

OFF THE RAILS

THE FOSSIL FUEL TAKEOVER OF THE PACIFIC NORTHWEST



ForestEthics

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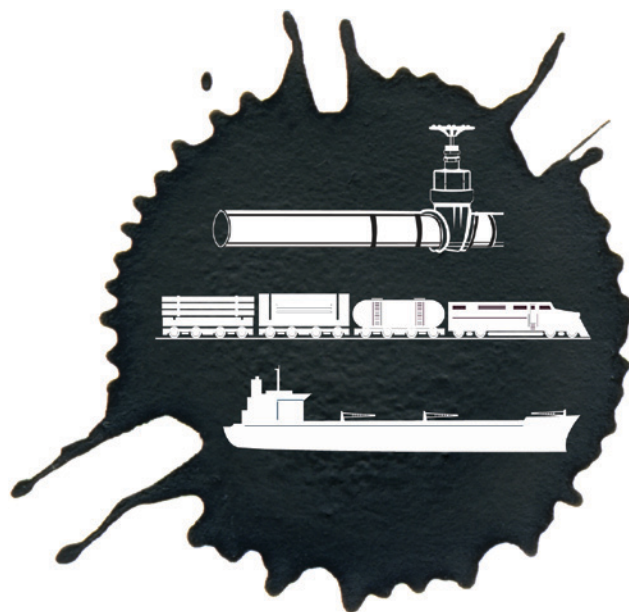
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OVERVIEW OF THE THREAT

From tankers to trains to pipelines, the fossil fuel industry is scrambling to find new ways to bring oil, tar sands, and coal from the interior of North America to new buyers in Asia and beyond. This is happening right now with little debate or discussion by citizens and political leaders – yet this issue could forever change the face of our region.

OUR WAY OF LIFE: ON THE LINE

Several seismic shifts in the last decade have led to the Pacific Northwest finding itself at a risky fossil fuel crossroads. A decline in US consumption of both coal and oil¹ combined with higher levels of production has led to a new gold rush mentality and a relentless drive to get product to market in the fastest, cheapest way possible. Washington, Oregon, and British Columbia are being queued up as the exit ramp to Asia – we just happen to be the shortest and cheapest routes to those markets, whether from pipeline or rail to tankers and then across the Pacific.² But this shift brings few jobs – and puts many more at risk.

A single major oil spill in Puget Sound, by the estimate of Washington's Department of Ecology, could cost the economy \$10.8 billion and negatively impact 165,000 jobs.³ The fossil fuel industry's drive for more profit as fast as possible is putting our economic well-being at risk – and also putting in jeopardy the mountains, rivers, salmon, and orca whales that are the very essence of this place called the Pacific Northwest.

Isn't This Just the Expected Environmental Hyperbole?

You be the judge. In 2008, only 9,500 rail cars of oil were transported on America's Class I railways. In 2013 there were an estimated 400,000 rail cars of oil.⁴ In only six years, oil-by-rail has increased 4,111%. During that same time, the Pacific Northwest went from having zero oil-by-rail facilities capable of receiving massive oil trains, to four functional and six proposed terminals as of the end of 2013. Rail is far from the only threat. Kinder Morgan, an oil giant run by former Enron execs, requested permits in December 2013 for a new pipeline threatening Washington State, with a proposed terminus just north of the American/Canadian border. If permitted, this pipeline, combined with an existing Kinder Morgan pipeline built in 1953 on almost the same route, could carry 890,000 barrels of oil – more than the highly controversial Keystone XL pipeline. Almost all of it would be shipped through Puget Sound.


There has been little public discussion of these rapid-fire developments and some of the risks are impossible to mitigate. In the case of Bakken oil, it is extremely explosive and it is being transported in tank cars identified as unsafe for this purpose in 1991.⁵ Tar sands oil is less explosive, but more toxic when refined and nearly impossible to clean up in marine or freshwater spills.⁶ With so much at stake, our choices must place broad public benefits over narrow private profits – the Northwest will own these decisions for decades to come.



“OIL EXPORT TERMINALS DON'T EMPLOY A LOT OF PEOPLE... THE RISK ISN'T WORTH THE REWARD, WE DON'T BELIEVE IN JOBS AT ANY COST. YOU KNOW, ONE ACCIDENT THERE PUTS US OUT OF WORK, IT'LL PUT THOUSANDS OF PEOPLE OUT OF WORK.”

