chief Engineer and one Engineer of Bridges & Structures at HQ in the B&B Department. (TPI Rebuttal Ex. III-D-2 at 58.) However, they disagree on the need for a Director of Bridges, an Engineer of Facilities Design, a Manager of Facilities Maintenance, and the appropriate number of Assistant Track Engineers. (Id. at 58-60.)

With respect to the Director of Bridges, CSXT argues that this position is necessary to supervise the eight Managers of Bridges over the TPIRR system. (CSXT Reply III-D-195, July 21, 2014.) However, CSXT also states that these eight managers cannot be managed from HQ and it adds four Assistant Track Engineers. (Id. at III-D-224 to III-D-225.) TPI argues that CSXT has added both the Director of Bridges at HQ and four Assistant Track Engineers at the division level to manage the same eight Managers of Bridges. (TPI Rebuttal Ex. III-D-2 at 59.) The Board agrees with TPI's argument that one individual at HQ and four at the division level is excessive supervision of eight managers, and that CSXT has failed to justify its inclusion of a Director of Bridges at HQ. As a result, the Board rejects CSXT's proposal.

As to the four Assistant Track Engineers that CSXT adds on reply, TPI accepts the addition of only two of the Assistant Track Engineers, but argues that eight employees do not require four supervisors. (Id. at 59-60.) We agree, and because TPI's position is feasible and

supported, we will accept two Assistant Track Engineers as general office staff at the division level.[57]

With respect to the Engineer of Facilities Design, CSXT argues that this position is necessary to handle design and specifications for modifications and expansions to facilities that will be required as TPIRR's traffic mix and customer base evolves. (CSXT Reply III-D-196, July 21, 2014.) TPI counters that TPIRR is already designed to meet those traffic needs and that CSXT provides no support for its statement that TPIRR's facilities would need to be modified or expanded during the DCF period. (TPI Rebuttal Ex. III-D-2 at 59.) Because CSXT has not adequately supported its argument that TPIRR would evolve sufficiently during the 10-year DCF period to require an Engineer of Facilities Design, the Board rejects the addition of this position.

With respect to the Manager of Facilities Maintenance, CSXT argues that this position is necessary to provide oversight and manage contracts for facility maintenance. (CSXT Reply III-D-195, July 21, 2014.) TPI argues that the responsibilities for this position could be handled by the Engineer of Bridges and Structures that CSXT proposed on reply and TPI accepted. (TPI Rebuttal Ex. III-D-2 at 59.) However, TPI fails to explain how one position could handle the responsibilities described by CSXT for the Manager of Facilities Maintenance in addition to the previously-described duties for the Engineer of Bridges and Structures. The Board will accept the addition of the Manager of Facilities Maintenance.

d. B&B Department—Field Staff

The Board will accept the parties' agreed-upon staffing for TPIRR's B&B Department field staff. (CSXT Reply III-D-225, July 21, 2014.)

[57] CSXT also accepts TPI's proposal for a four-person Public Projects staff, but moves the Public Projects staff to a HQ position in the Office of the Vice President. We will address Public Projects Department in the section on Other HQ Staff.

TABLE A-9

B&B Department - Headquarters and General Staff			
Headquarters Staff	**TPI**	**CSXT**	**STB**
Chief Engineer - B&B	1	1	1
Engineer - B&B	1	1	1
Director of Bridges	0	1	0
Manager Facilities Design	0	1	0
Manager Facilities Maintenance	0	1	1
General Office Staff			
Assistant Track (Division) Engineer	2	4	2
Field Staff			
Manager Bridges	8	8	8
Bridge Inspectors	8	8	8
Bridge - Machine Operators	4	4	4
Bridge and Building Foreman	8	8	8
B&B Repairmen / Welders, and Helpers	24	24	24

e. Communications and Signals (C&S) Department—HQ & General Office Staff

The parties agree on the need for one Chief Engineer of C&S, three PTC staff, and four call desk staff. However, they disagree on 23 positions that CSXT adds on reply, and disagree on certain details about the positions upon which they agree. Each of those positions and issues is discussed below.

i. C&S Testing Staff

CSXT adds one Specialist Test Engineering and two Engineer Service Testing positions. (CSXT Reply III-D-201, July 21, 2014.) CSXT argues that the need for periodic signal testing is a critical and highly regulated safety function, and that these specialists are needed for the type of troubleshooting that Signal Maintainers are not qualified to address. (Id. at III-D-197.) TPI rejects these positions, arguing that they are not included in CSXT staffing from 2010 and that CSXT's argument that Signal Maintainers cannot perform this function is inconsistent with its statement that the "[i]nstallation of PTC will increase the recordkeeping, testing, troubleshooting, and maintenance workload on maintainers." (TPI Rebuttal Ex. III-D-2 at 49-50 (citing CSXT Reply III-D-220, July 21, 2014).) We agree with TPI on both points, and we reject CSXT's addition of these positions as a result.

ii. C&S Design Staff

CSXT adds one Director of Hump Yard Engineering and one Manager of Signal Design. (CSXT Reply III-D-201, July 21, 2014.) CSXT argues that the Manager of Signal Design would be necessary as TPIRR grows and adapts to accommodate changes in its operating practices. (Id. at III-D-197.) It states that the Director of Hump Yard Engineering would be necessary so that

TPIRR has a central resource for matters regarding hump yard electronic equipment. (Id.) TPI rejects both positions, arguing that CSXT fails to explain why the Manager of Signal Design would be necessary on a newly constructed railroad. It also argues that CSXT fails to support its asserted need for a Director of Hump Yard Engineering. (TPI Rebuttal Ex. III-D-2 at 49-50.) The Board agrees that CSXT has not provided sufficient justification to include these positions, and so we will reject CSXT's unsupported addition of one Director of Hump Yard Engineering and one Manager of Signal Design.

iii. Positive Train Control (PTC) Staff

The parties agree on one Director of PTC and two Engineers of PTC to address PTC technical issues, critical configuration control, and inventory record-keeping. (TPI Rebuttal Ex. III-D-2 at 50.) CSXT places these personnel at HQ whereas TPI places them within the C&S Department on rebuttal. (CSXT Reply III-D-201, July 21, 2014; TPI Rebuttal Ex. III-D-2 at 49.) Because TPI provides no explanation for moving these employees, the Board will place the three PTC staff at HQ.[58]

iv. C&S Other Staff

CSXT adds one Director of Communications, four Communications Managers, one Director of Network Operations, and two Managers of Network Operations to HQ. It also moves nine Communications Technicians from the field to HQ and renames them Communications Specialists. TPI rejects all of these changes. CSXT also reclassifies four of TPI's Call Desk Staff and adds one additional position. (CSXT Reply III-D-201, July 21, 2014, TPI Rebuttal Ex. III-D-2 at 49.)

With respect to the Director of Communications and the four Communications Managers, CSXT argues that a Director would be needed to supervise the contracted maintenance functions, and that the Managers would be needed to maintain mobile radio communications equipment. (CSXT Reply III-D-199 to III-D-200, July 21, 2014.) CSXT includes the Managers as HQ staff despite acknowledging that they would be physically located in the divisions. (Id. at III-D-200.) TPI argues that it includes all the necessary management staff and explains the layers of management it proposes. (TPI Rebuttal Ex. III-D-2 at 50-51.) TPI's explanation supports its claims that management of C&S field staff is sufficiently covered at the division level, and that CSXT has failed to support the purported need for a Director of Communications and four Communications Managers. As a result, we will reject CSXT's addition of these positions.

[58] We note that TPI renames the Assistant Communications Engineer it proposed on opening as Director of PTC. (See TPI Rebuttal WP "Rebuttal TPI MOW Employee Positions and Descriptions.xlsx," Tab "Empl. Positions & Descriptions," Row 15, and TPI Rebuttal WP "TPIRR Rebuttal Comp MOW.xlsx," Tab "Rebuttal Staff Work," Row 97.)

With respect to the Director of Network Operations and two Managers of Network Operations, CSXT argues that these positions are necessary to interface between TPIRR's communications network, IT department, and centralized traffic control system. (CSXT Reply III-D-199, July 21, 2014.) TPI states that it accounts for this expense as part of its communications maintenance, which it contracts out. It argues that because CSXT accepts this approach to developing communication maintenance expenses, CSXT must accept that these responsibilities have already been covered. (TPI Rebuttal Ex. III-D-2 at 51.) Because the Board agrees with TPI that these functions are covered by TPI's contract budget, CSXT's addition of the Director of Network Operations and two Managers of Network Operations will be rejected.

With respect to the nine Communications Specialists, CSXT moves these personnel to HQ from TPI's 41 field-based Communications Technicians. TPI argues that the managerial and technical responsibilities that CSXT moves to HQ are covered by TPI's proposed field staff. (Id. at 50.) Because CSXT does not support the movement of nine personnel to HQ or the need for these apparently more specialized positions, we will reject CSXT's move of nine Communications Specialists to HQ. As explained below, we accept TPI's 41 field-based Communications Technicians.

Finally, with respect to the Call Desk Staff, TPI proposes four Dispatch Coordinators, (TPI Opening Ex. III-D-3 at 34), which CSXT modifies to four Supervisors Call Desk and adds one Manager Call Desk. CSXT seeks to justify the changes by claiming that TPI does not provide any oversight or relief for its Call Desk Staff. CSXT then describes the duties of the two different positions it proposes, but those duties seem to be identical. (See CSXT Reply WP "Reply CSXT MOW HQ and Divisional Management Detail.xlsx," Tab "CSXT Eng. Job Descriptions," Rows 65 and 46, July 21, 2014.) TPI responds that it is illogical to have four supervisors with no one to supervise, and that the manager is excessive. (TPI Rebuttal Ex. III-D-2 at 52.) CSXT's evidence regarding its modification of job titles and additional staff here is not consistent, and it does not adequately explain the need for such modifications or the need for managers or supervisors in this area. We will accept TPI's evidence on Call Desk Staff of four Dispatch Coordinators.

v. C&S General Office Staff

On opening, TPI proposes four Assistant Signal Engineers (reporting to the Chief Engineer) who would be in charge of supervising the signals function and associated field personnel. (TPI Opening Ex. III-D-3 at 23.) CSXT accepts the inclusion of these four engineers but calls them Signal Engineers, arguing that it is unclear whom they would assist. (CSXT Reply III-D-219, July 21, 2014.) We will reject CSXT's change in the Assistant Signal Engineers title because CSXT does not sufficiently explain why or how the job responsibilities of these individuals would change under its proposal. Accordingly, the Board accepts TPI's inclusion of four Assistant Signal Engineers.

f. C&S Department—Field Staff

TPI proposes a total of 331 C&S field staff (TPI Rebuttal Ex. III-D-2 at 53), compared to CSXT's proposed total of 509 personnel (CSXT Reply III-D-218, July 21, 2014). We discuss the differences in the parties' positions below.

i. Signal Supervisors (Managers of Electronics Engineering) and Signal Maintainers

The parties disagree on the number of Signal Supervisors and Signal Maintainers. TPI proposes 22 Signal Supervisors who would be responsible for field supervision of its 264 Signal Maintainers. (TPI Opening Ex. D-III-3 at 23.) CSXT agrees with TPI's ratio of 12 Signal Maintainers per Signal Supervisor, but makes two changes. First, it proposes regular maintainers in 344 territories and 17 relief maintainers for a total of 361 Signal Maintainers. (CSXT Reply III-D-220, July 21, 2014.) Second, it adds Signal Supervisors to supervise the additional maintainers it proposes, but reclassifies all of its Signal Supervisors as Managers of Electronics Engineering (MEEs). (Id. at III-D-222.) CSXT proposes a total of 30 MEEs. In its rebuttal, TPI does not address the reclassification or the addition of MEEs associated with territories containing concentrations of electronics equipment.

With regard to the number of Signal Maintainers, CSXT disagrees with TPI's assumption that the average maintainer can maintain 1,750 American Railway Engineering and Maintenance-of-Way Association (AREMA) signal units, which it states is inconsistent with common practice and Board precedent. (Id. at III-D-219 to III-D-220 (citing DuPont, NOR 42125, slip op. at 111; Sunbelt 2014, NOR 42130, slip op. at 79).) CSXT developed its proposed number of Signal Maintainers based on the assumption that the average maintainer can maintain 1,100 AREMA signal units, which it asserts is conservative because it does not consider requirements based on PTC equipment. (Id. at III-D-220.) It also states that each territory would require relief maintainers. (Id. at III-D-221.) TPI disagrees that the 1,100 AREMA units per maintainer standard should apply to TPIRR. (TPI Rebuttal Ex. III-D-2 at 54-55.) It reiterates that its witness established the 1,750 signal units count based on his real-world experience with the Long Island Railroad (LIRR). It also states that CSXT fails to take into account the reduced maintenance needs of a newly designed and constructed railroad. (Id.)

TPI has failed to convincingly explain why the standard 1,100 AREMA signal units per maintainer should not apply to TPIRR. It does not explain why LIRR should be considered an appropriate benchmark for TPIRR Signal Maintainers, nor does it convincingly show that signal maintenance on a newly constructed railroad would differ significantly from other railroads, particularly given that the Board has accepted 1,100 AREMA signal units per maintainer in recent SAC decisions. Because TPI has not adequately supported its evidence, and because CSXT's evidence is feasible and supported, we accept CSXT's counts for Signal Maintainers (361) and MEEs (30).

ii. Signalmen and Centralized Traffic Control (CTC) Dispatch Center Technicians

The parties disagree on the need for Signalmen in TPIRR's hump yards and technicians at TPIRR's dispatch center. CSXT states that TPIRR needs six Signalmen at each hump yard to maintain the master, group, and skate retarders as well as conduct testing and make small repairs. (CSXT Reply III-D-222, July 21, 2014.) It also states that TPI's staffing for its dispatch center is insufficient and requires coverage by specialized technicians. (Id. at III-D-223.) TPI argues that CSXT's Signalmen responsibilities are covered by Signal Maintainers who will be placed at hump yards and that the addition of Signalmen results in a double count. (TPI Rebuttal Ex. III-D-2 at 55-56.) TPI similarly argues that the additional dispatch center technicians are sufficiently covered by its Signal Maintainers, Communications Technicians, and IT Technicians as well as communications systems maintenance contractors. (Id. at III-D-2 at 55.) We agree with TPI that CSXT has not adequately supported its addition of six Signalmen at hump yards or its addition of five CTC Control Center Technicians, or differentiated their responsibilities from those covered by other staff included in TPI's proposal. We therefore reject CSXT's inclusion of these positions.

iii. Electronic Technicians

The parties disagree on the need for Electronic Technicians. While CSXT provides only limited justification for its addition of 11 Electronic Technicians,[59] TPI provides no response. In the absence of any response by TPI, the Board will accept CSXT's addition of 11 Electronic Technicians.

iv. Communications Supervisors and Technicians

On opening, TPI proposes 41 Communications Technicians based at the 15 major and 34 minor crew-change locations, and four Communications Supervisors. (TPI Opening Ex. III-D-3 at 23, 24.) On reply, CSXT accepts TPI's four Communications Supervisors,[60] accepts TPI's 41 technicians (but reclassifies and reorganizes some of them), and includes one additional Director of Communications at HQ. (CSXT Reply III-D-218, 223-24, July 21, 2014.) As discussed above in the section on C&S Other Staff, we reject CSXT's transfer of Communications Technicians to HQ and its addition of a Director of Communications. We will

[59] CSXT Reply III-D-222, July 21, 2014. CSXT asserts that each hump yard requires a technician to maintain and monitor the processor-based control system and related interfaces for the hump yard, and to troubleshoot and repair electronic equipment such as track circuit loops, the distance to couple unit, and radar systems.

[60] CSXT at one point states that it is renaming this position "Communications Engineer," but continues to use the label "Communications Supervisor" elsewhere. Compare CSXT Reply III-D-223 to III-D-224, July 21, 2014 with CSXT Reply III-D-218, July 21, 2014. We accept CSXT's use of the latter term.

accept TPI's proposed 41 field Communications Technicians and the parties' agreement regarding the inclusion of four Communications Supervisors.

TABLE A-10

Communications & Signals (C&S) Department - Headquarters & General Staff			
Headquarters Staff	TPI	CSXT	STB
Chief Engineer	1	1	1
Director - PTC	1	1	1
Engineer - PTC (used CSXT's HQ salary)	2	2	2
Specialist Test Engineer	0	1	0
Engineer of Service Testing	0	2	0
Manager of Signal Design	0	1	0
Director Hump Yard Engineer	0	1	0
Director of Communications	0	1	0
Communications Manager	0	4	0
Director Of Network Operations	0	1	0
Manager of Network Operations	0	2	0
Call Desk C&S MOW Coordinator Dispatch	4	0	4
Manager Call Desk	0	1	0
Supervisor Call Desk	0	4	0
Communications Specialists	0	9	0
General Office Staff			
Assistant Signal Engineer	4	0	4
Signal Engineer	0	4	0
Field Staff			
Communications & Signals Supervisors	26	0	0
Manager of Electronics Engineering	0	30	30
Signal Maintainers	264	361	361
Signalmen	0	66	0
CTC Control Center Technician	0	5	0
Communications Technicians	41	32	41
Communication Supervisors*	4	4	4
Electronics Technician	0	11	11

* In its rebuttal narrative, TPI includes the four Communications Supervisors it proposed on opening, however it omits the positions in its accompanying workpapers. (TPI Rebuttal Ex. III-D-2 at 56.) As noted above, we accept the parties' stated agreement to include four Communications Supervisors.

g. Other HQ Staff

i. Office of the Vice President

The parties agree to the following positions in the HQ Office of the Vice President: one Vice President of Engineering, two Managers of Administration & Budgets, one Manager of Safety/Training, and seven Administrative Assistants/Clerks. (TPI Rebuttal Ex. III-D-2 at 25.) We will accept the parties agreed upon totals for the Office of the Vice President.[61]

On opening, TPI proposes to include a Director of Environmental Operations and an Environmental Engineer at HQ. (TPI Opening Ex. III-D-3 at 32.) On rebuttal, TPI agrees to reflect environmental personnel in the G&A section of the case as CSXT proposes on reply. (TPI Rebuttal Ex. III-D-2 at 25-26.) As a result, these positions are addressed in the G&A section of this appendix.

ii. Public Projects Department

On opening, TPI proposes a public projects staff of four Public Project Engineers to be included in the B&B Department. (TPI Opening Ex. III-D-3 at 25.) On reply, CSXT accepts TPI's staff total but moves the staff to HQ. (CSXT Reply III-D-188, July 21, 2014.) CSXT states that it establishes the position of Chief Engineer-Public Projects with a staff of three Principal Engineer Public Projects positions. (Id. at III-D-202, July 21, 2014.)[62] While CSXT explains why a Chief Engineer is necessary, it does not address the modification from Public Project Engineers to Principal Engineer Public Projects. (CSXT Reply III-D-202, July 21, 2014.) TPI does not directly address the change to one Chief Engineer or the move from B&B to HQ, but appears to accept CSXT's proposed move of the Public Projects Department to HQ. (See TPI Rebuttal Ex. III-D-2 at 26, TPI Rebuttal WP "TPIRR Rebuttal Comp MOW.xls," Tab "Rebuttal Staff Work," Rows 62-66.) In light of the minimal evidence on both sides, we will accept three Public Project Engineers and one Chief Engineer-Public Projects located at TPIRR HQ as the best evidence of record.

---

[61] The total agreed-on personnel in the Office of the Vice President is 11, but TPI's Rebuttal Exhibit III-D-2, Table 5 shows that CSXT has a total Office of the Vice President staffing of 15 and TPI has 14. This apparent discrepancy stems from TPI's inclusion of the Public Projects Department under the Office of the Vice President. We discuss the Public Projects Department separately below.

[62] CSXT's evidence contains an inconsistency in the total number of staff it proposes for the Public Projects Department. While it repeatedly states that it accepts TPI's staff of four and classifies them as a Chief Engineer and three Principal Engineers (CSXT Reply III-D-202, III-D-225), its Table III-D-42 and workpapers show a total of five personnel. Because CSXT's narrative consistently describes it as accepting TPI's staffing of four, we interpret CSXT's evidence as proposing four staff including one Chief Engineer and three Principal Engineers in the Public Project Department. CSXT provides no support for increasing the number of staff.

TABLE A-11

Other HQ Staff			
Office of the Vice President	TPI	CSXT	STB
Vice President of Engineering	1	1	1
Manager of Administration & Budgets	2	2	2
Manager of Safety & Training	1	1	1
Administrative Assistants/Clerks	7	7	7
Public Project Department			
Public Project Engineers	4	0	3
Chief Engineer	0	1	1
Principal Engineer	0	3	0

h. Non-Executive Employee Salaries and Compensation

The parties agree to use Wage Form A&B data for non-executive employee compensation. (TPI Rebuttal Ex. III-D-2 at 63.) Compensation for executive employees is discussed in the G&A section of this appendix.

i. Allocation of MOW Personnel to Operations and Maintenance Expense

TPI allots approximately one-third of the salaries of the Vice President-Engineering and the MOW administrative/support staff to capital expense and the remaining two-thirds to operating expense. TPI states that this is appropriate because one-third of TPIRR's MOW administrative/ support staff time would be spent evaluating, planning, and helping to execute capital MOW projects, as well as program contractor supervision. (TPI Opening Ex. III-D-3 at 53, TPI Rebuttal Ex. III-D-2 at 60.) CSXT argues that TPI's one-third approach is arbitrary and that its own employee-by-employee approach to determining how to allocate time is preferable. (CSXT Reply III-D-225 to III-D-226, July 21, 2014.) In its reply, TPI explains that it did not arbitrarily assign one-third of its salaries to capital expense, but instead used a similar position-by-position approach that resulted in, on average, one-third of salaries allocated to capital expenses. (TPI Rebuttal Ex. III-D-2 at 61-62.) TPI further states that its allocation approach is similar to the one that the Board accepted in DuPont. (Id. at 62; TPI Rebuttal WP "Rebuttal MOW.xlsx.") Because TPI adequately supports its allocation of MOW staff time between operating and non-operating activities, and CSXT has not sufficiently justified the rejection of TPI's evidence, we will apply TPI's allocation of MOW personnel expenses.

2. Planned Contract Maintenance

The parties agree to the cost and frequency of track geometry testing, ultrasonic rail testing, yard cleaning, equipment maintenance, communications systems maintenance, and bridge inspections (for major bridges). They also agree on the costs for ditch cleaning. They disagree on vegetation control, building maintenance, and shoulder ballast cleaning.

With respect to vegetation control, the parties agree on a methodology for calculating vegetation control costs but disagree on the total constructed route miles of the SARR. (TPI Rebuttal III-D-2 at 64.)[63] The Board will accept the parties agreed-upon methodology and will calculate the vegetation control cost based on our accepted total constructed route miles of the SARR.

The parties agree that the cost of building maintenance would be two percent of total building costs. (CSXT Reply III-D-233, July 21, 2014.) However, they disagree on how to calculate total building costs. (TPI Rebuttal Ex. III-D-2 at 65.) TPI uses only buildings to calculate its total building costs (see TPI Rebuttal WP "TPIRR Facilities Rebuttal.xlsx," Tab "Summary," Lines 18-27; TPI Rebuttal WP "Rebuttal Exhibit III-D-2 TPIRR MOW.xls," Tab "MOW Summary," Cell L82), whereas CSXT, without explanation, adds unspecified facilities costs to its building cost calculation (see CSXT Reply III-D-233, July 21, 2014; see also CSXT Reply WP "Reply Exhibit III-D-3 CSXT TPI MOW.xlsx," Tab "MOW Summary (2)," Cell J77, July 21, 2014; CSXT Reply WP "TPIRR Facilities CSXT Reply.xlsx," Tab "Summary," Lines 1-38, July 21, 2014). The Board finds that TPI's methodology for calculating total building costs is feasible and supported, and CSXT fails to undermine TPI's calculations. We will accept TPI's methodology for calculating building costs, but adjust the total based on the Board's accepted building costs in the RPI appendix of this decision.

The parties disagree over whether shoulder ballast cleaning is necessary over the ten-year life of the SARR. (TPI Rebuttal Ex. III-D-2 at 64-65.) In its opening, TPI states that while shoulder ballast cleaning may be desired on a ten-year cycle, there is no evidence to suggest that CSXT cleans newly constructed track within the first 10 years of its operation in the real world. (TPI Opening III-D-3 at 46.) CSXT responds that shoulder ballast cleaning is a widely practiced and essential maintenance function because it is a cost effective way to protect the subgrade from saturation, which is a concern in TPIRR's territory. (CSXT Reply III-D-230 to III-D-231, July 21, 2014.) Additionally, concerns about surface stability and track structure related to coal dust and other rail car spillage would call for shoulder ballast cleaning. (Id. at III-D-231.) Based on his experience, CSXT witness Hughes estimates that TPIRR would require shoulder ballast cleaning about every 250 million gross tons, which would result in cleaning an average of 1,377 track miles of main and passing siding miles annually. (Id. at III-D-232.) On rebuttal, TPI argues that CSXT's estimate of shoulder ballast cleaning costs is arbitrary and unsupported. It also states that CSXT failed to provide evidence of annual ballast cleaning costs in discovery or even in its reply. (TPI Rebuttal Ex. III-D-2 at 64-65.)

While the Board has indicated that shoulder ballast cleaning may be desirable in the first 10 years of a SARR's operation, see DuPont, NOR 42125, slip op. at 127-28, it has also more

---

[63] Compare TPI Opening WP "Exhibit III-D-3 CSX TPI MOW.xls," Tab "Vegetation Control," Cell B8 with CSXT Reply WP "Reply Exhibit III-D-3 CSX TPI MOW.xls," Tab "Vegetation Control (2)," Cell B8 and TPI Rebuttal WP "Rebuttal Exhibit III-D-3 CSX TPI MOW.xls," Tab "Vegetation Control," Cell B8.

recently accepted shipper arguments that such a cleaning program would be unnecessary for a newly constructed railroad, see Sunbelt 2014, NOR 42130, slip op. at 92-93. In any event, in this case TPI on opening alleges that CSXT does not engage in shoulder ballast cleaning on newly constructed track in the first ten years of its operation in the real world, an allegation that CSXT fails to refute on reply. CSXT likewise fails to explain why TPIRR must engage in a shoulder ballast cleaning program despite the lack of evidence of annual ballast cleaning costs. As a result, we reject CSXT's inclusion of costs for shoulder ballast cleaning.

3. Unplanned Contract Maintenance

The parties agree to the cost of storm debris removal, building repairs, derailments and cleaning wrecks, washouts, and environmental cleanups, but disagree on the cost of snow removal. TPI argues that snow removal activity will be performed by TPIRR's field maintenance personnel where needed, that it is largely unnecessary due to certain technologies, and that CSXT did not provide snow removal data in discovery. (TPI Opening Ex. III-D-3 at 49.) CSXT replies that TPI's claim that TPIRR will not incur snow contract removal costs is unreasonable given the SARR's geography. (CSXT Reply III-D-233, July 21, 2014.) CSXT bases its estimated snow removal costs on the SARR in DuPont, which it states is slightly larger than, but operating in similar territory to, TPIRR. (Id. at III-D-233 to III-D-234 (citing DuPont, NOR 42125, slip op. at 128).) Although neither party provides a substantial amount of evidence to support its snow removal position, we agree with CSXT's argument that TPIRR's geography would require snow removal. We find unpersuasive TPI's arguments that certain technologies would obviate the need for snow removal and that snow removal activity will be performed by TPIRR's field maintenance personnel where needed. Specifically, TPI argues that its field maintenance personnel "are not as busy in the winter as in the summer in the areas where snowstorms are likely," (TPI Opening Ex. III-D-3 at 49), but it does not explain why they are not as busy. TPI also states that all main track switches in the Northern Region are equipped with switch heaters, and that ballast regulators for this region are all equipped with snow removal attachments, but does not explain how this equipment would be sufficient to meet TPIRR's snow removal needs without other equipment such as plows, sand/salt spreaders, and rubber-tired bucket loaders (the costs for which TPI does not include). Therefore, we find that TPIRR would need a contract snow removal budget, and we accept CSXT's contract snow removal costs as the best evidence of record.

4. Program Maintenance

The parties agree to the cost and frequency of crossing repaving and bridge substructure and superstructure repair. They also agree that surfacing crews are capitalized. In addition, the parties agree to capitalize bridge substructure and superstructure repair. Therefore, we will accept that treatment of the cost here although the Board has previously disagreed with capitalizing this cost. See Ariz. Elec., NOR 42113, slip op. at 77.

While TPI expenses the cost of annual bridge maintenance on opening (TPI Opening WP "Exhibit III-D-3 CSXT TPI MOW.xls," Tab "MOW Summary," Cell 81K), it then capitalizes the cost in its rebuttal evidence (TPI Rebuttal WP "Exhibit III-D-3 TPIRR MOW.xls," Tab "MOW Summary," Cell 81K). CSXT expenses the cost. (CSXT Reply WP "Reply Exhibit III-

D-3 CSXT TPI MOW.xlsx," Tab "MOW Summary (2)," Cell G76, July 21, 2014.) Neither party provides a narrative description of this issue. Because TPI changed its treatment of this cost between opening and rebuttal without explanation, we will accept its opening position, which CSXT accepted.

While the parties agree on the cost of rail grinding, they disagree on whether that cost should be capitalized. TPI proposes to capitalize rail grinding costs primarily based on 2009 and 2010 public CSXT documents and a 2010 news article that supports capitalizing the cost. (TPI Opening III-H-16 to III-H-18.) However, CSXT states that it no longer capitalizes this cost and that treating rail grinding as an operating expense is its preferred method and is consistent with industry practice and Board precedent. (CSXT Reply III-D-228 to III-D-229.) We agree that capitalizing contract maintenance, such as rail grinding, would be a departure from Board precedent. As explained recently, the Board will accept capitalized costs for contract maintenance only where the parties agree to such treatment. See DuPont, NOR 42125, slip op. at 124 (citing Ariz. Elec., NOR 42113, slip op. at 77). Therefore, the Board rejects TPI's proposal to capitalize rail grinding costs.

5. Equipment

The parties agree to the use and unit cost of track and related equipment. They also agree on the use and unit cost for hi-rail vehicles, trucks for road equipment mechanics, rail drills, impact wrenches, tamping tools, tampers and ballast regulators, grinders, 400-amp welders, oxy-acetylene welders, gradalls, track hoes, backhoes, and dump trucks. However, because they have very different district and crew sizes, the final quantity and cost of the equipment may differ significantly. We accept the parties' agreed-upon use and unit costs and calculate the final quantity and cost to be consistent with the district and crew sizes accepted elsewhere in this appendix.

There are three additional discrepancies between the parties' equipment evidence. First, in its reply workpapers, CSXT adds—without explanation in either its narrative or the workpapers themselves—mechanics trucks, 3/4T flatbed trucks with fuel tanks, rail lubricator service trucks, and heavy signal maintenance trucks. (CSXT Reply WP "Reply Exhibit III-D-3 CSX TPI MOW.xlsx," Tab "Master Equipment (2)," Cells L15:L18," July 21, 2014.) We reject the unsupported addition of these four types of trucks. Second, TPI on opening includes costs for hydraulic tools, with which CSXT agrees in its reply. (TPI Opening WP "Exhibit III-D-3 CSX TPI MOW.xls," Tab "Master Equipment," Line 13; CSXT Reply WP "Reply Exhibit III-D-3 CSX TPI MOW.xlsx" Tab "Master Equipment (2)," Line 13, July 21, 2014.) In rebuttal, TPI states that it removes the costs of hydraulic tools because they were included elsewhere in CSXT's costs. (TPI Rebuttal Ex. III-D-2 at 68.) However, TPI provides no support for this statement. We will include hydraulic tools in the parties' equipment costs. Finally, TPI states on rebuttal that it agrees with changes to certain equipment unit costs made by CSXT on reply. (Id. at 68.) However, in its workpapers, TPI fails to index the agreed-upon modified unit costs for welders and welder trucks and hi-rail crew trucks to 2010 (unlike other equipment unit costs, which TPI did index to 2010). We accept the agreed-upon modified unit costs, indexed to 2010.

G. LEASED FACILITIES

The parties agree on the costs of leased facilities[64] except for the time frame on which to base the calculation of certain costs that CSXT added on reply. (CSXT Reply III-D-237 to III-D-239 July 21, 2014; TPI Rebuttal III-D 60 to III-D-61.)

In its rebuttal, TPI changes the calculations to the average monthly charges for three of the facilities by using up to 12 months of data (between August 2009 to July 2010), as opposed to the seven months of data ending with the SARR start state (January 2010 to July 2010) that CSXT uses in its reply.[65] We accept TPI's calculation of the average monthly charge based on the average of 12 months. Although neither party articulated how it chose the data to use for its calculations, CSXT's choice to use only seven months of data is particularly questionable. In contrast, TPI's choice of 12 months of data is feasible and consistent with the Board's preference of using more data rather than less.[66] As a result, we accept TPI's calculation.

With regards to a fourth facility, each party uses only one month of data: TPI uses the July 2010 rate and CSXT uses the December 2010 rate. (TPI Rebuttal III-D-62.) For this charge, we will use a Board-adjusted calculation. We prefer TPI's calculation to CSXT's calculation because it is based on the July 2010 TPIRR start date and thus better reflects 2010 costs, but TPI fails to take into account known price increases related to an escalation provision in CSXT's contract. (CSXT Reply WP "Mobile TASD 2010.pdf," July 21, 2014.) Therefore, the Board has adjusted this charge based on the evidence in the record to calculate a six-month weighted average using data from July 2010 to December 2010, an approach that takes into account data both from the start of the SARR and from the December 2010 contract escalation, thereby more accurately reflecting actual 2010 costs during that period.

H. LOSS AND DAMAGE

The parties agree to the methodology for calculating TPIRR's annual loss and damage costs. However, CSXT corrects certain inputs that, it argues, TPI used to allocate revenues. (CSXT Reply III-D-239, July 21, 2014.) In its rebuttal, TPI recalculates the loss and damage expenses based on revised calculations. (TPI Rebuttal III-D-62.) As discussed in the traffic and

---

[64] Leased facilities include facilities leased by joint facility agreements and trackage rights agreements.

[65] See TPI Rebuttal III-D-61 to III-D-62; TPI Rebuttal WP "TPI Joint facility charges 2010 REBUTTAL.xlsx," Tab "BRC," cells R220 to U38; TPI Rebuttal WP "TPI Joint facility charges 2010 REBUTTAL.xlsx," Tab "IHB," cells M32 to P49; and TPI Rebuttal WP "TPI Joint facility charges 2010 REBUTTAL.xlsx," Tab "IHB," cells I32 to L49.

[66] See, e.g., DuPont, NOR 42125, slip op. at 100 ("[T]he Board favors use of an average of multiple years over using data from a single year. This reduces the chance that an expense estimate will be based on an aberrational year.")

revenue appendix, the Board accepts TPI's revised miles and applies the parties' agreed-upon methodology for calculating TPIRR's annual loss and damage costs.

I. INSURANCE

The parties agree on an insurance ratio of 1.35% of operating expenses based on the real-world CSXT. (CSXT Reply III-D-239, July 21, 2014; TPI Rebuttal III-D-63.) We will accept the parties' agreement on this issue.

J. AD VALOREM TAX

On opening, TPI calculates TPIRR's ad valorem taxes by determining the amount of tax that CSXT paid per route-mile in each of the states in which TPIRR operates (Alabama, Florida, Georgia, Illinois, Indiana, Kentucky, Louisiana, Maryland, Mississippi, New York, North Carolina, Ohio, Pennsylvania, South Carolina, Tennessee, Virginia, and West Virginia, and the District of Columbia). (TPI Opening III-D-27.) TPI then applies these amounts to TPIRR's route miles in each state, totaling an ad valorem tax burden of $41.3 million in the first year. (Id.) TPI states that this methodology allows for consideration of how each state actually determines final assessed values. (Id.)

On reply, CSXT argues that TPI's methodology is flawed because ad valorem taxation is not primarily a function of route miles, but instead a function of profitability. (CSXT Reply III-D-240, July 21, 2014.) CSXT points out that fourteen[67] of the states in which TPIRR operates tax railroad property as a function of the railroad's overall profitability as an enterprise—its "unit value"—and that a SARR that is more profitable than the incumbent railroad will pay higher taxes as a result. (CSXT Reply III-D-240, July 21, 2014.) Because TPIRR, as posited on opening, has a higher net operating income on a route-mile basis than CSXT, CSXT asserts that TPIRR would have a higher income valuation and thus higher ad valorem taxes. (Id. at III-D-246 to III-D-247.) To account for these higher taxes, CSXT calculated a "unit value modifier" that measures the relative profitability of TPIRR vis-à-vis CSXT to adjust TPIRR's total ad valorem tax burden. (Id.)

On rebuttal, TPI continues to apply its methodology from opening, arguing that CSXT's methodology contains two flaws. First, TPI contends that CSXT's unit multiplier value is based on two different accounting standards. (TPI Rebuttal III-D-64 III-D-65.) TPI argues that CSXT's use of different accounting standards to develop its unit multiplier, and to calculate CSXT's net revenue figures, results in CSXT's and TPIRR's net revenue not being comparable. (Id.) Second, TPI asserts that CSXT's allegation that TPIRR is hyper-profitable and would need

[67] Specifically, Alabama, Florida, Georgia, Illinois, Indiana, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Ohio, South Carolina, Tennessee, and West Virginia. (CSXT Reply III-D-242, July 21, 2014; see also CSXT Reply WP "III-D-8," July 21, 2014 (tax work papers demonstrating unit value assessment for each SARR state using unit value for appraisals).

to pay higher ad valorem taxes contradicts CSXT's claim that this proceeding should be dismissed because TPIRR is not viable. (Id. at III-D-66).

