



Northwest Coal Exports

Some common questions about economics, health, and pollution.

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“Coal is a dead man walkin’.”

That’s what Kevin Parker, the global head of asset management for Deutsche Bank, told the *Washington Post*. Regarding coal-fired power plants, he said, “Banks won’t finance them. Insurance companies won’t insure them. The EPA is coming after them. . . . And the economics to make [coal] clean don’t work.”¹

Customer demand for coal has been declining in the United States, in part because of competition from cleaner energy sources. With dimming prospects in North America, coal companies are looking to Asian markets where demand appears to be increasing.² These companies hope to take coal mined on public land in the Powder River Basin of Montana and Wyoming, carry it by rail to West Coast ports, and ship it to Asia, including China and India, where it would be burned to generate electricity.³ Before coal companies can export large volumes of coal to Asia, however, they would need new shipping terminals. Yet exporting coal from the Northwest states could open a Pandora’s box of pollution and economic risk for the region.

What is the status of coal exports in the Northwest?

Several coal export terminals are planned in Oregon and Washington, and they have the potential to dramatically increase the amount of coal shipped to Asia.

Some coal already travels through terminals in British Columbia. Most of it is high grade metallurgical coal mined in Canada, rather than the thermal power plant fuel coal from the Powder River Basin. The biggest coal export facility is the Westshore Terminal at Roberts Bank, just north of the US border, which moved about 21 million tons of coal in 2010. Neptune Terminals in North Vancouver moved an additional 8 million tons, and Ridley Terminals in Prince Rupert exports roughly 9 million. (Note that coal volume figures throughout this report refer to metric tons.)⁴

Some capacity expansions are underway at British Columbia’s coal ports, but the Northwest’s coal

exports would be enlarged dramatically with the addition of new export facilities that are planned for Oregon and Washington:

- ◆ **Cherry Point, Washington.** SSA Marine is planning to build and operate the Gateway Pacific Terminal, a new shipping facility north of Bellingham that would be capable of handling 48 million tons of coal per year. Peabody Energy, the world's largest private sector coal company, has already agreed to supply 24 million tons of coal.⁵
- ◆ **Longview, Washington.** Millennium Bulk Terminals, a subsidiary of the Australian coal mining company Ambre Energy, purchased a port site on the Columbia River. Arch Coal, a major American coal mining company, has a 38 percent stake in the site. Ambre hopes to export 44 million tons of coal, with 25 million tons in the first phase.⁶
- ◆ **Grays Harbor, Washington.** According to newspaper accounts, RailAmerica is planning to develop a coal export terminal at the Port of Grays Harbor's Marine Terminal 3 that could handle 5 million tons of coal each year.⁷
- ◆ **Port Westward, Oregon.** Kinder Morgan is planning to build and operate a coal export terminal at the Port Westward Industrial Park near Clatskanie that will be capable of handling 30 million tons of coal per year, with 15 million tons in an initial phase of development.⁸
- ◆ **Port of Morrow, Oregon.** Ambre Energy is planning to construct a facility on the Columbia River in eastern Oregon that will transfer coal from rail to barges that will be towed downriver Port Westward where the coal will be loaded on ongoing vessels. The company says that the system will be capable of handling 8 million tons per year.⁹
- ◆ **Coos Bay, Oregon.** The Port of Coos Bay is considering a mysterious proposal known only as "Project Mainstay" that officials say could export 6 to 10 million tons of coal per year.¹⁰

If each of these facilities were to operate at full capacity Northwest ports would be shipping more than 140 million tons of coal each year, making it one of the largest coal-shipping regions in the world.

Does the US already export coal to Asia?