**CAGER CLABAUGH, ILWU
LOCAL PRESIDENT IN
VANCOUVER, WA**

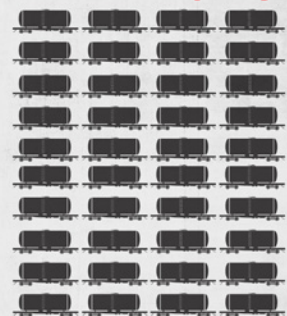
**IN ONLY SIX YEARS,
OIL-BY-RAIL HAS
INCREASED 4,111%**

 = 9,500 Rail Cars

2008



2013



OVERVIEW OF THE THREAT

ALL RISK & NO REWARD

The most immediate risks to the Northwest come from aggressive efforts to push through new oil transport infrastructure. The oil and coal industries are pushing hard to maximize the rate of extraction and export of tar sands in Alberta, shale oil from deposits in North Dakota, and coal from Wyoming and Montana.

The numbers for the Northwest are staggering:

New oil-by-rail projects constructed in WA and OR since 2011: **4**

Daily potential throughput of those 4 projects in barrels per day: **183,600**

Proposed oil by rail projects in WA and OR: **6**

Daily potential throughput of the 6 proposed projects in barrels per day: **601,300**

Total barrels per day throughput of all 10 oil by rail projects if built: **784,900**

Keystone XL pipeline, if built, in barrels per day: **830,000**

New pipeline proposals in BC: **2**

Capacity of those 2 pipelines in barrels per day, combined: **1,115,000**

Number of tar sands tankers these pipelines would bring to the West Coast: **560**

Number of proposed coal terminals in BC, OR, and WA: **4**

Combined tonnage of those 4 terminals in tons/year: **108 million**

Approximate number of loaded coal freighters through the Salish Sea and Pacific Coast: **1,000**

Expansion proposed at BC's existing coal export terminals, tons/year: **19 million**

Number of mile or longer coal and oil trains, daily, if all known proposals are built: **57**



IF THESE PROJECTS GO FORWARD, IT'S NOT A MATTER OF WHETHER WE WILL HAVE A DEADLY EXPLOSION, A DESTRUCTIVE OIL SPILL, OR A COAL TRAIN DERAILMENT; IT'S JUST A QUESTION OF HOW SOON.

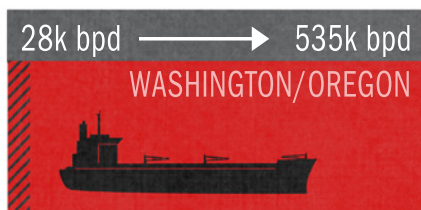
OVERVIEW OF THE THREAT

PROPOSED INCREASES IN OIL TRANSPORT THROUGH THE REGION

Washington and southern BC currently supply refineries for the region primarily by the combination of tankers and the existing Kinder Morgan Trans Mountain pipeline. These graphs represent the increase of crude transport in thousands of barrels a day, whether Bakken or tar sands, through BC, Washington, and Oregon.



Additional tanker traffic in BC reflects the reality that the proposed Kinder Morgan and Enbridge pipeline proposals will both feed tankers destined for the US or Asia.



The increase in Washington and Oregon tankers comes from the proposals on both the Columbia River and in Hoquiam (Grays Harbor). Tankers and barges could travel to Washington's refineries on Puget Sound, to California, or to Asian markets. Incoming tankers to Washington's refineries are not included in these numbers.



The increase in pipeline capacity is the addition of Kinder Morgan and Enbridge proposals to the existing Kinder Morgan pipeline.



The increase in rail throughput comes from maximum permitted capacity for the existing four rail terminals in Washington and Oregon, with the 6 new proposals making up the difference.

SPOTLIGHT: RISKS POSED BY TRAINS

COMMUNITIES WITH TRAINS RUNNING THROUGH THEM COULD FACE AN INCREASE OF MORE THAN FOUR HOURS A DAY OF WAITING AT THE TRACKS IF ALL THE OIL-BY-RAIL AND COAL TRAIN PROPOSALS COME TO FRUITION.