In its reply, CSXT notes that its "unit method" has previously been accepted by the Board in SAC cases such as Sunbelt 2014. (CSXT Reply III-D-240 (citing Sunbelt 2014, NOR 42130, slip op. at 66-67).) However, subsequent to CSXT's reply evidence, the Board reconsidered its decision to accept the railroad's method for calculating ad valorem taxes in Sunbelt, and changed the method of calculating ad valorem taxes it accepted to that used in prior cases. Sunbelt 2016, NOR 42130, slip op. at 12-13. In that decision, the Board concluded that the railroad's proposed profitability-based methodology was flawed and contained unanswered questions that made relying on it inappropriate. Id. We find that CSXT's application of a profitability-based methodology in this case contains the same flaws and unanswered questions that led the Board to reject that methodology in the Sunbelt 2016 decision. Thus, consistent with TPI's proposed methodology, we will follow the Sunbelt 2016 decision and apply the Board's long-established precedent of using route-miles to calculate ad valorem taxes. See Ariz. Elec., NOR 42113, slip op. at 32; Tex. Mun., 6 S.T.B. at 690; FMC Wyo., 4 S.T.B. at 843.

K. OTHER MISCELLANEOUS COSTS

1. Intermodal Lift Costs

While the parties largely agree on bulk terminal costs, they disagree on a number of other intermodal lift costs. In its opening, TPI calculates the lift and ramp costs for handling intermodal shipments based on the amount CSXT incurs for lift and ramp services at intermodal terminals located on CSXT lines included in TPIRR's network. TPI states that it calculated costs at each facility and applied those costs on a facility-by-facility basis to the containers and trailers handled by TPIRR at each facility. TPI includes costs for contract services, equipment repair, rail operations, government fees, terminal security, and other items. (TPI Opening III-D-27 to III-D-28.) In its reply, CSXT states that TPI failed to include certain cost components in its lift costs, including costs for: clerical support; utilities; management or supervisory positions to oversee operations, employees, and contractors; and lift equipment and hostlers. (CSXT Reply III-D-248 to III-D-52, July 21, 2014.) CSXT also states that TPI miscalculated the costs associated with the Bedford Park and North Baltimore facilities. (Id. at III-D-250.) In its rebuttal, TPI argues that it need not include CSXT's additions here because TPI accurately estimated associated costs and fees for the facilities by using CSXT's actual expenses to develop a cost per container. (TPI Rebuttal III-D-67.)

a. Clerical Support & Utilities

CSXT states that TPI failed to explain why TPIRR would not be responsible for the clerical utility costs incurred by CSXT at intermodal facilities, which it argues TPI should have included because it based TPIRR's intermodal lift and ramp costs on CSXT's expenses. (CSXT Reply III-D-247 to III-D-248, July 21, 2014.) It argues that by excluding the clerical costs, TPI fails to account for functions essential to supporting intermodal operations, which would jeopardize service standards and violate safety and reporting regulations. (Id. at III-D-248.) TPI states that by including all intermodal facility clerical and utility costs, CSXT includes costs

associated with services TPIRR does not use. (TPI Rebuttal III-D-68.) TPI asserts that because it does not own the facilities, it would not incur clerical costs associated with services it does not receive. For utility costs, it similarly asserts that it "is only seeking to recover costs associated with its ramp-to-ramp revenues from intermodal shippers" and should not be forced to incur all facility costs. (Id.) We find that CSXT has raised valid criticisms about the feasibility of TPI's evidence. Because TPIRR uses part of the intermodal facilities, it should incur some of the costs associated with clerical support and utilities. The Board accepts CSXT's reasonable adjustment to the unit cost of per lift at each intermodal facility to include clerical and utility costs.

b. Management/Supervisory Positions

CSXT states that TPI failed to include management or supervisory positions to oversee operations, employees, and contractors. (CSXT Reply III-D-249, July 21, 2014.) It explains that these personnel ensure that the railroad's policies and procedures are followed and serve as liaisons between the contract operators and railroad personnel. CSXT argues that TPI must either increase its own personnel or increase its payment to contractors to account for those responsibilities. (Id. at III-D-248.) CSXT cites a workpaper that it produced in discovery that identifies management positions that CSXT maintains at intermodal terminals along the TPIRR network. (Id. at III-D-249, n.538.) In its rebuttal, TPI argues that the functions associated with the management and supervisory positions that CSXT includes are the responsibility of either contractor personnel or TPIRR operations and marketing personnel. (TPI Rebuttal III-D-67.) While TPI argues that CSXT failed to identify any TPIRR responsibilities not already accounted for, TPI does not address the workpaper cited in CSXT's reply. (Id.) Nor does TPI adequately support its assertion that these management and supervisory functions are covered by contractor or other TPIRR personnel. Therefore, we accept CSXT's added supervisory and management positions.

c. Lift Equipment and Hostlers

In its reply, CSXT claims that TPI failed to include the cost of intermodal lift equipment and hostlers, which it states are essential for intermodal yard operations. (CSXT Reply III-D-250 to III-D-251, July 21, 2014.) CSXT explains that it uses its own inventories of owned lift equipment and hostlers for each intermodal yard to calculate 3Q 2010 price levels; using that data, CSXT calculates payments using the approach that TPI used to estimate TPIRR annual vehicle costs. (Id.) In its rebuttal, TPI states that it includes equipment rents in its development of lift costs, which, it argues, should be sufficient because it neither owns nor receives revenues from the intermodal facilities. (See TPI Opening WP "Intermodal Terminal Cost and Volume Update lift 2010.xlsx;" TPI Rebuttal III-D-68 to III-D-69.)

The Board finds that CSXT does not adequately support its criticisms. CSXT does not explain why the total equipment rents TPI includes in the development of its costs are not sufficient. Also, CSXT does not sufficiently explain why the vehicle cost methodology it proposes would be appropriate to apply here. For example, CSXT does not explain why lift equipment and hostler fees should be based on current cost rather than the original cost of assets. Therefore, we find that TPI's costs are feasible and supported and accept TPI's lift equipment and hostler costs.

d. Bedford Park and North Baltimore

CSXT also asserts that TPI understates TPIRR's share of the facility's total expense. (CSXT Reply III-D-250, July 21, 2014.) Regarding Bedford Park, CSXT argues on reply that TPI should have included the full cost of the facility because it handles 99% of CSXT's traffic, but states that TPI only includes 60% of the actual facility cost. Regarding North Baltimore, CSXT states that TPI failed to account for significant increases in volumes and costs between 2010 and 2013. (Id. at III-D-249 to III-D-250.) In its rebuttal, TPI claims that CSXT's calculation of operating expenses at Bedford Park is a departure from the approach otherwise used by both parties to calculate lift costs. (TPI Rebuttal III-D-69.) TPI argues that it should not be required to bear the full burden of an intermodal facility's costs if it does not collect revenue from that facility. (Id.) It adds that its costs are based on lift fees per container to include the ramp-to-ramp line-haul revenues for TPIRR intermodal traffic. (Id.) Regarding the North Baltimore facility, TPI argues[68] that CSXT's statement that lifts (and therefore lift costs at the facility) will substantially increase after 2010 ignores the impact of system-wide changes on the overall lift cost calculation. It states that while containers may increase at North Baltimore, they decrease at other facilities and it would compromise the overall approach to selectively recalculate costs at a single facility. (Id. at III-D-69 to III-D-70.) TPI argues that its methodology for developing lift cost expenses appropriately increases base year expenses over time, as with other operating expenses. (Id. at III-D-70, III-H-30.)

For both of these facilities, the Board finds that TPI's evidence is feasible and supported, and that CSXT's criticisms do not justify altering the basic methodology used by both parties to develop other lift costs. CSXT's claim that TPIRR handles 99% of the CSXT traffic at Bedford Park is not consistently established in its workpapers.[69] Moreover, although facilities other than North Baltimore also experience increases or decreases in volume over time, CSXT does not conduct the same analysis to account for those facilities and provides no reason why it would be appropriate to selectively update only certain facilities. Therefore, we find that TPI's evidence on the facility costs, which applies a consistent approach, is feasible and supported, and we therefore accept TPI's costs for the North Baltimore and Bedford Park facilities.

2. Automotive Handling Costs

The parties generally agree on the approach to calculating costs for loading and unloading at TPIRR's automotive facilities, but CSXT adds the cost of utilities at the facility. (CSXT Reply III-D-253 to III-D-54, July 21, 2014.) On rebuttal, TPI excludes the cost of utilities for automotive facilities. (TPI Rebuttal III-D-70.) For the same reasons outlined above

---

[68] TPI also discusses this issue in the DCF section of its rebuttal, where it explains that it continues to use the approach it used on opening by "indexing all intermodal lift costs based on TPIRR's change in gross ton-miles." (TPI Rebuttal III-H-30.)

[69] Compare CSXT Reply WP "TPIRR Reply Intermodal Lift and Ramp.xlsx" with CSXT Reply WP "TPIRR_Selected_Traffic.xlsx."

in the section on clerical support and utilities, we accept CSXT's addition of utility costs to the handling costs at TPIRR's automotive facilities. We adjust this cost to reflect the traffic group that the Board accepts in the traffic volumes and revenue appendix.

3. Bulk Transfer Facility Costs

The parties agree on operating costs associated with bulk transfer facilities. In its rebuttal, TPI states that because it built the bulk transfer facilities and captured certain revenue, it includes CSXT's additions to TPIRR's bulk transfer costs. (Id.) However, in its reply, CSXT states that it also includes additional management and supervisory personnel associated with the bulk transfer function. (CSXT Reply III-D-254, July 21, 2014.) Although CSXT provides little support for the inclusion of these employees, because TPI did not address the additions on rebuttal, the Board will accept CSXT's proposed additional management and supervisory personnel for bulk transfer facilities.

APPENDIX B—TPIRR ROAD PROPERTY INVESTMENT

This appendix[70] addresses the evidence and arguments of the parties concerning what it would cost to build TPIRR. The below table summarizes the parties' cost estimates associated with that construction, as well as the numbers used in our analysis.

TABLE B-1
TPIRR Construction Costs

	TPI	CSXT	STB
Land	$4,096,288,989	$5,489,892,824	$4,280,307,202
Roadbed Preparation	$3,653,827,347	$6,002,221,813	$4,175,064,331
Culverts	$127,334,486	$136,636,695	$136,636,695
Track	$9,234,336,170	$10,990,851,526	$10,767,382,266
Tunnels	$1,629,798,302	$1,629,798,302	$1,629,798,302
Bridges	$4,147,960,108	$5,499,046,695	$5,493,297,326
Signals & Communications	$1,878,042,480	$2,661,332,621	$1,943,438,948
Building & Facilities	$1,117,845,427	$1,492,435,451	$1,442,017,737
Public Improvements	$135,687,551	$234,383,873	$135,704,228
Mobilization	$591,970,461	$773,461,088	$694,530,176
Engineering	$2,192,483,187	$2,864,670,698	$2,572,333,983
Contingencies	$2,470,928,552	$3,228,483,876	$2,899,020,399
TOTAL	$31,276,503,059	$41,003,215,462	$36,169,531,594

[70] To the extent the Board accepts one party's quantities or agreed-to quantities, those quantities will be adjusted to fit TPI's system configuration as modified. See supra, Stand-Alone Cost Analysis Part A.3.

A. REAL ESTATE

TABLE B-2
Real Estate Acreage

	TPI	CSXT	STB
ROW	73,251	Not stated	73,251
Yards			
Major Yards	2,512	2,844	2,629
Other Yards	2,898	3,607	3,319
Intermodal	1,927	2,348	1,935
Automotive	999	999	999
Bulk Transfer	275	275	275
Partially Owned	213	213	213
Interchange Yards	0	568	26
Microwave Tower Sites	570	570	570
Sub TOTAL	82,645	11,425	83,217
Easements	8,113	8,113	8,113
TOTAL	90,758	Not stated	91,330

TABLE B-3
Real Estate Costs

	TPI	CSXT	STB
ROW	$3,075,900,000	$3,905,917,159	$3,075,900,000
Yards			
Major Yards	$241,541,420	$275,268,248	$254,577,457
Other Yards	$278,539,134	$516,201,735	$321,762,180
Intermodal	$288,919,533	$310,283,142	$290,054,230
Automotive	$137,777,000	$164,031,724	$137,777,000
Bulk Transfer	$28,113,115	$28,113,115	$28,113,115
Partially Owned	$13,029,350	$111,901,796	$13,029,350
Interchange Yards	$0	$20,588,086	$841,798
Microwave Tower Sites	$32,370,000	$31,900,000	$32,370,000
Sub TOTAL	$4,096,189,552	$5,364,205,006	$4,154,425,130
Easements	$99,437	$18,443,818	$18,443,818
Acquisition & Transaction Costs	$0	$107,244,000	$107,438,254
TOTAL	$4,096,288,989	$5,489,892,824	$4,282,933,868

1. Acreage

TPI initially estimates a total acreage of 89,040.5 acres is required to construct its SARR.[71] (TPI Opening III-F-3.) This includes 73,030.6 acres for the right of way acquired in fee simple; 8,113.1 acres for the right of way via easement; 7,328.8 acres for yards; and 568 acres for microwave towers. (Id.) TPI states that TPIRR's right-of-way is based on an average width of 75 feet in urban areas and 100 feet elsewhere. (Id.) On reply, CSXT adds land for additional yards and communications facilities and for land in which it has partial ownership. (CSXT Reply III-F-10, July 21, 2014.) On rebuttal, TPI modifies the acreage to accommodate increased yard sizes from the addition of classification and other tracks and to reflect additional acres for yards and bulk transfer facilities added by CSXT. (TPI Rebuttal III-F-3 n.3.) Specifically, TPI revised the acreage in 38 yards, added five flat yards, added two partially owned yards, accepted CSXT's revisions to bulk transfer facility acreage, and accepted the coal pier facility. (Id. at III-F-9 to III-F-10.) We will use TPI's estimated rebuttal acreage because we are accepting TPI's operating plan and system configuration (with adjustments). However, we will adjust TPI's acreage figure to account for the minor modifications made to TPI's system configuration.

2. Unit Costs

TPI utilizes an Across-the-Fence (ATF) method for appraising land, estimating the value of the right-of-way by establishing the value of adjacent lands and parcels of land with the same zoning as lands abutting the right-of-way. (TPI Opening III-F-2.) TPI's appraisers, in part, utilized aerial imagery to help them classify land. (Id. at III-F-4 to III-F-5.)

CSXT accepts TPI's methodology for appraising rural areas, but claims that it leads to inaccurate results in urban areas. (CSXT Reply III-F-2, July 21, 2014.) CSXT claims that on-the-ground inspections are necessary in urban areas. (Id. at III-F-4.) CSXT asserts that TPI undervalued land in the urban areas of Chicago, Ill.; Washington, D.C.; Atlanta, Ga.; Baltimore, Md.; Pittsburgh, Pa.; Nashville, Tenn.; Jacksonville Fla.; and Chattanooga, Tenn.

CSXT also claims that TPI improperly designated land units in certain urban areas, thereby undervaluing them. (Id. at III-F-5.) Specifically, CSXT alleges that TPI wrongly designated land near Chicago as restricted because it is adjacent to a golf course that shows up as dark, undeveloped land in aerial photos. (Id.) CSXT reclassified this land as residential and commercial. (Id. at III-F-6.) Similarly, CSXT argues that TPI incorrectly designated land in Anne Arundel County, Md., that abuts a racetrack as restricted when it is actually industrial and commercial. (Id.) CSXT also re-designates land in Atlanta from restricted to industrial and land in Nashville from restricted to industrial and commercial. (See TPI Rebuttal, Ex. III-F-2 at 151,

[71] As ordered by the Board, TPI ultimately included acreage for the 19 intermodal terminals it incorrectly removed on rebuttal. (See TPI Compliance & Suppl. Evid. III-F-3.)

154.) Lastly, CSXT alleges that TPI's valuation units for land are too large in urban areas. (CSXT Reply III-F-6 to III-F-7, July 21, 2014.)

On rebuttal, TPI defends its methodology as applied in urban areas and states that its appraisers conducted on-the-ground inspections in 16 areas, five of which (Atlanta, Chicago, Jacksonville, Nashville, and Pittsburgh) were on the list of urban areas enumerated by CSXT. (TPI Rebuttal III-F-4; TPI Opening, Ex. III-F-2 at 21.) TPI further states that its appraisers have "intimate familiarity" with the Baltimore and Washington, D.C. areas. (TPI Rebuttal III-F-4; TPI Opening, Ex. III-F-2 at 22.) Regarding CSXT's re-designation of land, TPI accepts the designation of the land outside Chicago to residential and commercial, but maintains that the land in Atlanta, Nashville, and Anne Arundel County should be designated restricted as they include floodplain or are located in a flood zone. (TPI Rebuttal III-F-6 to III-F-7.)

We will accept TPI's methodology for appraising land in urban areas as feasible and supported. TPI has demonstrated that it conducted on-the-ground inspections in numerous areas, and also used available tools such as aerial photographs and online mapping. Furthermore, we disagree with CSXT that TPI improperly designated land units in certain areas. TPI is correct that the relevant units in Atlanta, Nashville, and Anne Arundel County are included within designated floodplains or flood zones and are, thus, properly designated as restricted. Accordingly, we accept TPI's calculation of the size of land valuation units in urban areas as feasible and supported by the record. We also accept the parties' agreed-upon methodology for appraising land in rural areas.

The parties also disagree on the value of easements. On opening, TPI states that it calculated the average cost per easement acre for each state and then applied it to the acreage for each easement in the state. (TPI Opening III-F-6.) CSXT asserts that TPI should have indexed the easements costs to current market value. (CSXT Reply III-F-8, July 21, 2014.) TPI states that there is no correlation between time and easement values and states that it performed a regression of observed easement fees per acre to support its position.[72] (TPI Rebuttal III-F-11 to III-F-12.)

We disagree with TPI's underlying premise that easement fees would not increase with the passage of time. Just as the value of land increases over time, the cost of using that land also increases. Moreover, we have repeatedly held that a SARR's investments, including easements, should be valued at current costs. See Sunbelt Chlor Alkali P'ship v. Norfolk S. Ry. (Sunbelt 2014), NOR 42130, slip op. at 103 (STB served June 20, 2014) (citing Public Service Co. of Colo. v. Burlington N. & Santa Fe Ry., 7 S.T.B. 589, 669 (2004)) petition for reconsideration granted in part and denied in part (Sunbelt 2016) (STB served June 30, 2016) (with Commissioner Begeman dissenting in both) appeal docketed sub nom. Sunbelt Chlor Alkali P'ship v. STB, No. 16-15701 (11th Cir. Aug. 26, 2016). Accordingly, we conclude that TPI's

[72] Regression validation is the process of deciding whether the numerical results quantifying hypothesized relationships between variables, obtained from regression analysis, are acceptable as descriptions of the data.

easement values methodology is not feasible. CSXT's easement values, which are based on the methodology used in prior cases, will be accepted.

3. Real Estate Acquisition Costs

TPI did not include any real estate acquisition costs on opening. On reply, CSXT claims that TPI failed to provide for $104 million in costs associated with land acquisition, such as title work, surveying, appraisals, negotiation consultants, and closing costs. (CSXT Reply III-F-11 to III-F-14, July 21, 2014.) TPI responds that such costs constitute a barrier to entry. (TPI Rebuttal III-F-12 to III-F-13.)

We will accept CSXT's proffered land acquisition costs.[73] "These costs are inherent in real estate transactions and would be incurred by a new rail entrant." Sunbelt 2014, NOR 42130, slip op. at 104. That is, the original rail companies incurred such costs in purchasing the property for the lines replicated here even though the amount of the original expenditure is not now known. Id.; see also E.I. DuPont de Nemours & Co. v. Norfolk S. Ry., NOR 42125, slip op. at 141 (STB served Mar. 24, 2014), corrected and updated, (STB served Oct. 3, 2014), reconsideration denied, (STB served Dec. 23, 2015) (with Vice Chairman Begeman dissenting on the reconsideration decision). As a result, the inclusion of such costs does not constitute a barrier to entry.

[73] CSXT includes land acquisition costs as "mobilization." (CSXT Reply III-F-220, July 21, 2014.) We will accept the costs, but include them as a real estate investment.

B. ROADBED PREPARATION

TABLE B-4
Roadbed Preparation Costs

	TPI	CSXT	STB
Earthwork			
a) Common	$683,203,893	$2,199,806,059	$705,977,782
b) Loose Rock	$406,790,609	$451,456,811	$468,387,709
c) Solid Rock	$1,056,294,902	$1,126,699,765	$1,200,020,370
d) Borrow	$818,716,007	$891,737,326	$818,977,755
Earthwork Subtotal	$2,965,005,412	$4,669,699,961	$3,193,363,617
Clearing & Grubbing	$93,876,352	$154,017,779	$139,392,149
Lateral Drainage	$69,924,538	$69,917,557	$69,924,538
Retaining Walls	$223,904,475	$311,119,984	$287,451,350
Rip Rap	$76,917,102	$77,921,315	$76,917,102
Relocation of Utilities	$738,306	$738,306	$738,306
Topsoil Placement / Seeding	$1,475,923	$1,475,923	$1,475,923
Road Surfacing	$4,332,732	$4,332,732	$4,332,732
Environmental Compliance	$889,950	$889,950	$889,950
Land for Waste Quantities	$216,762,558	$532,284,176	$216,768,297
Subgrade Preparation	$0	$75,158,394	$79,349,398
Fine Grading	$0	$104,665,737	$104,460,970
Roadbed Total	$3,653,827,347	$6,002,221,813	$4,175,064,331
Culverts	$127,334,486	$136,636,695	$136,636,695
Total All Costs	$3,781,161,833	$6,138,858,508	$4,311,701,026

1. Trestle Hollow

TPI develops costs for TPIRR rail construction, including clearing and grubbing, earthwork costs, excavation, culverts, and subballast using actual costs from South Central Tennessee Railroad's Trestle Hollow rail construction project (Trestle Hollow Project). (See, e.g., TPI Opening III-F-6 to III-F-26.) TPI indexed the Trestle Hollow Project costs for location. According to CSXT, it was improper for TPI to use data from the Trestle Hollow Project to determine costs for common earthwork excavation, clearing and grubbing, and seeding. CSXT

claims that the cases cited by TPI[74] do not provide precedent for using the costs of a small project on a short line as the basis for the costs of constructing a SARR that replicates the core of a Class I carrier's network. (CSXT Reply III-F-19 to III-F-21, July 21, 2014.) CSXT also claims that the Trestle Hollow Project is not a reliable proxy and is not applicable to TPIRR because it traversed different topography, reused much less excavated materials as embankment, required less water compaction, realized economies from conducting all of its work in a small geographic area, and generally reflected much lower costs than other CSXT projects or costs derived from the R.S. Means Handbook (Means).[75] (See id. at III-F-21 to III-F-23.) Instead of using costs from the Trestle Hollow Project, CSXT claims that TPIRR's costs should be derived from Means, a method that the Board has favored in the past. (See id. at III-F-17 to III-F-18.) On rebuttal, TPI lists several reasons why it believes that costs from the Trestle Hollow Project are reliable and applicable here, including the fact that one of TPI's engineering experts was the Engineer of Record on the project, that the second lowest contractor bid was within $6,000 of the low bid, that the project was designed in a similar fashion to other railroad capital construction projects, that the terrain (and thus the clearing and roadbed construction) was difficult, and that the cross-sections used were similar to TPIRR typical roadbed sections. (TPI Rebuttal III-F-19.)

The Board has previously addressed, and declined to accept, proposals to use the Trestle Hollow Project for earthwork costs.[76] Similarly, the Board will reject TPI's proposed use of the Trestle Hollow Project unit costs as a proxy for TPIRR's costs because TPI did not demonstrate that the costs realized on a small short line relocation project in Tennessee are representative of the costs TPIRR would incur on a nearly 7,000-mile, multi-state Class I railroad. The size, scope, and geographic and topographic diversity of TPIRR make the use of Means more appropriate than the extrapolation of costs from a single project. See Sunbelt 2016, NOR 42130, slip op. at 14-17; see also DuPont, NOR 42125, slip op. at 141.

TPI contends that Means overstates TPIRR's costs because it does not reflect TPIRR's economies of scale that would be achieved during the construction of a nearly 7,000-mile railroad. (TPI Rebuttal III-F-20 to III-F-21.) The Board disagrees. As we explained in Sunbelt 2016, Means (which has been used in many rate cases) accounts for economies of scale by providing costs for a wide variety of different sizes and types of equipment, including large equipment packages with higher productivity and efficiency that are used in large projects.

---

[74] See TPI Opening III-F-17 (citing Ariz. Elec. Power Coop. v. BNSF Ry., NOR 42113 (STB served Nov. 22, 2011); W. Fuels Ass'n v. BNSF Ry. (W. Fuels 2007), NOR 42088 (STB served Sept. 10, 2007).

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

[76] See Sunbelt 2016, NOR 42130, slip op. at 14-17 (denying reconsideration of the Board's decision to reject Trestle Hollow project costs); E.I. du Pont de Nemours v. Norfolk S. Ry., NOR 42125, slip op. at 14-17 (STB served Dec. 23, 2015) (also denying reconsideration regarding Trestle Hollow project costs).

Under the theory of unconstrained resources, a SARR can deploy as many of these large equipment and manpower packages (subject to feasibility limitations including size of equipment) as it wants along its right-of-way. TPI does not explain why TPIRR's ability to choose equipment packages under Means would not account for economies of scale.

2. Clearing and Grubbing

TPI relies on applicable valuation sections from the ICC Engineering Reports (Engineering Reports) to determine clearing and grubbing quantities and relies on costs from the Trestle Hollow project to determine unit costs. (TPI Opening III-F-8.) CSXT accepts TPI's methodology for determining quantities, but rejects TPI's proposed unit costs. (CSXT Reply III-F-31, July 21, 2014.) On rebuttal, TPI corrects an input error in the clearing and grubbing quantities for valuation section ACL-5-FL, resulting in a decrease in the quantities it submitted on opening. (TPI Rebuttal III-F-28.)

For the reasons discussed above, we will accept the Means-based costs proffered by CSXT, but we also conclude that TPI is correct in noting an error in the Engineering Reports and will accept TPI's rebuttal quantities.

3. Earthwork

a. Right-of-Way Quantities

TPI uses the Engineering Reports to determine right-of-way segments and valuations. (TPI Opening III-F-11.) CSXT endorses this methodology, but states that TPI misapplied it in 73 instances. (CSXT Reply III-F-35, July 21, 2014.) On rebuttal, TPI agrees with 13 of the 73 misapplications alleged by CSXT. (TPI Rebuttal III-F-31.) The Board's review of these 73 instances supports CSXT's analysis with respect to the 13 misapplications admitted by TPI and results in a fourteenth that should be included as an earthwork quantity.[77] For the remaining 59 alleged misapplications, based on the Board's review, CSXT has not adequately supported its position. With regard to these 59 other instances, CSXT (1) incorrectly groups items together that are not associated or representative of the group, and/or (2) relies on values or their claimed attributes that are not reflected in the Engineering Reports.

b. Yard Quantities

On opening, TPI includes 12 major yards and several lesser yards, including interchange yards. (TPI Opening III-F-12.) CSXT accepts TPI's yard earthwork quantities with three exceptions: 1) the addition of the Curtis Bay coal facility, 2) the construction of humps in hump/classification yards and the addition of associated costs, and 3) the addition of quantities

[77] This is error item #71 @ RFP-2-VA. 18,950 cubic yards have been added to TPI's excavation quantities.

for segments over which CSXT has only partial ownership. (CSXT Reply III-F-39 to III-F-40, July 21, 2014.)

On rebuttal, TPI accepts the addition of the Curtis Bay facility and the partially owned lines. (TPI Rebuttal III-F-32 to III-F-33.) Regarding the classification of hump yards, however, TPI claims that this is a new cost item that has never been included in SAC proceedings. (Id. at III-F-33.) TPI asserts that earthwork quantities for hump yards are captured in the Engineering Reports and rejects CSXT's further addition. (Id.)

The Board will reject CSXT's addition of earthwork quantities for hump yards. CSXT has provided no evidence that the material required to construct the hump yards is not included in the Engineering Reports, and no adequate justification for deviating from Board rate case precedent by including a separate cost item for hump-related earthwork. See generally Sunbelt 2014, NOR 42130, App. B; DuPont, NOR 42125, App. B. The Board will otherwise accept the parties' agreement regarding yard earthwork quantities.

c. Earthwork Unit Costs

i. Common Excavation

TPI uses Trestle Hollow Project costs to ascertain the common excavation costs for TPIRR. (TPI Opening III-F-13 to III-F-15.) For adverse terrain common excavation, TPI used a ratio between Means costs under ideal conditions and under adverse conditions to adjust the Trestle Hollow Project unit cost. (Id. at III-F-16.) To accomplish this, TPI calculated a common excavation cost and a cost for common excavation in adverse areas using Means. (See id.) On reply, CSXT states Means is a more appropriate and preferred method of calculating unit costs. (CSXT Reply III-F-41 to III-F-43, July 21, 2014.) However, CSXT also adds excavation haul costs to account for shrinkage and swell within TPIRR. (Id. at III-F-43.) For the reasons discussed supra Part B.1 and infra Part B.3.c.vii, the Board will employ the costs calculated using Means[78] with an adjustment for shrinkage and swell.

ii. Loose Rock Excavation

CSXT accepts TPI's use of Means as the source for loose rock excavation unit costs, but rejects TPI's unit cost for loose rock excavation in adverse terrain and recalculates it to adjust for swell, as well as correcting an indexing error. (CSXT Reply III-F-43, July 21, 2014; CSXT Reply WP "TPIRR Open Grading CSXT Reply.xlsx," Tab "Unit Costs," July 21, 2014.) To both costs, CSXT adds hauling costs to account for shrinkage and swell. On rebuttal, TPI accepts the correction of its indexing error for unit costs for loose rock excavation in adverse terrain, but rejects CSXT's proposed adjustments for swell. (TPI Rebuttal III-F-37.) As explained infra Part

[78] Moreover, TPI uses costs from the Trestle Hollow Project for common excavation and common excavation in adverse terrain, but does not index these costs for location, only time. This is inconsistent with TPI's indexing when it uses Means costs.

B.3.c.vii, the Board is accepting the need for adjustments relating to shrinkage and swell. Thus, the Board will accept the parties' agreement regarding unit costs for loose rock excavation and loose rock excavation in adverse terrain, but will adjust those costs to correctly account for shrinkage and swell.

iii. Solid Rock Excavation

CSXT accepts TPI's use of Means as the source of unit costs for both solid rock excavation and solid rock excavation in adverse terrain. (CSXT Reply III-F-44, July 21, 2014.) For both, however, CSXT adds hauling costs to account for shrinkage and swell. As explained infra Part B.3.c.vii, the Board is accepting the need for modifications relating to shrinkage and swell. Thus, the Board will accept the parties' agreement regarding unit costs for solid rock excavation and solid rock excavation in adverse terrain, but will adjust those costs to correctly account for shrinkage and swell.

iv. Embankment/Borrow

TPI uses Means as a basis for its unit costs for borrow, for a total of $16.82 per cubic yard. (TPI Opening III-F-18.) CSXT concurs with this figure. (CSXT Reply III-F-44, July 21, 2014.) The Board will accept the parties' agreement on this issue.[79]

v. Land for Waste Excavation

TPI assumes a 30% average waste ratio for the entire TPIRR. (TPI Opening III-F-18.) TPI recognizes that additional land will be needed to handle the waste generated and includes an additional 11,687 acres of rural land at $18,451 per acre. (Id. at III-F-19.) CSXT accepts TPI's asserted waste ratio and land acres, but rejects TPI's proffered cost per acre, arguing that TPI's assumption that the waste would occur only in rural areas is erroneous. (CSXT Reply III-F-45, July 21, 2014.) TPI responds that it is proper to use rural areas because, until construction begins, it is impossible to determine where the waste will occur. (TPI Rebuttal III-F-39.) TPI also states that CSXT's methodology is improper because it overstates the cubic yards of waste in non-rural valuation sections.

The Board will accept the parties' agreed-to waste ratio and additional acres and will accept TPI's rural land values as the unit cost for waste areas as feasible and supported. We find TPI's argument that CSXT's methods can result in an overstatement of urban quantities persuasive. Furthermore, in past cases the Board has rejected similar arguments by railroads to raise the cost of land for waste excavation. See Sunbelt 2014, NOR 42130, slip op. at 119; DuPont, NOR 42125, slip op. at 170.

[79] The Board will also add valuation section PLE-7-PA. See infra Part B.6.c.

vi. Fine Grading

On opening, TPI states that it does not include additional costs for fine grading because they are included in Trestle Hollow Project costs. (TPI Opening III-F-15.) On reply, CSXT includes fine grading as a separate cost based on Means. (CSXT Reply III-F-48 to III-F-49, July 21, 2014.) Because the Board rejects use of Trestle Hollow Project costs, supra Part B.1, we will accept CSXT's addition of costs for fine grading.

vii. Shrinkage and Swell

On opening, TPI does not address cost or volume adjustments to account for changes in soil states that occur in the process of excavating, hauling, and backfilling earth (shrinkage and swell). On reply, CSXT applies conversion factors to earthworks costs, stating that Means implicitly recognizes their necessity by reporting unit prices for hauling materials in loose cubic yards (LCY) but unit prices for excavation in embanked cubic yards (ECY). (CSXT Reply III-F-50 to III-F-52, July 21, 2014.) TPI responds that the adjustment is improper, explaining that the Board has previously rejected proposals to include such an adjustment to account for shrinkage and swell. (TPI Rebuttal III-F-42 (citing Sunbelt 2014, NOR 42130, slip op. at 116; DuPont, NOR 42125, slip op. at 184-85; Ariz. Elec., NOR 42113, slip op. at 92).) TPI argues that there is no evidence that the Engineering Reports quantities reflect any particular material state and therefore the adjustment CSXT proposes is speculative. (TPI Rebuttal III-F-42.) TPI further argues that the adjustment is inconsistent with how a contractor would develop earthworks costs and inappropriately inflates Means costs. (Id. at III-F-42 to III-F-43.)

Although the Board rejected adjustments to account for shrinkage and swell in DuPont and Arizona Electric, the Board found in Sunbelt 2016, slip op. at 34-35, that an adjustment was appropriate in that case. We agree with CSXT that such an adjustment is appropriate here. Both parties develop a composite unit cost for soil that includes, among other things, excavation, haulage, and compaction. While the costs for each of these activities accurately reflect Means costs, it is inappropriate to use the same volume of soil as a multiplier of the unit cost, as the soil is clearly in three different states, and therefore at three different volumes. Sunbelt 2016, NOR 42130, slip op. at 34-35. Because CSXT has shown that an adjustment to material haulage quantities is appropriate (see CSXT Reply III-F-50 to III-F-52, July 21, 2014), we conclude that TPI's unadjusted earthworks costs are not feasible and supported.

CSXT's methodology to account for shrinkage and swell is acceptable. Ideally, conversion factors would be applied to the volumes of the soil in its different phases; however, this is not possible given how the evidence has been presented here—with one composite cost for moving soil from its natural to constructed state. CSXT, as its workpapers show, fixes this problem by applying the conversion factors to the Means unit costs at the different phases within the development of the composite cost. (Id.; CSXT Reply WP "TPIRR Open Grading CSXT Reply," Tab "Unit Costs Modified," July 21, 2014.) Therefore, although one would expect an adjustment to soil volumes to account for shrinkage and swell, CSXT's approach of adjusting unit costs accomplishes the same purpose here.

However, we will make an adjustment to CSXT's evidence and apply the conversion factors based on an assumption that the Engineering Reports quantities are in bank cubic yards (BCY). ECY is the most compact material state, BCY is a less compact state, and LCY is the least compact state. As TPI argues, the Engineering Reports do not specify any more specific unit of measurement than cubic yards. However, as the Board recently explained, its statements in Sunbelt 2014, NOR 42130, slip op. at 116, about quantity measurements in the Engineering Reports were in error. Sunbelt 2016, NOR 42130, slip op. at 34-35. As in Sunbelt 2016, slip op. at 34-35, we conclude that in this case the Engineering Reports reflect quantities measured in BCY and ECY. However, CSXT applies its swell conversion factors based on an assumption that all Engineering Reports quantities are in ECY. Because the available evidence does not establish that the quantities are entirely in ECY, we will instead apply the conversion factors based on the assumption that all Engineering Reports quantities are in BCY. This approach results in lower quantities, and therefore lower costs, than CSXT's approach of identifying all Engineering Reports quantities as ECY. See Sunbelt 2016, NOR 42130, slip op. at 34-35. Given the available evidence, we find this conservative approach to be appropriate here.

With regard to TPI's argument that an adjustment would be inconsistent with how a contractor would develop earthworks costs and would inappropriately inflate Means costs, we conclude (as discussed above) that the parties' approach to developing earthworks unit costs requires the adjustment. As a result, we will apply the conversion factors as described above.

4. Drainage

a. Lateral Drainage

TPI uses the Engineering Reports to determine the quantity of pipe needed for lateral drainage and Means to determine the unit costs. (TPI Opening III-F-20.) CSXT accepts TPI's methodology for determining quantity and costs, but asserts that TPI improperly excluded certain quantities for a particular valuation section from the Engineering Reports. (CSXT Reply III-F-62, July 21, 2014.) On rebuttal, TPI rejects CSXT's additions, but does add quantities for partially owned lines. (TPI Rebuttal III-F-47 to III-F-48.)

Because, as TPI points out, neither party included the siding and joint tracks for the valuation section at issue, CSXT has not undermined the feasibility of TPI's quantities. Thus, we will accept TPI's quantities proffered on rebuttal and the agreed-to method for determining unit costs.

b. Yard Drainage

The parties' disagreement regarding yard drainage quantities is addressed below in the section relating to facility costs. See infra Part G.20.c.

5. Culverts

TPI utilizes aluminized steel corrugated metal pipe culverts that are, according to TPI, adequate to withstand railroad loadings to a gross weight on rail of 286,000 pounds per car. (TPI

Opening III-F-20.) If the existing flow could not be carried by corrugated metal pipe, TPI replaced the culvert with a Type I bridge. (Id. at III-F-21.) CSXT generally accepts TPI's culvert quantities, but rejects the replacement of some existing bridges with culverts. (CSXT Reply III-F-65, July 21, 2014.)

a. Culvert Unit Costs

On opening, TPI calculates unit costs for culverts by the linear feet of the culvert and the diameter of the pipe and adds unit costs for excavation, furnishing and placing crushed stone for bedding material, and backfill. (TPI Opening III-F-21.) TPI also adds transportation costs of $0.035 per ton-mile. (Id.) CSXT claims that TPI either omitted or incorrectly applied costs associated with culvert installation. (CSXT Reply III-F-63, July 21, 2014.) Specifically, CSXT claims that, against Board precedent, TPI uses costs from the Trestle Hollow Project for bedding material (while CSXT derives its costs from Means). (Id.) CSXT also claims that TPI applied a unit cost for trenching ditches of the incorrect size. (Id.) On rebuttal, TPI accepts CSXT's modification to unit costs for trenching ditches including backfill, excavation and pipe, but maintains that taking costs from the Trestle Hollow Project for bedding material is appropriate. (TPI Rebuttal III-F-48 to III-F-49.)

