

Alternative Approaches to Pricing Coal Transportation Services

Presented at RMEL's
Spring Management, Engineering and Operations Conference
May 20-22, 2018



by

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Overview

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- IV. Approach 1: Tying Rail Transportation Rates to Power Prices
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Introduction

The traditional way of pricing rail transportation services for coal is not working so well ...

Traditional Coal Transportation Contracts:

- Rates priced at \$/ton or \$/carload
- Periodic rate escalation based on industry indexes
- Fuel Surcharge
- Volume requirements with damages

... which works fine when plants dispatch is between 70% to 85% and coal demand is fairly certain and easy to forecast.

... but does not work fine when plants dispatch between 50% to 70% and coal demand fluctuates from week-to-week and month-to-month and is difficult to forecast.

IT'S TIME TO RE-THINK "ONE RATE FITS ALL" RAIL TRANSPORTATION PRICING!

Rail Transportation Pricing Needs

The following “needs” should be addressed when pricing rail transportation services:

- ✓ Rail transportation pricing isn't really 100% variable, so why price it that way? Rail transportation contracts contain tonnage deficiency penalties that, if triggered, have to be paid regardless of tonnages shipped;
- ✓ Rail transportation pricing should reflect plant dispatch or should provide flexibility when dispatch is uncertain; and
- ✓ Rail transportation pricing should lead to more dispatch, which creates more value for both the coal-fired generator and railroads to share.

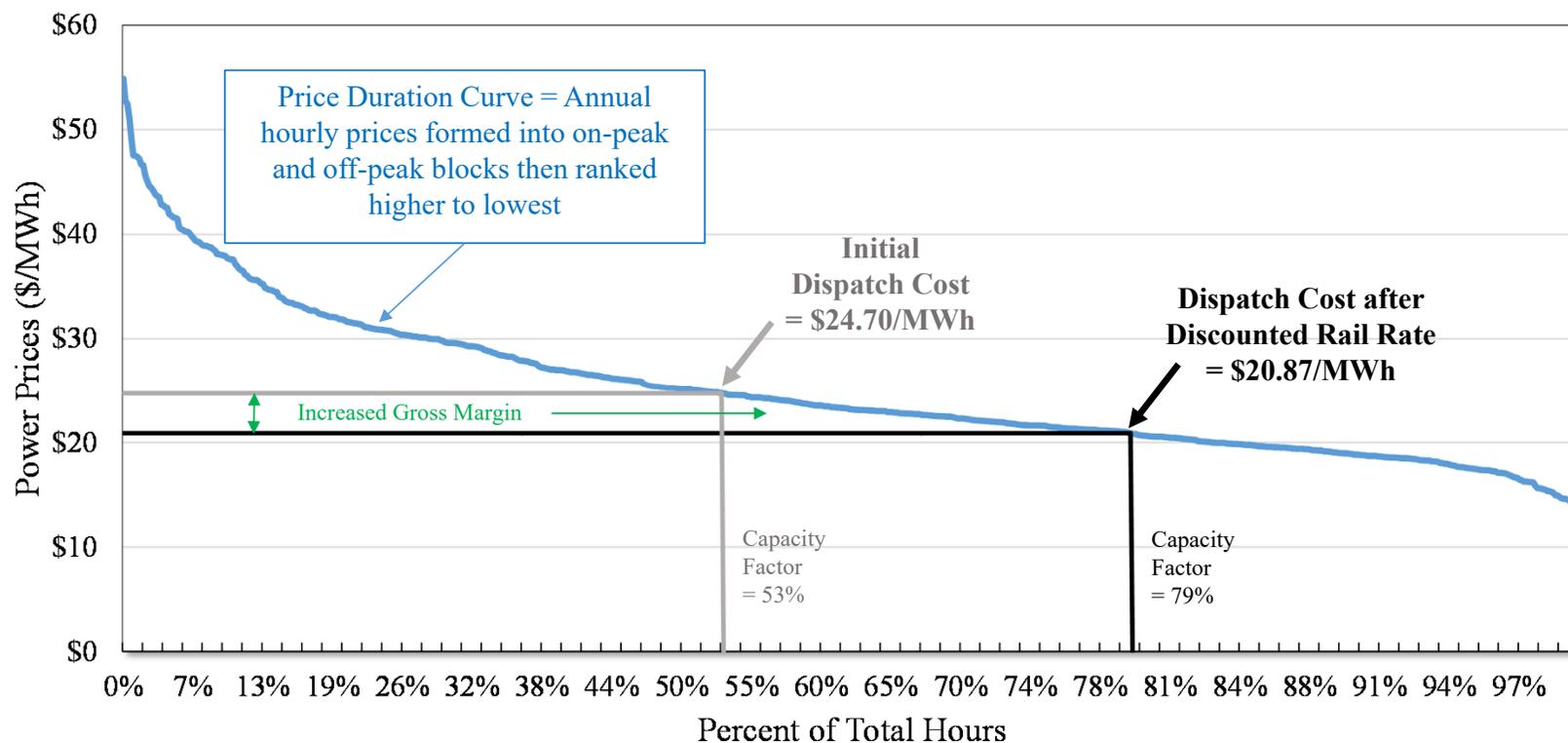
Lower Rail Transportation Rates Generate More Combined Margin

Lower rail transportation rates generate more combined margin for the coal-fired generator and railroad to share.