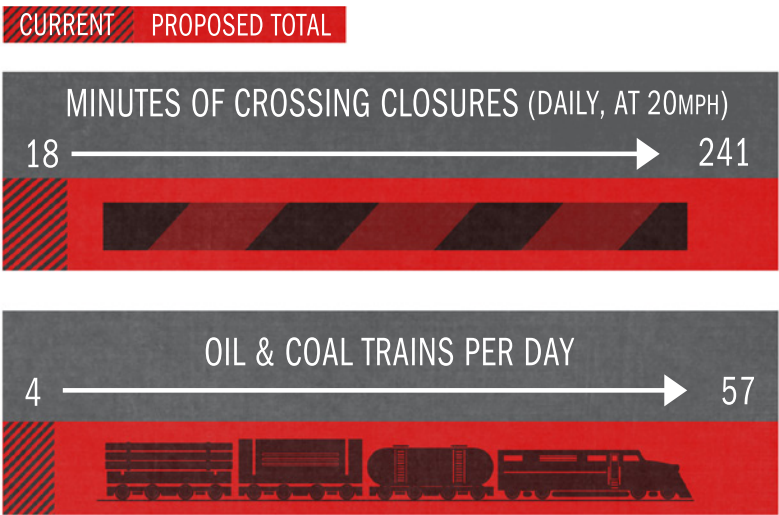
HOW MANY LEAKING, EXPLODING TRAINS DO YOU WANT IN YOUR COMMUNITY?

Plans to ship both Bakken and tar sands crude oil by rail through the Pacific Northwest represent the worst of both worlds. Tragic and deadly accidents in 2013 demonstrated conclusively that Bakken shale oil poses a uniquely explosive threat⁷, while tar sands sink in aquatic spills and create a long-lived toxic residue that contaminates ecosystems.⁸

The increase in these massive oil and coal trains would shut down streets in cities and small towns for hours each day, slow emergency responders, delay passenger rail service, annoy neighbors with unprecedented noise and vibrations, and disrupt the engines of Pacific Northwest commerce. From coal trains alone, some crossings in Seattle could see an 83% increase in closures by 2026 (over 3 hours)—and that’s not counting oil.⁹ Even worse, large-scale fossil fuel exports would mean drastic increases in carbon emissions and new risks to vessels navigating the islands and shoals of the Salish Sea.

Standing Up & Fighting Back

Over the past three years, Pacific Northwest communities have been fighting back against coal industry schemes that would invite 18 trains full of coal into the region each day (36 trips of full and empty trains), each spewing diesel and dust alongside the tracks. But last year, the problem got bigger when the oil industry hatched plans along the Columbia River, in Grays Harbor, and at all five of Washington’s Puget Sound refineries to build rail loops designed to receive giant oil trains of 100 or more tanker cars. Each oil train hauls roughly 70,000 barrels of oil.



SPOTLIGHT: RISKS POSED BY TRAINS

“FLAMMABLE, LIKE GASOLINE”¹⁰

Most of the oil terminals in Washington claim to be focused on oil from the Bakken shale plays. In early January 2014, a federal agency alert from the Pipeline and Hazardous Materials Safety Administration made clear what many already knew: that Bakken crude is more prone to explosion than other types of crude oil.¹¹ Four major explosions in 2013 (Alabama, North Dakota, New Brunswick, and Quebec) helped 2013 far exceed previous decades of spills from rail accidents.

When oil trains explode or catch fire, they are incredibly dangerous. Normally, there is little fire fighters can do to extinguish the blaze; the response is generally to try to evacuate the vicinity and let the blaze burn itself out or let the tanker cars explode.¹²

Worse yet, we don't really know how big the problem is. The large-scale rail transport of crude oil is a very recent phenomenon.

And the tanker cars themselves are dangerous: Nearly 80 percent of the crude oil moved around North America railways (78,000 of the 92,000 tanker car fleet) is carried in a flawed and aging tanker car model known as the DOT-111.¹³ The National Transportation Safety Board has known for decades that the DOT-111's thin metal skin and protruding valves mean they shouldn't be used for flammable or hazardous materials. But the growth of crude-by-rail shipments depends on using a hundred or more DOT-111 tanker cars hitched together - a huge concentration of risk.¹⁴

WHAT IS MOTIVATING REFINERIES TO WANT TO BRING IN OIL AND TAR SANDS BY RAIL?

