



Peabody Energy, Gateway Pacific, and the Asian Coal Bubble

How the collapse in coal prices has affected Peabody Energy's coal export prospects

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Executive Summary

China's unexpected emergence as a major coal importer in 2009 sent shockwaves through Pacific Rim coal markets. As rising demand sent coal prices skyward, international mining conglomerate Peabody Energy spotted what it thought would be a lucrative business opportunity: exporting coal from low-cost mines in Wyoming to power-hungry Asian markets. To exploit this opportunity, Peabody soon secured an option to export 24 million metric tonnes per year from the proposed Gateway Pacific coal export terminal in Bellingham, Washington.

But by the time Peabody and Gateway Pacific revealed their export plans, Pacific Rim coal prices had already started to tumble. After peaking at \$133 per metric tonne in the first few weeks of 2011, the Australian coal price benchmark fell almost as quickly as it had risen. By August 2013, that benchmark had fallen below \$77 per tonne—roughly where it was when the coal bubble began to inflate.

All Pacific Rim coal companies now face hard times. But Peabody faces three key vulnerabilities that will make it particularly difficult to succeed in today's marketplace:

Low quality coal. Compared with better-positioned domestic and international competitors, Peabody's Powder River Basin (PRB) coal mines produce coal with relatively meager energy content, which reduces the price that the company's coal can command in international markets.

High transportation and handling costs. The cost of a 1,600-mile rail trip to the Gateway Pacific terminal, plus coal handling and ocean shipping fees, undermines the competitiveness of Peabody's PRB coal.

Low-cost competitors. To succeed in international coal markets, Peabody must compete with well-established international rivals, many of whom produce higher quality coal with lower costs.

These three vulnerabilities mean that, in today's market, **Peabody would lose between \$8 and \$10 for every metric tonne of coal it exported through Gateway Pacific.** Even if coal prices make a modest rebound, Peabody's market disadvantages will make it difficult for the company to earn a profit in PRB coal exports. By continuing to pursue its partnership with Gateway Pacific, Peabody is in effect gambling that the Pacific Rim coal bubble will re-inflate, and stay inflated indefinitely. And as the last few years of price trends have revealed, betting on sustained high prices in the volatile and oversupplied Pacific Rim coal market is a risky prospect.

Introduction

The Powder River Basin (PRB), which stretches through more than 25,000 square miles in southeastern Montana and northeastern Wyoming, contains vast deposits of coal. Although North American power plants purchase hundreds of millions of tons of the mineral each year, Powder River Basin coal companies have had little success making inroads into Asia. To reach Korea, Japan, or China, PRB coal companies first must send their wares

Peabody announced its export plans just after international coal prices peaked.

on a 1,600-mile rail journey to West Coast ports. There, port terminal operators must transfer the material to ocean-going vessels for a

4,500 nautical mile voyage across the Pacific Ocean. At each step, costs mount. By the time the coal reaches an Asian port, the coal's delivered cost reaches at least five times higher than the cost of mining alone.

For many decades, coal prices simply weren't high enough to cover the high costs of shipping Powder River Basin coal to Asia. But between early 2009 and early 2011, Pacific Rim coal prices doubled, lifted primarily by rising Chinese imports,¹ and PRB coal producers saw an opportunity to sell their wares to Asia. But to seize that opportunity, coal companies would need new export facilities on the West Coast.

International coal conglomerate Peabody Energy was one of the first PRB coal producers to launch plans to export to Asia. In February 2011, Peabody announced an agreement with the developers of the proposed Gateway Pacific coal export terminal, northwest of Bellingham, Washington, to export 24 million metric tonnes of coal per year to Asia.