For the reasons we have discussed, we reject TPI's inclusion of costs from the Trestle Hollow Project. See supra Part B.1. Accordingly, we accept CSXT's unit costs for bedding material and otherwise accept the parties' agreed-to unit costs for trenching, backfill, excavation, and pipe.

b. Culvert Installation Plans

The parties agree on the installation plans for the culverts. (See TPI Rebuttal III-F-49.) We will accept the parties' agreement on this issue.

c. Culvert Quantities

CSXT accepts most of the culvert quantities TPI proffered on opening, but rejects TPI's substitution of culverts for bridges in certain instances. (CSXT Reply III-F-65, July 21, 2014.) On rebuttal, TPI accepts the alterations made by CSXT. (TPI Rebuttal III-F-49.) We will accept the parties' agreement on this issue.

6. Other

a. Ditches

TPI specifies ditches with trapezoidal sections with cuts two feet wide and two feet deep. (TPI Opening III-F-23.) CSXT accepts these specifications. (CSXT Reply III-F-65, July 21, 2014.) We accept the parties' agreement on this issue.

b. Retaining Walls

On opening, TPI states that TPIRR uses gabions (galvanized steel mesh boxes filled with rocks) for all of its retaining walls. (TPI Opening III-F-24.) TPI uses Means to derive the cost for the gabions and timber pilings. (Id.) CSXT accepts TPI's use of gabions as replacements for masonry, timber, and tie retaining walls and accepts TPI's timber- and tie-to-gabion quantities, but rejects TPI's conversion of masonry to gabion quantities. (CSXT Reply III-F-66, July 21, 2014.) CSXT states that masonry retaining walls have a greater weight by volume than gabions and, thus, cannot be replaced by an equivalent volume of gabions. (Id. at III-F-67.) CSXT employs an approximately 1.54:1 gabion-to-masonry conversion ratio and applies it to all the gabions in TPIRR. (Id. at III-F-68.) On rebuttal, TPI generally rejects the conversion ratio and also argues that over 27% of the masonry retaining walls on TPIRR are non-solid walls to which the conversion ratio should not be applied. (TPI Rebuttal III-F-52 to III-F-53.)

We have recognized that 1.54:1 is an appropriate conversion ratio to be applied when substituting gabions for masonry walls. See Sunbelt 2014, NOR 42130, slip op. at 123; DuPont, NOR 42125, slip op. at 178. Although TPI argues that its method of determining gabion quantities is conservative and likely overstates quantities, TPI's claim is unsupported by any attempt to compare the degree of overstatement it claims to the increase in quantities that result from application of the conversion ratio. However, we accept TPI's position that it is not necessary to apply that ratio to gabions that are replacing non-solid masonry walls. Accordingly, we will accept the 1.54:1 ratio as proposed by CSXT and will apply it to 73% of the gabions on TPIRR.

c. Rip Rap

TPI developed rip rap quantities from the Engineering Reports and applied the unit cost from Means. (TPI Opening III-F-24.) CSXT accepts TPI's unit costs, but alleges that TPI incorrectly recorded the quantities. (CSXT Reply III-F-69, July 21, 2014.) TPI responds that the two quantities that CSXT claims are incorrect are related to track construction, not roadbed preparation. (TPI Rebuttal III-F-53.)

Further review of the Engineering Reports reveals a similar notation for quantities shown in valuation section PLE-7-PA. Both parties include these quantities as "Borrow Quantities-Loose Rock Embankment," as part of roadbed preparation. Given that the two quantities in question are clearly loose rock-type material from the Engineering Reports entry descriptions, and given that the quantities specify the same information as the PLE-7-PA entry, the correct way to include these disputed quantities is as borrow quantities-loose rock embankment in roadbed preparation. See supra Part B.3.c.iv.

On rebuttal, TPI also includes rip rap quantities for partially owned lines that CSXT did not include on reply. (TPI Rebuttal III-F-53.) Because the Board agrees that TPI must account for CSXT's partially owned lines, we accept the additional rip rap quantities TPI included for those lines. We further accept the parties' agreement regarding unit costs.

d. Relocating and Protecting Utilities

The parties agree on costs for utility relocation (see CSXT Reply III-F-69, July 21, 2014), and we accept the parties' agreement on this issue.

e. Seeding/Topsoil Placement

For recently constructed branch lines, TPI estimated the acres per mile for seeding/topsoil placement based on the average acres per mile for the 79-mile Orin Line, constructed by the BNSF Railway in Wyoming in the 1970s. (TPI Opening III-F-25.) For all other lines, it used the Engineering Reports. (Id.) To determine unit costs, TPI relied on $1,600 per acre from the Trestle Hollow Project and indexed it to $1,733 at 3Q 2010 levels, resulting in a total cost of $1.5 million. (Id.) On reply, CSXT states that it rejects TPI's quantities and costs (CSXT Reply III-F-69, July 21, 2014); however, in its workpapers, CSXT uses the same quantities and costs proposed by TPI on opening. (Compare CSXT Reply WP "TPIRR Open Grading CSXT Reply," Tab "Other Costs," cells G53, G55, G57, July 21, 2014 with TPI Opening WP "TPIRR Open Grading," Tab "Other Costs," cells G53, G55, G57). As a result, TPI's proposed quantity and unit cost is the only evidence of record for seeding/topsoil placement, and we will accept TPI's proposal for these items.

f. Water for Compaction/Subgrade Preparation

Citing the Eastern coal rate cases,[80] TPI does not include additional costs for water for compaction or subgrade preparation on opening, stating that because TPIRR traverses sub-humid to humid areas and not arid or semi-arid areas, such costs are unnecessary. (TPI Opening III-F-25.) TPI further asserts that, to the extent such costs might be necessary, they are incidentally included in TPI's proffered Trestle Hollow Project unit costs for common earthwork. (Id. at III-F-25 to III-F-26.)

Citing recent Board decisions, CSXT rejects TPI's approach to these costs. (CSXT Reply III-F-52 to III-F-53, July 21, 2014 (citing DuPont, NOR 42125, slip op. at 183; Sunbelt 2014, NOR 42130, slip op. at 113).) CSXT applies costs—derived from Means—for loading, transporting, and distributing the water in the roadbed material as well as for drying wet material. (CSXT Reply III-F-61, July 21, 2014.) CSXT claims that it applies these costs to common excavation and borrow quantities. (Id. at III-F-61 to III-F-62.)

TPI rejects these costs, arguing that CSXT's unit costs are overstated and contain technical errors. (TPI Rebuttal III-F-45 to III-F-46.) Specifically, TPI argues that although CSXT examines five states traversed by TPIRR with the lowest annual precipitation, CSXT's results inexplicably indicate that three of those states had earthwork quantities of 82% or higher

[80] Duke Energy Corp. v. CSX Transp., Inc. (Duke/CSXT), 7 S.T.B. 402 (2004); Duke Energy Corp. v. Norfolk S. Ry. (Duke/NS), 7 S.T.B. 89 (2003); Carolina Power & Light Co. v. Norfolk S. Ry., 7 S.T.B. 235 (2003).

that required drying of roadbed material. (Id. at III-F-45.) Similarly, TPI claims that CSXT's unit cost for water does not make sense because, as calculated by CSXT, it would cost more to dry material than it would to supply water, spray, and compact the material. (Id. at III-F-46.) TPI also criticizes CSXT's workpapers for containing hard-coded data that TPI could not replicate and argues that CSXT should have utilized alternate data sources. (Id.)

As previously stated, the Board rejects TPI's reliance on costs derived from the Trestle Hollow Project. Supra Part B.1. Thus, we recognize that additional costs must be added to account for subgrade preparation when relying on Means. We are not persuaded by TPI's arguments that CSXT's estimates are nonsensical or inexplicable. CSXT provides a roadmap explaining how it arrived at those estimates, and TPI offered no evidence to refute CSXT's evidence. Nevertheless, an analysis of CSXT's workpapers shows that CSXT applies its Means-derived costs to all types of excavation, which is improper as certain types of excavated materials (e.g., rock) do not have moisture content. Accordingly, the Board will accept CSXT's inclusion of subgrade preparation costs applied only to common excavation and borrow, using the percentage requirements for earthwork type determined by CSXT and the grading quantities supplied by TPI.

g. Detour and Access Roads

CSXT accepts TPI's cost for surfacing relevant detour roads. (CSXT Reply III-F-70, July 21, 2014.) CSXT does not address TPI's conclusion that separate construction access roads are largely unnecessary and would result in no additional cost. As a result, we will accept TPI's uncontested figures for surfacing detour roads.

C. TRACK CONSTRUCTION

TABLE B-5
Track Construction Costs

	TPI	CSXT	STB
Rail	$2,832,608,560	$2,955,139,586	$2,873,102,709
Ties	$1,325,146,189	$1,755,054,655	$1,745,342,749
OTM	$797,240,889	$854,592,443	$849,741,103
Ballast & Subballast	$1,944,291,253	$2,878,194,064	$2,915,145,901
Track Labor	$1,515,337,600	$1,549,446,683	$1,539,510,104
Field Welds	$37,985,063	$64,775,828	$38,453,043
Geotextile	$3,694,168	$4,081,038	$3,762,808
Turnouts	$720,714,411	$871,275,685	$744,033,466
Diamonds	$24,160,475	$24,160,475	$24,160,475
Lubricators	$13,234,580	$13,684,865	$13,683,705
Switch Heaters	$10,328,420	$10,328,420	$10,328,420
Derails	$9,530,027	$10,053,249	$10,053,249
Wheel Stops	$64,537	$64,537	$64,537
TOTAL	$9,234,336,170	$10,990,851,526	$10,767,382,266

1. Geotextile Fabric

TPI places geotextile fabric under turnouts and at-grade crossings. (TPI Opening III-F-28.) CSXT accepts TPI's geotextile specifications and unit costs, but includes additional turnouts on the basis of its operating plan requirements. (CSXT Reply III-F-71, July 21, 2014.) As we are accepting TPI's operating plan and system configuration (with adjustments), we will use the number of turnouts provided by TPI.

2. Ballast

TPI uses 18 inches of ballast and subballast, consisting of a six-inch subballast layer and a 12-inch layer of clean rock ballast for all main tracks. (TPI Opening III-F-28.) For yard tracks, helper pocket tracks, and set-out tracks, TPI uses four inches of subballast and six inches of ballast. (Id. at III-F-29.)

CSXT accepts TPI's methodology for determining ballast quantities (adjusted to its own system configuration),[81] but rejects TPI's ballast costs. (CSXT Reply III-F-71, July 21, 2014.) CSXT states that TPI's ballast costs are understated because TPI erroneously included ballast suppliers adjacent to the (unbuilt) TPIRR route, used incorrect transportation distances, failed to weight the average material and transportation cost by the amount of ballast TPIRR would procure from each supplier, and used an erroneous off-line transportation cost per ton-mile. (Id. at III-F-71 to III-F-72.)

On rebuttal, TPI acknowledges that four of the suppliers it lists on opening are on TPIRR. (TPI Rebuttal III-F-56.) It argues, however, that the 14 suppliers it lists in opening were provided by CSXT in discovery and states that it used those 14 suppliers (including the four on TPIRR) to calculate an average ballast cost based on all the ballast sources provided by CSXT. (Id. at III-F-56 to III-F-57.) TPI also makes four changes to CSXT's distance calculations from supplier to railhead,[82] but otherwise accepts CSXT's railhead designations. (Id. at III-F-59.)[83]

TPIRR cannot transport construction materials over lines it would need to build. Otter Tail Power Co. v. BNSF Ry., NOR 42071, D-26 (STB served Jan. 27, 2006), aff'd sub nom. Otter Tail Power Co. v. STB, 484 F.3d 959 (8th Cir. 2007). TPI agrees that TPIRR would have no rail access to four of the suppliers as noted by CSXT (in Tyrone, Ga.; Lithonia, Ga.; Notasulga, Ala.; and Skippers, Va.). (TPI Rebuttal III-F-56.) Thus, we will recalculate ballast unit costs and transportation distances, removing the suppliers with no rail access.

CSXT also rejects the use of TPI's ballast suppliers in August, Ga.; Cayce, S.C.; and Greystone, N.C. because they would result in higher costs than the alternatives selected by CSXT. (CSXT Reply III-F-74 to III-F-75, July 21, 2014.) Although use of these suppliers might, in fact, result in higher costs, CSXT has made no showing that using them would be infeasible or that the proposed costs of doing so are unsupported, and we therefore will consider these sources in calculating material unit costs and transportation distances.

We also conclude that TPI's use of a simple average to calculate ballast material and transportation costs is reasonable. While a simple average generally might be less predictive than a weighted average, to be of any value a weighted average must incorporate supported frequency assumptions (e.g., assumptions regarding the volume of purchases from individual ballast suppliers), which CSXT's proposal fails to include. In any event, we conclude that development of the factual record necessary to support the use of a weighted average in this regard could involve significant effort and unduly complicate the SAC process. The Board has

---

[81] As we are accepting TPI's operating plan and system configuration (with adjustments), we will use TPI's ballast quantities.

[82] TPI did not enumerate any railhead destinations on opening.

[83] Three of these changes correct errors in CSXT's data and one substitutes a closer railhead. (TPI Rebuttal III-F-59.) We conclude that TPI's proposed modifications to CSXT's supplier and railhead pairings and distances are appropriate.

explained that some simplifying assumptions are necessary to make the SAC process manageable. Sunbelt 2016, NOR 42130, slip op. at 11; see also BNSF Ry. v. STB, 453 F.3d 473, 482 (D.C. Cir. 2006) ("The pursuit of precision in rate proceedings, as in most things in life, must at some point give way to the constraints of time and expense, and it is the agency's responsibility to mark that point."). As a result, we accept TPI's use of a simple average to calculate ballast material and transportation costs.

Citing Arizona Electric Power Cooperative v. BNSF Railway, NOR 42113 (STB served Nov. 22, 2011), TPI applies a $0.035 per ton-mile off-line transportation cost. (TPI Opening III-F-30.) On reply, CSXT supplies a quote from aggregates supplier Vulcan Materials Company, which, indexed to 2010, is $0.073 per ton-mile. (See CSXT Reply III-F-81, July 21, 2014; CSXT Reply WP "Track Construction CSXT Reply.xlsx," Tab "BALLAST SHIPPING COST", July 21, 2014.) Although the Board has previously accepted the transportation cost TPI proposes here, we recently explained that pricing should reflect current market conditions from the time that would be applicable to the construction of the SARR. See Sunbelt 2014, NOR 42130, slip op. at 131, 133. Thus, CSXT has shown that, for use in this proceeding, TPI's proposed cost is unsupported. Because CSXT's per ton-mile figure is based on a current real-world estimate while TPI's per ton-mile figure is drawn from the figure used in Arizona Electric, the Board will accept CSXT's unit costs for off-line transportation and apply it to the recalculated mile average.

The parties agree to an on-line transportation distance of 37 miles and $0.035 per ton-mile for on-line unit costs. (See TPI Rebuttal III-F-60; CSXT Reply III-F-79 to III-F-81, July 21, 2014.) We will accept the parties' agreement on these issues.

3. Subballast

CSXT generally accepts TPI's subballast specifications, but rejects TPI's assertion that subballast would only be sourced from the same locations as ballast. (CSXT Reply III-F-82, July 21, 2014.) CSXT also claims that TPI removed subballast beneath grade crossings in its workpapers. (Id.) CSXT further adjusts subballast quantities to conform to its operating plan. (Id.) CSXT rejects TPI's reliance on the Trestle Hollow Project for determining subballast costs and proposes a cost based on quotes from suppliers located along the proposed TPIRR route. (Id. at III-F-83 to III-F-84.) On rebuttal, TPI argues that its cost is supported and conservative. (TPI Rebuttal III-F-63 to III-F-64.)

As an initial matter, we note that TPI's cost for grade crossings does include costs for subballast installation during crossing installation and, thus, CSXT's reintroduction of that cost would result in a double-count. (See TPI Opening WP "2012 SCTRA Crossing Specifications.pdf.") Accordingly, we will use TPI's quantities for subballast grade crossings. Furthermore, given that we are accepting TPI's operating plan and system configuration (with adjustments), we also accept TPI's subballast quantities generally.

TPI's proposed unit cost for subballast, however, is not feasible and supported. TPI proposes to use one project in Tennessee as the source of its unit cost, but TPIRR traverses 17 states. In contrast, CSXT's proposed unit cost is based on quotes from quarries dispersed throughout the TPIRR system, and those quotes demonstrate regional cost differences. CSXT

then used these price quotes and corresponding transportation costs to estimate a system-average subballast cost.[84] Accordingly, we will accept CSXT's unit cost for purchase and transportation of subballast, which we will index to 3Q 2010.

The parties agree on the cost of subballast installation, and we will accept the parties' agreement on this issue.

4. Ties

TPI opts for wood ties with a tie spacing of 20.5 inches for all main track, passing sidings, and branch lines. (TPI Opening III-F-30.) Its wood ties have 24-inch spacing in yards, helper tracks, and set-out tracks. (Id.) TPI selected standard Grade 5 treated hardwood railroad ties. (Id. at III-F-31.) TPI based the unit cost of $35.47 for Grade 5 ties on costs from CSXT's 2010 R-1 filing and added transportation costs based on the miles from the supplier to TPIRR locations. (Id.)

On reply, CSXT accepts TPI's tie type and spacing, and, thus, TPI's tie quantities adjusted to CSXT's system configuration. (CSXT Reply III-F-85, July 21, 2014.) CSXT claims in its narrative, however, that its 2010 costs do not cover the Grade 5 wood ties chosen by TPI. (Id.) CSXT suggests a unit cost of $44.60 based on an average from the three suppliers that TPI identified on opening. (Id. at III-F-87.) CSXT agrees to TPI's off-line haul distance of 256.1 miles, but argues that TPI's cost of $0.035 per ton-mile is unsupported because it assumes that the ties would be transported by truck and proffers a cost of $0.092 per ton-mile based on a price quote it obtained from a tie vendor. (Id.) TPI responds that, as both its quote and CSXT's are based on shipment by rail, CSXT's criticism of its cost is irrelevant. (TPI Rebuttal III-F-66.)

CSXT is correct in noting that its R-1 report does not distinguish between different types of ties and tie characteristics. That cost represents a contribution to the value from all tie types, not just the ones matching the tie specifications of TPIRR. Moreover, CSXT's unit tie cost is based on an average from the three suppliers TPI identified on opening. We conclude that CSXT has shown that TPI's unit cost for ties is not fully supported, and we accept CSXT's alternative unit cost as feasible and supported. Furthermore, TPI's transportation cost is also unsupported, as TPI provides no information on its source. Because TPI has failed to meet its burden on this issue, we accept CSXT's transportation cost for ties as the best evidence of record. We also accept the parties' agreed-to off-line haul distance of 256.1 miles. As we are using TPI's operating plan and system configuration (with adjustments), we will use TPI's cross tie quantities.

[84] We note that CSXT's calculations include a unit cost for subballast in Tennessee equal to the unit cost from the Trestle Hollow Project; thus, the Trestle Hollow Project's actual cost is represented in the data used by CSXT to determine subballast costs.

5. Rail

a. Main Line, Yards, and Sidings

TPI proposes that TPIRR will use 136-pound continuous welded rail (CWR) for most of the main tracks and passing sidings, with premium rail on curves of three degrees or greater. (TPI Opening III-F-31.) On light-density segments, yards, and helper tracks, TPI proposes to use new 115-pound CWR. (Id.; see CSXT Reply III-F-88, July 21, 2014.) CSXT agrees with these specifications. (CSXT Reply III-F-88, July 21, 2014.) We accept the parties' agreement on these issues.

b. Rail Pricing

The parties agree on the rail unit cost per ton and unloading costs. (Id.; TPI Rebuttal III-F-66.) CSXT, however, claims that the transportation costs per ton-mile proffered by TPI are unsupported and proposes a quote from Arcelor Mittal Long Carbon North America, a major rail supplier. (CSXT Reply III-F-88 to III-F-89, July 21, 2014.) TPI accepts CSXT's rail transportation unit costs, but adjusts them for on- and off-line mileage differences. (TPI Rebuttal III-F-67 to III-F-68.) TPI also states that CSXT double-counted rail train rental and that it removed that double-count on rebuttal. (Id.) Off-line transportation is transportation from the rail manufacturer to TPIRR railheads. CSXT increases the average off-line miles that rail would travel, which TPI accepts.[85] (Id. at III-F-67.) On-line transportation is transportation from the railhead to the placement location. TPI notes that CSXT overstated on-line miles for 136-pound rail by using the number of track construction packages (97) instead of the average on-line miles (35.39). (Id.) Similarly, TPI points out that for 115-pound rail, CSXT uses TPI's incorrect opening mileage (42.91) instead of the average on-line miles (35.39). (Id.)

We will accept the parties' agreed-to rail unit cost per ton and unloading costs. We will also use TPI's transportation costs, as we agree that CSXT's proffered costs include a double-count of train rental costs. For off-line rail, we will apply the parties' agreed-to cost and agreed-

[85] CSXT incorrectly calculated the off-line mileage distance on reply. On reply, CSXT substitutes four railheads for the Nashville railhead (CSXT Reply WP "Track Construction CSXT Reply.xlsx," Tab "Mileage Matrix for Supplier," Cell J9, July 21, 2014)—a change TPI accepts on rebuttal (TPI Rebuttal WP "Track Construction Rebuttal.xlsx," Tab "Mileage Matrix for Supplier," Cell J9). However, when calculating the average distance, CSXT first calculates an average of the four substitute railheads and then uses that averaged number when calculating the total average. (CSXT Reply WP "Track Construction CSXT Reply.xlsx," Tab "Mileage Matrix for Supplier," Cell J9, July 21, 2014.) It is inappropriate to use an average to calculate a subsequent average; accordingly, we recalculate the off-line mileage average using the agreed-to railheads and otherwise agreed-to methodology employed by the parties.

to shipping distance as correctly calculated by the Board. For on-line rail, we will use the agreed-to 35.39 miles.[86]

c. Field Welds

On opening, TPI states that the cost of labor for field welds is derived from direct quotes and historical prices from projects overseen by Crouch Engineering and the cost for materials is included in this labor cost. (TPI Opening III-F-32.) TPI also states that field welds for at-grade crossings and turnouts are included in the costs for those items. (Id.) CSXT argues that TPI understated the amount of field welds required by only counting the welds needed to join 1,440-foot rail sections, 18 welds per panel turnout, and four welds per grade crossing (i.e., omitting field welds required to install insulated joints and crossing diamonds). (CSXT Reply III-F-89, July 21, 2014.) CSXT also claims that TPI's unit costs for field welds are unsupported. (Id. at III-F-90, July 21, 2014.) On rebuttal, TPI states that the bids upon which its costs are based are all-inclusive. (TPI Rebuttal III-F-68 to III-F-69.) It acknowledges that it omitted field welds for insulated joints on opening and corrects that error, but maintains that field welds for crossing diamonds are included as part of grade crossings. (Id. at III-F-69.) TPI also points out that, despite its narrative, CSXT does not include any additional costs or quantities for crossing diamond field welds on reply. (Id.)

TPI has sufficiently demonstrated that the real-world bids upon which it relied are feasible and supported. Accordingly, we will accept TPI's unit costs for field welds. We further accept the agreed-to costs and quantities for crossing diamonds. (CSXT Reply III-F-94, July 21, 2014.).[87] We also accept the parties' agreement with regard to quantities for insulating joints and other field welds. (See id. at III-F-89; TPI Rebuttal III-F-69.)

d. Insulated Joints

Insulated joints are discussed infra Part F.1.a.

6. Switches (Turnouts)

As the Board is adopting TPI's configuration (with adjustments)—and thereby its suggested route, track miles, and track layout—we accept TPI's turnout quantities, which reflect its TPIRR configuration. Beyond that, the parties agree to the mileages for shipping turnouts, the unit cost of turnouts, and the labor cost for the installation of turnouts. (See CSXT Reply III-F-

[86] CSXT's workpapers make it clear that it intended to use the 35.39 average on-line mile figure. (See CSXT Reply WP "Track Construction CSXT Reply," Tab "Mileage Matrix for Supplier," Cell F20, July 21, 2014.)

[87] The Board notes that, despite narrative arguments to the contrary, CSXT does not add any additional costs or quantities for crossing diamond field welds in its workpapers. (See "Track Construction CSXT Reply.xlsx," Tab "Summary," Column Q.)

90 to III-F-91, July 21, 2014; TPI Rebuttal III-F-70.) We accept the parties' agreement on these issues.

The parties disagree on the costs for turnout transportation. TPI utilizes the same cost it did for transporting ties and ballast—$0.035, apparently based on Arizona Electric—applied on the same basis. (TPI Opening III-F-33.) On reply, CSXT supplies a quote from A&K Railroad Materials, which, indexed to 3Q 2010, is $0.083 per ton-mile. (See CSXT Reply III-F-91, July 21, 2014; CSXT Reply WP "Track Construction CSXT Reply.xlsx," Tab "TURNOUT SHIPPING COST", July 21, 2014.) Although the Board has previously accepted the transportation cost TPI proposes here, we recently explained that pricing should reflect current market conditions from the time that would be applicable to the construction of the SARR. See Sunbelt 2014, NOR 42130, slip op. at 131, 133. Thus, CSXT has shown that, for use in this proceeding, TPI's proposed cost is unsupported. Because CSXT's per ton-mile figure is based on a current real-world estimate while TPI's per ton-mile figure is drawn from the 2000 figure used in Arizona Electric, the Board will accept CSXT's turnout transportation cost and apply it to TPI's turnout quantities.

CSXT also states that TPI did not install manual switch machines on yard turnouts, and CSXT develops costs for these switches. (CSXT Reply III-F-91, July 21, 2014.) TPI responds that its "yard turnout price quote was for a complete turnout which would include the hand throw switches." (TPI Rebuttal III-F-70.) The language of the price quote,[88] however, is less definitive, stating that certain specifications are to be determined and not clearly stating that a manual switch is included. Thus, we conclude that TPI's evidence, which is at best vague on whether the price quote includes the cost of a manual switch, is not sufficiently supported. In contrast, we conclude that CSXT's proffered cost for manual switches, which is based on a quote from Kimes Steel and Rail, Inc., is itself feasible and supported, and we therefore accept CSXT's proffered cost for manual switches.

7. Other

a. Rail Lubricators

On opening, TPI provides rail lubricator quantities and unit costs based on the CSXT Field Manual and quotes from vendors. (TPI Opening III-F-34.) CSXT replies that TPI's costs failed to include grease,[89] track mat, and lubricator installation. (CSXT Reply III-F-92, July 21, 2014.) CSXT states that it requested a quote from the same vendor specified by TPI and provided a corrected unit cost. (Id.)

---

[88] See TPI Opening WPs "Progress 10 Turnout Quote.pdf" & "Progress Turnout Quote.pdf."

[89] Although CSXT argues that TPI failed to include costs for grease, CSXT likewise does not add this cost. (See CSXT Reply WP "Track Construction CSXT Reply.xlsx," Tab "Rail Lubricator & Mats," July 21, 2014.)

Despite stating in its narrative that it rejected TPI's lubricator quantities (CSXT Reply III-F-92, July 21, 2014), CSXT uses the same quantities as TPI—1,795 lubricators—in its reply workpaper. (Compare CSXT Reply WP "Track Construction CSXT Reply.xlsx," Tab "Summary," Cell E56, July 21, 2014 with TPI Opening WP "Track Construction.xlsx," Tab "Summary," Cell E56.) We will use this quantity, as it is the only lubricator quantity in evidence.

The parties utilize the same base cost per unit, but use different indexing factors to arrive at slightly different unit costs. (Compare CSXT Reply WP "Track Construction CSXT Reply.xlsx," Tab "Rail Lubricator & Mats," July 21, 2014 with TPI Opening WP "Track Construction.xlsx," Tab "Rail Lubricator & Mats.") We will use TPI's indexing factor and TPI's indexed unit costs, which are feasible and supported. CSXT does not undermine the feasibility or support of TPI's evidence; as noted in CSXT's workpaper, CSXT indexes its unit costs to 2Q 2014, which is beyond the table of indices presented in evidence in this proceeding.

CSXT's argument that TPI failed to include track mat costs is incorrect. TPI clearly did include such costs (sourced from vendors), and CSXT has presented no argument why TPI's proposed costs are not feasible. (See TPI Opening WP "Track Construction.xlsx," Tab "Rail Lubricator & Mats.")

TPI uses Means to determine its installation cost for rail lubricators, but relies on the Means section applying to car bumpers. (See TPI Opening WP "Installation Price Lubricator.pdf.") CSXT's installation costs are based on a vendor quote. (See CSXT Reply WP "CSXT_Rail_Lubricator_LB_Foster.pdf," July 21, 2014.) TPI's evidence is incorrectly sourced and therefore is not adequately supported. CSXT's installation cost is feasible and supported, as it is based on a current real-world quote, and we will accept it.

Both TPI and CSXT rely on quotes from the same vendor in estimating transportation costs. (See CSXT Reply WP "Track Construction CSXT Reply.xlsx," Tab "Rail Lubricator & Mats;" TPI Opening WP "Track Construction.xlsx," Tab "Rail Lubricator & Mats," July 21, 2014.) The difference in the parties' transportation costs is a result of their destination choices. CSXT obtained a quote to have the lubricators shipped to the railhead in Chicago, Ill. (See CSXT Reply WP "CSXT_Rail_Lubricator_LB_Foster.pdf," July 21, 2014.) TPI obtained a quote to have the lubricators shipped to the railhead in Athens, Ga. (See TPI Opening WP "LB Foster – Lubricator Price Quote.pdf.") CSXT provides no justification for why shipping the lubricators to Athens would be inappropriate. Accordingly, CSXT has not undermined TPI's costs for transporting rail lubricators, and we will accept TPI's transportation costs as feasible and supported.

b. Plates, Spikes, and Anchors

TPI provides specifications for plates, spikes, and anchors on opening (TPI Opening III-F-34.) On reply, CSXT accepts these specifications and TPI's unit costs, but rejects TPI's transportation costs of $0.035 per ton-mile. (CSXT Reply III-F-93, July 21, 2014.) CSXT provides an alternate transportation cost of $0.092 per ton-mile based on a real-world estimate from a vendor. (Id.)

Although the Board has previously accepted the transportation cost TPI proposes here, we recently explained that pricing should reflect current market conditions from the time that would be applicable to the construction of the SARR. See Sunbelt 2014, NOR 42130, slip op. at 131, 133. Thus, CSXT has shown that, for use in this proceeding, TPI's proposed cost is unsupported. Because CSXT's per ton-mile figure is based on a current real-world estimate while TPI's per ton-mile figure is drawn from the 2000 figure used in Arizona Electric, the Board will accept CSXT's transportation cost for plates, spikes, and anchors.

c. Derails, Wheel Stops, and Switch Heaters

CSXT accepts TPI's unit and shipping costs for retractable derails in yard locations as well as TPI's unit and shipping costs for mainline derails. (CSXT Reply III-F-93, July 21, 2014; TPI Rebuttal III-F-72 n.74.) CSXT corrects TPI's transportation distance for mainline derails, (CSXT Reply III-F-93, July 21, 2014), and TPI accepts this correction (TPI Rebuttal III-F-72). Although not discussed in the narrative, CSXT increases the cost for yard derails (sliding derails) as a result of adding a stand. Because stands are required for these types of derails, and because TPI did not challenge this added cost on rebuttal, we will accept CSXT's increased cost for yard derails.

The parties agree on derail quantities. The parties, likewise, agree on quantities and costs for wheel stops and switch heaters. The Board will accept the parties' agreement on these issues.

d. Materials Transportation

Discussion of specific transportation costs can be found in the specific sections addressing the items being transported.

e. Track Labor and Equipment

TPI derives track laying and related costs from direct quotes and bids resulting in a total cost for track construction of $8,495 million. (TPI Opening III-F-37.) Its total estimated track labor of $1,458 million is based on a quote from Queen City Railroad Construction. (Id.) CSXT agrees to these costs (CSXT Reply III-F-95, July 21, 2014), and the Board will accept the parties' agreement on track labor and equipment costs.

D. TUNNELS

TABLE B-6
Tunnel Costs

	TPI	CSXT	STB
Tunnels	$1,629,798,302	$1,629,798,302	$1,629,798,302

On opening, TPI indicated that it included all tunnels that were located on TPIRR based on tunnel inventory provided by CSXT. (TPI Opening III-F-38.) This resulted in TPI's initial inclusion of 72 tunnels. (TPI Opening WP "TPIRR Tunnel Construction.xlsx.") On reply, CSXT accepts the unit costs and tunnel lengths proffered by TPI, but claims that TPI excluded the Diana and Luda tunnels on a line between Nashville and New Orleans. (CSXT Reply III-F-95 to III-F-96, July 21, 2014.) TPI includes these two tunnels on rebuttal. (TPI Rebuttal III-F-73.) Accordingly, the parties agree on the tunnels and their associated costs. The Board will accept the parties' agreement on these issues.

E. BRIDGES

TABLE B-7
Bridge Costs

	TPI	CSXT	STB
Railroad Bridges	$3,924,939,808	$5,270,552,287	$5,264,802,918
Highway Overpasses	$223,020,299	$228,494,408	$228,494,408
TOTAL	$4,147,960,108	$5,499,046,695	$5,493,297,326

1. Bridge Inventory

The parties agree on the bridge inventory for TPIRR (TPI Rebuttal III-F-74), and the Board will accept the parties' agreed-to bridge inventory.

2. Bridge Design and Costs

On opening, TPI states that it designed TPIRR's bridges to have the same lengths as the CSXT bridges being replicated but with more efficient spans, where possible. TPI claims that CSXT's bridge inventory did not include bridge height data, and it included bridge under-clearance data for only approximately 55% of the bridges in its system.[90] (TPI Opening III-F-39). Using the available data, TPI's engineers utilized concrete piers, concrete abutments, and steel viaducts to handle the varying clearances and span lengths. For the 45% of the bridges for which no clearance data was provided, TPI first developed average bridge clearances based on the data CSXT provided and then developed a standard cost formula for each bridge type using Crouch Engineering's historical data from successful bidders on similar scale railroad bridge construction projects in rural Tennessee and Alabama. TPI applied this standard formula to every bridge within the relevant category in the inventory. (TPI Opening III-F-39 to III-F-40.)

On reply, CSXT accepts the majority of TPI's design elements associated with the standard Type I through Type IV bridges. CSXT also accepts that the majority of unit prices TPI

[90] Bridge heights help determine substructure costs. The higher the bridge, the more substructure it needs for support.

used to calculate costs for TPIRR bridges are accurate; however, CSXT claims that TPI selectively relied on data from low-cost areas (Alabama and Tennessee) to extrapolate costs for the entire TPIRR system, which resulted in a significant understatement of investment costs for TPIRR bridges. (CSXT Reply III-F-103, July 21, 2014.) According to CSXT, TPI's unit costs should be adjusted for regional differences in the costs of material and labor due to variations in regional economies, using Means city cost indices and location factor values. (CSXT Reply III-F-103 to III-F-104, July 21, 2014.) Furthermore, CSXT argues that TPI incorrectly combined unit costs from Alabama and Tennessee projects for a single bridge. To correct TPI's bridge inventory costs, CSXT first indexed TPI's contractor price quotes to Tennessee levels using the Means state location factors. (CSXT Reply III-F-104 to III-F-105, July 21, 2014.) Next, CSXT applied location factors to adjust the cost of each bridge to account for its location on TPIRR. However, CSXT excluded the movable bridge classification, claiming that they are such unique structures that Means location factor data cannot reasonably be applied to their construction costs. (CSXT Reply III-F-105 to III-F-106, July 21, 2014.)

On rebuttal, TPI rejects CSXT's use of a location factor adjustment, arguing that TPI is entitled to use the lowest feasible cost. TPI claims that its costs are feasible because they are derived from actual bridge projects. TPI also argues that CSXT failed to provide evidence that the unit costs used by TPI would be different for similar projects in other locations. (TPI Rebuttal III-F-74 to III-F-75.)

The Board will accept CSXT's application of location factors. TPI has not persuaded the Board that historical data limited to projects in Tennessee and Alabama is sufficient support for the costs TPIRR would incur in constructing its multi-state railroad. As CSXT argues, and we agree, TPIRR's size, scope, and geographic and topographic diversity make the use of Means location factor adjustments more appropriate than the extrapolation of costs from data derived from just two states in the same region.

Our decision here is consistent with Board precedent. In DuPont, the Board accepted the railroad's inclusion of Means cost location factors in the calculation of highway overpass costs and bridge base costs because the shipper's evidence was based solely on projects from one state. The Board reasoned that, given the wide geographical area the SARR traversed, the application of average location costs was the best evidence of record. See DuPont, NOR 42125, slip op. at 212, 220. For the same reasons the Board discussed in DuPont, the bridge costs derived here from two states in the same region are an inadequate benchmark for the costs of bridge installation throughout the entire TPIRR multi-state rail system.

a. Type I Bridges

CSXT accepts TPI's design and source of unit prices used to calculate the cost of Type I Bridges. CSXT, however, adds location factors to the unit costs for these bridges. (CSXT Reply III-F-107, July 21, 2014.) On rebuttal, TPI again rejects the addition of location factors. (TPI Rebuttal III-F-75.) The Board will accept the parties' agreed-to Type I bridge design and source of unit prices. Additionally, for the reasons discussed above in the section on bridge design and costs, the Board will accept CSXT's inclusion of location factors.

b. Type II Bridges

On opening, TPI states that TPIRR would use the same columns, abutments, caps, and wing-walls for all Type II bridges. On reply, CSXT claims that TPI erred in both the design and cost of Type II bridges. First, CSXT states that TPI's Type II bridge superstructure is insufficient to meet the American Railway Engineering and Maintenance-of-Way Association (AREMA) deflection criteria because, after correcting for TPI's calculation errors, the deflection is greater than the allowable 0.844 inches established by AREMA. To meet AREMA deflection criteria, CSXT argues that the beam size of the Type II bridge superstructure must be increased. CSXT further argues that TPI incorrectly approximates deflection of the beams. Finally, CSXT applies location factors to the corrected unit prices. (CSXT Reply III-F-107 to III-F-111, July 21, 2014.)