To demonstrate this, hypothetical coal plant dispatch inputs (seen to the right) are used with a price duration curve (shown on slide 7) to determine underlying revenues and costs for a coal-fired generator and railroad, both without and with a discounted rail transportation rate (shown on slide 8).

<u>Item</u>	<u>Value</u>
(1)	(2)
Plant Capacity (MW)	1,000
Plant Heat Rate (btu/kWh)	10,800
Coal Heat Content	8,800
Coal Price (\$/ton)	\$12.00
Rail Rate (\$/ton)	\$25.00
Variable O&M (\$/MWh)	\$2.00
Rail Rate Discount	25%
<u>Resulting Dispatch Costs (\$/MWh)</u>	
Initial Dispatch Cost	\$24.70
Dispatch Cost After Rail Discount	\$20.87

Lower Rail Transportation Rates Generate More Combined Margin



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Lower Rail Transportation Rates Generate More Combined Margin

Item	No Rail Discount	With Rail Discount	Difference (3) - (2)
(1)	(2)	(3)	(4)
<u>Generator's Gross Margin (millions)</u>			
1. Tons Burned (millions)	2.84	4.27	1.43
2. Electricity Produced (millions of MWh's)	4.63	6.95	2.32
3. Plant Capacity Factor	53%	79%	26%
4. Gross Margin	\$33.1	\$55.2	\$22.2
<u>Railroad's Margin (millions)</u>			
5. Tons Shipped (millions)	2.84	4.27	1.43
6. Revenues	\$71.0	\$80.1	\$9.1
7. Variable Costs 1/	\$39.4	\$59.2	\$19.8
8. Margin (Line 6 - Line 7)	\$31.6	\$20.9	(\$10.7)
9. Combined Margin (Column (4), Line 4 + Line 8)	—————→		\$11.5

1/ Column (2) assumes original rail rate is set at 180% of variable costs. Thus, Line 7, Column (2) equals Line 6, Column (2) ÷ 180%. Line 7, Column (3) equals the implied variable cost per ton in Line 7, Column (2) (i.e., Line 7, Column (2) ÷ Line 5, Column (2)) times Line 5, Column (3) Tons Shipped.

Approach 1: Tying Rail Transportation Rates to Power Prices

- Can be used in an organized market where an independent system operator (“ISO”) clears locational marginal prices (“LMP”)
- When power prices are low, rail transportation rates are discounted
- When power prices are high, rail transportation rates include a premium

Hypothetical Rail Rate/ Power Price Schedule

	<u>LMP</u> <u>(\$/MWh)</u> (1)	<u>Corresponding</u> <u>Transportation</u> <u>Rate (\$/Ton)</u> (2)
1.	<\$20	\$18.75
2.	\$20 to \$23	\$20.83
3.	\$23 to \$25	\$22.92
4.	\$25 to \$26	\$25.00
5.	\$26 to \$28	\$27.08
6.	\$28 to \$30	\$29.17
7.	>\$30	\$31.25

Approach 2: Fixed Demand Charge with Variable Service Charge

Question: How do natural gas pipelines price transportation service for intermediate combined-cycles when demand for services swings from week-to-week or month-to-month?

Answer: They charge a fixed demand charge that allows a generator to call, or schedule volumes of natural gas on a day-ahead basis at a set service charge.

Coal transportation service can be priced the same way, but rather than daily flexibility with natural gas scheduling, coal-fired generators would receive monthly flexibility with train scheduling.

Pros:

- Coal-fired generator can reduce dispatch costs
- Coal-fired generator has more flexibility with managing coal demand
- Railroads recovery fixed costs

Cons:

- Coal-fired generator must be able to recover fixed demand charge through generating margin

Conclusion

- ✓ **Traditional 100% variable \$/ton rail transportation service no longer works for intermediate coal plants.**
- ✓ **Both coal-fired generators and railroads can increase margins with more plant dispatch.**
- ✓ **New approaches to rail transportation pricing are needed to allow coal-fired generators and railroads to share additional margin for more dispatch.**
- ✓ **Tying rail transportation rates to power prices provides coal-fired generators with discounted rail transportation rates when power prices are low and provides railroads with premiums on rail transportation rates when power prices are high.**
- ✓ **Pricing rail transportation service with a fixed demand charge and variable service charge allows for lower dispatch costs and more flexibility with the management of coal supplies.**

Note: Similar pricing approaches could also be used for pricing coal supply.