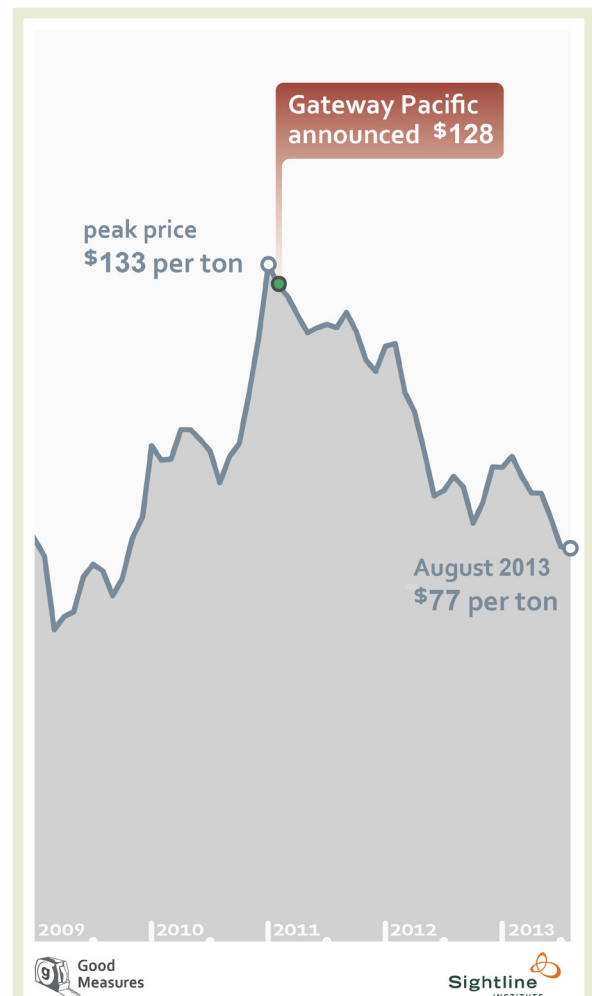


Figure 1. Peabody launched its export plans just after coal prices peaked.

As it turned out, though, Peabody announced its export plans just after international coal prices peaked. (See Figure 1.) And over the next few years, coal prices would lose almost as much ground as they'd gained during their meteoric rise.²

In retrospect, the collapse of the Asian coal bubble should come as little surprise, since both coal producers and coal consumers responded to soaring coal prices in predictable ways. Australia, Indonesia, and other established Pacific Rim exporters boosted output from existing mines and rushed new mines into production. China, meanwhile, took steps to control high prices by shuttering high-cost mines, increasing output from low-cost ones, and easing rail bottlenecks in coal-producing regions. A cooling economy, coupled with gains in energy efficiency, also slowed the growth in China's appetite for coal.

The combination of rising supply and moderating demand deflated the coal bubble. By August 2013, after more than two years of fitful declines, coal prices had lost more than \$55 per metric tonne from their early 2011 highs—a decline of more than 40 percent.

Peabody's Powder River Basin Export Costs

Although nobody can be sure of future price trends, one thing is certain: at today's low Pacific Rim coal prices, Peabody will find it virtually impossible to earn a profit shipping coal to Asia. The combination of mining, rail transportation, handling, and shipping, plus adjustments for Peabody's poor-quality coal—each of which is detailed below—pushes Peabody's costs too high to compete against coal from Australia, Indonesia, and northern China.

Table 1. Peabody's Powder River Basin coal mines vary in quality, production volumes, cost, and shipping distance to West Coast ports.³

Mine	BTU/lb, Gross As Received	2012 Production (metric tonnes)	Rail Distance to Gateway Pacific (rail miles)	Mining cost (\$ per metric tonne)
Rawhide	8,300	13.3 million	1,568	\$8.36
Caballo	8,500	16.9 million	1,575	\$11.40
North Antelope Rochelle	8,800	107.6 million	1,622	\$9.79

Coal Production Costs

Peabody Energy operates three mines in Wyoming's Powder River Basin: the Rawhide mine, the Caballo Mine, and the North Antelope Rochelle mine. Each mine has a different combination of coal quality, shipping distances, and mining costs. (See Table 1.)