On rebuttal, TPI rejects CSXT's arguments about deflection criteria and location factors. TPI argues that its Type II bridge superstructure is sufficient to meet AREMA guidelines because the actual bearing length is less than what CSXT argues. Additionally, TPI argues that CSXT's calculations improperly use the alternate live load of 100 kips per axle, much heavier than the maximum load of 80 kips per specific axle, which is the industry standard and used for TPIRR. TPI further argues that neither CSXT's nor TPI's calculations account for the rail and bracing, which adds to the capacity of the beams. (TPI Rebuttal III-F-75 to III-F-76.)

The Board will accept TPI's beam sizes and associated costs. TPI's proposal is feasible and supported by its evidence, and CSXT fails to provide sufficient evidence undermining TPI's beam selection or loading configuration. The loading proposed by TPI for TPIRR bridges is consistent with the loading TPI proposed for culverts, and we find that acceptable. Additionally, although CSXT claims that TPI's indirect approach to approximate the deflection of beams should be replaced with actual deflection determinations, a review of the parties' evidence reveals that both parties rely on approximation to calculate the deflection of beams. We conclude that CSXT has failed to undermine the reasonableness of TPI's approach. Lastly, for the reasons discussed above in the section on bridge design and costs, the Board will adjust those costs to include location factors, as proposed by CSXT.

c. Type III Bridges

The parties agree on the Type III bridge design and the source of unit costs used to calculate the cost of these bridges. The parties disagree, however, on CSXT's addition of location factors to the unit costs for these bridges. (CSXT Reply III-F-111 to III-F-112, July 21, 2014; TPI Rebuttal III-F-76.) The Board will accept the parties' agreement on the bridge design and source of unit prices. Additionally, for the reasons discussed in the section on bridge design and costs, the Board will accept CSXT's unit cost calculation, including the location factor adjustment.

d. Type IV Bridges

The parties agree on the Type IV bridge superstructure design. CSXT, however, makes several adjustments to TPI's opening evidence and adds location factors to the unit costs for

these bridges. (CSXT Reply III-F-112 to III-F-113, July 21, 2014.) On rebuttal, TPI accepts all of CSXT's adjustments, except the location factors. (TPI Rebuttal III-F-76.)

The Board will accept the parties' agreement on Type IV bridge superstructure design and unit costs. Additionally, for the reasons discussed above in the section on bridge design and costs, the Board will adjust Type IV bridge costs to include location factors.

e. Mixed Span Bridges

TPI states on opening that it accommodates the different span types required by mixed span bridges by using step caps for different size superstructures, appropriate abutments for different span types, and appropriate piers for different span types and clearances. (TPI Opening III-F-44.) On reply, for mixed span bridges including Type II spans, CSXT adjusts TPI's mixed span bridge cost calculations to reflect the same changes CSXT made to Type II bridges above. (CSXT Reply III-F-114 to III-F-115, July 21, 2014; see also CSXT Reply WP "TPI Bridge Construction Costs CSXT Reply.xlsx," Tab "TPI Mixed Spans List," July 21, 2014.) Lastly, CSXT adds location factors to the unit costs for these bridges. (CSXT Reply III-F-114, July 21, 2014.)

On rebuttal, TPI accepts some of CSXT's adjustments to its Type II bridges, but rejects others, as discussed above in the sections on each bridge type. (TPI Rebuttal III-F-76 to III-F-77.) TPI, again, rejects CSXT's inclusion of location factors. (TPI Rebuttal III-F-76.)

Where the parties agree, the Board will accept that agreement. With respect to CSXT's reply adjustments to Type II bridges, the Board accepts and rejects the adjustments in accordance with its acceptance or rejection of those adjustments in the section above. Finally, for the reasons discussed above in the section on bridge design and costs, the Board will adjust mixed span bridge costs to include location factors.

f. Tall Bridges

TPI classifies bridges with clearances of 65 feet or greater as "tall bridges." (TPI Opening III-F-44.) According to CSXT, TPI's proposed parameters for TPIRR tall bridges require a number of significant corrections to both the design and cost development in order to meet the requirements of the bridges TPIRR would build. (CSXT Reply III-F-115, July 21, 2014.) CSXT adjusts TPI's tall span bridge cost calculations to reflect the same changes CSXT made to Type II bridges. (CSXT Reply III-F-120, July 21, 2014; see also CSXT Reply WP "TPI Bridge Construction Costs CSXT Reply.xlsx," Tab "Tall Bridges," July 21, 2014.) More specifically, where TPI's tall bridges included Type II spans, CSXT adjusts those spans as discussed above. (CSXT Reply III-F-120, July 21, 2014.) On rebuttal, TPI accepts some of CSXT's adjustments but rejects others, in accordance with its acceptance and rejections of those adjustments in the Type II section. (TPI Rebuttal III-F-77.) Lastly, as with other bridge type classifications, CSXT applies a location factor adjustment for tall bridges (CSXT Reply III-F-115), which TPI rejects on rebuttal (TPI Rebuttal III-F-77).

Where the parties agree, the Board will accept their agreement. With respect to the adjustments CSXT made to reflect changes it made to TPI's proposed Type II bridges, the Board rejects the adjustments in accordance with its rejection of those adjustments in the section above. Finally, for the reasons discussed above in the section on bridge design and costs, the Board accepts CSXT's addition of location factors.

g. Special Non-Movable Bridges

According to CSXT, TPI's bridge construction cost workpapers include a separate spreadsheet tab for non-movable bridges that cannot be classified as one of the standard bridge types ("special non-movable bridges"), although TPI did not discuss these bridges in its opening narrative. (See TPI Opening WP "TPI Bridge Construction Costs.xlsx," Tab "Special Non-Movable Bridges.") While CSXT does not object to creating this separate class of bridges, CSXT states that TPI's special non-movable bridges evidence contains a number of design and cost errors. (CSXT Reply III-F-121 to III-F-124, July 21, 2014.) On rebuttal, TPI agrees to a number of CSXT's criticisms, but several disputed issues remain outstanding. (TPI Rebuttal III-F-77 to III-F-78.)

For special non-movable bridges containing Type II or Type IV spans, CSXT adjusts TPI's cost calculations to reflect the changes CSXT made to Type II and Type IV bridges. (CSXT Reply III-F-124, July 21, 2014; see also CSXT Reply WP "TPI Bridge Construction Costs CSXT Reply.xlsx," Tab "Special Non-Moveable Bridges," July 21, 2014.) On rebuttal, TPI accepts and rejects those adjustments consistent with its arguments above in the respective sections on those bridges. CSXT also applies its location factor adjustment for special non-movable bridges, which TPI rejects. (TPI Rebuttal III-F-78.)

Where the parties agree, the Board will accept their agreement on costs and design for special non-movable bridges. With respect to the adjustments CSXT made to reflect changes it made to TPI's proposed Type II and IV bridges, the Board accepts and rejects the adjustments in accordance with its acceptance or rejection of those adjustments in their respective sections, above. Finally, for the reasons discussed above in the section on bridge design and costs, the Board also accepts CSXT's addition of location factors.

h. Truss Spans

On reply, CSXT states that, with the exception of three bridges, all special non-movable bridges on TPIRR contain at least one truss span which requires several adjustments. CSXT also applies location factors to the costs. (CSXT Reply III-F-124 to III-F-127, July 21, 2014.) On rebuttal, TPI rejects CSXT's location factors, but accepts and incorporates the other modifications. (TPI Rebuttal III-F-78.)

For the reasons discussed above in the section on bridge design and costs, the Board will accept CSXT's addition of location factors. The Board will also accept the parties' agreement on other truss span issues.

i. Oversized Culverts

According to CSXT, TPI's opening narrative does not include any discussion of oversized culverts, but its bridge cost spreadsheet includes an oversized culvert inventory with associated costs. CSXT states that the structures listed in TPI's bridge cost spreadsheet as "oversized culverts" are culvert structures that TPI assumes can be replaced with Type I bridges. CSXT does not dispute TPI's premise that certain oversized culverts could be replaced with Type I bridges; however, it states that TPI ignores specific characteristics of each culvert that resulted in the real-world selection of a culvert instead of a bridge. CSXT claims that the bridges TPI proposes to replace oversized culverts are shorter in length and height than the size of the bridge that would actually be required in place of the culvert because TPI's bridge lengths are the same as the culverts it would replace. It argues that bridges this long would require deeper, more expensive abutments. Alternatively, CSXT argues that TPI could use standard abutments, which require a spill slope, and lengthen the bridges to account for the required spill slope. CSXT states that it corrected TPI's proposed bridge lengths and bridge heights for bridges replacing culverts and similar structures. Additionally, CSXT applies location factors to the costs for oversized culverts. (CSXT Reply III-F-127 to III-F-131, July 21, 2014.)

On rebuttal, TPI accepts CSXT's proposed adjustments, with one exception: TPI uses a 1.5:1 ratio for spill slopes, rather than the 2:1 ratio proposed by CSXT. TPI claims that it is very common practice for slopes to be 1.5:1. According to TPI, BNSF's and UP's standards for bridges use a 1.5:1 ratio for spill slopes. TPI maintains that a 1.5:1 ratio is also appropriate because that is the ratio it uses for slopes for its roadbed. TPI also rejects CSXT's application of location factors.[91] (TPI Rebuttal III-F-78 to III-F-79.)

The Board will accept the parties' agreed-to bridge lengths and bridge heights for bridges replacing culverts and similar structures, as set forth in CSXT's reply evidence. A review of the workpapers filed by the parties reveals that, on opening, TPI calculated costs using a methodology of unit costs multiplied by bridge component quantities for each culvert being replaced. On reply, CSXT utilizes TPI's spreadsheet but adds columns containing its component unit costs, lengths, and the associated calculations, including location factors. On rebuttal, TPI modifies the equations it uses to calculate costs but fails to explain its revised method for calculating costs. While the Board routinely allows for the correction of minor technical errors in SAC cases, a party generally may not switch methodologies on rebuttal, as TPI has done here. See Sunbelt 2014, NOR 42130, slip op. at 43; Duke/NS, 7 S.T.B. at 101. By switching methodologies, TPI presents impermissible rebuttal evidence, and we will therefore disregard the new methodology that TPI introduced in support of its bridge cost calculations on rebuttal. The Board will accept CSXT's cost calculations, including CSXT's addition of location factors.

[91] TPI states that, while preparing its rebuttal, it discovered that it had double-counted the number of abutments for the bridges replacing oversized culverts. According to TPI, it corrects this error in rebuttal. (TPI Rebuttal III-F-79.) However, there is no indication that TPI actually made any changes to correct a double-count of abutments in its rebuttal workpapers, and we have found no evidence of any such double-count in TPI's opening evidence.

The Board will also accept the spill slopes proposed by CSXT. The Board agrees with CSXT that it is necessary to maintain the flow capacity of the existing culverts and finds the evidence provided by CSXT, which analyzes the effect of its design of slopes on the flow area, both feasible and supported. Moreover, TPI did not present any discussion of spill slopes on opening. The spill slope methodology presented by CSXT on reply is feasible and supported by detailed analysis, and TPI did not provide any evidence or argument to undermine that feasibility.

j. Movable Bridges

TPI proposed to replicate CSXT's real-world movable bridge spans on TPIRR's route with one of two movable span types: bascule spans or vertical lift spans. TPI argues that TPIRR would be responsible for only 10% of the cost of the movable span portion of these bridges because federal funding under the Truman-Hobbs Act would cover the remaining 90% of the replacement cost of movable bridges. (TPI Opening III-F-45 to III-F-46.)

CSXT accepts TPI's use of bascule span and vertical lift bridges but proposes several adjustments to TPI's opening movable bridge evidence. (CSXT Reply III-F-131 to III-F-145, July 21, 2014.) First, CSXT challenges TPI's bascule span bridge costs and applies location factors. (CSXT Reply III-F-132 to III-F-134, July 21, 2014.) On rebuttal, TPI accepts CSXT's proposal that bascule bridge span costs represent 91% of total bascule bridge costs, but rejects CSXT's location factors. (TPI Rebuttal III-F-79.). Second, CSXT makes several modifications to TPI's vertical lift span costs. (CSXT Reply III-F-134 to III-F-137, July 21, 2014.) TPI accepts these modifications on rebuttal. (TPI Rebuttal III-F-79 to III-F-80.). Finally, CSXT challenges TPI's assumption that TPIRR would only be responsible for 10% of movable bridge costs under the Truman-Hobbs Act. (TPI Opening III-F-45 to III-F-46; CSXT Reply III-F-138 to III-F-141, July 21, 2014.) We will accept the parties' agreement on bascule span bridge costs and vertical lift span costs. For the reasons discussed above in the section on bridge design and costs, we will accept CSXT's addition of location factors.

With respect to the funding of movable bridge spans, TPI argues that TPIRR is only responsible for 10% of the cost of constructing these spans because TPIRR would have been "ideally suited" to take advantage of funding from the Truman-Hobbs Act, a federal statute which has "the purpose of aiding bridge owners with the costs of movable bridges." (TPI Opening III-F-45.) CSXT argues that TPI's assumption that TPIRR's costs would be covered is unsupported and contrary to both statute and the Board's precedent (citing DuPont and Sunbelt 2014). CSXT argues that Truman-Hobbs Act funding can only be invoked by the U.S. Coast Guard making an Order to Alter when it determines that bridges unreasonably obstruct navigation, not by a bridge owner making an application. Because railroads cannot apply for such funding, CSXT argues that the Board should not assume that TPIRR would be entitled to such funding. CSXT also argues that Truman-Hobbs funding would not be available for the construction of a SARR because the funding is authorized only for use in the replacement of existing structures. (CSXT Reply III-F-138 to III-F-140, July 21, 2014.)

On rebuttal, TPI argues that a blanket ban on a SARR's use of Truman-Hobbs Act funding would impose an impermissible barrier to entry. It argues that a barrier to entry is created if the incumbent received Truman-Hobbs Act funding to construct a required bridge but the SARR must construct the same bridge without the benefit of the same funding source. (TPI Rebuttal III-F-81 to III-F-84.) TPI points to evidence that CSXT received 94% funding under the Truman-Hobbs Act and the American Recovery and Reinvestment Act for a bridge over the Mobile River in Alabama. (TPI Rebuttal III-F-84.) Alternatively, TPI argues for the first time on rebuttal that the Board should permit the SARR to construct a bridge "that provides a lesser level of waterway navigability than the existing bridge." (TPI Rebuttal III-F-82.)

We will not discount the cost of constructing bridges based on Truman-Hobbs Act funding. As an initial matter, we will not address TPI's alternative argument that TPIRR should be permitted to incur the cost of a bridge that provides a lesser degree of navigability because TPI raised this argument for the first time on rebuttal. Duke/NS, 7 S.T.B. at 101; Total Petrochems. & Refining USA, Inc. v. CSX Transp., Inc., NOR 42121 (STB served May 31, 2013) (noting that "[p]rinciples of fairness and the orderly handling of cases require that 'parties submit their best evidence on opening'"), reconsideration denied (STB served Dec. 19, 2013) (with Vice Chairman Begeman dissenting in both), petition dismissed sub nom. CSX Transp., Inc. v. STB, 774 F.3d 25 (D.C. Cir. 2014). In any event, TPI has not provided evidence of the specific requirements of these alternative bridges or what they would cost.

With regard to TPI's argument that it should be responsible for only 10% of the cost of constructing movable bridges, TPI failed to address CSXT's primary argument that the availability of Truman-Hobbs Act funding cannot be presumed because it is the Coast Guard that determines whether a bridge needs to become more navigable, thereby triggering the Truman-Hobbs Act.[92] The mere possibility that a bridge could be selected by the Coast Guard to receive an unspecified amount of funding for replacement/renovation is not sufficient to justify the 90% construction cost discount on all movable bridges as advocated by TPI.

Moreover, allowing the SARR to pay only 10% of the cost of a renovated/replaced bridge could result in the SARR's avoidance of a significant portion of the cost to construct movable bridges. Here, TPI claims on rebuttal that CSXT actually received Truman-Hobbs Act funding to upgrade its bridge over the Mobile River near Hurricane, Ala. (TPI Rebuttal III-F-84.)

---

[92] TPI also argues that the Board should assume that TPIRR would qualify for funding under a number of other state and federal programs, including the Department of Transportation's Transportation Investment Generating Economic Recovery (TIGER) program, which was created by Congress in 2009. (TPI Rebuttal III-F-85 to III-F-89.) However, regardless of whether TPIRR would qualify for these programs, and potentially receive funding, the mere fact that these programs exist does not demonstrate that CSXT did not bear the full cost of constructing the movable bridge or that the 90% construction discount TPI proposes is appropriate. Moreover, TPI has not included funding from any of these programs in its workpapers or otherwise indicated to the Board how these programs would affect the costs for movable bridges. The Board, therefore, rejects these arguments.

However, given that Truman-Hobbs Act funding is far from a certainty, the fact that a carrier obtained upgrade funding for one of the bridges on its system does not mean that all of the bridges would have received such funding. Also, CSXT's use of federal funding to assist in the replacement of the Mobile River bridge cannot, by itself, excuse TPIRR from bearing 90% of the cost of constructing even that bridge. CSXT presumably paid for the construction of the original Mobile River bridge as well as its portion of the costs to upgrade the bridge. TPI does not consider or account for the original construction costs, which could result in a cost avoidance windfall for the SARR.[93]

Contrary to TPI's arguments, the issue of movable bridge upgrade funding does not fit neatly into the Board's existing barrier to entry analyses. The Board has defined barriers to entry as new costs that a new entrant must incur that were not incurred by the incumbent. W. Tex. Utils. Co. v. Burlington N. R.R., 1 S.T.B. 638, 670 (1996). As discussed above, here TPI makes no argument that CSXT did not incur costs to construct a bridge, a critical distinction from most other barrier-to-entry determinations. See, e.g., AEP Tex. N. Co. v. BNSF Ry., NOR 41191 (Sub-No. 1), slip op at 102 (STB served Sept. 10, 2007) (observing that whether grade crossing costs were included in SAC costs is dependent on whether the evidence showed that the incumbent likely paid for them). Rather, TPI argues that, because CSXT received (or could have received) a subsidy to upgrade a bridge to what would be required for new construction, depriving the SARR of the benefit of that upgrade subsidy is a barrier to entry. (TPI Rebuttal III-F-81-82.) There may be some merit to TPI's argument that the incumbent may not, in some cases, have paid the full price of constructing a bridge in its extant form due to the receipt of Truman-Hobbs or other funding to raise the bridge's level of navigability. However, accepting TPI's broad proposition that all movable bridges are therefore entitled to a 90% across-the-board construction discount is not supported. Nor has TPI shown that requiring TPIRR to pay only 10% of the cost to build the upgraded Mobile River bridge would place it on an equal footing with CSXT.[94] Accordingly, we will accept CSXT's position that TPIRR will be responsible for the cost of constructing movable bridges with no cost sharing arrangement.

i. Pier Heights

On opening, TPI states that its engineers were able to calculate pier height using bridge clearance data provided by CSXT for approximately 55% of the bridges in CSXT's system. TPI

[93] TPI argues that it would be an unreasonable burden to require complainants to produce evidence of the incumbent railroad's original movable bridge construction costs. (TPI Rebuttal III-F-84.) TPI's proposed 90% discount methodology, however, makes no attempt to acknowledge or account for these costs in any way.

[94] Although we reject any discount based on the Truman-Hobbs Act for building the Mobile River bridge given the inadequacy of the evidence here, we are concerned about the complexity that such evidence could introduce into the RPI analysis. While the Board seeks in the SAC process to place the SARR on equal footing with the incumbent, we recognize that such a result "is not feasible in all instances if doing so would undermine the usefulness of SAC as an analytical tool." Sunbelt 2014, NOR 42130, slip op. at 188-89.

states that it developed average bridge clearance data for the remaining 45% of bridges, for which TPI asserts that CSXT failed to provide bridge clearance data. (TPI Opening III-F-39 to III-F-40.)

On reply, CSXT rejects TPI's use of the bridge clearance value as the measure of pier height in calculating substructure costs for movable bridges. According to CSXT, the bridge clearance measure alone does not account for the portion of a pier that is below the waterline. CSXT calculates that TPI understates pier heights by an average of 12 feet, but CSXT adds a blanket five feet to the pier heights on all movable bridges as a conservative adjustment to ensure that the movable bridges on TPIRR would not be floating on top of the water. (CSXT Reply III-F-141 to III-F-142, July 21, 2014.)

On rebuttal, TPI rejects CSXT's adjustment to pier heights, stating that it requested bridge height data from CSXT in discovery, but CSXT refused to provide it because obtaining such data would require a special study. TPI claims that CSXT performed a portion of that special study for its own use. TPI rejects CSXT's alleged selective use of special studies and retains its opening bridge heights. (TPI Rebuttal III-F-89.)

The Board accepts CSXT's pier heights. TPI's opening evidence is not feasible. As CSXT notes, TPI set the pier height equal to the vertical clearance value; railroad bridge piers, however, are anchored to the ground below the water. CSXT provides corrective evidence, in which it calculates the average water depth unaccounted for by TPI at movable bridge locations by verifying both the vertical clearance and the actual water depth at each bridge location. The Board finds that CSXT's proposed addition of a blanket five feet to the pier heights on all movable bridges is a conservative adjustment given that the average value of the TPI understatement of pier heights is 12 feet, more than double that amount.

Additionally, the Board rejects TPI's argument that CSXT performed a portion of the special study it refused to undertake to develop materials responsive to TPI's discovery requests. Based on a review of CSXT's evidence, it is clear CSXT did not reference a special study to develop its pier height evidence. CSXT relied on publicly available nautical charts published by the United States Department of Commerce's National Oceanic and Atmospheric Administration. (See CSXT Reply WP "Movable Bridges Channel Depths.pdf," July 21, 2014; see also, e.g., CSXT Reply WP "Albany_Buffalo Terminal_QD_Overall.pdf," July 21, 2014.)[95] Regardless, the determinative issue in this section is that TPI built insufficient bridges because it only accounted for bridge clearance—and not the depth of piers under water.

[95] When discovery disputes arise, parties may file motions to compel discovery. Two such motions to compel were filed in the instant case, neither of which encompassed the specific request for production of bridge height data. See TPI Mot. to Compel, Nov. 16, 2010; TPI Second Mot. to Compel, Nov. 17, 2010.

k. Highway Overpasses

The parties agree on the unit costs for highway overpasses and that TPIRR would be responsible for a 10% cost share of those bridges. (See TPI Opening III-F-46 to III-F-47; CSXT Reply III-F-142, July 21, 2014.) They also agree on the highway overpass investment. (CSXT Reply III-F-142 to II-F-145, July 21, 2014; TPI Rebuttal III-F-90.) However, CSXT also applies the Means location factors to adjust the unit costs to the location where the highway overpasses are constructed (CSXT Reply III-F-142 to II-F-145, July 21, 2014), which TPI rejects on rebuttal (TPI Rebuttal III-F-90).

The Board accepts the parties' agreement on the highway overpass investment, and, for the reasons discussed above in the section on bridge design and costs, the Board also accepts CSXT's addition of location factors.

F. SIGNALS AND COMMUNICATION

TABLE B-8
Signals and Communications Costs

	TPI	CSXT	STB
Signals	$1,041,350,236	$1,154,811,965	$1,050,598,634
PTC Signals	$121,021,694	$178,598,909	$174,911,051
Communications	$342,173,020	$381,027,666	$344,431,733
PTC Loco Costs	$72,922,530	$505,440,420	$72,922,530
Hump Yard Equipment	$300,575,000	$300,575,000	$300,575,000
PTC Development - Signals	$0	$125,773,130	$114,662,645
PTC Development – Communications	$0	$15,105,531	$13,655,887
TOTAL	$1,878,042,480	$2,661,332,621	$1,943,438,948

1. Signal System

The parties agree that TPIRR will rely on a standard Centralized Traffic Control (CTC)-based vital signal system with components added to provide Positive Train Control (PTC) and that it would rely on a microwave system for communications. (CSXT Reply III-F-146, July 21, 2014.) The specifics of TPIRR's PTC system are discussed below in the section on PTC.

The parties also agree on TPIRR's costs for highway at-grade crossing devices and failed equipment detectors and dragging equipment detectors. (TPI Rebuttal III-F-95.) Where the parties are in agreement on the components and costs of TPIRR's signal system, the Board accepts that agreement.

a. Signal Component Inventory

Although CSXT accepts TPI's method of assuming typical CTC component installations at various locations based on stick diagrams, it claims that TPI omitted or misapplied some signal components, used incorrect or unsupported unit costs for other components, and used outdated unit costs for others, as discussed in more detail below. (CSXT Reply III-F-151 to III-F-155, July 21, 2014.)

i. Omitted or Misapplied Components

CSXT claims that TPI omitted the costs for the following components: (1) track connections or track wires, (2) grounding kits for signal equipment shelters, and (3) fencing around TPIRR's intermediate or interlocking signal huts. CSXT adds related costs on reply. CSXT also states that the cable used by TPI for AC service drops is inadequate and substitutes the costs for higher capacity cables. (CSXT Reply III-F-152 to III-F-153, July 21, 2014.)

On rebuttal, TPI claims that it included the wires for the track circuit connections on opening (see TPI Opening WP "TPI Signals & Communications.xlsx," Tab "Components & Tabulations," Item 25 (Line 30)), but inadvertently omitted the connectors to the rails. TPI states that it obtained a quote for the connectors and included the costs in rebuttal. (TPI Rebuttal III-F-92.) TPI accepts CSXT's adjustments related to cables and grounding kits. However, TPI rejects the addition of fencing around the signal huts. According to TPI, the huts specified by TPI and accepted by CSXT have locking doors as required by FRA and argues that fencing is, therefore, unnecessary. Moreover, TPI argues that CSXT did not provide any evidence that it has security fences around all of its signal huts. (TPI Rebuttal III-F-92 to III-F-93.)

The Board will accept the parties' agreement related to cables and grounding kits. The Board will also accept TPI's cost for track connectors because CSXT's cost was based on a quote for the incorrect item (angle bars). With respect to fencing around signal huts, CSXT has not presented any evidence establishing that the locking doors TPI specified would be insufficient to meet FRA requirements. As a result, CSXT has not demonstrated that its proposed fencing around all TPIRR signal huts is necessary, and therefore has failed to undermine the feasibility of TPI's evidence. The Board therefore rejects the inclusion of such fencing.

ii. Incorrect Unit Costs

CSXT states that it corrects certain signal component unit costs proposed by TPI to conform to the supporting documentation TPI provided, and provides supported alternatives for certain unsupported unit costs proposed by TPI. (CSXT Reply III-F-153 to III-F-155.) On rebuttal, TPI accepts CSXT's reply evidence on signal foundation costs, 24-volt batteries, and the unit costs for power and mainline switches. (TPI Rebuttal III-F-93.)

On reply, CSXT claims that TPI's unit cost of $213 for insulated joints was undocumented and conflicts with information provided to TPI in discovery. CSXT includes a unit cost of $1,528 on reply. (CSXT Reply III-F-154 to III-F-155, July 21, 2014.) On rebuttal, TPI argues that an email provided in TPI's opening workpapers, titled "Insulated Joint.pdf," supports its opening evidence unit cost. TPI further argues that CSXT's $1,528 unit price double-counts the cost of 20 feet of rail for each insulated joint. (TPI Rebuttal III-F-93 to III-F-94.)

The Board accepts the parties' agreed-to unit costs for signal foundations, 24-volt batteries, and power and manual mainline switches. With respect to the unit cost for insulated joints, the Board's review of CSXT's evidence shows that CSXT's unit price double-counts the cost of 20 feet of rail for each insulated joint, and the Board therefore accepts TPI's proposed unit cost for insulated joints.

iii. Outdated Unit Costs

According to CSXT, TPI's proposed costs for interlocking and intermediate huts, signals, switches, electric locks, batteries, cables, failed equipment detectors, crossing predictor huts, and VHF LMR radios, among other items, were based on 2005 costs that TPI did not adjust to reflect

2010 cost levels. On reply, CSXT indexes TPI's 2005 costs to 3Q 2010 using the Association of American Railroad (AAR) Rail Cost Recovery Index for Materials, Wages, and Supplies Excluding Fuel (East). (See CSXT Reply WP "TPI Signals & Communications CSXT Reply.xlsx," Tab "Index Factors," July 21, 2014.) CSXT argues that this method is consistent with how the DCF model adjusts signal and communication costs to account for the three-year SARR construction period. (CSXT Reply III-F-155, July 21, 2014.)

On rebuttal, TPI accepts that the material costs of these items needs to be indexed from 2005 to 2010 but argues that CSXT made two errors in its indexing process: (1) CSXT should not have indexed labor costs for these items, and (2) CSXT should not have used the inflation index used in the DCF model. According to TPI, its labor costs (which CSXT accepted) are not 2005 costs and therefore do not need to be indexed. TPI argues that CSXT did not index the labor costs for other items where the material costs did not need to be indexed. TPI also states that the parties use the Means historical cost index to adjust unit costs to the proper 2010 cost levels for other investment costs, and argues that CSXT should have done the same here. On rebuttal, TPI indexes the material costs for these items from 2005 to 2010 using the Means historical cost index. (TPI Rebuttal III-F-94.)

The Board will accept the parties' agreement that material costs should be indexed to 2010. The Board, however, will reject CSXT's indexing of labor costs and use of AAR's Rail Cost Recovery Index to index costs. CSXT has not provided any evidence to support its argument that TPI's labor costs are 2005 costs. Likewise, CSXT fails to provide any evidence demonstrating why it deviated from its usual practice and used the AAR Rail Cost Recovery index rather than the Means historical cost index in this single instance. The Board disagrees with CSXT's argument that using the AAR index is consistent with how the DCF model adjusts signal and communication costs because the AAR index is an investment-related index based on service life, rather than a historical cost index. The Board therefore accepts TPI's indexing proposal.

b. PTC

i. PTC Installation in 2010

On opening, TPI proposes that TPIRR would install a fully-functioning, interoperable PTC system in 2010. (TPI Opening III-F-47 to III-F-51.) Although CSXT accepts the assumption that TPIRR could have installed some type of PTC system in 2010, it rejects TPI's assertion that the 2010 system could meet the interoperability standards of the Rail Safety Improvement Act (RSIA). (See CSXT Reply III-F-146 to III-F-151, July 21, 2014.) CSXT argues that TPI's proposal is infeasible because critical PTC components still do not exist and certainly did not exist in 2010. (CSXT Reply III-F-146 to III-F-147, July 21, 2014.) CSXT also states that TPI did not identify which PTC technology TPIRR would install. According to CSXT, TPI bases its PTC system costs on the ERTMS II system CSXT is installing today, even though it is unrelated to any of TPI's examples of PTC systems developed before 2010, which it relies upon in support of its claim that TPIRR could install a functioning, interoperable PTC system in 2010. (CSXT Reply III-F-146 to III-F-148, July 21, 2014.)

On reply, CSXT proposes that TPIRR would first install a functioning, but non-interoperable PTC system in 2010, which would be upgraded to meet RSIA interoperability requirements in the 2011 to 2015 time frame. CSXT, therefore, adds costs TPIRR would incur after the initial 2010 installation, which it claims are consistent with those expenditures currently being made by other Class I railroads to upgrade the system to meet interoperability standards. (CSXT Reply III-F-146, July 21, 2014.) CSXT assumes that TPIRR would incur an additional 25% of its initial PTC development and support cost in the 2011 to 2015 timeframe. (CSXT Reply III-F-168, July 21, 2014.)

On rebuttal, TPI contends that the Board must permit TPI to implement an RSIA-compliant, fully-interoperable PTC system in 2010 in order to eliminate the PTC mandate as an impermissible barrier to entry under contestable market theory. According to TPI, the imposition of two sets of PTC costs (i.e., the initial 2010 PTC investment and the PTC upgrade costs) upon TPIRR within just five years is inconsistent with contestable market theory because it imposes unique costs upon the new entrant that CSXT did not face. TPI argues that CSXT had many decades to recover the costs associated with its existing CTC system before incurring the costs of a PTC system, whereas TPIRR would have less than five years to recover the costs of the 2010 PTC system before incurring the upgrade costs. TPI further argues that if the Board adheres to its precedent in DuPont and Sunbelt 2014, and permits TPIRR to implement only a non-interoperable version of PTC in 2010 and then incur additional upgrade costs from 2011 through 2015 to become interoperable, it cannot impose costs that are greater than those incurred by CSXT. (TPI Rebuttal III-F-96 to III-F-97, III-F-100 to III-F-104.)

It is true, as CSXT argues, that TPIRR would not be able to implement a PTC system in 2010 that complies with all RSIA standards, including interoperability. (See CSXT Reply III-F-146, July 21, 2014.) The Board, therefore, accepts CSXT's position that TPIRR would first install a PTC system and then upgrade it to meet RSIA requirements. Our decision here is consistent with Board precedent. See DuPont, NOR 42125, slip op. at 228-30; Sunbelt 2014, NOR 42130, slip op. at 144-45. In both DuPont and Sunbelt 2014, the Board accepted that the SARR could install an initial PTC system, which the SARR would subsequently upgrade to meet RSIA interoperability requirements. See DuPont, NOR 42125, slip op. at 229-30; Sunbelt 2014, NOR 42130, slip op. at 145. The costs for the upgrades in those cases were spread through the period leading up to the PTC implementation deadline established in RSIA (December 31, 2015), rather than being incurred together with the initial costs of installing the system. See DuPont, NOR 42125, slip op. at 228-30; Sunbelt 2014, NOR 42130, slip op. at 144-45. The Board explained that the overwhelming weight of evidence demonstrated that implementing a fully RSIA-compliant PTC system was not feasible at the time the Board issued those decisions in 2014. See DuPont, NOR 42125, slip op. at 228-30; Sunbelt 2014, NOR 42130, slip op. at 144-45. We certainly do not have evidence that it was feasible to implement an RSIA-compliant PTC system in 2010, as TPI proposes. In fact, effective October 29, 2015, the deadline for PTC implementation was extended by three years from December 31, 2015 to December 31, 2018. See Positive Train Control Enforcement and Implementation Act of 2015, Pub. L. No. 114-73, 129 Stat. 568 (2015); 49 U.S.C. § 20157. Consistent with precedent, the Board will accept that TPIRR would first install a PTC system and then upgrade it to meet RSIA interoperability requirements. The upgrade costs in the instant case, however, will be spread over the 2011

through 2018 time period to account for the extension of the PTC implementation deadline from December 31, 2015 to December 31, 2018.

The Board rejects TPI's argument that CSXT's proposed two-phase PTC implementation imposes an impermissible barrier to entry on TPIRR. The Board is not persuaded by TPI's argument that the two-phase implementation imposes unique costs upon the new entrant that CSXT did not face. We do not have evidence that it was feasible to implement an RSIA-compliant PTC system in 2010. Therefore, the fact that TPIRR cannot install a fully-functioning, interoperable PTC system in at the outset of operations in 2010 is not a barrier to entry, but rather a reflection of the real-world limitations facing the railroad industry.

The Board discusses specific disputes regarding costs of installing TPIRR's PTC system below. In each instance where we accept CSXT's PTC costs, the Board will make one minor adjustment to CSXT's method of calculating PTC costs. According to CSXT, its experts assume TPIRR would incur the same costs as CSXT for all PTC deployment and support elements, scaled to the ratio of "TPIRR route miles of PTC" to "route miles of CSXT's planned deployment of PTC." (CSXT Reply III-F-167 to III-F-168, July 21, 2014.) CSXT proposed a scale factor of 62.9%, derived from the ratio of TPIRR operating route miles over CSXT assumed miles of PTC Deployment. (See CSXT Reply WP "PTC Development Costs for TPIRR in CSX Reply evidence.xlsx," Tab "route," July 21, 2014.)

TPI contests both elements (TPIRR operating route miles and CSXT assumed miles of PTC Deployment) of CSXT's calculation. First, TPI argues that CSXT improperly includes trackage rights miles in its calculation of TPIRR route miles. (TPI Rebuttal III-F-118 to III-F-119.) The Board agrees with TPI on this issue. TPIRR is responsible only for investment costs for constructed miles, not trackage rights miles. The Board, therefore, will remove the trackage rights miles from the equation so that CSXT's ratio reflects TPIRR constructed route miles rather than operating route miles.

Second, TPI urges the Board to reject CSXT's use of the hard-coded value for assumed miles of CSX PTC Deployment in its ratio because CSXT does not provide any support for this value. While TPI is correct that CSXT provided no explanation of how it arrived at its figure for "assumed miles of CSX PTC Deployment," TPI's proposed figure is also flawed. As TPI indicates, the figure it proposes was identified in CSXT's discovery materials as miles to be surveyed, and TPI assumes they represent route miles. (See TPI Rebuttal III-F-119.) TPI provides no explanation of the basis of this assumption, and it is not clear to the Board how the figure upon which TPI relies is relevant to the calculation of TPIRR PTC costs. Moreover, the figure proposed by TPI represents CSXT's entire system, and it is highly unlikely that PTC would be installed over the entire system. As such, the use of this figure as proposed by TPI is neither feasible nor supported. The figure proposed by CSXT, on the other hand, while unsupported is at least seemingly relevant to the calculation of TPIRR PTC costs and more realistic given the size of the system. For these reasons, the Board will accept CSXT's evidence as the best evidence of record. As a result of the Board's removal of trackage rights from the calculation, CSXT's proposed scale factor is reduced from 62.9% to 56.9%.

ii. 2010 TPIRR PTC System Investment

As discussed above, on opening, TPI proposes that TPIRR would install a fully-functioning, interoperable PTC system in 2010. (TPI Opening III-F-47 to III-F-51.) On reply, CSXT provides costs necessary to install an initial, functioning but not interoperable, PTC system in 2010 and then to upgrade that system in the 2011 to 2015 timeframe to meet interoperability standards. (CSXT Reply III-F-157 to III-F-158, July 21, 2014.) On rebuttal, TPI argues that the upgrade costs proposed by CSXT should be excluded because they are a barrier to entry. (TPI Rebuttal III-F-105; see also TPI Final Brief 48-50.) According to TPI, CSXT applies an unsupported assumption that upgrade costs would equal 25% of the initial costs. (TPI Rebuttal III-F-99.) TPI also argues that the upgrade costs CSXT includes are a redundant double-count because the costs CSXT imposes on TPIRR in 2010 for a non-interoperable PTC system are based on CSXT's costs to develop a fully interoperable system. According to TPI, the Board, therefore, must limit the total expense to the 2010 costs developed by the parties. (TPI Rebuttal III-F-105 to III-F-106.)