In recent years, the US has exported only a few million tons of coal to Asia, and just a fraction of that to China.¹¹ Even though the volume of Asia-bound coal increased during 2010 and early 2011, the two facilities proposed for Washington could easily multiply total American coal exports to China tenfold.¹²

Coal mining companies want to tap new markets as domestic utilities shift away from coal. Coal power in the US is facing economic competition from cleaner fuels, and older plants can't meet modern pollution standards without expensive upgrades. In January 2011, Chevron announced it would sell its coal mines by the end of the year because staying in the industry was no longer a good business strategy.¹³ Over the last two years, utilities have announced plans to close more than three dozen outdated coal plants, including Oregon's only coal-fired electricity plant at Boardman.¹⁴ Washington's lone coal plant will close by 2025.¹⁵

At the same time that North American prospects are dimming, however, coal has been commanding

higher prices in Asia.¹⁶ Coal mining companies are looking to overseas markets that lack strong pollution and health standards. Yet even exports to Asia will not save the industry. A July 2011 research report from Deutsche Bank argues that Chinese coal imports for power plants will stabilize at roughly 100 million tons per year, rather than increasing as many analysts had been expecting.¹⁷

Do coal export facilities make good neighbors?

One of the primary objections to coal export terminals is the spread of coal dust. Exporters store coal in large piles at terminals, and these piles can feed prolific quantities of dust to the wind, especially when terminal machinery are loading and unloading the fuel. As one study put it, “coal terminals by their nature are active sources of fugitive dust.”¹⁸ Unsurprisingly, coal dust problems plague several coal export facilities in North America.

In Seward, Alaska, for example, residents have sued the local terminal operators because coal dust blowing off the terminal’s stockpiles regularly coats nearby fishing boats and neighborhoods with debris. The residents’ suit states that the conveyor system used to load ships drops coal dust into Seward’s scenic harbor, violating the Clean Water Act.¹⁹ In 2010, the state of Alaska fined the railroad company that delivers coal to the terminal \$220,000 for failing to adequately control dust.²⁰

British Columbia’s Westshore coal terminal, which ships about 21 million tons per year, sits on a peninsula jutting into the Strait of Georgia. Some residents of Point Roberts, a beachfront community three miles away, complain that coal dust blackens their homes, patio furniture, and boats moored in the local marina.²¹ A comprehensive 2001 study of coal dust emissions in Canada found that the Westshore Terminal emits roughly 715 tons of coal dust a year.²² A separate study recently conducted by researchers at the University of British Columbia found that the concentrations of coal dust in the vicinity of the terminal had doubled during the period from 1977 to 1999.²³

The Lamberts Point Coal Terminal in Norfolk, Virginia, which ships 28 million tons of coal annually, is legally permitted to release up to 50 tons of coal dust into the air each year. Black grit from the coal piles commonly coats cars, windowsills, and plants in neighboring communities. Neighbors worry that the dust is responsible for the vicinity’s elevated asthma rates.²⁴

The scale of likely dust emissions at the export facilities planned for the Northwest is unclear. Project developers at Longview and Bellingham are promising to install mitigation devices that they say will control dust, yet it’s highly unlikely that the coal dust can be contained entirely. Huge piles of coal will stand outdoors in wind and weather, and frequently be shoveled into new positions by giant bulldozers and other machinery.

Does rail transport release coal dust?

Coal dust escapes from the open-top rail cars used for transporting coal and can create safety and congestion problems for rail traffic. In 2005, for example, coal dust that had accumulated in ballast, the layer of crushed rock that supports rail tracks, caused two derailments. Coal dust deposits sometimes even cause spontaneous fires.

The Burlington Northern / Santa Fe Railway (BNSF) has studied the problem and found that as much as a ton of coal can escape from a single loaded coal car, while other reports show that as much as 3 percent of a coal car's load, which is typically 100 tons or more, can blow away in transit.²⁵ The US Department of Transportation classifies coal dust as a “pernicious ballast foulant” that can weaken and destabilize rail tracks.²⁶ It is not clear how much coal dust might escape in the Pacific Northwest, but one watchdog group has verified that coal and coal dust does escape from open rail cars traveling along Puget Sound coastlines.²⁷

To reduce or eliminate coal dust from escaping, shippers can fill cars less full or cover them with tarps or chemical sprays, but these measures run up the cost of moving coal, so coal shippers rarely employ them by choice.²⁸ A March 2011 ruling from the US Surface Transportation Board, which oversees railway operations, allows BNSF to require coal shippers to cover their loads or otherwise control dust.²⁹

How effective those measures will be is anyone's guess: Powder River Basin coal is notoriously difficult to handle. One technical analysis finds that, “PRB coal is extremely friable and will break down into smaller particles virtually independent of how the coal is transported or handled.” According to the study's authors, “PRB represents the extremes of handling problems.”³⁰