Refineries can only process a certain amount of oil and tar sands, but with the new tracks, they can receive more than they process and transfer crude to tankers to sell to other states and countries. Here's why this is likely:

- 1** Tar sands from Canada is legally different than US crude, allowing it to be exported.¹⁵
- 2** The oil industry, politicians, and lobby groups are pushing to allow export of US crude, which has been effectively banned since 1975.¹⁶
- 3** Oil by rail infrastructure proposed to date exceeds refining capacity in the Northwest by such a large amount that these proposals appear aimed at export.¹⁷

Even in the short run, this means that our refineries could be turned into nothing but an exit ramp to Asia for Canadian tar sands and US crude--adding huge oil spill risks to already overburdened Salish Sea waterways.



**WE AREN'T READY:
COMMUNITIES
AND GOVERNMENT
AGENCIES ARE SIMPLY
NOT PREPARED FOR
OIL SPILL CLEANUP
OR RESPONDING TO
OIL FIRES ALONG THE
NORTHWEST'S RAIL
ROUTES, WHICH DIVIDE
POPULATION CENTERS
ACROSS THE REGION.
AND TAXPAYERS ARE
ON THE HOOK FOR
CLEANUP AND FIRST
RESPONDERS' NEEDS.¹⁸**

SPOTLIGHT: RISKS POSED BY PIPELINE & OIL TANKERS



TAR SANDS OIL IS ESPECIALLY RISKY BECAUSE:

A) WITHOUT A COCKTAIL OF TOXIC CHEMICALS TO DILUTE IT, SLUDGE-LIKE TAR SANDS IS IMPOSSIBLE TO TRANSPORT

B) WHEN IT SPILLS IN WATER, IT IS NEARLY IMPOSSIBLE TO CLEAN UP¹⁹

C) MINING FOR TAR SANDS DESTROYS RICH NORTHERN FORESTS AND HOMELANDS FOR FIRST NATIONS

D) WELLS TO WHEELS, TAR SANDS IS 10% TO 30% MORE CARBON INTENSIVE THAN CONVENTIONAL CRUDE²⁰

2 PROPOSED PIPELINES, 560 NEW OIL TANKERS

Two tar sands pipelines would up the ante for the risk of a major Salish Sea oil spill. About 80 tar sands tankers currently transit the region's waterways each year, carrying diluted bitumen (tar sands) from Kinder Morgan's existing pipeline from Alberta to Vancouver, BC. The proposed export-focused Kinder Morgan pipeline in combination with Enbridge's Northern Gateway proposal would multiply that number eight-fold to more than 640 loaded tar sands tankers annually in the Salish Sea and Pacific coasts combined.

The new export-focused Kinder Morgan pipeline - a second, and larger, pipeline that would run alongside the existing spill-prone pipeline - would pump an additional 590,000 barrels per day to the Salish Sea at Burrard Inlet in Vancouver, BC. All that oil and tar sands would require over 300 additional fully-laden tar sands tankers to thread the currents and reefs of the Georgia Strait, Haro Strait, Rosario Strait, and Strait of Juan de Fuca. The Northern Gateway pipeline dreamed up by Enbridge, and provisionally approved in December 2013, would deliver 525,000 barrels per day to Kitimat on the central British Columbia coast, supplying tar sands supertankers that would transit the remote coasts of BC, Oregon, Washington, or Alaska en route to Pacific markets.

In Washington, oil spills from pipelines and trans-loading at refinery docks directly threaten the health of key natural areas on Puget Sound, including the Cherry Point and Fidalgo Bay Aquatic Reserves. The Puget Sound Pipeline, a southern spur from the Kinder Morgan Trans Mountain pipeline in Canada, brings tar sands and other crudes from Canada directly to Ferndale and Anacortes refineries, crossing the Nooksack and Samish rivers and vulnerable streams and wetlands.