The Board rejects TPI's arguments. First, for the reasons discussed in the section on the PTC installation in 2010, above, TPI's proposal that TPIRR would install a fully-functioning, interoperable PTC system in 2010 is neither feasible nor supported. Additionally, despite TPI's assertion to the contrary, nothing in the record suggests that the 2010 costs developed by CSXT are for an RSIA-compliant, fully-interoperable PTC system. Rather, as CSXT describes on reply, CSXT's 2010 PTC costs include only those components that TPIRR hypothetically might have attempted to install in 2010 to achieve a CTC-with-certain-PTC-capabilities system. (CSXT Reply III-F-156, July 21, 2014.) Moreover, CSXT does not include upgrade costs across the board to every component comprising CSXT's proposed 2010 costs. Rather, CSXT identifies the hardware, communications backbone, and back office components from the initial TPIRR PTC system that would meet RSIA 2015 standards (including interoperability) without any upgrade, and includes upgrade costs for only those components that would not already meet RSIA interoperability standards (see, for example, the GIS costs discussed below). CSXT's experts reviewed a number of factors in determining that a reasonable estimate of the additional costs TPIRR would incur to upgrade its 2010 system to a 2015 RSIA-compliant, fully-interoperable system would be approximately 25% of the costs of installation of the original.[96] (CSXT Reply III-F-156, III-F-159 n.342, July 21, 2014.) The upgrade costs, therefore, were not included in CSXT's 2010 costs and do not constitute a double-count. Lastly, for the reasons discussed in the section on the PTC installation in 2010, the upgrade costs proposed by CSXT do not constitute a barrier to entry. The Board, therefore, finds that CSXT's method of developing 2010 PTC costs and estimating upgrade costs are both feasible and supported, and in absence of

[96] CSXT states that its experts reviewed the Board's rulings regarding SARR implementation of PTC in DuPont and Sunbelt 2014; the PTC system that CSXT is installing and its equipment, components and operations; the requirements of the RSIA and FRA regulations and standards for PTC systems by the end of 2015; their signals systems experience and expertise; and their knowledge of the state of development of PTC technology by railroads today. (CSXT Reply III-F-159, July 21, 2014.)

a feasible and supported proposal from TPI, the Board accepts CSXT's method of developing PTC costs for both 2010 and the upgrade period.[97]

CSXT breaks down its investment proposal for TPIRR into eight components, discussed individually below.

PTC Office Segment. On reply, CSXT includes $12.5 million for PTC back office systems for the startup PTC system, including $10 million in 2010 and $2.5 million to upgrade to a fully interoperable PTC system between 2011 and 2015. (CSXT Reply III-F-158 to III-F-159, July 21, 2014.) On rebuttal, TPI rejects these costs for two reasons. First, according to TPI, TPI already includes $10 million for the TPIRR back office system, which includes PTC capability. (See TPI Rebuttal WP "TPI Signals & Communications Rebuttal.xlsx," Tab "Components and Tabulations," Item 47 (Row 52) "CTC office system.") TPI argues that CSXT's additional $10 million expense is not necessary for TPIRR because CSXT's expenditures reflect a retrofitted PTC system installed over an existing CTC system, as opposed to the efficiencies of TPIRR's clean slate system design and implementation. Second, TPI argues that the $10 million cost estimate is for a fully-interoperable PTC system because this is what CSXT will be installing as its initial startup PTC system. (TPI Rebuttal III-F-98, III-F-108 to III-F-109.)

The Board rejects both of TPI's arguments. As discussed above, nothing in the record supports TPI's contention that CSXT's proposed 2010 costs are for the installation of a fully-interoperable PTC system. Given that we are accepting CSXT's position that TPIRR would install a functioning, but non-interoperable, PTC system in 2010, which would be upgraded to meet RSIA interoperability requirements, the Board will also accept CSXT's costs for the PTC back office systems installation and upgrades, which better reflect the PTC implementation plan. However, as discussed above, we will make an adjustment to the scale factor used in CSXT's calculations to exclude trackage rights miles.

PTC Wayside System. On reply, CSXT claims that TPI did not fully develop its PTC wayside system. CSXT claims that TPI omitted key components of wayside interface units and radios and understated the number of wayside interface units and radios required for a fully functioning TPIRR PTC system. According to CSXT, it corrected TPI's omissions and developed costs for an integrated PTC system to be installed at all wayside control points, wayside signals, and tunnels. CSXT notes that this includes outfitting movable span bridges in the same way as control points—which are the same from a signals perspective. Additionally, CSXT adds wayside communications capabilities at intermediate signal locations and interlockings. (CSXT Reply III-F-159 to III-F-161, July 21, 2014.) The parties agree that components installed as part of the wayside segment in 2010 will not need to be upgraded for interoperability. (CSXT Reply III-F-158, July 21, 2014; TPI Rebuttal III-F-109.)

---

[97] As discussed above, the upgrade costs proposed by CSXT will be spread over the 2011 to 2018-time frame to account for the recent extension of the PTC implementation deadline.

On rebuttal, TPI states that it accepts "most" of the additional costs added by CSXT. (TPI Rebuttal III-F-98.) It specifies that it accounted for wayside interface units at all movable bridge locations and accepts CSXT's additional costs related to the wayside interface units that CSXT adds at interlockings and wayside communications. (TPI Rebuttal III-F-109 to III-F-110.)

The Board will accept the parties' agreed-to costs for wayside interface units at interlockings and the wayside communications at either intermediate locations or interlockers. Additionally, while TPI states that it accepts most of the additional costs added by CSXT, TPI does not explain which of CSXT's costs it rejects and why, rendering TPI's proposed costs unsupported. For the same reason, TPI fails to undermine the feasible and supported corrective evidence provided by CSXT on reply. The Board thus accepts the costs added by CSXT for the PTC wayside system.[98]

PTC Radios and Antennas. The parties agree on the unit cost for components necessary to render the intermediate signal locations and interlockings communications capable, such as batteries, battery chargers, installation labor, and material shipping and taxes. (CSXT Reply III-F-161 to III-F-162, July 21, 2014; TPI Rebuttal III-F-91.) However, they disagree on the type of radios and antennas TPIRR would install. On reply, CSXT rejects TPI's proposed costs for PTC radios and antennas because the costs selected by TPI from CSXT discovery materials are for a 220 megahertz radio and the associated antenna, which, according to CSXT, had not yet been developed in 2010 and is still not available today. (CSXT Reply III-F-161 to III-F-162, July 21, 2014.) On rebuttal, TPI claims that CSXT increases radio and antenna expenses by more than four times—simply on the unsubstantiated assertion that TPIRR could not install 220 megahertz radios in 2010. (TPI Rebuttal III-F-98 to III-F-99, III-F-110 to III-F-112.)

The Board accepts TPI's proposed costs for PTC radios and antennas. TPI's evidence is feasible and supported, and CSXT fails to provide any support for its assertion that the 220 megahertz radios were not available in 2010.

PTC Wayside System. On reply, CSXT accepts TPI's costs to outfit each TPIRR locomotive with PTC capability but rejects TPI's assumption that TPIRR would need to outfit only its own locomotive fleet to be compatible with its PTC system. According to CSXT, in order for the TPIRR PTC system to be functional, TPIRR would need to outfit locomotives received in interchange service from the residual CSXT and other TPIRR interchange partners with PTC capability. (CSXT Reply III-F-162 to III-F-163, July 21, 2014.) CSXT also rejects TPI's assumption that the locomotive radios TPIRR would install in 2010 would be capable of meeting RSIA interoperability standards, arguing that such radios are still being developed and refined today. (CSXT Reply III-F-163 to III-F-164, July 21, 2014.)

[98] As discussed above, the Board will make an adjustment to the scale factor used in CSXT's calculations to exclude trackage rights miles.

On rebuttal, TPI rejects the added cost to outfit foreign carriers' locomotives with PTC capabilities because it would result in TPIRR cross-subsidizing CSXT's real-world competitors and because it is contradicted by other facets of CSXT's reply evidence. (TPI Rebuttal III-F-99, III-F-112 to III-F-114.)

The Board rejects CSXT's position that TPIRR would need to outfit locomotives owned by other carriers with PTC capability. The Board agrees with TPI that requiring TPIRR to pay for PTC equipment on behalf of other railroads appears on this record to be at odds with reality. As TPI argues and we agree, CSXT offers no evidence that this sort of arrangement occurs in the real world. As such, CSXT's assertion is neither feasible nor supported. Moreover, even if TPIRR were required to pay for outfitting non-TPIRR locomotives with PTC capability in the early stages of its operation for the system to be functional, the foreign railroads eventually have to invest in that equipment themselves. TPIRR's payments, therefore, would have to be reimbursed no later than the RSIA compliance deadline, yet CSXT did not account for this in its reply evidence. For these reasons, we will require that TPIRR outfit only TPIRR-owned road locomotives with PTC capability. Finally, as discussed in the preceding section, the Board rejects CSXT's argument and accepts the radios and antennas proposed by TPI.

PTC Technical Development and Support. On reply, CSXT includes approximately $44 million in PTC technical development and support costs in 2010, as well as an additional $11 million, or 25%, for upgrades to comply with the RSIA interoperability standards. According to CSXT, its experts assumed TPIRR would incur the same costs as CSXT for all PTC deployment and support elements, scaled to the ratio of TPIRR route miles of PTC to route miles of CSXT's planned PTC deployment. (CSXT Reply III-F-167, July 21, 2014.) CSXT argues that, as a first mover in implementing a workable PTC system for a major freight railroad, TPI would incur significant costs for developing and testing system components, designing the communications backbone and back office network, and acquiring the necessary spectrum, among other things. (CSXT Reply III-F-166, July 21, 2014.)

On rebuttal, TPI rejects CSXT's addition of technical development and support costs. According to TPI, CSXT's reliance on the development and testing costs actually incurred by CSXT to develop a PTC system that is fully interoperable at start-up cannot be reconciled with CSXT's position that TPIRR cannot install a fully-functioning PTC system in 2010. TPI argues that CSXT cannot deny that TPIRR could install an interoperable system in 2010 and also insist that TPIRR would have been a "first mover" in PTC technology. TPI, therefore, includes no development and support costs on rebuttal. TPI also argues that CSXT's proposed 25% upgrade costs are unsupported. According to TPI, the upgrade costs are an arbitrary increase because CSXT's actual costs cover the full development of the same technologies, for which CSXT seeks to include an upgrade cost. (TPI Rebuttal III-F-98, III-F-106, III-F-115 to III-F-117.)

TPI's exclusion of all technical development and support costs is neither feasible nor supported. A workable PTC deployment requires that locomotives communicate effectively and reliably with the PTC back office. Therefore, TPI's exclusion of technical development and support costs is not feasible. Additionally, TPI does not support its argument that CSXT is denying TPIRR access to the same technology CSXT's development costs created. As CSXT notes, railroads are still grappling with issues and challenges related to successful PTC

implementation, which would need to be resolved by TPIRR. CSXT's proposed costs, on the other hand, are both feasible and supported. CSXT logically bases TPIRR costs on CSXT expenditures for PTC deployment and support elements. It provides line item costs for each item factored into the development of these costs and scales the costs to the ratio of TPIRR route miles of PTC to route miles of CSXT's planned deployment of PTC. (See CSXT Reply III-F-164 to III-F-170, July 21, 2014.) Moreover, given that we are accepting CSXT's proposal that TPIRR would first install a PTC system and then upgrade it to RSIA requirements, it follows logically that we should use the technical development and support costs associated with that installation plan. The Board will accept CSXT's PTC technical development and support costs.[99]

PTC Testing. TPI challenges the PTC testing costs that CSXT adds on reply to both 2010 and the 2011 to 2015 time frames for the same reasons TPI challenged CSXT's technical development and support costs. For the same reasons discussed in the preceding section, the Board finds TPI's arguments unpersuasive.

Additionally, TPI argues that the imposition of separate PTC testing costs for TPIRR would be redundant because TPIRR already included testing costs in its labor costs as part of its initial start-up prior to the initiation of operations. (TPI Rebuttal III-F-117 to III-F-118.) The costs included by TPI on opening, however, do not reflect the two-phase PTC implementation plan accepted by the Board in this case. More specifically, TPI's inclusion of PTC testing costs in its labor costs was premised on the assumption that TPIRR would install a fully functioning, interoperable PTC system in 2010, which the Board is not accepting. TPI's proposed installation costs reflect costs for testing associated with installing a complete, fully functioning interoperable system in 2010. Those costs would not be the same for testing costs when installation is completed under the two-phase approach proposed by CSXT and accepted by the Board. Thus, TPI's proposed testing/labor costs do not account for additional testing of the PTC system that would be necessary to ensure that it functions properly during both phases of installation—for this reason, the proposed costs are infeasible. CSXT's PTC testing costs, on the other hand, were developed based on the two-phase PTC implementation, which the Board is accepting, and are feasible and supported.[100]

GIS. On opening, TPI develops GIS (Geographic Information System) unit costs based on information it obtained from a PTC spreadsheet provided by CSXT in discovery. (See TPI Opening WP "TPI Signals & Communications.xlsx"; see also TPI Opening WP "CSXT PTC

---

[99] However, as discussed above, the Board will make an adjustment to the scale factor used in CSXT's calculations to exclude trackage rights miles. The Board will also adjust CSXT's proposed upgrade costs to be spread through 2018, rather than 2015, to account for the extension of the PTC implementation deadline.

[100] As discussed above, the Board will make an adjustment to the scale factor used in CSXT's calculations to exclude trackage rights miles. The Board will also adjust CSXT's proposed upgrade costs to be spread through 2018, rather than 2015, to account for the extension of the PTC implementation deadline.

Unit Costing Detail.xls.") On reply, CSXT claims that TPI misinterpreted CSXT's discovery data and understates TPIRR's total GIS costs by erroneously multiplying the cost per track mile by TPIRR constructed track miles where it should have multiplied the cost per track mile by the total track miles for TPIRR. On rebuttal, TPI rejects CSXT's changes. As it does in the above section on PTC Installation in 2010, TPI argues that CSXT did not provide any support for its scaling and overstated TPIRR's miles by including trackage rights miles.

The Board rejects TPI's position because, as discussed above, the figure TPI uses for "total miles" is neither feasible nor supported. As the Board discussed in the section on PTC installation in 2010, above, the Board accepts the method proposed by CSXT for calculating TPIRR GIS costs using a scale factor but will adjust the scale factor from 62.9% to 59.1%, as discussed above, to eliminate the trackage rights miles.

PTC Communications. On reply, CSXT states that TPI did not include any costs for a PTC communications system on opening and provided no explanation of how TPIRR would address this critical aspect of a functioning PTC system. CSXT argues that, in order to ensure uninterrupted communication between the PTC system and locomotives moving on TPIRR system, like the carriers implementing PTC today, TPIRR would be required to invest heavily in a communications backbone and back office systems for its PTC system. CSXT adds communications costs for both the 2010 and upgrade time frames. CSXT also applies a reverse assumption for TPIRR expenditures for PTC communications, assuming TPIRR would incur 25% of the projected CSXT cost for all PTC communications at the outset, again scaled to the proportionate size of TPIRR system, followed by 100% of the projected CSXT communications spending, scaled by the relative TPIRR route miles of PTC, over the upgrade period to meet RSIA compliance standards. (CSXT Reply III-F-173 to III-F-175, July 21, 2014.)

On rebuttal, TPI rejects the costs CSXT added for PTC communications, arguing that they are unnecessary because TPI already accounted for them in the costs for TPIRR's back office system and in the communications systems components of the wayside interface units and the locomotive PTC radios. Additionally, TPI argues that CSXT incurs many of its real-world PTC costs because it is overlaying a PTC system onto its existing CTC system, but TPIRR would not incur those costs because it is installing a PTC system right from the start. (TPI Rebuttal III-F-120.)

Given that we are accepting CSXT's position that TPIRR would install a functioning, but non-interoperable, PTC system in 2010, which would be upgraded to meet RSIA interoperability requirements, it follows logically that we should accept CSXT's costs for PTC communications.[101] Although TPI argues that its opening evidence already accounts for certain costs added by CSXT on reply, the costs referenced by TPI are not consistent with the two-phase

[101] As discussed above, the Board will make an adjustment to the scale factor used in CSXT's calculations to exclude trackage rights miles. The Board will also adjust CSXT's proposed upgrade costs to be spread through 2018, rather than 2015, to account for the extension of the PTC implementation deadline.

PTC implementation plan accepted by the Board in this case. More specifically, TPI's PTC communication costs were developed assuming the installation of a fully functioning, interoperable PTC system in 2010, which the Board is not accepting. These costs, therefore, do not account for changes to the communication system that would be necessary to ensure that the communication system functions properly during both phases of the PTC installation. CSXT's PTC communication costs, on the other hand, were developed based on the two-phase PTC implementation, which the Board is accepting, and are feasible and supported.

c. Communications System

On opening, TPI proposes a communications system that uses microwave radio technology for TPIRR's radio system backbone and land mobile radio technology to facilitate communications between end user applications and the radio system backbone. On average, TPI places microwave towers at 20-mile intervals. (TPI Opening III-F-52 to III-F-54.)

On reply, CSXT states that it accepts TPI's general system design, but adjusts the layout and distribution of microwave towers to correspond to TPIRR's route configuration. Specifically, CSXT makes three adjustments. First, CSXT contends that, while 20-mile spacing is generally reasonable, TPI's use of an undifferentiated simple average fails to account for complexities and requirements for a workable rail communications system, such as the need for a clear line of sight between each tower in differential terrain (hills, mountains, curved, etc.) or the need to extend radio coverage to the end of TPIRR lines regardless of the length of the last segment. CSXT states that it addresses these shortcomings by analyzing the actual TPIRR route using GIS software to determine where towers would need to be placed. CSXT proposes a 20-mile tower spacing convention adjusted for specific conditions on TPIRR's route. (CSXT Reply III-F-175 to III-F-176, July 21, 2014.)

Second, CSXT rejects TPI's assertion that it uses multi-directional microwave towers and states that TPI only used costs for towers with equipment to face one direction. CSXT argues that TPI's single tower design fails to account for the two-way towers (intermediate towers), three-way towers, or four-way towers that are required to provide coverage to the entire TPIRR route (e.g., at junctions, interchanges, and other locations where TPIRR lines go in three or more directions). CSXT adds a set of microwave equipment and two corresponding antennas to account for the directional point-to-point line-of-sight microwave communications paths required and where TPIRR lines diverge. These corrections increase TPI's total tower count by 43 for a total of 21 one-way towers (end of line), 337 two-way towers (intermediate), 25 three-way towers, and four four-way direction towers. (Id. at III-F-176 to III-F-177.)

Third, CSXT argues that TPI either omitted or incorrectly accounted for a number of component costs and states that it added those costs using prices from TPI's documentation where possible, and also used quotes from outside vendors. More specifically, CSXT adjusts the costs for the microwave base station, polarized parabola and feed horn (microwave antenna), land mobile radio base station, desktop controller, 200-foot microwave tower, and the 7/8" Standard Coax (foam) for that tower to conform to TPI's documentation. CSXT also adds allegedly omitted costs for microwave antenna mount assembly; the Land Mobile Radio base station; BRI data card; foundation and fencing for the microwave tower; and shed

footings/foundation, an alarm system, and a halo ground system for the communications shed. (Id. at III-F-177 to III-F-180.)

On rebuttal, TPI accepts many of CSXT's adjustments with some modifications. With respect to the microwave towers, TPI accepts CSXT's four different types of microwave towers. TPI also accepts CSXT's counts for the number of one-way, three-way, and four-way towers but, rejecting CSXT's increase in the count of microwave towers, TPI reduces the number of two-way towers from 337 to 294. According to TPI, microwave towers can be spaced as much as 30 miles apart, and therefore by using an average spacing of 20 miles, TPI recognized that tower spacing would depend on topography. (TPI Rebuttal III-F-121.)

With respect to other components, TPI accepts CSXT's revised cost for the microwave base station, polarized parabola and feed horn (microwave antenna), land mobile radio base station, 200-foot microwave tower, and the 7/8" Standard Coax (foam) for that tower. TPI also accepts CSXT's addition of the microwave antenna mount assembly, the Land Mobile Radio base station, foundation for the microwave tower, and shed footings/foundation and alarm system for the communications shed.

TPI, however, rejects CSXT's revised costs for the desktop controller, claiming that the price used by TPI is in fact shown in TPI's workpapers. TPI also rejects CSXT's proposed fencing around the microwave tower because CSXT neither provided evidence that it is "standard practice" to fence microwave sheds nor shown that it has incurred the cost to place fencing around all of its microwave sheds. Lastly, TPI rejects CSXT's addition of a halo ground system at the communications shed. According to TPI, the benefit of a halo ground system has been the source of controversy in the signals and communications industry for years. TPI also points out that CSXT did not think a halo ground system was necessary for the signal huts. (Id. at III-F-122 to III-F-123.)

The Board will accept CSXT's tower quantities and the associated type distribution. The Board agrees with CSXT that the layout and distribution of microwave towers proposed by TPI fails to account for complexities and necessary requirements for a workable rail communications system, and is therefore not feasible. The Board cannot accept TPI's argument that microwave towers can be spaced as much as 30 miles apart because this argument could have been made on opening, but instead was raised for the first time on rebuttal, providing CSXT no opportunity to respond. CSXT's analysis takes into consideration topographical characteristics that would affect tower spacing and location and is, therefore, an accurate representation of the realities that would be encountered in building TPIRR. The Board also accepts the parties' agreed-to quantity of two antennae per tower.

The Board will also accept the parties' agreed-to investment cost for the microwave base station, polarized parabola and feed horn (microwave antenna), land mobile radio base station, 200-foot microwave tower, and the 7/8" Standard Coax (foam) for that tower. Likewise, the Board accepts the parties' agreement on the addition of the microwave antenna mount assembly, the Land Mobile Radio base station, foundation for the microwave tower, and shed footings/foundation and alarm system for the communications shed.

The Board, however, will reject CSXT's addition of a BRI data card for the multiplexor unit, fencing around the microwave sheds, and a halo ground system at communications sheds. In each of these instances, CSXT failed to provide any evidence undermining the feasibility and support of TPI's opening position. With respect to the BRI data cards, CSXT failed to provide any evidence, other than an unsupported statement, that the BRI data card is required. Although CSXT argues that TPI includes BRI data cards in its own documentation as part of a suite of items required for a functioning multiplexor unit, the only evidence CSXT submits in support of that contention is a comprehensive ordering guide, not a list of items required for a functioning multiplexor unit, as CSXT contends. (See CSXT Reply WP "S&C Workpapers 3.pdf" at 33, July 21, 2014.) CSXT also provides no support for its assertion that it is standard practice to provide fencing due to the high-value equipment at the site and dispersed and isolated tower locations. Likewise, CSXT includes only a sentence stating that TPI omitted a halo ground system to properly ground the shed and internal equipment from lightning strikes but failed to provide any argument as to why TPI's opening position would be inadequate. Similarly, the Board will reject CSXT's change to TPI's cost for the desktop controller because CSXT's own evidence shows a price of $417 for the desktop controller proposed by the parties (see CSXT Reply WP "S & C Workpapers 2.pdf" at 2, July 21, 2014), and CSXT has not provided any argument as to why TPI's price of $417 is otherwise unreasonable.

d. Hump Yard Equipment

The parties agree on investment costs for equipment for the 11 TPIRR hump yards (see CSXT Reply III-F-150, July 21, 2014; TPI Rebuttal III-F-124), and the Board accepts the parties' agreement on the issue.

G. BUILDINGS AND FACILITIES

TABLE B-9
Buildings and Facilities Costs

	TPI	CSXT	STB
Major Yards	$409,253,968	$521,782,218	$514,891,884
Other Yards	$211,187,492	$237,392,190	$227,002,678
Intermodal Yard	$201,588,543	$357,807,336	$339,683,388
Auto Yards	$221,683,998	$265,810,754	$264,961,002
Bulk Transfer Yards	$32,802,654	$41,271,676	$41,271,676
Additional Interchange Yards	$0	$1,261,833	$1,261,833
Partially Owned Yards	Included above	Included above	$8,710,909
MOW Buildings	$14,157,772	$19,987,442	$16,656,202
Curtis Bay Coal Facility	$27,171,000	$47,122,000	$27,578,165
TOTAL	$1,117,845,427	$1,492,435,451	$1,442,017,737

On opening, TPI states that TPIRR's major system facilities are located at its 12 major yards. These facilities include TPIRR's headquarters building, crew facilities, locomotive repair shops, 1,000- and 1,500-mile inspection facilities, and car and locomotive storage. Additional smaller yards are located throughout the TPIRR system. (TPI Opening III-F-55.) On reply, CSXT states that its experts have identified a substantial number of facilities that TPIRR would require but that TPI did not include in its evidence, along with errors and omissions in TPI's development of the necessary components for a number of facilities and in the buildup of the associated costs. (CSXT Reply III-F-181 to III-F-182.) The Board will address each of those facility types below.

1. Quantity of Intermodal and Automotive Facilities

a. Intermodal Facilities

On opening, TPI included the road property investment costs for 19 intermodal terminals. (TPI Opening I-14.) On reply, CSXT adds additional costs to these 19 terminals, and adds investment costs for three additional intermodal yards (for a total of 22). (CSXT Reply III-B-19, July 21, 2014.) On rebuttal, TPI eliminates all investment costs for intermodal terminals with the exception of the track construction and roadbed preparation costs required to construct the tracks needed to serve the terminals (excluding the two already identified as being owned by other entities) on the basis that CSXT does not own these terminals and TPIRR, therefore, is not required to own or construct them. (TPI Rebuttal III-F-125 to III-F-127.)

On November 5, 2014, in conjunction with its rebuttal evidence, TPI submitted a petition to supplement the record seeking, in part, to eliminate the investment costs for the 19 intermodal terminals that TPI asserted were mistakenly included in its opening evidence. (TPI Pet. 2-4, Nov. 5, 2014.) CSXT replied to TPI's petition, arguing, among other things, that TPI had failed to demonstrate that the evidence regarding those 19 intermodal terminals could not have been introduced earlier. (CSXT Reply 11-16, Nov. 25, 2014.) On July 24, 2015, the Board issued a decision denying TPI's petition to supplement its evidence with respect to the intermodal terminals in question. See Total Petrochems. & Refining USA, Inc. v. CSX Transp., Inc. (Supplemental Evidence Order), NOR 42121, slip op. at 4 (STB served July 24, 2015). Following the Board's Supplemental Evidence Order, TPI submitted compliance and supplemental evidence that includes certain investment costs for the 19 intermodal terminals that TPI included in its opening evidence, as well as the track construction and roadbed preparation costs required to construct the tracks needed to serve the three additional intermodal yards included by CSXT on reply. (See TPI Compliance & Suppl. Evid. WP "TPIRR Facilities Rebuttal.xlsx," Tab "TPIRR Yards," Oct. 7, 2015.) TPI continues to dispute CSXT's inclusion of additional costs relating to the initial 19 intermodal terminals, as well as CSXT's inclusion of investment costs for the three additional intermodal yards.

The Board's prior decisions have addressed neither the costs for those facilities added by CSXT on reply, nor the investment costs for the three intermodal yards added by CSXT on

reply.[102] With regard to the former, given TPI's choice on opening to build the 19 intermodal terminals, we conclude that TPI must include all costs necessary to their construction. We address individual cost components for these facilities in their respective sections below.

With regard to the latter, we conclude that TPIRR is not responsible for constructing the three additional facilities. There is no reason to mandate that these three facilities have the same ownership structure as the other 19 that were the subject of TPI's petition to supplement. Moreover, TPI argues (and CSXT concedes) that CSXT neither owns nor operates any of the intermodal facilities served by TPIRR. (TPI Rebuttal III-F-125 to III-F-127; CSXT Reply to Pet. 5, Nov. 25, 2014.) TPI's proposal for the three intermodal yards added by CSXT on reply—to exclude construction costs but include lift fees payable to the owner of the intermodal facilities—is feasible and supported. As a result, the Board will include facility construction costs for only the 19 intermodal terminals from TPI's opening evidence.

b. Automotive Facilities

On opening, TPI included the road property investment costs for 20 automotive facilities. (TPI Opening III-I-14, III-B-7.) CSXT likewise includes the same categories of investment costs (but adds additional costs) for 20 automotive facilities in its reply evidence. (CSXT Reply WP "TPIRR Yard Matrix CSXT Reply.xlsx," Tab "TPIRR Yards," July 21, 2014.) On rebuttal, TPI eliminates all investment costs for three automotive facilities that are not owned by CSXT, and does not include the additional costs added by CSXT on reply for the other 17 facilities. (TPI Rebuttal III-F-127.) TPI continues to exclude these costs in its compliance and supplemental evidence. (See TPI Compliance & Suppl. Evid. WP "TPIRR Facilities Rebuttal.xlsx," Tab "TPIRR Yards," Oct. 7, 2015.)

The Board will accept CSXT's proposal to include 20 automotive facilities.[103] It is the duty of the complainant to make its best case on opening, and there is a public interest in maintaining an evidentiary standard that protects litigants from unnecessary costs caused by their opponents' errors. Supplemental Evidence Order, slip op. at 5. Here, TPI's opening evidence includes an annotation next to the three facilities in question, indicating that each of those facilities is owned by entities other than CSXT. (See TPI Opening WP "TPIRR Facilities," Tab "TPIRR Yards," Line Items 104-05, 119 (Rows 104-05, 133).) TPI, therefore, had actual

[102] The additional costs and facilities added by CSXT on reply were not (and could not have been) the subject of TPI's motion to supplement, and thus were not the subject of the Board's denial of that motion. As a result, the procedural decision we reached in the Supplemental Evidence Order with regard to the costs for the initial 19 intermodal terminals included by TPI on opening does not address the additional costs for those terminals or the three yards added by CSXT on reply.

[103] TPI also continues to dispute CSXT's inclusion of additional costs relating to all 20 of the automotive facilities. Given TPI's choice on opening to build 20 automotive facilities, TPI must include the necessary costs related to their construction. The Board will address individual cost components for these facilities in their respective sections below.

knowledge at the time it submitted its opening evidence that these three automotive facilities were not owned by CSXT, yet it chose to include them as part of its opening SAC presentation, as it was free to do. Just as the Board determined in its Supplemental Evidence Order that TPI is bound by its decision on opening to build 19 TPIRR intermodal facilities not owned by CSXT, TPI is likewise bound by its decision on opening to include investment costs for the three automotive facilities not owned by CSXT.

2. Headquarters

The parties agree on the headquarters facility location in Atlanta, Ga. and the unit costs of TPIRR's headquarters building. The parties also agree on CSXT's addition of square footage required to accommodate both the male and female locker rooms. (CSXT Reply III-F-183, July 21, 2014; TPI Rebuttal III-F-127 to III-F-128.) The parties, however, disagree on the size of the headquarters building. On opening, TPI developed the required square footage for the facility using the American Institute of Architects (AIA) standard square footage per employee, which includes additional space for work rooms, IT equipment, hallways, bathrooms, and mechanical services. Executives were allotted additional space. TPI states that the resulting building is two stories with a total of 112,500 square feet and its costs are based on the Means costs for similar structures. (TPI Opening III-F-56.)

On reply, CSXT adjusts the size of the headquarters building to accommodate the general and administrative and non-train operating personnel positions that CSXT proposes. (CSXT Reply III-F-183, July 21, 2014.) On rebuttal, TPI revises the size of the headquarters building to reflect the number of TPIRR executive and administrative personnel that TPI included in its rebuttal evidence. (TPI Rebuttal III-F-127 to III-F-128.)

The Board will accept the parties' agreed-to location of the headquarters building, the headquarters unit costs, and the addition of space for the locker rooms. For the employees that would use the headquarters building, the Board will accept a staffing level much closer to the figure proposed by CSXT, as discussed in the Operating Expenses appendix. The Board, therefore, will also accept CSXT's headquarters building square footage, which better reflects the space required for these employees. See, e.g., W. Fuels Ass'n 2007, NOR 42088, slip op. at 118.

3. Fueling Facilities

With the exception of certain components, which it adds or modifies on reply, CSXT accepts TPI's opening fixed locomotive fueling facility and oil water separator systems unit costs as the starting point for TPIRR costs of these facilities. (CSXT Reply III-F-184 to III-F-188, July 21, 2014.) On rebuttal, TPI accepts the adjustments made by CSXT. (TPI Rebuttal III-F-129.) The Board will accept the parties' agreement on fueling facilities.

4. Locomotive Shops

The parties agree on investment costs for locomotive shops, with the exception of two modifications that TPI makes on rebuttal. First, TPI states that it inadvertently indexed jib crane

costs twice on opening and has removed the duplicate costs. Second, TPI claims that CSXT overstated jib crane costs by including the costs for two of TPI's cranes and two of CSXT's larger cranes. TPI states that it removed the costs for one of TPI's smaller cranes and one of the larger cranes so that the costs now reflect one small crane and one large crane as specified in CSXT's reply narrative. (Id. at III-F-130.)

The Board accepts TPI's rebuttal costs for locomotive shops. The Board routinely allows the correction of minor technical errors in SAC rate cases.[104] Given the size and complexity of such cases—in which thousands of data points are submitted—a standard that allows parties to correct minor errors is both appropriate and necessary. The Board finds that TPI's double indexing of jib crane costs is a minor technical error and accepts TPI's removal of the duplicate costs. Additionally, based on a review of the evidence, TPI is correct that CSXT's reply evidence included more cranes than were discussed in CSXT's reply narrative. TPI's rebuttal evidence reflects the correct crane configuration.

5. Diesel Service and Inspection Shops

On reply, CSXT claims that, in addition to its major locomotive repair facilities, TPIRR would require 12 diesel locomotive service and inspection facilities to conduct 92-day inspections and to perform minor running repairs at TPIRR locations that do not already have major locomotive repair facilities. CSXT argues that these additional facilities are necessary because existing TPIRR locomotive repair shops are spaced too far apart to provide adequate access for locomotive service and inspection and performing mid-level services is not practical at other existing fixed fueling facilities where only minor repairs can be accomplished while maintaining efficient fueling operations. (CSXT Reply III-F-196 to III-F-197, July 21, 2014.)

On rebuttal, TPI rejects CSXT's addition of diesel locomotive service and inspection facilities, arguing that the existing locomotive repair facilities can handle inspections and that locomotives can be efficiently moved to the closest facility when necessary. (TPI Rebuttal III-F-131.)

The Board accepts CSXT's locomotive servicing facilities plan with minor adjustments. As discussed in the body of this decision, the Board agrees with CSXT's argument that TPI's proposed heavy repair shops are spaced too far apart to provide adequate access for locomotive service and inspections. TPI's plan to accomplish locomotive servicing, therefore, is not feasible. For the reasons discussed in the body of the decision, the Board finds that CSXT's arguments are feasible and supported with respect to the diesel locomotive service and inspection facilities added by CSXT on reply. However, while CSXT claims it "has included diesel service and inspection shops at the other twelve major yards without locomotive shops" (CSXT Reply

[104] See, e.g., AEP Tex. N. Co. v. BNSF Ry. (AEP), NOR 41191 (Sub-No. 1), slip op. at 76 n.88 (STB served Sept. 10, 2007) (noting Board acceptance of minor change in yard acreage submitted in errata filing), reconsideration denied (STB served May 15, 2009), vacated on other grounds and remanded sub nom. AEP Tex. N. Co. v. STB, 609 F.3d 432 (D.C. Cir. 2010).

III-F-196 to III-F-197, July 21, 2014), the parties agree that four of the 12 major TPIRR yards will include locomotive shops. (CSXT Reply WP "TPIRR Facilities CSXT Reply.xlsx," Tab "TPIRR Yards," Column U, July 21, 2014; TPI Rebuttal WP "TPIRR Facilities Rebuttal.xlsx," Tab "TPIRR Yards," Column U.) In fact, CSXT only includes service and inspection shops at the eight major yards that do not already have locomotive shops. (CSXT Reply WP "TPIRR Facilities CSXT Reply.xlsx," Tab "TPIRR Yards," Column AO, July 21, 2014.) We will accept CSXT's addition of those eight locomotive service and inspection stations.

6. Car Repair Shops

TPI did not include any costs for a car repair facility on opening. TPI states that a car repair facility is not necessary because TPIRR acquires its railcars via full service leases with the lessor responsible for all necessary car repair. TPI did, however, include the space and necessary tracks for such a facility at three TPIRR yards. (TPI Opening III-F-58.) On reply, CSXT accepts TPI's opening evidence. (CSXT Reply III-F-197, July 21, 2014.) The Board accepts the parties' agreement on car repair shops.

7. Crew Change Facilities

On opening, TPI included costs for 48 crew change facilities at locations across TPIRR with buildings at 14 locations sized for a total of 2,240 square feet and buildings at 34 other locations sized for a total of 1,400 square feet. (TPI Opening III-F-58.) CSXT accepts TPI's sizing, count, and costs for all the crew facilities. (CSXT Reply III-F-198.) The parties agree on the costs for small and large crew change buildings. The Board accepts the parties' agreement on crew change facilities.