The same analysis found that:

Spontaneous combustion of coal is a well-known phenomenon, especially with PRB coal. This high-moisture, highly volatile sub-bituminous coal will not only smolder and catch fire while in storage piles at power plants and coal terminals, but has been known to be delivered to a power plant with the rail car or barge partially on fire...³¹

Outside of confined environments, Powder River Basin coal does not spontaneously explode or burst into full flame, but under the wrong conditions it can self-ignite and burn slowly even while it is riding the rails—a troubling proposition for railroad workers and communities along the tracks.

Is coal dust harmful?

Coal dust is more than a nuisance. It degrades water quality and may pose a danger to residents' health. Coal workers who are exposed to dust, for example, suffer elevated rates of bronchitis, emphysema, and black lung disease.³² In Liverpool, England, researchers found that, even after correcting for economic and environmental factors at home, children exposed to coal dust from the nearby docks were more likely to miss school because of respiratory problems, including wheezing and coughing.³³

In Norfolk, Virginia, home of the Lamberts Point Coal Terminal, soil samples contain up to 20 percent coal by weight at a site less than 1 kilometer from the docks, 3 percent coal at a site 5 kilometers away, and 1 percent coal as far as 12 kilometers away. High coal levels in soil along railroad tracks suggest that trains are another pathway for contamination. Researchers in Norfolk also found arsenic levels were 5 times higher than background soil concentrations nearby, and hypothesize that the coal export terminal is at least partially responsible for the difference because coal often contains arsenic.³⁴

A group of 160 doctors and other health professionals in Whatcom County, Washington, published a position statement documenting a number of health-related problems with coal exports. In addition to the risks of coal dust, the doctors raise concerns about the impacts of the trains themselves, which generate noise, create collision hazards, and delay emergency medical response by impeding rail crossings. Trains are also responsible for hazardous air pollution from diesel engines, a documented threat to health in Washington.³⁵

The BNSF rail yards in Spokane—an important linkage point between the Powder River Basin and Washington’s Pacific ports—would see increased rail traffic that is almost certain to increase harmful pollution there. A 2010 study by the Spokane Clean Air Agency identified lung cancer risks in Spokane that appear closely related to residents’ proximity to the BNSF railyard, where diesel engines generate prodigious quantities of small particulate pollution—the most health-threatening major air pollutant in the Northwest. Researchers ruled out numerous alternative explanations and concluded that “the BNSF railyard appears to be the only other air pollution source in the vicinity of Hillyard that can account for its differential lung cancer risk.”³⁶

Is Powder River Basin coal better for the environment than China’s coal?

Powder River Basin coal is lower in ash and sulfur than some other kinds of coal, but it also produces less energy per pound than the coals that are more commonly burned in modern power plants.³⁷ To produce the same amount of energy from Powder River Basin coal requires mining, shipping, and burning about 50 percent more.³⁸ After accounting for those differences, coal from the Powder River Basin is somewhat cleaner than China’s domestic sources of coal, but it is still coal—an extremely polluting form of energy.

Coal is a highly impure form of fuel, and burning it releases numerous hazardous substances, including radioactive materials such as uranium and thorium. In fact, the US Department of Energy’s Oak Ridge National Laboratory has estimated that coal plants have released hundreds of thousands of tons of uranium, and that radiation from coal plants is a greater threat to Americans than is radiation from nuclear plants.³⁹

The true costs of coal are daunting. Researchers at the Harvard Medical School recently pegged the annual cost of coal—including harm to public health, mining damage, pollution, and subsidies—at \$345 billion per year in the United States alone.⁴⁰ A 2010 report from the National Research Council finds that the non-climate damages from burning coal are 20 times higher than the damages from natural gas, the next dirtiest and costliest fossil fuel in use.⁴¹ And a 2009 report from the National Academy of Sciences determined that US coal burning results in \$60 billion per year in health costs alone.⁴²

Won’t China just burn someone else’s coal if we don’t supply it?