What could this mean for the Salish Sea or the Nooksack River? Just ask the people along the Kalamazoo River in Michigan, where 2010's rupture of Enbridge pipeline 6B resulted in:

Number of gallons of tar sands spilled: 843,000²¹

Miles of rivers destroyed: 35²²

Estimated cost of cleanup: \$1,039,000,000²³

SPOTLIGHT: RISKS TO OUR HEALTH & CLIMATE

CLIMATE & ACIDIFICATION

Coal, oil, and tar sands plans in the Northwest represent a titanic climate risk, not only to global temperatures but also to acidification in local waters that results from atmospheric carbon. Among commercially valuable species, shellfish appear to be the most vulnerable. In recent years, two of the Northwest's three major oyster hatcheries have had massive die-offs, some of which have been linked to acidified seawater. In Washington's Willapa Bay, oysters have largely failed to reproduce in the wild for the last six years. And there is mounting evidence that ocean acidification will disrupt food webs and make their prey less abundant.

Asked to rate his concerns about ocean acidification, the executive director of Alaska's largest commercial fishing organization, Mark Vinsel, says, "I'd say probably on a scale of 1 to 10, it would be 20 or 30."

It's an important question for a state like Washington, where a study conducted for the Seattle Marine Business Coalition found the commercial fishing industry contributes \$3.9 billion in personal income, or 2 percent of the state's net earnings.²⁴ In Oregon, a state study puts those numbers at \$400 million in personal income, or the equivalent of 12,000 jobs.²⁵ In Alaska, where much of the Northwest fleet fishes, one study estimates that commercial fishing generates 78,000 direct and indirect jobs and is the third largest driver of economic activity in the state.²⁶

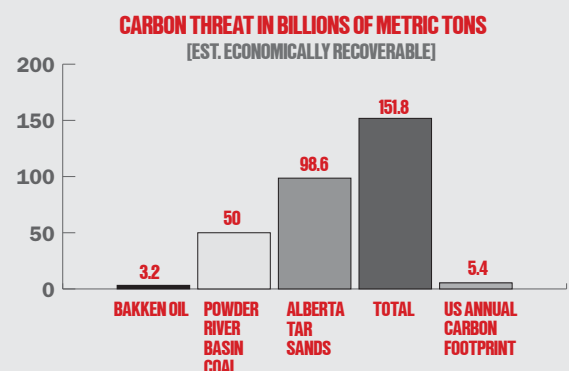
REFINERY EMISSIONS BRING ASTHMA, HEART DISEASE, & MORE

Refineries are one of the most hazardous parts of our transportation system, especially to the already vulnerable segments of our society. The poor, the young and the old, those suffering from diseases that affect their heart and lung systems, and minority communities that already bear an unfair distribution of environmental burdens – these are the groups that pay most dearly for our current dependence upon refineries for transportation fuel.

Communities living near to tar sands refineries suffer from more intense sulfur dioxide pollution because of the extremely high sulfur content of tar sands crude used to make gasoline and diesel. Sulfur dioxide pollution is associated with a wide array of health threats, including asthma and heart disease.²⁷ Moreover, just storing toxic and volatile crude oil can lead to major health problems from off-gassing. In some cases, families have even been forced to move to protect their children's health.²⁸

To learn more, read our report "Tar Sands Refineries Put Communities at Risk" [<http://forestethics.org/news/tar-sands-refineries-report>]

THIS CHART DEMONSTRATES THE TONS OF CARBON THAT WOULD BE RELEASED IF ALL OF THE ECONOMICALLY RECOVERABLE DEPOSITS OF OIL, COAL, AND TAR SANDS IN THE BAKKEN, POWDER RIVER BASIN, AND ALBERTA DEPOSITS, RESPECTIVELY, WERE RELEASED. PRESSURE TO BUILD EXPORT TERMINALS, PIPELINES, AND RAIL EXPANSIONS IS LINKED TO THE SIZE OF THESE DEPOSITS, MARKET DEMAND OVERSEAS, AND EXISTING TRANSPORT CAPACITY ONLY SUFFICIENT FOR DOMESTIC CONSUMPTION.



CONCLUSION

The Pacific Northwest is at a carbon crossroads. Will the region grow into a new clean energy economy that supports local jobs and sustains a healthy environment or will it be pressed into service as a fossil fuel highway delivering oil and coal to consumers in Asia?

As it stands now, Pacific Northwest communities are besieged by ill-advised export schemes, with new oil by rail the most problematic among them. Most decision-makers do not adequately understand the risks of these plans in isolation. No one understands the manifold dangers of their combined impacts.