8. Yard Offices

The parties agree on building sizing and unit costs for yard offices. (See Id. at III-F-198, July 21, 2014.) The parties also largely agree on the quantity of large yard offices,[105] but disagree on the quantity of small yard offices. On opening, TPI includes 50 small TPIRR yard offices at locations where there are car inspectors, transportation department field personnel, and more than one yard crew. (TPI Opening III-F-59.) On reply, CSXT includes offices at 115 small yards to be consistent with the modifications CSXT made to TPIRR's operating plan. Included in CSXT's 115 small yard offices are offices at 21 intermodal facilities, 19 automotive

[105] (See TPI Opening WP "TPIRR Facilities.xlsx," Tab "TPIRR Yards," Cell AA 165; CSXT Reply WP "TPIRR Facilities CSXT Reply.xlsx," Tab "TPIRR Yards," Cell AA 181, July 21, 2014.) However, CSXT included a large yard office in its evidence regarding the overall construction costs of the Curtis Bay Coal Facility. (CSXT Reply WP "Curtis Bay Coal Pier.xlsx," July 21, 2014.) Our decision to include a large yard office there is addressed below in the section related to that facility.

facilities, and 19 bulk transfer facilities. (CSXT Reply WP "TPIRR Facilities CSXT Reply.xlsx," Tab "TPIRR Yards," Cell AC 181, July 21, 2014.)[106]

TPI rejects CSXT's addition of 58 yard offices to intermodal, automotive, and bulk transfer facilities on rebuttal. (TPI Rebuttal III-F-132.) TPI argues that it is not responsible for the construction of intermodal facilities and therefore is not responsible for the construction of yard offices at those facilities. TPI also argues that yard offices at intermodal, automotive, and bulk transfer facilities are the responsibility of the contractor, not TPIRR. According to TPI, CSXT also has not provided any documentation that it paid for yard offices at these locations. Finally, TPI argues that many of these facilities are adjacent to or part of TPIRR major or other yards where TPI has already provided yard offices. (Id.) TPI, however, states on rebuttal that it adds small yard offices at an additional five locations that have car inspectors, transportation department field personnel, and more than one yard crew. TPI's evidence on rebuttal, therefore, includes a total of 55 small yard offices. (Id. at III-F-133.)[107]

Because the Board is accepting TPI's operating plan and system configuration, which are the determining factors in establishing the number of these facilities, the Board will start with TPI's quantities of yard offices and modify them as appropriate. In particular, the Board will modify TPI's quantities to add small yard offices at intermodal facilities, automotive facilities, and bulk transfer facilities to the extent that CSXT included small yard offices at those facilities in its evidence (with one exception). Again, given TPI's choice on opening to build intermodal, automotive, and bulk transfer facilities, TPI must include the necessary costs related to their construction. The movement of freight in and out of intermodal, automotive, and bulk transfer facilities is a complex operation, and yard offices are necessary to house the staff needed to

---

[106] In its opening evidence, TPI included a small yard office at the Chicago-Bedford Park intermodal terminal, which is included in CSXT's count of 21 such offices at intermodal facilities on reply. (TPI Opening WP "TPIRR Facilities.xlsx," Tab "TPIRR Yards," Cell AC 93; CSXT Reply WP "TPIRR Facilities CSXT Reply.xlsx," Tab "TPIRR Yards," Cell AC 93, July 21, 2014.) TPI does not challenge the inclusion of a small yard office at this location on rebuttal. (TPI Rebuttal WP "TPIRR Facilities Rebuttal.xlsx," Tab "TPIRR Yards," Cell AC 93.)

CSXT includes a small yard office at every intermodal facility except for the intermodal terminal at the Howell Yard in Evansville. (CSXT Reply WP "TPIRR Facilities CSXT Reply.xlsx," Tab "TPIRR Yards," Cell AC 99, July 21, 2014.) CSXT likewise includes a small yard office at every automotive facility except for the one at the Bristow Yard in Bowling Green. (CSXT Reply WP "TPIRR Facilities CSXT Reply.xlsx," Tab "TPIRR Yards," Cell AC 119, July 21, 2014.) CSXT includes a small yard office at all but four of the bulk transfer facilities included in its workpapers. (CSXT Reply WP "TPIRR Facilities CSXT Reply.xlsx," Tab "TPIRR Yards," Cells AC 142, 145, 148 & 155, July 21, 2014.)

[107] TPI did not add or remove any yard offices in its compliance and supplemental evidence. (See TPI Compliance & Suppl. Evid. WP "TPIRR Facilities Rebuttal.xlsx," Tab "TPIRR Yards," Oct. 7, 2015.)

direct those operations. As a result, CSXT has supported its position that TPIRR must construct 56 small yard offices at those facilities.[108] The Board will also remove the small yard office at the Curtis Bay freight yard for the reasons discussed in the section related to the Curtis Bay Coal Facility. As a result of these modifications, the Board will include a total of 109 small yard offices.

9. Maintenance of Way Buildings

On opening, TPI included 51 maintenance-of-way (MOW) buildings similar in size and design to the crew change facilities it included but with additional areas provided for garaging certain vehicles and storing MOW supplies. (TPI Opening III-F-59.) On reply, CSXT accepts the cost of TPI's MOW buildings and TPI's method of deriving the cost of MOW buildings from the cost of small crew change facilities since not all MOW building are located at yards. However, CSXT increases the total number of MOW buildings from 51 to 72 based on the MOW territories and personnel requirements that CSXT developed in reply. (CSXT Reply III-F-198 to III-F-199, July 21, 2014.) On rebuttal, TPI continues to include 51 MOW buildings, arguing that CSXT includes an unrealistically high number of MOW buildings based on an overstated number of MOW territories and personnel that are not required by an optimally efficient, realistically-staffed TPIRR. (TPI Rebuttal III-F-133.)

The Board accepts the parties' agreement on MOW building size and cost per building. Additionally, the Board will include 60 MOW buildings. The parties agree that it is feasible to include one MOW building per MOW territory (TPI includes 51 MOW buildings in 51 MOW territories while CSXT includes 72 MOW buildings in 72 MOW territories). Therefore, because the Board is accepting 60 MOW territories, as discussed in the Operating Expenses appendix, the Board will accept a corresponding number of MOW buildings.

10. Guard Booths

The parties agree on the unit cost for guard booths and include guard booths at the 19 intermodal terminals included on opening.[109] (CSXT Reply III-F-199, July 21, 2014.) The parties disagree on the inclusion of guard booths at the Curtis Bay Coal Terminal and at three

---

[108] Again, because TPIRR is not responsible for building the three intermodal yards added by CSXT on reply, TPIRR need not pay the cost of constructing small yard offices at those locations.

[109] On rebuttal, TPI removed the costs for guard booths at the 19 intermodal facilities included on opening, claiming that TPIRR is not responsible for constructing these facilities. (TPI Rebuttal III-F-133 to III-F-134.) Following the Board's Supplemental Evidence Order, TPI included investment costs for guard booths at those 19 intermodal facilities in its compliance and supplemental evidence. (See TPI Compliance & Suppl. Evid. WP "TPIRR Facilities Rebuttal.xlsx," Tab "TPIRR Yards," Oct. 7, 2015.) (While CSXT added three intermodal yards on reply, it did not include costs for guard booths at these locations. (CSXT Reply WP "TPIRR Facilities CSXT Reply.xlsx," Tab "TPIRR Yards," Cells AG 177-79, July 21, 2014.))

automotive facilities not owned by CSXT. TPI argues on rebuttal that CSXT did not provide any explanation as to why a guard booth is necessary at the Curtis Bay Coal Facility. TPI further argues that the guard booth is unnecessary at that facility because there is no truck traffic in and out of the coal terminal. (TPI Rebuttal III-F-134.) TPI also states that it removes the investment costs for the guard booths at the three automotive facilities not owned by CSXT because TPIRR is not responsible for the construction of those facilities. (Id.)

The Board will accept the parties' agreement on the unit cost for guard booths. For the reasons discussed in the section related to intermodal facilities, the Board will accept the inclusion of guard booths at the 19 intermodal facilities included by TPI on opening. Furthermore, for the reasons discussed in the section related to automotive facilities, the Board will also accept the inclusion of guard booths at the three automotive facilities not owned by CSXT. The Board, however, will reject CSXT's inclusion of a guard booth at the Curtis Bay Coal Facility. As TPI argues, neither party has indicated that there would be any truck traffic serving the facility, and the guard booth, therefore, would be unnecessary. CSXT's evidence with respect to the guard booth it proposes for the Curtis Bay Coal Facility does not undermine the feasibility or support of TPI's evidence.

11. Yardmaster Towers

On opening, TPI includes one yardmaster tower at each of the 11 TPIRR hump yards. TPI states that costs for the yardmaster towers were developed from costs provided by CSXT in discovery and indexed to 3Q 2010. (TPI Opening III-F-60.)

On reply, CSXT accepts TPI's use of the costs for a 1966 yardmaster tower indexed to 3Q 2010 levels for the base tower but adds a hydraulic 2,000-pound capacity elevator with three stops to comply with modern accessibility standards under the Americans with Disabilities Act (ADA). CSXT states that it also adjusted the number of yard towers consistent with its operating plan. (CSXT Reply III-F-199 to III-F-200, July 21, 2014.)

On rebuttal, TPI rejects CSXT's additional yard towers. TPI argues that CSXT fails to explain in its narrative where these towers were added or why the towers are necessary. TPI also rejects CSXT's addition of an elevator, arguing that the 2010 ADA standards would not apply to TPIRR construction because (1) the 2010 ADA standards apply to new construction starting on or after March 15, 2012, and construction of TPIRR would be completed prior to the start of TPIRR operations on July 1, 2010; and (2) TPIRR's yardmaster towers would be exempt from the elevator requirement because the yardmaster towers have less than 3000 square feet per story. (TPI Rebuttal III-F-135 to III-F-136.) More broadly, TPI argues that because CSXT did not incur this cost, it should be considered a barrier to entry. (Id. at III-F-136.)

The Board accepts the agreed-upon unit cost for yardmaster towers. The Board also accepts TPI's quantities and location for yardmaster towers because the Board is accepting TPI's operating plan and system configuration, which are the determining factors in establishing the number and location of these facilities. In any event, CSXT has failed to demonstrate that TPI's inclusion of one yardmaster tower at each of the 11 TPIRR hump yards is infeasible. Furthermore, the Board rejects CSXT's proposed inclusion of hydraulic 2,000 pound capacity

elevators. In West Texas Utilities Co. v. Burlington Northern Railroad Co., the Board held that certain regulatory requirements—such as the cost of needed permits, licenses, and environmental compliance—must be considered a barrier to entry when that cost was not incurred by the incumbent. See W. Tex. Utilities Co. v. Burlington N. R.R., 1 S.T.B. 638, 672-73, 705-06 (1996). Here, the record does not show that CSXT incurred the costs of installing such elevators in its yardmaster towers, or that CSXT's real-world yard towers at the locations in question have such elevators. Therefore, we agree with TPI that these costs must be excluded from the TPIRR investment costs.

12. Wastewater Treatment

The parties agree that all TPIRR building facilities are located near existing towns and cities and are able to be served by local sewer connections or similar services. The parties also agree on the costs for sewer tie-ins. (See TPI Opening III-F-60; CSXT Reply III-F-200, July 21, 2014.) CSXT, however, includes costs for oil/water separators in the costs for diesel service and inspection shops, maintenance pads, hostler fueling areas, and vehicle service and repair buildings. (CSXT Reply III-F-200, WP "TPIRR Facilities CSXT Reply.xlsx," July 21, 2014.) On rebuttal, TPI rejects the inclusion of additional oil/water separators because TPI does not include any of the related facilities. (TPI Rebuttal III-F-137.)

The Board accepts the parties' agreement that all building facilities will be able to be served by local sewer connections or similar services and on the cost for sewer tie-ins. The Board also accepts CSXT's costs for oil/water separators for the diesel service and inspection shops, maintenance pads, hostler fueling areas, and vehicle service and repair buildings to the extent we conclude (in the individual sections relating to those facilities) that TPIRR is responsible for the construction of those facilities.

13. Turntables

On opening, TPI includes turntables at 11 TPIRR yards based on information provided by CSXT in discovery. (TPI Opening WP "TPIRR Facilities.xlsx," Tab "TPIRR Yards," Cell AM 165.). CSXT accepts TPI's turntable locations and unit cost on reply but adds a turntable in Cincinnati's Queensgate Yard. (CSXT Reply III-F-201, July 21, 2014.) On rebuttal, TPI accepts the additional turntable, but removes the turntable at the Mobile, Ala. intermodal terminal, arguing that TPIRR is not responsible for the construction of intermodal terminals. (TPI Rebuttal III-F-137.)

The Board accepts the parties' agreement on the unit cost for turntables. Furthermore, pursuant to the Supplemental Evidence Order, the Board accepts the inclusion of 12 turntables because TPI included the cost of a turntable at the intermodal facility in Mobile, Ala. on opening.

14. In and Out Gates

On opening, TPI does not include costs for in and out gates. (See TPI Opening WP "TPIRR Facilities.xlsx," Tab "Summary.") On reply, CSXT includes costs for 12 in gates and 12 out gates at intermodal terminals where available photographs have sufficient detail and

clarity to confirm their presence at terminals that serve TPIRR. According to CSXT, the in and out gates are standard features of intermodal yard operations. CSXT states that intermodal rail service providers must be able to closely manage the logistics of intermodal traffic, and advise their customers of the location of their merchandise at any given time. (CSXT Reply III-F-201 to III-F-202, July 21, 2014.) On rebuttal, TPI rejects CSXT's addition of these facilities because TPIRR is not responsible for the construction of intermodal facilities. TPI also argues that CSXT grossly overstates its costs for in and out gates. According to TPI, CSXT relies on a quote for combined in and out gates to develop costs for separate in and out gates, resulting in a double count of quantities for various components. (TPI Rebuttal III-F-138.)

The Board concludes that CSXT has adequately demonstrated that in and out gates are necessary here, and accepts CSXT's addition of 10 in and out gates—i.e., at only those intermodal terminals that TPIRR is responsible for constructing.[110] The Board finds CSXT's corrective evidence both feasible and supported because CSXT includes in and out gates only at terminals where it has confirmed that such gates are actually present. Moreover, while TPI argues that CSXT double counts various components of the in and out gates and claims to specifically identify the components and costs that CSXT double counted, the Board cannot determine whether certain items were in fact double counted without reviewing each party's design plans, which neither party produced. TPI's argument, therefore, does not sufficiently undermine the feasibility of CSXT's evidence.

15. Maintenance Pads

On opening, TPI does not include costs for maintenance pads. (See TPI Opening WP "TPIRR Facilities.xlsx," Tab "Summary.") On reply, CSXT includes costs for maintenance pads only at those intermodal terminals where available aerial photographs have sufficient detail and clarity to confirm their presence at terminals that serve TPIRR. CSXT argues that maintenance pads are commonly used by intermodal terminals in order to provide service and repairs to lift equipment, which requires routine scheduled maintenance and unscheduled repairs. (CSXT Reply III-F-202, July 21, 2014.) On rebuttal, TPI rejects CSXT's addition of the maintenance pads because TPIRR is not responsible for the construction of the intermodal facilities it serves. (TPI Rebuttal III-F-138 to III-F-139.)

The Board concludes that CSXT has adequately demonstrated that maintenance pads are necessary here, and accepts CSXT's addition of 15 maintenance pads—i.e., at only those intermodal terminals that TPIRR is responsible for constructing.[111] The Board finds CSXT's

[110] Thus, we do not accept CSXT's inclusion of costs for in and out gates at the Louisville and North Baltimore locations, as TPIRR is not responsible for constructing those intermodal facilities.

[111] Thus, we do not accept CSXT's inclusion of costs for maintenance pads at the Louisville and North Baltimore locations, as TPIRR is not responsible for constructing those intermodal facilities.

corrective evidence both feasible and supported because CSXT includes maintenance pads only at terminals where it has confirmed that maintenance pads are actually present.

16. Hostler Fueling Area

On opening, TPI does not include costs for hostler fueling areas. (See TPI Opening WP "TPIRR Facilities.xlsx," Tab "Summary.") CSXT includes costs on reply for hostler fueling areas only at those intermodal terminals where available aerial photographs have sufficient detail and clarity to confirm their presence at terminals that serve TPIRR. CSXT argues that such facilities are essential to provide off-road fueling for intermodal hostlers, which save costs on otherwise unnecessary expenditures for vehicle registration and insurance for vehicles that are not typically street legal. According to CSXT, except for those limited circumstances where remote storage yards require street-legal hostlers, hostler operations, fueling, and servicing generally are all performed on-site. (CSXT Reply III-F-203, July 21, 2014.) On rebuttal, TPI rejects CSXT's addition of hostler fueling areas because TPIRR is not responsible for the construction of the intermodal facilities it serves. (TPI Rebuttal III-F-139.)

The Board concludes that CSXT has adequately demonstrated that hostler fueling areas are necessary here, and accepts CSXT's addition of hostler fueling areas at eight intermodal terminals that TPIRR is responsible for constructing. The Board finds CSXT's corrective evidence both feasible and supported because CSXT includes hostler fueling areas only at terminals where it has confirmed that hostler fueling areas are actually present.

17. Air Compression Buildings and Yard Air Systems

On opening, TPI does not include costs for air compression buildings and yard air systems. (See TPI Opening WP "TPIRR Facilities.xlsx," Tab "Summary.") CSXT includes on reply costs for air compressor buildings and yard air systems only at those intermodal terminals where available aerial photographs have sufficient detail and clarity to confirm their presence at terminals that serve TPIRR. CSXT states that access to yard-compressed air is typically provided to at least one end of every segment of train consists to assist in charging the train brake systems and avoid unnecessarily extending dwell times at major yards. (CSXT Reply III-F-203 to III-F-204, July 21, 2014.) On rebuttal, TPI rejects CSXT's addition of air compressor buildings and yard air systems because TPIRR is not responsible for the construction of the intermodal facilities it serves. (TPI Rebuttal III-F-139.)

The Board concludes that CSXT has adequately demonstrated that air compression buildings and yard air systems are necessary here, and accepts CSXT's addition of such buildings and systems at four intermodal terminals that TPIRR is responsible for constructing. The Board finds CSXT's corrective evidence both feasible and supported because CSXT includes air compressor buildings and yard air systems only at terminals where it has confirmed that such buildings and systems are actually present.

18. Hostler Office and Welfare Buildings

On opening, TPI does not include costs for hostler office and welfare buildings. (See TPI Opening WP "TPIRR Facilities.xlsx," Tab "Summary.") On reply, CSXT adds costs for hostler accommodations. CSXT claims that, like train crews and yard switching crews, hostler operators report on- and off-duty at intermodal facilities and require similar accommodations. According to CSXT, because the hostlers are in many instances affiliated with a third-party provider, they will have separate business functions from those of railroad employees and would require separate facilities. CSXT accepts TPI's general crew change facilities as a reasonable model for this facility type and includes hostler accommodations only at those intermodal terminals serving TPIRR where this facility can be located and documented. (CSXT Reply III-F-204 to III-F-205, July 21, 2014.) On rebuttal, TPI rejects CSXT's addition of hostler accommodations because TPIRR is not responsible for the construction of the intermodal facilities it serves. (TPI Rebuttal III-F-140.)

The Board concludes that CSXT has adequately demonstrated that hostler accommodations are necessary here, and accepts CSXT's addition of hostler accommodations at eight intermodal terminals that TPIRR is responsible for constructing. The Board finds CSXT's corrective evidence both feasible and supported because CSXT includes hostler accommodations only at terminals where it has confirmed that hostler accommodations are actually present.

19. Vehicle Service and Repair Buildings

On opening, TPI does not include costs for vehicle service and repair buildings. (See TPI Opening WP "TPIRR Facilities.xlsx," Tab "Summary.") CSXT includes costs on reply for vehicle maintenance and repair facilities only at those intermodal terminals where available aerial photographs have sufficient detail and clarity to confirm their presence at terminals that serve TPIRR. CSXT states that the repair and service of motor vehicles, including the tractors used to shuttle intermodal trailers and containers, must occur at regular intervals. According to CSXT, because the majority of the intermodal operations employ non-street-legal hostler tractors, these services must be provided on-site for efficiency and convenience. (CSXT Reply III-F-205 to III-F-206, July 21, 2014.) On rebuttal, TPI rejects CSXT's addition of vehicle service and repair buildings because TPIRR is not responsible for the construction of the intermodal facilities it serves. (TPI Rebuttal III-F-140.)

The Board concludes that CSXT has adequately demonstrated that vehicle service and repair buildings are necessary here, and accepts CSXT's addition of 11 such facilities—i.e., at only those intermodal terminals that TPIRR is responsible for constructing.[112] The Board finds CSXT's corrective evidence both feasible and supported because CSXT includes vehicle

[112] Thus, we do not accept CSXT's inclusion of costs for vehicle service and repair buildings at the Louisville and Marion locations, as TPIRR is not responsible for constructing those intermodal facilities.

maintenance and repair facilities only at terminals where it has confirmed that vehicle maintenance and repair facilities are actually present.

20. Other Facilities

On opening, TPI included costs for yard lighting, paving, and drainage (plus site preparation costs) at TPIRR intermodal, automotive, and bulk transfer facilities as well as other TPIRR yards. On reply, CSXT proposed modifications to TPI's opening evidence. Each of these areas is discussed below.

a. Yard Lighting

The parties agree on the method for calculating average yard lighting costs for the Type 2 yards, 17 automotive facilities, and bulk transfer facilities. The parties also agree on the inclusion of costs for an underground electrical conduit, pullboxes for the 20' wood light poles, and lighting costs necessary for five flat yards and two partially owned yards added by CSXT on reply. (CSXT Reply III-F-207 to III-F-208, July 21, 2014; TPI Rebuttal III-F-141 to III-F-142.) The parties disagree, however, on the inclusion of yard lighting costs for intermodal and three automotive facilities.

On opening, TPI included yard lighting plans for TPIRR intermodal, automotive, and bulk transfer facilities based on existing CSXT lighting plans and Google Earth aerial views. (TPI Opening III-F-60 to III-F-62.) On reply, CSXT included yard lighting costs for each intermodal facility, including three intermodal facilities it added on reply, and for each automotive facility. (CSXT Reply WP "TPIRR Facilities Reply CSXT.xlsx," Tab "TPIRR Yards," July 21, 2014.) On rebuttal, TPI removes all lighting costs for intermodal facilities arguing that intermodal facilities are not constructed by TPIRR. (TPI Rebuttal III-F-141 to III-F-142.) Following the Board's Supplemental Evidence Order, however, TPI included in its compliance and supplemental evidence the investment costs for yard lighting at each intermodal facility (except the three intermodal facilities added by CSXT on reply) and the 17 automotive facilities owned by CSXT. (See TPI Compliance & Suppl. Evid. WP "TPIRR Facilities Rebuttal.xlsx," Tab "TPIRR Yards," Oct. 7, 2015.) TPI excludes yard lighting costs for the three automotive facilities that are not owned by CSXT. (See id.; TPI Rebuttal III-F-141 to III-F-142.)

The Board accepts the parties' agreement on the method for calculating average yard lighting costs for the Type 2 yards, 17 automotive facilities, and bulk transfer facilities, as well as the inclusion of costs for underground electrical conduit, pullboxes for the 20' wood light poles, and lighting costs necessary for five flat yards and two partially owned yards added by CSXT on reply. Additionally, since neither party discussed unit costs, the Board will accept the parties' implicit agreement. Furthermore, the Board will accept CSXT's inclusion of yard lighting costs for the three automotive facilities not owned by CSXT and the 19 intermodal terminals included by TPI on opening because TPIRR is responsible for building these facilities (as explained above in the sections related to those facilities). Lastly, the Board will not accept CSXT's inclusion of yard lighting costs for the three intermodal facilities added by CSXT on reply because TPIRR is not responsible for building these facilities (as explained above in the section related to those facilities).

b. Yard Paving

On opening, TPI developed paving plans for TPIRR's intermodal, automotive, and bulk facilities, plus major yards and other yards, that were based on existing CSXT yard plans provided in discovery and based on a review of these locations in Google Earth. TPIRR paving costs were based on unit costs from Means for the appropriate pavement section required. (TPI Opening III-F-61.)

On reply, CSXT accepts TPI's approach of developing yard paving requirements based on aerial views of existing CSXT facilities as a reasonable starting point but argues that TPI's pavement costs are based on substandard specifications that would not withstand the burdens of everyday railroad use. CSXT specifically objects to the pavement sections proposed by TPI for the intermodal facilities, arguing that TPI's proposed concrete section is not realistic and ignores costs for overexcavation, backfilling, compaction, and base aggregate. CSXT argues that TPI also did not include appropriate costs for yard concrete pavement typically used at intermodal facilities, such as crane runways, which must have deeper cross sections than those of surrounding pavement because they are subject to heavier loads. CSXT further argues that intermodal and bulk transfer terminals should have asphalt pavement cross sections and costs that are different from and stronger than those of typical parking lot asphalt since they are subject to forces exerted by heavy containers and machinery operations. CSXT, therefore, provided pavement design sections from recently constructed intermodal terminals and cost information from 2012 Means taking into account the array of asphalt and concrete cross sections found in various functional yard areas. Specifically, CSXT upgrades asphalt and concrete types, incorporates multiple paving standards for concrete and asphalt sections, modifies TPI costs for yard concrete pavement that CSXT states is used at intermodal facilities, adds costs to TPI's asphalt cross-section for regular traffic, revises the pavement numbers used to quantify Type 1 yards, and adds the costs for three additional intermodal terminals. (CSXT Reply III-F-208 to III-F-211.)

On rebuttal, TPI accepts the additional costs for backfilling and compacting but rejects all of the remaining adjustments made by CSXT. According to TPI, its opening pavement specifications are heavier than necessary for automobile and light truck traffic and sufficient for heavy use at a bulk transfer facility or medium use at an automotive facility. TPI claims that CSXT's "heavy duty" pavement section, which increases the gravel layer from six inches to nine inches but reduces the binder from four inches to three inches, is unnecessary. TPI also rejects CSXT's quantity changes for Type 1 and Type 2 yards, arguing that the adjustments are unsupported. TPI states that CSXT included only non-scaled PDF files that did not allow for TPI to identify the changes made by CSXT to the opening yard quantities or to verify CSXT's figures. Additionally, TPI rejects CSXT's use of 0.28 acres of heavy asphalt pavement section for four major yards and 11 other yards because CSXT did not explain why heavy asphalt was necessary at these locations. For the flat and partially owned yards added by CSXT on reply and accepted by TPI on rebuttal, TPI accepts CSXT's quantities of paving for these yards but consolidates CSXT's two types of pavement into TPI's single type. (TPI Rebuttal III-F-142 to III-F-144.) Lastly, TPI excluded on rebuttal yard paving costs for intermodal facilities, arguing that TPIRR is not responsible for the construction of the intermodal facilities it serves. TPI also

removed on rebuttal the costs for three automotive facilities that are not owned by TPIRR. (Id. at III-F-142 to III-F-144.)

Following the Board's Supplemental Evidence Order, TPI added back into its compliance and supplemental evidence the yard paving costs for all intermodal facilities, except the three added by CSXT on reply. (See TPI Compliance & Suppl. Evid. WP "TPIRR Facilities Rebuttal.xlsx," Tab "TPIRR Yards," Oct. 7, 2015). TPI does not include yard paving costs for the three automotive facilities not owned by CSXT in its compliance and supplemental evidence. (See id.)

The Board will accept CSXT's costs for yard paving. As CSXT argues, and we agree, TPI's pavement costs do not take into account the load and usage requirements of differing yard areas. CSXT provides feasible and supported evidence undermining the feasibility of TPI's one-size-fits-all approach. Demonstrating that yards typically include more than one pavement type, CSXT provides a typical real-world engineering worksheet for calculating pavement section requirements. CSXT also provides pavement design sections from recently constructed intermodal terminals that take into account the proper array of asphalt and concrete cross sections found in various functional yard areas and the vastly different loadings supported by these different areas. (See CSXT Reply III-F-208, June 21, 2014.)

TPI contends that CSXT's "heavy duty" pavement section is unnecessary, but it provides no evidence or rationale to support this statement. (See TPI Rebuttal III-F-143). The Board is likewise not persuaded by TPI's argument that the non-scaled PDF files included in CSXT's evidence prevented TPI from identifying and verifying the changes CSXT made to TPI's opening yard quantities. TPI could have adjusted CSXT's quantities by applying the design specifications proposed by CSXT to its own scaled files.

The Board also accepts CSXT's inclusion of yard paving costs for the three automotive facilities not owned by CSXT and the 19 intermodal terminals included by TPI on opening because TPIRR is responsible for building these facilities (as explained above in the sections related to those facilities). However, the Board will not accept CSXT's inclusion of yard paving costs for the three intermodal facilities added by CSXT on reply because TPIRR is not responsible for building these facilities (as discussed above).

c. Yard Drainage

On opening, TPI provided for drainage facilities for TPIRR major and other yards as well as automotive, intermodal, and bulk transfer facilities based on plans provided by CSXT in discovery. TPI's yard drainage facilities consist of catch basins, drainage pipes, and headwalls. TPI states that it did not provide for drainage facilities in other yards without classification tracks or additional interchange yards because they consist of fewer than 10 tracks and will be sufficiently graded to allow for water to drain naturally, over the crusher run cap and through the track ballast. (TPI Opening III-F-61 to III-F-62.)

On reply, CSXT accepts the unit costs for yard drainage facilities proposed by TPI but adjusts the quantities to which they are applied by including yard drainage inventories for flat

yards with fewer than 10 tracks using the method TPI applied to all other flat yards. (CSXT Reply III-F-211 to III-F-212, July 21, 2014.) CSXT also adds three intermodal yards, five flat yards, and two partially owned yards to TPIRR's yard inventory and calculates yard drainage costs for each. (See CSXT Reply WP "TPIRR Facilities CSXT Reply.xlsx," Tab "Yard Drainage Costs.")

On rebuttal, TPI accepts the additional yards and facilities identified by CSXT and adds the yard drainage costs necessary for the flat yards with classification tracks or more than 10 tracks. TPI, however, rejects yard drainage costs for any intermodal facility, including the three intermodal facilities added by CSXT on reply, and it removes yard drainage costs for three automotive facilities that are not owned by TPIRR. (TPI Rebuttal III-F-144 to III-F-145.)

Additionally, TPI rejects CSXT's addition of drainage facilities for yards with fewer than 10 tracks because (1) CSXT has not provided any evidence that its smaller yards have drainage facilities, (2) CSXT provides no evidence that the lack of drainage facilities in smaller yards has led to the deterioration of the tracks and roadbeds in these yards, (3) water draining through the ballast and sub-ballast is precisely how water drainage is handled along TPIRR's main lines, and (4) according to a TPI engineering witness, railroads do not install drainage mechanisms (such as catch basins and drainage pipes) in small yards. (Id. at III-F-145 to III-F-146.)

The Board accepts the parties' agreed-to unit costs. The Board also accepts CSXT's quantities for yard drainage, which are feasible and supported. The Board disagrees with TPI's contention that drainage facilities for yards with fewer than 10 tracks are not necessary. First, although TPI alleges that Norfolk Southern Railway has a policy of avoiding yard drainage systems, TPI provides no support for that assertion. Second, as the Board explained in Sunbelt 2014, employing water drainage through ballast is not the correct way to transfer runoff to ditches, as water deteriorates track and roadbed and can lead to track instability. Sunbelt 2014, NOR 42130, slip op. at 120-21. Water should be drained away from the tracks, not through them. Id. at 121. For these reasons, the Board finds that TPI has not set forth a feasible plan for yard drainage, and the Board, therefore, accepts CSXT's plan for yard drainage. However, the Board will not accept CSXT's inclusion of drainage costs for the three intermodal facilities added by CSXT on reply (beyond those included by TPI on rebuttal) because TPIRR is not responsible for building these facilities (as explained above in the section related to those facilities).

d. Fencing

The parties agree on the unit cost for fencing; actual fencing counts for automotive and bulk transfer terminals; TPI's ratio method for fencing take-offs for TPI's Type 1 (smaller non-specialty) and Type 2 (larger non-specialty) yards; and yard fence quantities for major yards, bulk transfer terminals, flat yards added by CSXT on reply, and partially owned lines. (CSXT Reply III-F-212 to III-F-213, July 21, 2014; TPI Rebuttal III-F-146 to III-F-147.) The parties disagree, however, on yard fence quantities for intermodal and automotive facilities. On reply, CSXT includes fencing for most intermodal facilities and all automotive facilities. (See CSXT Reply WP "TPIRR Facilities CSXT Reply.xlsx," Tab "Yard Pavements and Fence Costs," July 21, 2014.)

On rebuttal, TPI removes the fencing costs for intermodal facilities and for the three automotive facilities that are not owned by TPIRR. (TPI Rebuttal III-F-146 to III-F-147.) Following the Board's Supplemental Evidence Order, TPI adds back into its compliance and supplemental evidence fencing costs for all intermodal facilities, except the three added by CSXT on reply. TPI does not include fencing costs for the three automotive facilities not owned by CSXT in its compliance and supplemental evidence. (See TPI Compliance & Suppl. Evid. WP "TPIRR Facilities Rebuttal.xlsx," Tab "Yard Pavements and Fence Costs," Oct. 7, 2015.)

The Board accepts the parties' agreed-to fencing costs. The Board also accepts CSXT's inclusion of fencing costs for the three automotive facilities not owned by CSXT and the 19 intermodal terminals included by TPI on opening because TPIRR is responsible for building these facilities (as discussed above). However, the Board will not accept CSXT's inclusion of fencing costs for the three intermodal facilities added by CSXT on reply because TPIRR is not responsible for building these facilities.

e. Pavement Marking

The parties agree on pavement marking counts for TPIRR yards and terminals, (see CSXT Reply III-F-213, July 21, 2014; TPI Rebuttal III-F-147), and the Board will accept the parties' agreement on the issue.

21. Curtis Bay Coal Facility

CSXT states that TPI's opening evidence omitted the cost of constructing the Coal Trans-Shipment facility at Curtis Bay. CSXT, therefore, developed costs for the coal facility on reply. CSXT's proposed costs include the construction and operation of both a coal facility and a general freight/merchandise yard at Curtis Bay, mirroring CSXT's existing coal facility. (CSXT Reply III-F-213 to III-F-216, July 21, 2014.)

On rebuttal, TPI accepts the requirement that it must build the Curtis Bay Coal Terminal and agrees generally with the design, facilities, and costs proposed by CSXT, with a few modifications. First, TPI revises CSXT's method of accounting costs by removing some of the items from CSXT's investment spreadsheet and including them elsewhere as follows: (1) yard track miles are included in TPIRR's yard matrix so that track costs will be included with the track construction costs and grading costs will be included with the roadbed preparation costs; (2) yard drainage, paving, and lighting costs are included with facilities costs; (3) bridge costs are included with bridge costs; and (4) land costs are included with land costs. Second, TPI rejects costs for a vehicle service and repair building, arguing that CSXT has not demonstrated that it is required. Finally, TPI rejects the costs for a yard building, claiming that TPIRR has not

stationed any personnel at the facility and TPI added a yard building at the adjacent Curtis Bay freight yard.[113] (TPI Rebuttal III-F-147 to III-F-148.)

The Board will accept the parties' agreement on the design, facilities, and costs involved in building the Curtis Bay Coal Facility. The Board will also accept TPI's adjustments to CSXT's investment spreadsheet because TPI's proposed method of accounting is both more accurate and consistent with SAC investment accounting. Lastly, the Board will accept CSXT's addition of a large yard building at the Curtis Bay Coal Facility. Although TPI claims that it added a yard building at the adjacent Curtis Bay freight yard, TPI has not increased the size of the adjacent yard building in order to accommodate the staffing level required to operate two facilities out of one office. As a result, the evidence TPI provided with respect to the adjacent yard office is not feasible. CSXT's evidence, on the other hand, which includes a large yard office at the Curtis Bay Coal Facility, is feasible and therefore will be accepted by the Board.[114] The Board, however, will reject CSXT's inclusion of a vehicle service and repair building at the facility because the record contains no evidence that the facility would be served by trucks. As a result, a vehicle service and repair building is unnecessary.

H. PUBLIC IMPROVEMENTS

TABLE B-10
Public Improvements Costs

	TPI	CSXT	STB
Construct Grade Crossing	$117,657,451	$209,220,727	$117,657,451
Furnish & Install CrossBucks & Support	$14,075,396	$19,979,991	$14,075,396
Furnish & Install Mileposts	$1,039,687	$1,065,249	$1,056,364
Furnish & Install Yard Limit Signs	$47,563	$47,563	$47,563
Furnish & Install Whistle Posts	$1,736,379	$2,464,786	$1,736,379
Furnish & Install ENS Signs	$1,131,074	$1,605,557	$1,131,074
TOTAL	$135,687,551	$234,383,873	$135,704,228

[113] TPI also rejects CSXT's addition of a guard booth at the Curtis Bay Coal Facility. (TPI Rebuttal III-F-147 to III-F-148.) This argument is addressed above in the section related to guard booths.

[114] The inclusion of a large yard building at the Curtis Bay Coal Facility obviates the need for a small yard building at the Curtis Bay freight yard. Our use of TPI's small yard building count, addressed above in the yard building section, will be modified accordingly.

1. Fences

The parties agree that the right-of-way does not have fences. (See CSXT Reply III-F-217, July 21, 2014; TPI Rebuttal III-F-148.) To the extent they disagree on fencing for yards and facilities, that disagreement is discussed in the relevant sections. See supra Parts F.1.a.i; F.1.c; G.20.d. The Board accepts the parties' agreement that there are no fences on the right-of-way.

2. Signs and Road Crossing Devices

TPI employs a standard package of railroad signs, including milepost, whistle post, yard limit, and cross-buck signs and posts. (TPI Opening III-F-63.) It also includes emergency notification signs (ENS) at all highway at-grade crossings. (Id.) CSXT states that TPI included insufficient installation costs because it utilized costs for highway signage at railroad crossings and not railroad signage. (CSXT Reply III-F-217, July 21, 2014.) CSXT also increases the number of cross-buck, ENS, and whistle post signs. (CSXT Reply WP "Track Construction CSXT Reply.xlsx," Tab "Summary," Cells E57, E63, E66, July 21, 2014.) On rebuttal, TPI argues that CSXT did not support its contention that TPI's method for installing signs is insufficient. (TPI Rebuttal III-F-149 to III-F-150.) TPI also contests CSXT's increase in quantities for cross-buck, ENS, and whistle post signs. (Id. at III-F-150.)