Rail Costs

Exporting coal from any of Peabody's active mines would require a lengthy trip by rail to an export terminal, most likely on rail lines owned by the Burlington Northern Santa Fe (BNSF) railroad. BNSF does not release its rail charges to the public, but a recent investigation conducted on behalf of the Western Interstate Energy Board revealed a price quote for coal unit trains, apparently provided by BNSF itself: 1.54 cents per short ton of coal per mile traveled, or roughly 1.7 cents per metric tonne per mile.⁴ In addition to the base per-mile rate, BNSF charges a fuel surcharge schedule for coal trains tied to the prevailing price of diesel fuel.⁵

Given this price and the cost of diesel fuel in July 2013, we estimate that BNSF would charge between \$31.20 and \$32.30 to ship a metric tonne of Peabody coal from the mine mouth to the proposed Gateway Pacific terminal.

Terminal Fees

Because the Gateway Pacific terminal is years away from completion, and faces a lengthy permitting process as well as an extended construction phase, there is no way to know the fees that the Gateway Pacific terminal might eventually charge for handling coal shipments.

But data from nearby coal export terminals can give hints at the likely range of fees Gateway Pacific would charge. Over the past year the nearby Westshore Terminals in Roberts Bank, British Columbia, has taken in roughly \$9.33 per metric tonne of coal it moved onto ships.⁶ Ridley Terminals in northern British Columbia took in operating revenues of roughly \$9.08 per metric tonne over the same period.⁷ And the proposed coal terminal at Longview, Washington, estimated that it would charge terminal fees of \$9.92 per metric tonne.⁸ Based on these actual and estimated fees at nearby terminals, we expect the Gateway Pacific project to charge between \$9 and \$10 per metric tonne.

Trans-Pacific Shipping Costs

Many factors affect shipping costs, including: the size of the cargo ship; its daily hire price; the duration of the trip, including time to load and unload the vessel; the ship's fuel consumption; and the price of fuel.

The waters at the Gateway Pacific terminal are deep enough to handle large Capesize bulk cargo vessels, capable of handling more than 150,000 metric tonnes of coal in a single trip. These large vessels offer economies of scale, which historically have trimmed between \$5 and \$10 per metric tonne of coal from the cost of shipping coal across the Pacific, compared with smaller vessels. Capesize vessels hired for Pacific deliveries commanded roughly \$29,500 per day for a 4-6 month hiring duration.⁹

Southern China has seen the largest increase in coal imports since 2009. But PRB coal is more competitive in South Korea, which offers a shorter (and therefore cheaper) journey from the Northwest US. The ocean voyage from the Gateway Pacific terminal to South Korean ports stretches

roughly 4,600 nautical miles, requiring a round-trip journey of roughly 33 days, including loading and unloading.¹⁰ During the journey, a Capesize vessel would consume roughly 1,300 metric tonnes of bunker fuel, which has sold for prices ranging from \$607 to \$676 per metric tonne in recent months.^{11,12}

Based on these costs, we estimate that shipping coal from the Gateway Pacific terminal to Busan, South Korea via Capesize vessel would cost nearly \$12 per metric tonne.

Basis Adjustments

Coal buyers pay a premium for coals with high energy content and little moisture, but demand discounts for the moist, low-energy coals from the Powder River Basin. To compare different coals on an even footing requires “basis adjustments” that put different coals with different heat and moisture contents on a common standard.

To compare each PRB coal with benchmark coals from Australia, China, and Indonesia, we adjust each coal to a common energy content of 4,900 kcal/kg, on a “Net as Received” (NAR) basis. This conversion introduces significant price adjustments that work to Peabody’s disadvantage.

Table 2. Estimated delivered costs for Peabody Powder River Basin coal, through the Gateway Pacific terminal, to Busan, South Korea.

Cost components, \$USD/metric tonne	North Antelope Rochelle	Rawhide	Caballo
“Free on Board” costs			
Cash cost of coal mining	\$9.79	\$8.36	\$11.40
Handling and rail transportation	\$41.59	\$40.55	\$40.67
Total	\$51.38	\$48.91	\$52.07
Shipping costs and price adjustments			
Ocean shipping costs	\$11.90	\$11.90	\$11.90
Adjustment to 4,900 kcal/kg Net-as-Received	\$10.11	\$14.65	\$13.25
Total	\$22.01	\$26.55	\$25.15
Delivered costs, 4,900 kcal NAR basis	\$73.39	\$75.46	\$77.22