Oil and coal companies may urge that we forge ahead with reckless speed into uncharted waters, but we can't afford to abandon common sense. The Pacific Northwest has a responsibility to our neighbors, our businesses, and our children to gauge the threats of fossil fuel export projects before we proceed.



Together, we should:

- 1** Take a time out. A moratorium on permitting new coal, oil, and tar sands projects - Washington and Oregon pipelines, export terminals, and rail facilities - will allow us to review their benefits and costs.
- 2** Do the math. The region's future demands a thorough review of the cumulative impacts of fossil fuel export schemes - a calculation of new trains, tanker vessels, and local preparedness.
- 3** Establish a right to know. Emergency responders and residents alike deserve laws that require fossil fuel corporations to fully disclose the risks of the fuels they aim to transport through communities.

Visit www.ForestEthics.org/rail to stay up to date and get involved.

ENDNOTES

- 1 <http://www.eia.gov/todayinenergy/detail.cfm?id=11951>
- 2 <http://online.wsj.com/news/articles/SB10001424052702303332904579224000594400852>
- 3 <http://www.ecy.wa.gov/news/2011/118.html>
- 4 <https://www.aar.org/keyissues/Documents/Background-Papers/Crude-oil-by-rail.pdf>
- 5 http://www.nts.gov/doclib/recletters/1991/R91_12_13.pdf
- 6 <http://www.ec.gc.ca/Publications/default.asp?lang=En&xml=D6AB8B67-73F5-48B6-B3D1-AAE1B06FF9A2>
- 7 <http://daily.sightline.org/2014/01/21/why-bakken-oil-explodes/>
<http://bakkenshale.com/news/bakken-oil-flammable/>
- 8 <http://sierraclub.org/dirtyfuels/tar-sands/toxic-report.aspx>
- 9 <https://www.seattle.gov/transportation/coaltrainstudy.htm>
- 10 <http://ohsonline.com/articles/2014/01/03/phmsa-issues-alert-about-bakken-oils-flammability.aspx>
- 11 http://www.phmsa.dot.gov/staticfiles/PHMSA/DownloadableFiles/1_2_14%20Rail_Safety_Alert.pdf
- 12 <http://daily.sightline.org/2014/01/21/why-bakken-oil-explodes/>
- 13 <https://www.aar.org/keyissues/Documents/Background-Papers/Crude-oil-by-rail.pdf>
- 14 <http://yolanoclimateaction.files.wordpress.com/2014/01/rail-safety-comments-final-group-letter.pdf>
- 15 http://priceofoil.org/content/uploads/2013/07/OCI_KXL-Crude-Exports_07-11-13.pdf
- 16 <http://www.nationaljournal.com/daily/api-leader-says-oil-industry-united-in-seeking-end-to-ban-on-crude-exports-20140107>
- 17 <http://www.sightline.org/research/the-northwests-pipeline-on-rails/>
- 18 http://www.oregonlive.com/environment/index.ssf/2014/01/feds_offer_new_oil_train_safet.html
- 19 <http://www.ec.gc.ca/Publications/default.asp?lang=En&xml=D6AB8B67-73F5-48B6-B3D1-AAE1B06FF9A2>
- 20 <http://theenergycollective.com/jessejenkins/232591/climate-change-impacts-keystone-XL>
- 21 <https://www.edockets.state.mn.us/Efiling/edockets/searchDocuments.do?method=showPoup&documentId=%7bF1B13575-3D71-4CAA-A86A-05CE1EBBCA38%7d&documentTitle=20138-90363-03>
- 22 Ibid.
- 23 <http://desmog.ca/2013/08/26/official-price-enbridge-kalamazoo-spill-whopping-1-039-000-000>
- 24 <http://www.sightline.org/wp-content/uploads/downloads/2012/02/OA-primer1.pdf>
- 25 Ibid.
- 26 Ibid.
- 27 <http://forestethics.org/sites/forestethics.huang.radicaldesigns.org/files/ForestEthics-Refineries-Report-Sept2012.pdf>
- 28 <http://www.vancouverobserver.com/environment/oil-field-fumes-so-painful-alberta-families-forced-move>

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