CSXT did not provide any evidence to support its asserted unit costs, or any evidence that undermines the feasibility of TPI's supported method for installing signs during construction that would avoid the costs that CSXT adds. Further, CSXT uses an incorrect quantity for crossing signs (cross-buck, ENS, and whistle post signs)—it uses the number of road crossing feet instead of the number of road crossings to calculate sign quantities and costs. CSXT also increases the quantities of crossing signs without providing any support for the change. Accordingly, the Board accepts the unit costs and quantities proffered by TPI.

3. Grade-Separated and At-Grade Crossings

According to TPI, TPIRR is building all at-grade highway crossings and paying 100% of the cost for the crossing materials. As in AEP Texas North Co. v. BNSF Railway, NOR 41191 (Sub-No. 1), slip op. at 102 (STB served May 15, 2009), TPI includes 10% of the costs associated with crossing protection, such as gates, flashers, and related signal elements. (TPI Opening III-F-63.) Based on four separate bids involving seven locations, TPI proposes a grade crossing construction cost of $414.75 per track foot. (See CSXT Reply III-F-218 to III-F-219 & n.451, July 21, 2014 (citing TPI Opening WP "2012 SCTRA Bid Sheets.pdf"); TPI Rebuttal III-F-150 to III-F-151.) On reply, CSXT asserts that TPI failed to include 419 crossings. (CSXT Reply III-F-218, July 21, 2014.) CSXT also claims that TPI's asserted unit costs are not detailed enough to determine if they comply with Class I railroad crossing standards. (Id. at III-F-218 to III-F-219.) Relying on a single bid, CSXT proposes a construction cost of $792 per track foot (indexed to $751 for 2010). (Id. at III-F-219.) CSXT also increases the number of at-grade highway crossings to reflect that, on average, there are 1.4 tracks at each crossing. (Id.) TPI accepts CSXT's addition of 419 crossings and 1.4 tracks at each crossing, but rejects CSXT's added unit costs. (TPI Rebuttal III-F-151 to III-F-152.)

Neither party submitted evidence sufficient to determine whether its costs account for all the components required to satisfy Class I crossing standards. Thus, neither party's unit costs for grade crossings are feasible and supported. However, because TPI bases its unit costs on four separate bids (for an actual project whose work included the removal and rebuilding of a crossing), rather than just the one provided by CSXT (for which it provides no AFE), we accept TPI's evidence as it represents the best evidence of record.

I. MOBILIZATION

TPI adds a 2.7% mobilization factor to all road property items where mobilization is not included in the contractor's bid. (TPI Opening III-F-63.) CSXT agrees to the items to which the mobilization factor should be applied and also agrees to the 2.7% factor. (CSXT Reply III-F-220, July 21, 2014.) The Board will accept the 2.7% mobilization factor.

In this section, CSXT also includes land acquisition costs, (id.), that the Board has evaluated—and adopted—in our discussion of real estate above. See supra Part A.3.

J. ENGINEERING

To estimate the cost of engineering, construction management, resident inspections, and other components such as soil testing, TPI applies a 10% additive. (TPI Opening III-F-64.) CSXT accepts this additive. (CSXT Reply III-F-220, July 21, 2014.) The Board will accept the 10% additive.

K. CONTINGENCIES

TPI applies a 10% contingency factor to the construction subtotal excluding land. (TPI Opening III-F-64.) CSXT accepts this factor. (CSXT Reply III-F-220, July 21, 2014.) The Board will accept the 10% contingency factor.

L. CONSTRUCTION TIME PERIOD

TPI provides for a construction period of 30 months, which includes a total design and construction time of 24 months, with six additional months for operational testing. (TPI Opening III-F-65.) CSXT accepts the construction schedule provided by TPI. (CSXT Reply III-F-220, July 21, 2014.) The Board will accept a 30-month construction period.

APPENDIX C—TRAFFIC VOLUMES AND REVENUES

In this appendix, the Board examines the amount of traffic that TPIRR would transport and the revenues that traffic group is expected to generate for TPIRR over the 10-year SAC analysis period. The parties mostly agree on TPIRR's traffic group, including use of the Board's version of CSXT's 2012 Uniform Rail Costing System (URCS) model and certain aspects of the Average Total Cost (ATC) methodology. However, the parties' disagreements include: (1) internally rerouted traffic; (2) the appropriate methodology to forecast coal volumes; (3) the appropriate index for coal volume forecasts; (4) the methodology to allocate revenues for movements with no shipping key; (5) the total amount of on-SARR mileage; (6) fuel surcharges for movements to Birmingham, Ala.; and (7) the appropriate fuel surcharge to apply after the expiration of a contract.

TPI's use of internal cross-over, or "leapfrog," traffic (traffic that would move over multiple physically discrete segments of TPIRR) and CSXT's exclusion of that traffic are discussed in the body of this decision. Also discussed in the body is CSXT's use of an alternative ATC methodology to allocate revenues from leapfrog traffic. The remaining issues are discussed below.

A. STAND-ALONE TRAFFIC GROUP

1. Stand-Alone Railroad Traffic

On opening, TPI states that "TPIRR comprises 7,357 route miles, including 491 miles over which TPIRR will operate under trackage rights or joint facilities agreements." (TPI Opening III-A-2.) TPI notes that TPIRR's system will include route miles in 17 states. (Id.) TPI states that "the TPIRR traffic group was developed utilizing the CSXT car and container waybill data and CSXT car-event data for the third quarter (3Q) 2010 through the second quarter (2Q) 2013, which were produced by CSXT in response to TPI discovery requests." (Id. at III-A-3.) TPI states that the resulting traffic contained within the group includes merchandise (general freight), coal, and intermodal traffic. (Id.)

a. Rerouted Traffic

On opening, TPI notes that it has routed certain issue traffic moving on TPIRR in a manner different from the historical routing used by the real-world CSXT. (TPI Opening III-A-4.) TPI states that these reroutes are entirely internal to TPIRR's system and were required because TPI did not replicate every line used to move TPI's real-world issue traffic. (Id.) TPI states that the reroutes occur in three geographic regions: the Florida Panhandle, Ohio to West Virginia, and Central Indiana. (Id. at III-A-5.)

TPI notes that, in addition to the rerouted issue traffic, the routes for some TPIRR non-issue traffic trains also differ. (Id.) TPI states that these "reroutes are internal to the SARR

segment between TPIRR on-junction and TPIRR off-junction, and that any "cross-over" traffic is still interchanged with CSXT at a point along the actual route of the movement." (Id.) TPI argues that Board precedent allows such reroutes, provided they are reasonable and do not adversely impact the quality of service otherwise provided by CSXT. (Id. (citing Tex. Mun. Power Agency v. Burlington N. & Santa Fe Ry., 6 S.T.B. 573, 594-95 (2003); AEP Tex. N. Co. v. BNSF Ry., NOR 41191, slip op. at 11 (STB served Sept. 10, 2007)).) TPI argues that TPIRR's reroutes meet the Board's standards. (TPI Opening III-A-5.)

On reply, CSXT disagrees with TPI's assertion that it utilized limited rerouting. (CSXT Reply III-A-1, July 21, 2014.) CSXT states that a review of TPI's workpapers reveals that TPIRR's reroutes accounted for more than 1.3 million carloads in the base year, which includes hundreds of thousands of carloads in four metropolitan areas alone. (Id.) CSXT argues that, in the case of the Washington, D.C.; Nashville, Tenn.; Richmond, Va.; and Rochester, N.Y. areas, TPI consolidates two existing CSXT routes into one single route. (Id.) CSXT acknowledges that these reroutes are internal to TPIRR's system, as TPI claims. (Id.) CSXT argues, however, that these reroutes shift traffic from the predominant routes used by CSXT to lower-density lines. (Id.) CSXT explains that, in the examples enumerated above, this results in traffic being routed through downtown areas rather than the real-world CSXT routes that avoid downtown areas. (Id.) CSXT argues that this results in significant savings for TPIRR by avoiding the cost of maintaining multiple lines necessary for network fluidity. (CSXT Reply III-A-1, July 21, 2014.) Moreover, CSXT argues that TPI failed to adequately disclose its large-scale internal reroutes and failed to meet its burden that the traffic would provide the same or better service than that provided by CSXT, and that as a result the Board would be justified in disallowing the rerouted traffic and removing it from the SAC analysis. (Id. at III-A-1 to III-A-2.)

On rebuttal, TPI argues that it fully disclosed the rerouted traffic, and rejects CSXT's argument that TPI failed to meet the Board's service standards. (TPI Rebuttal III-A-15 to III-A-17.)

The Board gives SAC complainants significant discretion in designing a SARR. In Texas Municipal, 6 S.T.B. at 589, the Board noted that a SAC complainant has broad flexibility to design and locate the SARR and to group traffic to take advantage of traffic densities. At the same time, the reasonableness of the placement of the SARR and the traffic group is open to challenge. See id. The general service standard is that "the SARR must meet the transportation needs of the traffic in the group by providing service that is equal to (or better than) the existing service for that traffic." Id.

In this case, CSXT has challenged the manner in which TPI has rerouted the traffic in question and alleges that the reroutes result in service that does not meet the Board's service standard. The Board does not reach the merits of these arguments in this decision because CSXT has not supported its criticisms with replacement evidence. It is the defendant railroad's responsibility to support its narrative criticisms of the shipper's evidence with replacement evidence. E.I. DuPont de Nemours & Co. v. Norfolk S. Ry., NOR 42125, slip op. at 44 (STB served Mar. 24, 2014), corrected and updated, (STB served Oct. 3, 2014), reconsideration denied, (STB served Dec. 23, 2015) (with Vice Chairman Begeman dissenting on the reconsideration decision). Here, CSXT has not presented traffic group evidence that excludes

the reroutes presented by TPI.[115] As a result, the Board accepts the inclusion of rerouted traffic as the best evidence of record.

2. Volumes

a. Historical

The parties agree on traffic volumes for the July 1, 2010, through June 30, 2013, historical period, and the Board will accept the parties' agreement. The parties remain in dispute regarding the inclusion of high-priority leapfrog traffic during this historical period. The issue of high-priority leapfrog traffic is addressed in the body of the decision. See infra Stand-Alone Cost Analysis Part C.1.

b. Projected

TPI forecasts traffic volumes for TPIRR from July 1, 2013, through June 30, 2020. (TPI Opening III-A-6.) TPI states that these forecasts are based on actual CSXT data that is publicly available, CSXT traffic data obtained in discovery, and internal CSXT forecasts. (Id.) TPI forecasts the traffic by aggregating TPIRR traffic volumes by two-digit Standard Transportation Commodity Code (STCC), and then into one of five commodity groups: coal, grain, auto, other merchandise, or intermodal. (Id. at III-A-6 to III-A-7.) CSXT objects to certain aspects of TPI's methodologies for forecasting traffic.

i. For the Period from July 1, 2013, through December 31, 2017

TPI states that TPIRR traffic volumes were projected for this period by adjusting the base year (July 1, 2012-June 30, 2013) traffic by anticipated annual volume changes developed from CSXT volume forecasts. (TPI Opening III-A-7.) TPI states that it relied upon a CSXT internal forecast for developing these projections. (Id.) TPI states that after aggregating forecasts by two-digit STCC and commodity groups, it then disaggregated the CSXT coal-volume forecast based on Energy Information Administration (EIA) coal-production regions. (Id.) TPI states that it then applied these volume change indices to TPIRR's base-year traffic group. (Id.)

In reply, CSXT states that it does not dispute TPI's aggregation methods for merchandise and intermodal.[116] (CSXT Reply III-A-10, July 21, 2014.) Moreover, CSXT states that it largely accepts TPI's application of CSXT's internal forecasts to project TPIRR's volumes. (Id. at III-A-16.) The Board will accept the parties' agreement with respect to these issues.

---

[115] CSXT also argues TPI failed to meet its burden that the traffic would provide the same or better service than that provided by CSXT. However, CSXT did not provide evidence to demonstrate that TPI's reroutes resulted in slower performance than the real-world CSXT.

[116] CSXT's narrative does not discuss its respective position on TPI's aggregation method for auto and grain volume forecasts. A review of CSXT's workpapers reveals that CSXT does not dispute TPI's aggregation methodology for these commodities.

However, CSXT rejects the methodology TPI used to project coal volumes. (Id. at III-A-10.) CSXT argues that TPI uses an aggregate forecast for each origin region (e.g., Central Appalachia, North Appalachia), and further argues that "by assuming the same volume of growth of shipments to all destinations from a given region, TPI inappropriately shifted traffic from shipments that do not move over the SARR." (Id. at III-A-10 to III-A-11.) CSXT asserts that TPI's methodology overstates the future coal shipment volumes on TPIRR, and explains that CSXT projected future SARR volumes using an internal forecast at the origin region-destination level to correct these errors. (Id. at III-A-11 to III-A-12.) CSXT states that this method accounts for the individualized circumstances of the SARR and specific customers, and is consistent with the Board's decisions in Carolina Power & Light Co. v. Norfolk Southern Railway, 7 S.T.B. 235 (2003), and DuPont. (Id. at III-A-12.)

On rebuttal, TPI adjusted the coal volume forecast model in response to CSXT's argument that it contained traffic that was not included in TPIRR's traffic group. (TPI Rebuttal III-A-8.) TPI states, however, that it rejects CSXT's underlying position that its internal forecast must be aggregated at the origin region-destination level. (Id.) TPI argues that in making these adjustments, CSXT selectively updated its internal coal forecast that was produced in discovery. (Id. at III-A-9.) TPI argues that it did not have access to this information, and allowing CSXT to rely on it would be contrary to Board precedent. Moreover, TPI states that neither the Board nor TPI is in a position to identify aberrations between CSXT's internal forecasts and actual market performance in the time since the forecast was developed. (Id.)

In its final brief, CSXT states that TPI miscasts CSXT's adjustments as an update to its internal forecast. (CSXT Brief 48-49.) CSXT argues rather that the "primary difference between the parties' coal volume forecasts is the manner in which the forecast is aggregated and applied to the actual historical CSXT traffic volumes." (Id. at 49.) CSXT argues that the adjustments made by TPI on rebuttal are insufficient to correct the problems with its coal volume forecasts. (Id.)

TPI, in its final brief, maintains that its coal volume forecasts are accurate. (TPI Brief 28.) TPI argues that the methodology proposed by CSXT is complicated and procedurally improper. (Id.) TPI argues that the Board should accept its methodology because it is consistent with recent decisions, and it is consistent with the methodology used for other traffic volumes in the present case. (Id. (citing Sunbelt Chlor Alkali P'ship v. Norfolk S. Ry. (Sunbelt 2014), NOR 42130 (STB served June 20, 2014), petition for reconsideration granted in part and denied in part (Sunbelt 2016) (STB served June 30, 2016) (with Commissioner Begeman dissenting in both) appeal docketed sub nom. Sunbelt Chlor Alkali P'ship v. STB, No. 16-15701 (11th Cir. Aug. 26, 2016); DuPont, NOR 42125.)

With respect to coal volume forecasts, the parties articulate only slightly different methodologies. CSXT's primary criticism seems to be that TPI's proposed approach shifts traffic from shipments that do not move on the SARR to those that do and, as a result, projected TPIRR coal volumes are overstated. The Board agrees with CSXT's criticism that TPI's methodology overstates future SARR coal volumes. TPI's rebuttal corrections do not adequately address the underlying issues identified by CSXT that result in inflated coal volume forecasts—

rather, these corrections address only the single example CSXT put forth on reply. Furthermore, TPI is incorrect to suggest that the Sunbelt 2014 and DuPont decisions dictate the outcome here. The parties in the former case agreed to a coal volume forecasting methodology (which the Board accepted), Sunbelt 2014, NOR 42130, slip op. at 171, while the latter case accepted an origin-region coal forecasting approach on the basis that it would be more accurate than one using a single aggregated growth factor, DuPont, NOR 42125, slip op. at 257-58. Here, we agree with CSXT's argument that TPI's proposed coal volume forecasting methodology will result in overstated volume projections. Moreover, we find that CSXT's proposed methodology is more accurate than that proposed by TPI in that it matches CSXT internal forecasts with traffic selected for the SARR. As a result, the Board accepts CSXT's proposed methodology as a feasible and supported approach to forecasting coal volumes.

ii. Overflow Tons from Capped Plants

On reply, CSXT notes that in DuPont, "the Board accepted the Complainant's argument that when tonnages were forecasted to exceed the 85% factor at individual plants, the tons could be shifted to other lanes, effectively maintaining the overall level of volumes in the forecast." (CSXT Reply III-A-14, July 21, 2014.) CSXT argues that in DuPont the parties were applying EIA forecasts at a higher general level than the approach CSXT proposes. (Id. (citing DuPont, NOR 42125, slip op. at 258-59).) In this case, CSXT argues that its forecasts are more precise, allowing for a coal volume projection at each specific destination. (Id.) Ultimately, CSXT argues that TPI's methodology creates non-existent coal traffic volumes that should not be reallocated to other locations along the SARR. (Id. at III-A-15.) CSXT argues that the Board should instead rely upon its methodology, which removes the need to conduct any reallocations. (Id.)

While TPI does not directly address this issue, the Board is not convinced by CSXT's argument that coal volumes over 85% should not be reallocated to other facilities along the SARR route. Nor is the Board convinced that a decision regarding coal volume forecasting methodology necessitates a deviation from the Board's practice of allocating overflow tons from capped plants. The Board has previously found that electric generating plants do not normally operate at full capacity at all times, and the Board has established a rule of thumb that each coal-fired generating plant's coal needs are limited by an 85% plant capacity factor. See, e.g., W. Tex. Utils. Co. v. Burlington N. R.R., 1 S.T.B. 638, 661 n.47 (1996). Here, CSXT has not demonstrated that the Board's methodology is flawed. As a result, while the Board accepts CSXT's coal forecasting methodology (as described in the previous section), it will continue to reallocate excess volumes using the methodology from prior cases. See, e.g., DuPont, NOR 42125, slip op. at 258-59.

iii. For the Period from January 1, 2018, through June 30, 2020

On opening, TPI determined TPIRR traffic volumes for commodities other than coal by calculating the compound annual growth rate (CAGR) over the five-year period covered by CSXT's internal forecasts and then applying those compounded growth rates on a two-digit STCC basis. (TPI Opening III-A-8.) TPI argues that this method is consistent with Board precedent. (Id. (citing FMC Wyo. Corp. v. Union Pac. R.R., 4 S.T.B. 699, 730-32 (2000); AEP

Tex. N. Co. v. BNSF Ry., NOR 41191, slip op. at 107 (STB served Sept. 10, 2007)).) For coal shipments, TPI relied upon the CAGR approach and aggregated based on EIA coal-production regions. (Id.)

On reply, CSXT rejects TPI's CAGR approach. (CSXT Reply III-A-16 to III-A-17, July 21, 2014.) CSXT argues that there are two problems with TPI's use of CAGR. (Id. at III-A-17.) First, CSXT argues, in the case of STCC 10 commodities (metallic ores), TPI's approach projected an 11% annual growth rate based on a one-time event in an industry that historically has a flat growth rate. (Id.) CSXT argues that the second distortion occurs when volumes in the initial period are relatively small. (Id.) As an example, CSXT notes that in the case of STCC 13 traffic (primarily crude oil originating in North Dakota) the SARR saw low initial volumes in the first year, 2010—yet these volumes generated a CAGR of 221% over the course of 2010-2017. (Id. at III-A-18.) Moreover, CSXT states that "TPI calculated its CAGRs from only the 5-year period covered by the CSXT (2013-17) forecast, even though the SAC analysis period reaches back to mid-2010 and TPI had waybill data from 2010 from which to calculate growth rates." (Id. at III-A-17.) CSXT argues that the Board's rationale for accepting CAGR in DuPont should, at the very least, be extended to require that the full SAC analysis period be included in any CAGR calculations. (CSXT Reply III-A-18, July 21, 2014 (citing DuPont, NOR 42125, slip op. at 261).) Regardless, CSXT argues that CAGRs are an imperfect method for forecasting growth, and that the EIA forecasts it applies in the later SAC years for coal and non-coal commodities are a more accurate forecasting method. (Id. at III-A-19.)

On rebuttal, TPI continues to utilize a CSXT-internal-forecast-based CAGR to forecast growth in coal, merchandise, and intermodal traffic volumes. (TPI Rebuttal III-A-12.) TPI argues that its use of CAGR is supported by the Board's recent decisions in Sunbelt 2014 and DuPont. (Id.) TPI argues that CSXT's attempts to discredit CAGR are based on two STCC commodities that affect little more than 0.5% of TPIRR's overall volumes, and that it is even possible for CAGR to underestimate growth. (Id.) TPI states that CSXT's request for use of additional years of historical data is not in line with the Board's precedent that CAGR should be based on historical data covering the DCF period at issue in the proceeding. (Id. at III-A-13 (citing DuPont, NOR 42125, slip op. at 261).) In conclusion, TPI argues that the best method for forecasting growth is the use of "a CAGR based on actual data and the railroad's own internal forecast." (Id.)

The parties have presented two different methodologies for forecasting volume growth for the latter part of the SAC period: CAGR-based (TPI) and EIA-based (CSXT) forecasts. In the past, the Board has predominantly utilized a CAGR approach which relies, in part, on internal railroad forecasts to project growth. Here, TPI's methodology is consistent with the Board's prior cases, and neither party has made a claim that CSXT's forecasts are unreliable. Nor has CSXT persuaded us that our prior methodology is inappropriate. See, e.g., Ariz. Elec. Power Coop. v. BNSF Ry. Co., NOR 42113, slip op. at 33 (STB served Nov. 22, 2011) (describing that when a complainant has followed established agency precedent the burden shifts to the defendant to justify departing from that methodology). Specifically, CSXT's arguments about inflated growth rates with respect to STCC 10 and STCC 13 are isolated anomalies that do not demonstrate that the entire forecast model is unreliable, and therefore do not undermine the

overall feasibility of TPI's approach. Accordingly, the Board will use TPI's CAGR methodology.[117]

iv. Non-Coal Forecasts

As discussed above, TPI forecasts the traffic by aggregating TPIRR traffic volumes by two-digit STCC code, and then into one of five commodity groups: coal, grain, auto, other merchandise, or intermodal. (TPI Opening III-A-6 to III-A-7.) On reply, CSXT makes a specific correction to the forecast code for STCC 2991191, which CSXT argues TPI inappropriately included in its STCC 29 shipment forecasts. (CSXT Reply III-A-13, July 21, 2014.) CSXT notes that this STCC code is synthetic fuel derived from coal. (Id.) CSXT argues that the correct commodity aggregation for these shipments is with other coal shipments, STCC 11, rather than STCC 29 as proposed by TPI. (Id.) CSXT included volumes from this code in the coal forecast and excluded them from non-coal forecasts. (Id. at III-A-16.) TPI does not address this issue on rebuttal. The Board will accept CSXT's change to the aforementioned STCC code because it is unopposed and the method proposed by CSXT is feasible and supported.

3. Revenues (Historical and Projected)

a. Historical

i. Attribution of Revenues for Movements with No Shipment Key

On opening, TPI describes the methodology it used to develop total revenues for each traffic type for each year in the ten-year DCF model period, asserting that it relied upon relevant data provided by CSXT in discovery. (TPI Opening III-A-12.) To develop historical revenues, exclusive of fuel surcharges, TPI states that it used CSXT net revenues for each unique movement included in TPIRR's traffic group. (Id.) TPI states that "a unique movement is defined by ultimate origin and destination pair, CSXT origin and destination pair, STCC code, and contract (if available)." (Id.)

On reply, CSXT argues that TPI attributed revenues to TPIRR from waybills that lacked shipment keys.[118] (CSXT Reply III-A-27, July 21, 2014.) CSXT states that those waybills in

---

[117] CSXT also argues that even if TPI's approach is adopted, the full SAC analysis period should be used for its CAGR calculations. However, CSXT's failure to supply the necessary corrective evidence renders this argument moot. See, e.g., supra Section A.1.a.

[118] A shipment key is a 14-character code generated by CSXT that uniquely identifies each car movement in the car event data. This key is required to link CSXT car and container waybill data with the CSXT car event data. Without this key, it is not possible to directly link the CSXT revenue and the CSXT car event data. Thus, it is not possible to determine whether some revenue is associated with cars that traverse TPIRR.

most cases are missing information (such as the origin or destination) necessary for determining whether the shipment was associated with a movement that traveled over the lines of the SARR.[119] (CSXT Reply III-A-27, July 21, 2014.) CSXT argues that TPI's method for matching these missing fields resulted in TPI assuming that TPIRR would receive all CSXT revenue associated with that movement. (Id. at III-A-28.)

To correct this error, CSXT states that it first attempted to match the price authority for the revenue records in each year, and if a match was found, CSXT would then apply the percentage of shipments for that authority that traveled on TPIRR. (Id. at III-A-29.) If no match was possible, CSXT states that it then checked "for the Origin FSAC, Destination FSAC, and Consignee and applie[d] that percentage if there is a match." (Id.) Failing that, CSXT states that it applied the previously determined overall percentage to the relevant year to estimate the revenues attributable to TPIRR. (Id.)

On rebuttal, TPI rejects CSXT's adjustments and makes no changes to the approach it proffered on opening. (TPI Rebuttal III-A-24.) TPI argues that the proper time for CSXT to have evaluated these records was during discovery and not after TPI had relied upon them in presenting its opening evidence. (Id.) TPI further argues that CSXT's methodology should be rejected because CSXT was "fully aware that there were issues with the waybill data it produced in discovery and, despite TPI's repeated requests for clarification and corrected data at that time, CSXT declined to do so." (Id.)

In its final brief, CSXT argues that it did not produce bad data in discovery, as TPI suggests. (CSXT Brief 53.) Rather, CSXT states that the evidence that it produced in discovery "is the same data that CSXT uses in its normal course of business." (Id.) CSXT argues that the data-matching process it presented on reply is a more accurate method for identifying the revenues TPIRR should be allowed to claim. (Id.)

In reviewing the positions of the parties and the record evidence, it does appear that a small percentage of waybill data did not have the shipment keys necessary to assign the revenue in proportion to the amount of on-SARR movement for the traffic. Accordingly, it was necessary for each of the parties to develop a methodology to account for this missing information. CSXT challenges TPI's methodology for allocating revenues when these waybills were associated with a movement over TPIRR. CSXT contends that TPI's methodology allocates all of the revenue to TPIRR if a record matched only one of nine possible waybill fields, and argues that, as a result of this methodology, "TPI assumed that over 99% of CSXT revenue records without shipment keys generated revenues for the TPIRR." (CSXT Reply III-A-28, July 21, 2014.) The record evidence, however, does not support CSXT's assertions. In fact, TPI's approach allocates only a portion of the revenue to TPIRR when one of the other waybill fields matches, and allocates no revenue to TPIRR for a significant portion of the records in

[119] CSXT states that "these waybills represent less than 2% of total CSXT waybill revenues." (CSXT Reply III-A-27, July 21, 2014.)

question.[120] Furthermore, while CSXT suggests that its matching methodology is substantially different from TPI's, it appears from the evidence that the parties' methodologies are similar in their respective approaches to classifying movements with missing waybill information and lead to similar results. Both CSXT and TPI classify roughly 80% of the missing shipment key records pursuant to matches in the same three waybill categories, and the disparity between the percentage of disputed revenue claimed by each of the parties is small.[121]

Because TPI's approach appears reasonable, and because CSXT has failed to demonstrate that TPI's approach is infeasible or unsupported, the Board will accept TPI's methodology for attributing revenue for historical shipments with missing waybill data.

ii. Recalculated On-SARR Mileages

On reply, CSXT states that "TPI estimated TPIRR miles for each cross-over movement by totaling the miles found in the car event data for any CSXT network link that TPI had flagged as part of the TPIRR network." (CSXT Reply III-A-40, July 21, 2014.) CSXT argues that TPI made two errors which overstated the TPIRR miles in TPI's ATC calculations. (Id.) First, CSXT states that TPI attributed to TPIRR on-SARR mileages for the entire length of certain segments whose mileages properly should have been identified as off-SARR segments in the ATC revenue allocation process. (Id.) To correct this error, CSXT states that it has eliminated these segments from the on-SARR mileage calculations. (Id. at III-A-41.) Second, CSXT states that an error exists with CSXT network links that are split between TPIRR and the residual CSXT network. (Id.)

On rebuttal, TPI states that it agrees with CSXT's first criticism that certain network links were miscoded, and that a change in the network designation has been made in those cases. (TPI Rebuttal III-A-31.) Where the parties agree in regards to miscoded network links, the Board will accept the parties' agreement. The remaining disagreement concerning network links is resolved by the Board's acceptance of TPI's growth train calculation, as discussed in the operating plan section of the body of this decision. (See id. at III-A-31; III-C-144 to III-C-145.) TPI also agrees with CSXT's claim that in certain situations TPIRR and the incumbent CSXT should split links. As a result, TPI accepts CSXT's split link methodology in its ATC calculations. (Id. at III-A-32.) Where the parties agree about how to re-calculate on-SARR mileages, the Board will accept the parties' agreement.

b. Projected Revenues

For projected revenues, TPI states that it forecast TPIRR revenue "using CSXT's traffic and revenue data, CSXT publicly available data, CSXT contracts and pricing authorities, CSXT

---

[120] See, e.g., TPI Opening WP "2010 No Shipment Key.xlsx."

[121] See, e.g., CSXT Reply WP "2011 No Shipment Key Reply.xlsx" (claiming 61.4% of disputed 2011 revenue); TPI Rebuttal WP "2011 No Shipment Key _REB2.xlsx" (claiming 62.7% of disputed 2011 revenue).

internal forecasts provided in discovery, and publicly available forecasts of key economic indices." (TPI Opening III-A-13.) TPI states that for coal and non-coal movements, contract adjustment mechanisms were used to forecast TPIRR revenue for the contract term if the contract data was made available by CSXT. (Id.) For non-coal contracts that expired between 2013 and 2017, TPI states that rates were adjusted based on the change in revenue-per-unit from the CSXT-provided carload or container forecast. (Id.) TPI states that if the two-digit STCC code was not included in the CSXT forecast, TPI applied a system-average growth rate obtained from CSXT's forecast. (Id.) For coal contracts that expired between 2013 and 2017, TPI states that it relied on CSXT internal forecasts aggregated by EIA production region. (Id. at III-A-13 to IIIA-14.) TPI further states that for the January 1, 2018-June 30, 2020 period, all TPIRR revenues were developed by adjusting the prior year revenue per unit by the two-digit STCC code. CSXT makes various adjustments on reply, (CSXT Reply III-A-21 to III-A-27, July 21, 2014), and TPI accepts those adjustments except for two issues discussed below. (TPI Rebuttal III-A-36.)

i. Fuel Surcharges

On opening, TPI states that CSXT typically imposes a car-mile-based fuel surcharge on each carload based on the price of On-Highway Diesel Fuel (HDF) two months prior to the movement. (TPI Opening III-A-15.) TPI states that for coal and freight traffic, TPIRR uses the same program and formula that CSXT uses, and therefore, collects a per-car-mile fuel surcharge on each carload based on TPIRR's movement miles while the incumbent CSXT will continue to collect a per-car-mile fuel surcharge for its portion of the movement. (Id.) For intermodal traffic, TPI states that TPIRR uses the same HDF model employed by CSXT to "calculate total CSXT fuel-surcharge revenues and allocates a share of the total fuel-surcharge revenue to the TPIRR using the revenue division percentage calculated under the ATC methodology." (Id.) For contract moves, TPI states that fuel surcharges are calculated based on the relevant contract terms. (Id.) TPI states that where a contract specifies the use of HDF, it has applied the EIA forecast for HDF prices. (Id.) Where contracts specify a surcharge based on the West Texas Intermediate Crude Oil (WTI) prices, TPI states that WTI forecasts were also based on EIA. (Id.) After contract expiration and through 2Q 2020, TPI states that fuel-surcharge rates are assumed to follow CSXT's HDF surcharge program. (Id.)

On reply, CSXT states that with respect to coal contracts it accepts TPI's fuel surcharge contract assumptions, with several exceptions. (CSXT Reply III-A-22, July 21, 2014.) First, CSXT argues that TPI misidentified the fuel surcharge mechanism for one customer. (Id.) CSXT then argues that it corrects TPI's spreadsheet to properly calculate the fuel surcharge amounts for a contract with strike prices. (Id.) With respect to intermodal fuel surcharges, CSXT argues that TPI neglected to incorporate fuel surcharge discounts in its revenue calculations. (Id. at III-A-23.)

On rebuttal, TPI accepts all of CSXT's changes except (1) those adjusting for shipments between Birmingham, Ala., and Atlanta, Ga., and (2) CSXT assumptions regarding fuel surcharges for expiring contracts. (TPI Rebuttal III-A-36.) With respect to the fuel surcharge issues upon which the parties agree, the Board will accept the parties' agreement. The two remaining fuel surcharge disputes are discussed below.

Fuel Surcharges for Birmingham, Ala., Movements. On reply, CSXT argues that "TPI projected substantial fuel surcharge revenues for movements that paid little to no fuel surcharge in the actual historical period." (CSXT Reply III-A-24, July 21, 2014.) CSXT argues that for 189,000 shipments interchanged between Birmingham, Ala., and Atlanta, Ga., the waybill records demonstrate that almost no fuel surcharge revenues were collected. (Id.) CSXT argues, however, that TPI assigned the default CSXT fuel surcharge for these moves, which results in an artificial $25 million in revenue that TPIRR is not entitled to collect. (Id.)

TPI rejects CSXT's adjustments for movements interchanged at Birmingham. (TPI Rebuttal III-A-37.) TPI argues that 36% of CSXT's waybill records fail to report a valid price authority and that TPI, in defaulting to CSXT's intermodal fuel surcharge program, put forward a reasonable approach to deal with the problem. (Id.) TPI further argues that when records for these moves are examined in a disaggregated manner, this traffic historically achieved a fuel surcharge percentage as high as 25.4%. Moreover, TPI argues that it applied the same methodology to these shipments as it did to other intermodal movements and that CSXT did not object. (Id.) TPI argues that the same methodology should be applied to all moves. (Id.)

On final brief, CSXT argues that TPI's fuel surcharge evidence for Birmingham movements does not support the claim that fuel surcharges were as high as 25.4%. (CSXT Brief 53.) Rather, CSXT contends, TPI's evidence demonstrates that this traffic had an effective fuel surcharge of 0.7% overall. (Id.) CSXT argues that allowing TPI to apply the maximum fuel surcharge permits TPI to project revenue that does not exist. (Id.)

The Board will accept TPI's approach. In attempting to correct the problem of missing price authorities, TPI identified waybill records that did not provide information regarding fuel surcharges or similar information and defaulted to CSXT's generally-applicable intermodal fuel surcharge program in those instances. Although CSXT argues that the absence of fuel surcharges in the waybills demonstrates that no fuel surcharges were collected on these movements historically, the absence of waybill data by itself is not sufficient to demonstrate that no fuel surcharges were collected. As we have noted elsewhere in this decision, waybills may suffer from missing information as a result of normal business operations. CSXT, which maintains an intermodal fuel surcharge program, has not otherwise supported its assertion that no fuel surcharges were assessed on these movements (e.g., through the submission of transportation contracts or tariffs). Thus, CSXT has not adequately supported its position that no fuel surcharges were collected or that TPI's use of CSXT's intermodal fuel surcharge program in lieu of waybill information is infeasible or unsupported. The Board therefore concludes that TPI's use of CSXT's intermodal fuel surcharge program was a reasonable approach to deal with the problem, and that TPI's evidence and arguments on this issue are both feasible and supported.

Fuel Surcharge after Contract Expiration. On reply, CSXT argues that TPI wrongly assumed that after a contract expires the customer would be subject to CSXT's default (undiscounted) fuel surcharge program, regardless of what contract terms previously had been in effect. (CSXT Reply III-A-25, July 21, 2014.) CSXT states that this does not follow CSXT's general practice. (Id.) Rather, according to CSXT, when a contract expires previously-

established contractual discounts generally continue when a contract renews. (Id.) Thus, CSXT assumes that contracts renewed in the future will maintain the same fuel surcharge terms. (Id. at III-A-26.)

TPI rejects CSXT's adjustments on Rebuttal, arguing that the adjustments are based on little more than CSXT's assertion that TPI's assumption is contrary to CSXT's standard practice. (TPI Rebuttal III-A-38.) TPI argues that CSXT has no standard practice for the calculation of fuel surcharges for renewed contracts. (Id.) TPI further states that its assumption is consistent with the actions of a least-cost, most-efficient railroad that is focused on maximizing revenues. (Id. at III-A-39.)

On final brief, CSXT argues that TPI's assumption that every expiring contract would be renewed at the highest fuel surcharge level ignores CSXT's experience. (CSXT Brief 53.) CSXT states that larger customers have more negotiating power to obtain more favorable contract terms. (Id.) CSXT argues that TPI ignores the fact that many large customers have negotiated fuel surcharge discounts that generally continue upon contract renewal. (Id.)

On final brief, TPI contends that its approach of applying CSXT's tariff fuel surcharge program is consistent both with CSXT's and the larger rail industry's practice of increased fuel surcharges costs. (TPI Brief 29-30.)

Both parties' arguments in favor of their preferred approach lack sufficient supporting evidence demonstrating that a single across-the-board approach can accurately capture what might happen with regard to fuel charges post-contract expiration in the real world. TPI's methodology assumes a blanket policy of applying CSXT's default non-discounted fuel surcharge program when a customer's transportation contract expires. CSXT, while arguing that TPI's blanket approach does not reflect real-world operations, likewise suggests a general approach of continuing all contractual fuel-surcharge discounts post-contract expiration based on CSXT "standard operating procedures." Given the evidence provided, we conclude that TPI's use of CSXT's default non-discounted program is more appropriate because it is grounded in a documented CSXT practice—a fuel surcharge that is intended to apply in the absence of discounts. In contrast, CSXT did not produce adequate evidence to support its assertion that it has a standard procedure for implementing a discounted fuel surcharge program, relying instead on a general argument that large customers have negotiating leverage and often receive discounts in subsequent contracts. But even if CSXT had presented evidence adequate to support this general claim, that still would not support a conclusion that it is appropriate to allocate the negotiating power enjoyed by select large customers to all customers on the SARR, regardless of size. Accordingly, the Board finds that TPI's proposal to utilize CSXT's default fuel surcharge program is the best evidence of record.