Total Cost for Peabody’s PRB Exports

Based on the above estimates, South Korean buyers must be willing to pay at least \$73.39 per metric tonne, on a 4,900 kcal/kg NAR basis, for Peabody to break even exporting coal from its North Antelope Rochelle mine. For Rawhide coal, buyers would have to be willing to pay \$75.46 per metric tonne for Peabody to break even. And for Caballo coal, Korean buyers must pay \$77.22 per metric tonne (see Table 2). These values should be seen as rough estimates for the lowest cost at which Peabody could avoid cash losses on coal exports. If Peabody hopes to cover the full cost of production—including depreciation, amortization, and depletion—the prices would have to rise by

a dollar or more above these benchmark costs. And if Peabody hopes to actually earn a profit for its export plans, prices would have to rise even higher.

Peabody's Competition

Australia, Indonesia, and Northern China all export thermal coal of comparable quality to Peabody's PRB coal. These other producers have higher mining costs than most PRB coals, but benefit from much lower transportation costs to Asian import markets. And they all upgraded their infrastructure during the rise in Asian coal prices—meaning that they have ample export capacity in today's market.

Based on recent reported prices and shipping rates, a South Korean electric utility can purchase a tonne of Indonesian coal of comparable quality to North Antelope Rochelle's for about \$65.46 per metric tonne on a 4,900 kcal/kg NAR basis. Coal from Australia and Northern China sells for even lower prices. (See Table 3.)¹³

These numbers present a dire picture for Peabody's PRB export ambitions. As mentioned above, Peabody must receive at least \$73.39 per metric tonne just to break even on its most export-friendly coal—but South Korean buyers currently can purchase a comparable product for \$8 to \$10 less per metric tonne. As a result, in today's market, Peabody Energy stands to lose between \$8 and \$10 for every tonne of coal it exports. (See Table 3.)

Table 3. International competitors have an \$8 to \$10 per tonne advantage over Peabody.

Cost of coal delivered to South Korea \$USD/metric tonne, 4,900kcal/kg NAR basis	
Pesbody PRB coal	
Caballo	\$77.22
Rawhide	\$75.46
North Antelope Rochelle	\$73.39
International competitors	
Northern China coal	\$63.47
Australian coal	\$65.02
Indonesian coal	\$65.46

Conclusion

In early 2011, Peabody's bid to export coal from the Gateway Pacific terminal may have looked like a can't-miss proposition. Coal prices in Asian ports had risen steadily for nearly two years, and international prices were high enough that they could cover the projected costs of producing, handling, and shipping coal from the western United States to the other side of the Pacific, while still leaving Peabody with a margin for profit.

By September 2013, however, the deflation of the Pacific Rim coal bubble had sent Peabody Energy's export plans into the red. Asian coal prices have reverted closer to historic levels, and Peabody simply can't earn a profit shipping its wares to Asia.

Only a sustained increase in prices offers Peabody any hope of pricing into even the most competitive Asian coal markets. Yet many coal analysts now predict a slowdown in China's coal imports, or

even a decline, within a few years. Meanwhile, Australian and Indonesian coal miners have boosted production of low-cost coal, and have developed plans for new mines should prices rise again. These market changes convinced many Wall Street market forecasters that coal prices are likely to stay low for the foreseeable future—with Goldman Sachs declaring last month that “the window for thermal coal investment is closing.”¹⁴

These developments have cast a pall of doubt over the financial viability of coal exports from the Pacific Northwest—and created deep uncertainty for Peabody Energy’s coal export ambitions.

About the Author

Clark Williams-Derry directs research and communications for Sightline Institute. His research and writing over a 20 year career has spanned climate and energy policy, sustainable transportation, sprawl and smart growth, voting theory, agricultural policy, and wetlands preservation.

Sightline Institute is a not-for-profit research and communications center—a think tank—based in Seattle. Sightline’s mission is to make the Northwest a global model of sustainability—strong communities, a green economy, and a healthy environment.

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Note: *Coal markets experience constant flux, and both coal and rail companies keep much of their cost and sales data private. Readers should exercise caution in relying on Sightline’s estimates.*

Notes and Sources

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