US coal exports would not supplant the burning of dirtier Chinese coal. Instead, North American exports would add to the volume burned in Asia. In a recent white paper, resource economist Thomas

Power demonstrated this point:

This result—that international competition to serve particular import markets will lower the prices that the importing countries have to pay—should not be startling. One of the major benefits of international trade is that it allows countries access to lower cost sources of supply.⁴³

In other words, Washington coal exports will not simply displace other coal in the market. Instead, American coal exports will adhere to fundamental economic principles: an increase in supply will bring down market prices and thereby increase total consumption. The extent to which increasing supply will boost demand is debatable—just like the extent to which higher prices would dampen demand—but the direction of the change is clear.

In fact, some underlying dynamics may make US exports even more critical. As Power points out, lower prices may encourage China to build more coal-burning power plants than they otherwise would, an investment that would lock in elevated coal burning and pollution for decades to come.

Can Chinese coal burning harm the Northwest's environment?

Sulfur compounds, soot, and other byproducts of Asian coal combustion are detectable on mountaintops in the western United States.⁴⁴ Researchers have also linked ozone in the air above the United States to pollution from developing Asian countries that are burning fossil fuels.⁴⁵ Ozone can exacerbate asthma and heart disease. Mercury, a neurotoxin that is particularly dangerous for children, is especially likely to travel across the Pacific Ocean. An Oregon researcher estimates that as much as 18 percent of the mercury in Oregon's Willamette River comes from sources overseas, increasingly from China.⁴⁶ Another study found that human-created pollution from Asia contributed to 14 percent of the mercury dropped on Mount Bachelor in central Oregon.⁴⁷

What's more, burning large amounts of coal accelerates global climate change. Burning 100 million tons of Powder River Basin coal releases roughly 180 million tons of heat-trapping carbon-dioxide into the atmosphere. That's about twice as much global warming pollution as results from every activity in Washington in a year, including every power plant, car, truck, factory, and farm in the state combined. The power plant in Centralia, now scheduled to phase out coal-burning, emits about 10 million tons of carbon dioxide per year.⁴⁸ All the activity in the entire city of Seattle emits less than 7 million tons.⁴⁹

Would coal exports help the Northwest's economy?

Coal export terminals employ surprisingly few people. In Longview, estimates for the original version of the export project were that operations would employ 70 people to move about 5 million tons of coal.⁵⁰ The site currently employs 50 people, however, and news reports indicate that the coal terminal would eliminate most of the activity related to those 50 jobs.⁵¹ The net employment gain could be as small as 20 jobs.

At Cherry Point, project developers say that a 24 million ton facility, which they plan to open in 2015, would employ 89 workers. In 2026, when the entire 54 million ton facility is completed, proponents believe that it would directly employ about 280 people.⁵²

Each of the coal export facilities planned for Washington would occupy hundreds of acres of waterfront land with storage for raw coal, possibly forestalling other, more job-intensive uses for those lands. For example, at the Port of Tacoma, a marine construction company leasing just 3.5 acres of land and a new cold storage facility on 17 acres of land are each likely to generate 100 new jobs.⁵³ A Port of Seattle economic impact study found that shipping 1,000 metric tons of grain—a bulk commodity like coal—generates just 0.09 jobs, compared with 0.57 jobs for containerized cargo and 4.2 jobs for “break bulk” cargo, such as big machines or goods shipped on pallets, which requires more handling.⁵⁴ A study at the Port of Baltimore came to similar conclusions, finding that coal export supports just 0.11 jobs per 1,000 metric tons, as compared to 0.41 for other dry bulk commodities, 0.43 jobs for containerized cargo, and 1.71 jobs for autos.⁵⁵

Recent redevelopments on port sites along the Lower Columbia River illustrate the weakness of coal exports as an economic strategy. The proposed coal export terminal at Longview would occupy 416 acres of heavy industrial waterfront property and produce 70 jobs—less than 0.2 jobs per acre. By contrast, in Troutdale, Oregon a recently cleaned-up port site attracted a FedEx Ground regional distribution center that employs over 750 people on 700 acres of heavy industrial property—supporting 1.1 jobs per acre.⁵⁶ In Vancouver, Washington another redeveloped port site with 218 acres of heavy industrial waterfront is expected to employ up to 1,000 people to accommodate a surge in wind turbines and other cargo—generating 3.4 jobs per acre.⁵⁷

Will Canada ship the coal if the US does not?