TABLE C-1

Revenue Forecasts ($ millions)				
		TPI	CSXT	STB
July - December 2010		2,967.3	2,946.0	2,967.3
2011		6,540.5	6,487.3	6,540.5
2012		6,775.7	6,732.8	6,775.7
2013		7,075.5	7,019.3	7,075.5
2014		7,490.9	7,468.6	7,510.8
2015		7,956.7	7,853.5	7,926.0
2016		8,544.9	8,375.6	8,489.2
2017		8,976.6	8,758.9	8,913.4
2018		9,576.7	9,224.5	9,496.6
2019		10,270.8	9,702.3	10,117.5
January-June 2020		5,514.8	5,093.5	5,390.2

APPENDIX D—DISCOUNTED CASH FLOW ANALYSIS

The DCF analysis first estimates the revenue stream that a SARR would need to cover its operating costs and to provide a reasonable return on capital. It then compares these revenue requirements to the revenue the defendant railroad earns to determine if the revenues produced by the traffic in the group (based on existing and projected rate levels) would be greater or less than the amount required by the SARR. See generally Bituminous Coal—Hiawatha, Utah, to Moapa, Nev. (Nevada Power), 10 I.C.C.2d 259, 274-77 (1994). This procedure is discussed in more detail below.

The estimated revenue requirements of the SARR would need to cover expected operating expenses and provide a reasonable return on the capital investment the SARR would make if it were to enter the marketplace to serve the selected traffic group. Because entry would not be instantaneous, the revenue requirements would need to cover the interest on debt during the SARR's construction period. Finally, the revenue requirements would need to cover the track maintenance needed to maintain the rail network once constructed.

The need to deal with taxes complicates the estimation of the SARR's revenue requirements because taxes are a function of the flow of revenue over the analysis period, and not just the present value of the revenue. This means that we must determine the flow of capital equal to the present value of the initial road-property investment, plus interest during construction, together with the present value of the railroad's scheduled track maintenance. It is the necessity of dealing with taxes that precludes the use of a simpler model that would directly compute the SAC constraint without reference to the pattern of capital recovery over time.

The DCF model uses an iterative approach to determine the flow of capital recovery that would attract entry in a contestable marketplace. The first step is to assume an amount of capital recovery in the first year. This annual capital recovery is then indexed for inflation over the SAC analysis period (in this case, 10 years). Indexes for the various components of the road-property investment (such as land, grading, and rail) are used in the analysis.

The second step is to determine the value of the SARR at the end of the SAC analysis period. Because the assets the SARR would construct would have a longer useful life than the 10-year DCF period, the SARR would not need to recover the full investment in rail assets in the first 10 years. We must therefore estimate the economic value of the assets as of the end of the 10-year analysis period. This "terminal value" of the SARR equals the capital recovery in the tenth year divided by the estimated real cost of capital. This calculation yields the value (at year 10) of a perpetual income stream held constant (in real terms) at the capital return projected for the tenth year. Thus, in effect, the DCF model is an in-perpetuity analysis, although it is referred to here as a 10-year DCF analysis.

The third step is to determine the taxes the SARR would pay. The starting point is the capital recovery in a particular year, which conceptually is the net revenue (total revenues less operating expenses) for tax purposes. The parties submit a complex tax analysis that estimates the taxes, which are a function of interest on debt, depreciation of assets, and applicable state and

federal taxes. Because the SARR could take advantage of various tax loss provisions, the SARR would often pay no taxes for the first few years of operation.

The DCF model then calculates the present value of the projected capital recovery over the 10-year analysis period, together with the present value of the terminal value, minus the present value of taxes. If this total is less than the initial capital investment, plus interest, adjusted for depreciation and program maintenance, then the projected capital recovery would be too low to provide a reasonable return on investment and would not entice a SARR to enter the market. In that case, the initial capital recovery in the first year is adjusted upwards (or downwards if the flow of capital recovery is too low), and the steps described above are repeated.

This iterative process continues until the model finds the point at which the flow of capital recovery would, after taxes, provide a reasonable return on the initial capital investment. Once the necessary amount of capital recovery has been determined using this iterative process, the total revenue requirements of the SARR can be determined by combining the capital recovery with the projected operating expenses.

There are several inputs needed to perform this analysis, and the parties largely agree as to most of them. The areas of disagreement are described below.

A. COST OF CAPITAL

Capital expenses are estimated by calculating the cost of capital, which includes both the cost of debt and the cost of equity. Although the cost of debt is readily available and observable, the cost of equity (the expected return that equity investors require) can only be estimated using financial models.

The parties differ on whether to include a separate cost for "floating" (marketing) the shares that TPIRR would sell to raise capital. In its opening evidence, TPI develops the capital costs for TPIRR by employing for the years of 2008-2012 the values determined by the Board in its annual cost of capital proceeding. (TPI Opening III-G-3.) CSXT accepts TPI's use of the Board-determined railroad industry cost of capital but proposes adding an equity flotation fee of 2.0%. (CSXT Reply III-G-1 to III-G-8, July 21, 2014.) CSXT states that, because railroads have not recently incurred costs to raise new equity, there is no equity flotation costs included in the Board's 2008 through 2012 railroad cost of capital determinations. (Id. at III-G-6.) In support of its proposed 2.0% equity flotation fee, CSXT provides evidence of equity flotation costs incurred in 32 large initial public offerings (IPOs) that occurred over the past 10 years. (Id. at III-G-6 to III-G-8.) CSXT argues that, based on this evidence, a gross spread range of 2.0% would be a conservative equity flotation rate for a transaction as large as that required for TPIRR.

TPI objects to CSXT's inclusion of any equity flotation costs in the DCF model, arguing that CSXT has failed to justify an equity flotation fee for TPIRR. (TPI Rebuttal III-G-1 to III-G-17.) More specifically, TPI argues that: (1) the Board has continually rejected the inclusion of equity flotation costs in SAC cases; (2) CSXT has improperly assumed that any sale of SARR common equity would occur through an IPO undertaking; (3) risk and other factors are

significant in establishing equity flotation costs; and (4) CSXT's 2.0% equity flotation fee is excessive compared to other IPOs. (Id.)

We are not persuaded by TPI's position that no equity flotation fee is warranted here. TPI argues that the Board has "continually rejected the inclusion of equity flotation costs in SAC cases." (Id. at III-G-3.) In recent decisions, however, the Board did not reject the inclusion of equity flotation costs in SAC cases, but rather concluded that the carrier had failed to provide adequate evidence in support of the proposed fee. See E.I. DuPont de Nemours & Co. v. Norfolk S. Ry., NOR 42125, slip op. at 272-75 (STB served Mar. 24, 2014), corrected and updated, NOR 42125 (STB served Oct. 3, 2014), reconsideration denied, NOR 42125 (STB served Dec. 23, 2015) (with Vice Chairman Begeman dissenting on the reconsideration decision); Sunbelt Chlor Alkali P'ship v. Norfolk S. Ry. (Sunbelt 2016), NOR 42130, slip op. at 183-85 (STB served June 20, 2014), petitions for reconsideration granted in part and denied in part (Sunbelt 2016) (STB served June 30, 2016) (with Commissioner Begeman dissenting in both) appeal docketed sub nom. Sunbelt Chlor Alkali P'ship v. STB, No. 16-15701 (11th Cir. Aug. 26, 2016). In fact, the Board acknowledged in both DuPont and Sunbelt 2014 that it would be unreasonable to assume that the SARR would raise capital without paying some form of equity flotation fee. See DuPont, NOR 42125, slip op. at 274; Sunbelt 2014, NOR 42130, slip op. at 184. We reiterate here the unreasonableness of this assumption. Moreover, in addressing petitions for reconsideration in Sunbelt 2016, NOR 42130, slip op. at 29-32, the Board recently found that it had materially erred by not accepting the defendant's proposed equity flotation cost.

The Board will accept CSXT's proposed equity flotation fee here because CSXT's proposal is feasible, supported by competent evidence, and conservative. CSXT's evidence demonstrates that equity flotation fees typically range between 0.75% and 5.12%, with an average fee of 3.59%. (CSXT Reply III-G-6, July 21, 2014.) The evidence also shows that the average equity flotation costs by industry sector fall within the range of 2.9% to 4.7%. (Id. at III-G-7 to III-G-8.) While we would prefer evidence of an equity flotation fee from a recent railroad IPO of comparable size, such evidence apparently does not exist at this time. CSXT's analysis of 32 recent, large IPOs adequately supports its proposal in the absence of preferred railroad-specific evidence.

Further supporting its claim that a 2.0% fee is conservative, CSXT's proposed 2.0% fee is lower than the 3.9% fee paid in the last railroad stock offering, the 1991 BN offering. (See id. at III-G-6.) TPI argues that the 3.9% equity flotation costs incurred in the 1991 BN offering are not indicative of the equity flotation costs that would be incurred by TPIRR because TPIRR's common equity issuance would be significantly larger and would not include a stock dilution impact. (TPI Rebuttal III-G-13 to III-G-14.) However, TPI does not adequately explain why its criticism of a 3.9% fee demonstrates the unreasonableness of a 2.0% fee. Thus, the Board finds that the evidence of the equity flotation fee in the 1991 BN offering supports the reasonableness of CSXT's proposed 2.0% fee.[122]

[122] The 3% figure that TPI argues more accurately represents the 1991 BN offering equity flotation fee still supports the argument that CSXT's proposed 2.0% fee is conservative,

(continued . . .)

Additionally, the Board rejects TPI's argument that CSXT has improperly assumed that any sale of SARR common equity would occur through an IPO undertaking. TPI argues that TPIRR could raise equity capital through a private placement (or non-public offering) rather than an IPO. (Id. at III-G-4 to III-G-5.) TPI, however, has provided no support for its argument that such a scenario would be possible. While TPI cites to the fact that Berkshire Hathaway invested $34 billion to acquire and operate BNSF Railway as evidence that companies have shown a willingness to invest large sums of money on a private basis to operate railroads, TPI does not present any evidence that private placement would be a feasible method of raising the amount of capital necessary given the size of the transaction that would be required to construct and operate TPIRR. More importantly, TPI failed to provide evidence (1) that such an arrangement would involve no equity flotation fee, or (2) as to what the proper equity flotation fee would be if the sale of equity were to proceed through private placement.

TPI further argues that risk plays a considerable role in the determination of gross spreads on equity issuances. TPI cites academic literature stating that gross spreads are a function of a number of determinants, including overall risk, industry, size, and other relevant factors. (Id. at III-G-6 to III-G-13.) Although TPI presents convincing evidence that flotation costs may be influenced by risk, TPI does not provide any evidence of what the flotation cost would be if a risk factor were applied.

Lastly, TPI argues that, given CSXT's assertion that equity flotation fees decrease as the amount raised increases, the equity flotation fee proposed by CSXT for TPIRR should be lower than the average of 1.5% paid by the three largest IPOs in CSXT's data set because the size of the issuance is larger than any issuance examined by CSXT.[123] The Board rejects this argument. Even if the Board were to consider this average in determining TPIRR flotation costs, it would not be appropriate to include the General Motors transaction in that calculation because that transaction involved special circumstances—specifically, the U.S. Government selling its shares in the IPO—that may have induced investment bankers to negotiate lower gross spreads, which suggests that the transaction's lower equity flotation fee is an outlier. When this transaction is removed from the calculation, the average of the remaining two largest IPOs is 1.95%, which is close to CSXT's proposed 2.0% equity flotation fee.

(. . . continued)

and therefore, we need not address whether the 1991 BN offering fee should be considered 3% or 3.9%.

[123] (Id. at III-G-15 to III-G-17; see also CSXT Reply III-G-7, June 21, 2014.) CSXT Reply Table III-G-1 shows an average underwriting fee of 1.5% for three transactions that involved gross proceeds over $10 billion. The three transactions used in the average are Visa, Inc. (2.80%), General Motors Co. (0.75%), and Facebook, Inc. (1.10%). (See CSXT Reply WP "Gross Spreads Analysis.xlsx" Tab "US Industry," July 21, 2014.)

For the reasons set forth above, the Board concludes that CSXT's proposed 2.0% equity flotation fee is feasible and supported.

B. ROAD PROPERTY INVESTMENT VALUES

As discussed in the Real Estate section of the Road Property Investment Appendix, we accept TPI's land valuations, with some adjustment for easement values. Therefore, we do not apply CSXT's modification to the DCF model to account for the fact that CSXT's land valuations reflected both 2008 and 2010 valuations.

C. INFLATION INDICES

Parties must account for changes in capital asset value and operating expenses because these values and prices change during the 10 years covered by the DCF analysis. To do so, parties employ forecasts of inflation rates. TPI and CSXT agree regarding inflation indices for land and road property investment. (TPI Rebuttal III-G-17 to III-G-18.) They disagree regarding the treatment of fuel costs in the operating expense index. (Id. at III-G-18.)

The Board established a method of indexing operating expenses in Major Issues in Rail Rate Cases (Major Issues), EP 657 (Sub-No. 1), slip op. at 39-47 (STB served Oct. 30, 2006), aff'd sub nom. BNSF Railway v. STB, 526 F.3d 770 (D.C. Cir. 2008), under which base-year operating expenses are indexed using two forms of the rail cost adjustment factor (RCAF).[124] Under this method, the first year of expenses are indexed entirely with the unadjusted RCAF (RCAF-U), which reflects no changes in productivity. Subsequent years are indexed using a combination of RCAF-U and the adjusted RCAF (RCAF-A) (hybrid RCAF). RCAF-A does reflect productivity changes, and the proportion of RCAF-A to RCAF-U used for indexing operating expenses increases by 5% each year over the years that are indexed. This approach reflects the Board's conclusion that the SARR "would not be able to realize the same productivity gains as the rest of the industry, particularly in the early years" but that as the SARR gets older its yearly productivity gains will start to converge with the railroad industry's gains and by 20 years will converge with the railroad industry. Major Issues, EP 657 (Sub-No. 1), slip op. at 40-44.

On opening, TPI states that it indexed operating expenses using the approach adopted by the Board in Major Issues. (TPI Opening III-G-9 to III-G-10.) On reply, CSXT argues that because fuel costs for 3Q 2010 to 4Q 2013 are known, the actual costs should be used, citing Board statements that actual data is preferable to forecasted data. (CSXT Reply III-G-9, July 21,

[124] "The RCAF was established in the Staggers Rail Act of 1980 as a quarterly index intended to track changes in railroad costs. Initially, the ICC determined not to adjust the RCAF price index to reflect productivity, but rather, to measure only the change in the prices of inputs, such as labor and fuel, used to produce railroad services." Major Issues, EP 657 (Sub-No.1), slip op. at 39; see also R.R. Cost Recovery Procedures, 364 I.C.C. 841 (1981), aff'd sub nom. W. Coal Traffic League v. United States, 677 F.2d 915 (D.C. Cir. 1982).

2014 (citing Duke Energy Corp. v. CSX Transp., Inc., 7 S.T.B. 402, 446 (2004); Duke Energy Corp. v. Norfolk S. Ry., 7 S.T.B. 89, 143 (2003); Wis. Power & Light Co. v. Union Pac. R.R., 5 S.T.B. 955, 991 (2001)).) On that basis, CSXT used its actual fuel prices for those quarters and then accounted for fuel costs for the remaining SARR years by indexing the 2013 fuel prices using hybrid RCAF. This method required CSXT to change its indexing method for other operating expenses during the 2010 to 2013 period because hybrid RCAF reflects productivity gains related to fuel costs. As a result, CSXT used the All Inclusive Index Less Fuel (AII-LF) version of the RCAF[125] rather than the hybrid RCAF to index non-fuel operating expenses for 2010-2013.

On rebuttal, TPI objects to CSXT's changes. (TPI Rebuttal III-H-28 to III-H-30.) TPI argues that CSXT's changes are an improper deviation from Board rules, that CSXT's choice to selectively update one component of operating expenses is contrary to Board precedent, and that CSXT's method fails to properly account for changes in fuel productivity.

Where, as here, a complainant has followed established agency precedent, defendants carry the burden to justify a departure from that methodology. Ariz. Elec. Power Coop. v. BNSF Ry., NOR 42113, slip op. at 33 (STB served Nov. 22, 2011), petition for review denied sub nom. BNSF Ry. v. STB, 748 F.3d 1295 (D.C. Cir. 2014). We do not accept CSXT's changes to the Board's current method of indexing operating expenses. As an initial matter, there are multiple components of the operating expense index to which CSXT could have applied the same approach, but CSXT applies its proposed approach only to fuel costs. The Board disfavors such action because it allows parties to select different approaches for different components depending on which approach most favors its case in any given scenario. See W. Fuels Assoc. v. BNSF Ry., NOR 42088, slip op. at 6 (STB served Sept. 10, 2007); FMC Wyo. Corp. v. Union Pac. R.R., 4 S.T.B. 699, 729-30 (2000). The reason for CSXT's selectivity here is apparent, as fuel prices rose dramatically between 2010 and 2013, (see CSXT Reply WP "Exhibit III-H-1 Reply.xlsm, Tab "Fuel," July 21, 2014), making the update CSXT proposes beneficial to its case. Selectivity aside, CSXT's approach is also problematic given the fact that by 3Q 2015 (after CSXT had filed its reply evidence) fuel prices had fallen to pre-3Q 2010 levels. See CSXT Quarterly Financial Report Third Quarter 2010 at 3, http://investors.csx.com (follow "Quarterly Earnings Materials" hyperlink, then follow "2010" hyperlink, and then follow the hyperlink for the 3Q 2010 Financial Report) (last visited Sept. 6, 2016.) Thus, accepting CSXT's replacement of forecasted data with actual data would result in a significant distortion of the fuel price forecast—given that CSXT's forecast would begin from the point of a near-market high and project upward while actual market conditions did precisely the opposite in the real world. Furthermore, even if this distortion were not present, CSXT's adjusted method of indexing non-fuel operating expenses from 2010 to 2013 is not feasible because the productivity adjustment factor that CSXT proposes to use includes a fuel productivity component. Application of an indexing method that accounts for fuel productivity to expenses that exclude fuel costs does not accomplish CSXT's stated intention, which was to develop an index that excludes fuel

[125] The AII-LF is a version of the RCAF that does not include fuel and that is published by the Association of American Railroads.

productivity. We will apply TPI's method of indexing operating expenses because it is consistent with our precedent and CSXT has failed to justify a departure from that methodology.

D. BONUS DEPRECIATION

The parties agree to some aspects of the application of tax depreciation schedules to TPIRR. (TPI Rebuttal III-H-9.) However, they dispute the applicability of "bonus" depreciation provisions enacted as a part of federal economic stimulus efforts. (CSXT Reply III-H-6 to III-H-9, July 21, 2014.)

On opening, TPI argues that the Board should allow TPIRR to use full bonus depreciation benefits. (TPI Opening III-H-8 to III-H-10.) CSXT responds that TPIRR would be able to take full advantage of the bonus depreciation only because of the stand-alone assumption of unconstrained resources, which allows for all of the TPIRR construction to occur during the limited bonus depreciation tax window. For this reason, CSXT asserts, allowing TPIRR to use the bonus depreciation fully would result in a reverse barrier to entry that would bestow cost savings to a new hypothetical entrant that were not available to the incumbent. CSXT acknowledges that the Board has allowed full application of bonus depreciation in recent decisions, but argues that the Board erred. CSXT proposes to limit TPIRR to bonus depreciation only to the extent CSXT itself was able to use these provisions. (CSXT Reply III-H-6 to III-H-9, July 21, 2014.)

The Board has previously rejected claims that allowing full bonus depreciation benefits would distort the SAC analysis, concluding that the Board would not require a SARR to bear the disadvantages of its construction timing while denying it advantages such as bonus depreciation tax benefits. Sunbelt 2016, NOR 42130, slip op. at 40; see also DuPont, NOR 42125, slip op. at 278-79. We reach the same conclusion here. CSXT takes issue with the fact that, in previous decisions, the Board did not identify any disadvantages to the assumption of a short construction period. But the Board has since explained that the assumption of a short construction period may lead to significant disadvantages, including high interest rates on debt and elevated prices for various inputs such as land, materials, and labor. Sunbelt 2016, NOR 42130, slip op. at 40. We therefore conclude that that full application of bonus depreciation is not a "reverse barrier to entry." Rather, CSXT's "expectation that the SAC model should precisely reflect the conditions experienced by the defendant when it built its system is unrealistic." Id.

CSXT argues that the Board's reference in West Texas Utilities Co. v. Burlington Northern Railroad, 1 S.T.B. 638, 670 (1996) to the SARR as a replacement carrier that steps into the shoes of the incumbent absolutely requires the SARR to face exactly the same conditions as the incumbent. But the Board has explained that West Texas does not undermine its conclusion that a SARR may fully apply bonus depreciation tax benefits:

> [I]n West Texas Utilities Co., the Board was addressing what constitutes entrance costs faced by a second or subsequent entrant to a rail market. The Board did not address so-called reverse barriers to entry. Instead, in that decision, the Board defined barriers to the entrant as "any new costs that a new entrant must

> incur that were not incurred by the incumbent." But, as the Board explained, [Sunbelt 2014], slip op. at 188-89, "[p]lacing the SARR on equal footing with the incumbent is not feasible in all instances if doing so would undermine the usefulness of SAC as an analytical tool," and West Texas Utilities Co. does not contradict this conclusion.

Sunbelt 2016, NOR 42130, slip op. at 40. We accept TPI's application of bonus depreciation tax benefits.

E. INTEREST SCHEDULE OF ASSETS PURCHASED WITH DEBT CAPITAL

TPI proposes that, for purposes of calculating the tax-shielding effect of interest payments, the SARR would make quarterly interest-only coupon payments over a 20-year period, rather than amortizing the debt in mortgage-style payments (that include both principal and interest) over that period. (TPI Opening III-H-2 to III-H-7.) TPI acknowledges that the Board has rejected such proposals before, but argues the Board erred in other proceedings because "repayment of any principal amounts borrowed" is already accounted for in the DCF model "in the levelized stream of capital recovery payments, not in the debt amortization approach." (TPI Rebuttal III-H-2 to III-H-8.) TPI argues that the purpose of the debt amortization calculation is only to determine the amount of the interest payments for purposes of estimating state and Federal taxes, but not to account for the repayment of any borrowed funds. However, argues TPI, the quarterly capital carrying charges included in the "Investment SAC" level of the DCF model explicitly account for repaying principal on existing and future investments. CSXT replies that TPI's proposal is contrary to Board precedent and that TPI's proposal is inconsistent with its use of "the railroad industry's average cost of debt and the accompanying mix of short and long term maturities." (CSXT Reply III-H-2 to III-H-8, July 21, 2014.)

The Board has previously rejected proposals to use an interest-only schedule. See Sunbelt 2016, NOR 42130, slip op. at 10-12; DuPont, NOR 42125, slip op. at 281-82. We will do so again here. Under Board precedent, the SARR's debt payments contain an interest component and a principal component, and the interest portion decreases as the debt is amortized over time. See, e.g., Nevada Power, 10 I.C.C.2d at 319 (finding it more realistic to assume that the SARR would issue new debt as old debt is amortized, maintaining a constant capital structure over the DCF period). TPI has not demonstrated that a departure from this methodology is warranted.

To meet the competing interests of accuracy and practicability, the Board has determined that interest payments on outstanding debt will flow through the Board's DCF analysis at two places in the model. The dollar amounts of the SARR's quarterly interest payments are calculated based on the SARR's outstanding debt principal amount and incorporated into the Investment SAC spreadsheet's capital carrying charge. In effect, this represents the SARR's quarterly payment to service its debt. In addition, because there is some tax benefit to financing with debt as opposed to equity, the tax shielding effects of interest payments are calculated in the Interest SAC spreadsheet's debt amortization schedule, which then flows through the Investment

SAC spreadsheet's present value calculation. As discussed below, because of simplifying assumptions, these interest payment amounts are not calculated in the same fashion.

The Board has explained that some simplifying assumptions are necessary to make the SAC process manageable. Sunbelt 2016, NOR 42130, slip op. at 11; see also BNSF Ry. v. STB (BNSF Ry. 2006), 453 F.3d 473, 482 (D.C. Cir. 2006) ("The pursuit of precision in rate proceedings, as in most things in life, must at some point give way to the constraints of time and expense, and it is the agency's responsibility to mark that point."). One such assumption is that, with respect to the repayment of debt, the SARR is allowed to roll over its debt into perpetuity as if it were a mature entity, without any associated interest rate risk,[126] because it would otherwise be too complex to keep adjusting the debt and equity mix for purposes of determining the capital carrying charge in the Investment SAC spreadsheet. Thus, TPI's argument that the repayment of debt principal is accounted for in the Board's Investment SAC capital carrying charge calculation is incorrect. The capital carrying charge calculation does not assume that the debt is amortized, or that new debt is incurred when assets are replaced. Thus, without principal repayment being accounted for in the Interest spreadsheet, the SARR would pay no principal throughout the DCF period—meaning that it would not have paid for its assets. As a result, we decline to adopt TPI's proposed change to our DCF model.

F. TERMINAL VALUE ADJUSTMENT

The terminal value represents the residual value of the SARR's assets, future interest payments, and remaining tax liabilities (for both interest and depreciation), and reflects the cash flow required to account for the value of the assets not consumed during the 10-year life of the DCF model. In recent decisions, the Board has found that there was a mismatch between the interest payments associated with the capital carrying charge of the DCF model and the tax-shielding effect of those interest payments into perpetuity.[127] See, e.g., Sunbelt 2016, NOR 42130, slip op. at 36-37. To account for this mismatch, the Board adjusted the terminal value component of the DCF's capital carrying charge to reflect the cost-of-capital assumption that the SARR's level of debt is held constant into perpetuity, and that interest-tax shields consistent with this level of debt are accounted for in the cash flow calculation. TPI argues that the adjustment was appropriate and the Board should apply it in this case. (See TPI Opening III-H-12 to III-H-15; TPI Rebuttal III-H-17 to III-H-23.)

CSXT argues that, in previous decisions, the Board erred by applying the adjustment for two reasons. (CSXT Reply III-H-11 to III-H-15, July 21, 2014.) First, CSXT claims that the Board's modification would introduce a new inconsistency into the DCF model "by explicitly applying different financial assumptions to a SARR's initial acquisition of assets and its

[126] This lack of an associated interest rate risk is reduced somewhat by any party's right to petition the Board to reopen a proceeding on the grounds of substantially changed circumstances if interest rates change significantly. Sunbelt 2014, NOR 42130, slip op. at 193.

[127] Previously, the Board's DCF model had only taken into account the tax effect of interest payments during the 10-year life of the SARR.

subsequent replacement of assets as they are assumed to wear out." (Id. at III-H-13.) Second, CSXT contends that the adjustment overrides the scheduled interest payments in years 11 to 20 and instead uses an average interest rate over the 20-year debt amortization period. CSXT claims that this in turn leads to an overstatement of tax benefits in years 11 to 20. (Id. at III-H-14.) CSXT argues that if the Board concludes that it should address the mismatch, it should revert back to the methodology of Coal Trading Corp. v. Baltimore & Ohio Railroad, 6 I.C.C.2d 361, 379 (1990). (CSXT Reply III-H-14, July 14, 2014.) TPI responds that, rather than creating a new inconsistency in the DCF model, its proposed terminal value modification simply removes an inconsistency that was already present. (TPI Rebuttal III-H-20 to III-H-21.) Moreover, TPI argues that the Board's terminal value modification does not lead to a mathematical error, but merely reflects the use of an average interest rate payment over time. (Id. at III-H-21.)

We will apply the terminal value adjustment. As an initial matter, there appears to be some confusion about how the Board's Investment SAC spreadsheet operates within the DCF model. CSXT is correct that the DCF model must take into account the financing of both the initial acquisition of assets and the subsequent replacement of assets as they are assumed to wear out over the life of the SARR. Ideally, the Board's SAC analysis would precisely predict the timing of debt payments and their associated financing charges as the SARR strives over its life to achieve its optimal debt level. In practice, however, the complexity of such an effort would make the SAC analysis unworkable as a regulatory tool. Because different assets have different lives, precisely accounting for all of them would be impractical. Accordingly, constantly readjusting the debt and equity mix for purposes of determining the capital carrying charge in the Investment SAC spreadsheet, up to and including year 120, would undermine the usefulness of the DCF model. Thus, we must employ the simplifying assumption of calculating the net present value of the replacement assets and including that amount on day one of the DCF model for purposes of determining the total dollar amount of required financing, rather than accounting for the inclusion of replacement assets when they come due. Thus, CSXT misses the mark by arguing that the DCF model uses different assumptions for the treatment of the initial acquisition of assets and their subsequent replacement—in fact, the DCF model provides that both categories of assets are financed on day one out into perpetuity.[128]

It is the Board's responsibility to balance the constraints of time and expense with fairness to the parties in determining which simplifying assumptions are appropriate for use in its DCF model. See BNSF Ry. 2006, 453 F.3d at 482. In order to balance these competing interests, interest payments on outstanding debt flow through the DCF model at two places in the underlying spreadsheets: first, the Interest spreadsheet calculates interest payments as if the debt were amortized over 20 years for purposes of determining the tax shielding effect in years 1 to 10; and second, the Investment SAC spreadsheet calculates the dollar amount of quarterly

[128] Of course, any party is free to petition the Board to reopen a proceeding if circumstances change substantially. See, e.g., Sunbelt 2014, NOR 42130, slip op. at 193 ("If interest rates significantly change, the lawful rate may change as a result, and any party is free to petition the Board, under 49 C.F.R. § 1115.4, to reopen a proceeding on the grounds of substantially changed circumstances.").

interest payments as if the debt were held into perpetuity for purposes of determining the capital carrying charge. The Board's terminal value modification, rather than creating a new inconsistency in the model, actually solves an existing inconsistency by allowing for the tax-shielding effect of interest payments into perpetuity, consistent with the manner in which the underlying debt is also treated.

CSXT is similarly mistaken when it argues that application of the terminal value adjustment would override the scheduled interest payments in years 11 to 20 which, CSXT claims, leads to an overstatement of tax benefits. For purposes of determining the tax-shielding effect in years 1 to 10, the Interest spreadsheet amortizes the outstanding principal balance of the debt as if it were paid off over 20 years. However, that is not the case in the Investment SAC spreadsheet, where the principal balance of the debt remains outstanding into perpetuity. Implicit in CSXT's theory that interest payments in years 11 to 20 are overstated for purposes of determining the tax shielding effect is the assumption that the level of debt is still being amortized during that same time period in the Investment SAC spreadsheet. As discussed, the Board's SAC model makes a simplifying assumption about the repayment of debt that assumes a constant balance into perpetuity in its Investment SAC spreadsheet. Accordingly, CSXT's assumption that the debt is being paid down in years 11 to 20 in the Investment SAC spreadsheet is misplaced. As a result, we accept TPI's feasible and supported terminal value adjustment.

G. NORTH BALTIMORE INTERMODAL FACILITY

As discussed in the Other Miscellaneous Costs section of the Operating Expenses Appendix, we do not accept CSXT's calculation of lift costs for the North Baltimore intermodal facility. As a result, we likewise reject CSXT's adjustment to the DCF model to account for its calculation of lift costs at North Baltimore.

H. TIMING OF PTC INVESTMENT

As discussed in the Signals and Communications section of the Road Property Investment Appendix, TPI argues that TPIRR should install its PTC system at the outset of construction and investment. CSXT disagrees, arguing that TPIRR's PTC-related costs will begin in 2011 and extend through 2015. CSXT makes a corresponding adjustment to the DCF model to recover PTC investment only after the actual PTC expenditures take place. (CSXT Reply III-H-15, July 21, 2014.) TPI argues on rebuttal that CSXT's adjustment is incorrect, due to the timing of the PTC investment and also because CSXT did not account for bonus depreciation available on PTC assets. (TPI Rebuttal III-H-23 to III-H-26.) TPI argues that the Board erred in DuPont, NOR 42125, slip op. at 285, by not allowing the full application of bonus depreciation to PTC investments, and that the same approach in this case would be inconsistent with CSXT's real-world application of bonus depreciation to its PTC investments. Therefore, TPI claims, disallowing the full bonus depreciation benefits on PTC investment would create a barrier to entry by requiring TPIRR to incur tax expenses not faced by CSXT.

For the reasons set forth above in Appendix B, we are accepting CSXT's position that TPIRR would install a PTC system from the outset and then upgrade it to provide

interoperability and otherwise meet the applicable standards, although we are spreading the costs through 2018 to reflect the revised PTC deadline. Therefore, we will accept CSXT's corresponding adjustment to the DCF model and apply it to reflect our adjustment of the years during which PTC investment will take place.

However, as discussed above, we are accepting TPI's application of certain bonus depreciation provisions, which will apply to TPIRR's PTC system to the extent the costs are incurred during the appropriate time period and the bonus depreciation is otherwise applicable. In this case, TPI has shown that CSXT took depreciation on PTC assets in 2013 before implementation of its PTC system. (TPI Rebuttal III-H-25 to III-H-26; TPI Rebuttal WP "CSXT 2013 Supp PTC Revised.xls" (showing CSXT's 2013 supplemental PTC filing to its R-1 Report.)) We have confirmed that CSXT's 2014 and 2015 R-1 Reports also show that CSXT took depreciation on PTC assets in those years. The fact that CSXT took depreciation on PTC assets indicates that PTC upgrades would be "put into service" sooner than the point at which the finished product (a PTC system that is compliant with RSIA) would be ready in 2018. We will therefore allow TPIRR to take bonus depreciation on PTC assets for 2013 to 2015, the years for which we have determined bonus depreciation is available and there is evidence indicating that CSXT took depreciation on PTC assets.

I. MONONGAHELA RAILWAY (MGA) CAPITAL COSTS

On opening, TPI included the costs for TPIRR operations over the MGA but omitted the investment associated with annual program maintenance, as pointed out in CSXT's reply. (TPI Rebuttal III-B-3; CSXT Reply III-B-6 to III-B-9, July 21, 2014.) On rebuttal, TPI accepts CSXT's addition of the annual investment cost, but argues that corrections should be made to CSXT's treatment of the cost in the DCF model. (TPI Rebuttal III-B-3, III-H-26 to III-H-28.) TPI claims that these corrections are necessary to account for depreciation and interest expense tax shields associated with the MGA investments. (Id. at III-H-27.) We conclude that TPI's adjustments are appropriate because annual program maintenance is a capital expense incurred by the SARR. The SARR is entitled to the benefits from the associated tax depreciation and interest on debt to fund the investment. We will therefore accept TPI's adjustments to the treatment of those costs in the DCF model.

J. DCF RESULTS

The first step of the DCF analysis is to calculate TPIRR's total revenue requirements over the 10-year analysis period. We find that the initial road property investment of TPIRR would be $36,714M; interest during construction would be $4,260M; the present value of roadway property replacement would be $2,042M; and the resulting total road property investment would be $43,677M. Table D-1 shows the flow of capital recovery that would provide TPIRR a reasonable return on its capital investment and would therefore be sufficient to attract entry to serve the selected traffic group.

TABLE D-1

TPIRR Capital Recovery ($ Millions)				
Year	Capital Requirement Road Property	Total Taxes	Required Cash Flow	Present Value
2010	2,030	-	2,030	1,975
2011	4,165	-	4,165	3,736
2012	4,362	-	4,362	3,517
2013	4,420	-	4,420	3,207
2014	4,605	-	4,605	3,006
2015	4,735	-	4,735	2,780
2016	4,902	865.50	4,036	2,139
2017	5,050	1,516.79	3,533	1,678
2018	5,284	1,774.37	3,509	1,499
2019	5,403	1,830.95	3,572	1,372
2020	2,776	948.23	1,827	648
			Terminal Value	18,118
			Total	43,677

As shown in Table D-2, the total revenue requirements of TPIRR over the 10-year analysis period are the sums of the capital return and the projected operating expenses.

TABLE D-2

TPIRR Annual Revenue Requirements ($ Millions)			
Year	RPI Capital Recovery	Operating Expenses	TPIRR Revenue Requirements
2010	2,030	1,362	3,392
2011	4,165	2,972	7,137
2012	4,362	2,979	7,341
2013	4,420	3,073	7,493
2014	4,605	3,127	7,732
2015	4,735	3,207	7,942
2016	4,902	3,383	8,285
2017	5,050	3,531	8,581
2018	5,284	3,735	9,019
2019	5,403	3,951	9,355
2020	2,776	2,075	4,851

The second part of the DCF analysis compares the revenues a defendant is expected to earn from the traffic group against the revenues the SARR would need to serve the same traffic. In general, if the present value of the revenue stream is less than the SARR's revenue requirements, then the analysis has not demonstrated that the challenged rate is unreasonable. If the opposite is true, then the Board must decide what relief to provide to the complainant by allocating the revenue requirements of the SARR among the traffic group and over time. Here, Table D-3 reveals that the defendant is earning less from the traffic group than TPIRR would require to serve the same traffic, and thus the analysis has not demonstrated that the challenged rates are unreasonable.

TABLE D-3

TPIRR Discounted Cash Flow Analysis ($ Millions)					
Year	TPIRR Revenue Requirements	Forecast Revenues	Difference	Present Value	Cumulative Difference
2010	3,392	2,967	(425)	(425)	(425)
2011	7,137	6,541	(597)	(535)	(960)
2012	7,341	6,776	(565)	(455)	(1,415)
2013	7,493	7,076	(417)	(304)	(1,720)
2014	7,732	7,511	(221)	(145)	(1,864)
2015	7,942	7,926	(16)	(10)	(1,874)
2016	8,285	8,489	204	108	(1,766)
2017	8,581	8,913	332	158	(1,608)
2018	9,019	9,497	478	205	(1,403)
2019	9,355	10,118	763	294	(1,109)
2020	4,851	5,390	539	197	(912)