Although coal mined in the US accounted for no more than 6 percent of the total volume shipped through BC ports in 2009 and 10 percent in 2010, US coal mining companies appear to have looked at reaching new Asian markets through BC ports.⁵⁸ In January 2011, for example, Arch Coal announced that it had reached an agreement with Ridley Terminals to export 2.5 million tons of coal annually from Prince Rupert. In June 2011, Cloud Peak Energy announced an agreement to export an unspecified volume of coal from Westshore over a 10-year period.⁵⁹

Yet big increases in shipments of American coal from British Columbia seem unlikely. Canadian steelmaking coal is in high demand, and it brings significantly higher prices than the Powder River Basin coal. Moreover, to a large extent, BC’s coal ports are structured to handle primarily Canadian coal and other exports.

Finally, space is limited at BC terminals. Expansions planned for BC’s coal terminals do not come close to providing enough capacity for the volumes of coal called for by the recent proposals in Washington. Even if none of the planned new capacity were filled with high-value Canadian coal, and even if all three of BC’s coal ports were able to operate year-round at full capacity—two highly unlikely scenarios—the terminals would have less than 28 million tons of extra capacity, a small fraction of the 100 million tons or more planned for Washington.

What’s the history of coal exports on the West Coast?

Two West Coast port cities have already gambled and lost on coal-export facilities. After investing millions of dollars in infrastructure and setting aside sizeable harbor acreage to coal export facilities,

both Portland and Los Angeles watched their promised revenue from coal exports evaporate. The abandoned coal export facilities represented millions in stranded investments and clean-up expenses, not to mention years-long missed opportunities for more durable economic development choices.⁶⁰

The early 1980s saw a rush of coal companies proposing export terminals in Washington and Oregon to satisfy a hungry Asian market. Longview, Kalama, Vancouver, and Astoria all entertained proposals, but the Port of Portland bought in,⁶¹ committing to a 25-year lease with Pacific Coal for 90 acres and 900 feet of prime riverfront for a coal export terminal.⁶²

The Port and investors spent \$25 million building a coal export terminal, but two years later, the project imploded after Asian markets proved unstable and unreliable.⁶³ The *Oregonian* reported:

A five-month investigation showed Port and Pacific Coal officials heedlessly plunged ahead despite clear warnings that they might never move a solitary lump of coal.⁶⁴

Contractors didn't get paid, borrowers defaulted, and lawsuits flourished. Analysts later determined that coal export failed because the Asian demand was based on promises rather than actual long-term contracts. International banks studying the issue found that the demand for coal had been "vastly overstated."⁶⁵

Soon after the Port of Portland collapse, nearly all other West Coast coal plans died. In the early 1990s, however, Los Angeles forged ahead with another coal export facility when coal giant Peabody led a consortium of investors that promised jobs, tax revenue, and environmental protection with a new coal export terminal at LAXT, the Port of Los Angeles.⁶⁶ The plan was an enormously divisive project that alarmed neighbors and nearby workers.⁶⁷

A 1993 *Los Angeles Business Journal* article prefigures today's debates in the Northwest:

... although the terminal will create jobs and taxes throughout Southern California, the terminal will have a negligible impact on L.A. County because the product (coal) is sourced from other states and the automated terminal won't generate many direct jobs.⁶⁸

And:

[The City of Long Beach filed] a lawsuit July 14, alleging that the Port of L.A.'s environmental impact report doesn't adequately address the negative environmental impact of coal dust that will be spewed from the massive uncovered storage pile of coal and petroleum coke.

Fears proved well-founded. The terminal experienced at least two fires after dangerous amounts of coal dust accumulated in the ship-loading machinery.⁶⁹

The facility closed just six years after it opened, owing to unfavorable market conditions. When the facility shut down, the city of Los Angeles had to write off \$19 million of capital investment, and forfeit \$94 million in expected revenue.⁷⁰ Ultimately, the city was sued for improperly managing the site—and for failing to consider alternative uses of the site—and local authorities shelled out \$28 million to settle the suit.⁷¹

About the Author

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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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