

Next Frontier for Dangerous Tar Sands Cargo: California

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The West Coast is the next frontier of the tar sands invasion. Desperate for routes to get their crude oil from land-locked Alberta, Canada to refinery and export markets, the tar sands industry has its sights set on British Columbia, Washington, Oregon, and California as possible solutions. Taking advantage of proposed pipelines and terminals, existing rail lines, barges, tankers, and refineries, the industry’s expansion could inundate the West Coast with carbon-intensive fuels, while its rivers, ports, and coastline facilitate export to international markets.¹

The tar sands extraction process wreaks havoc on the surrounding environment, but the danger doesn’t stop there. One of the world’s dirtiest fuels, this thick, flammable crude is remarkably treacherous to transport. By pipeline, rail, or tanker, tar sands brings high risks of explosive accidents and disastrous spills that are nearly impossible to clean.

This tar sands invasion has major ramifications for the entire West Coast. It requires a strong response from decision-makers who must recognize the critical links between proposed tar sands infrastructure and strong comprehensive climate policies, lowering oil consumption, and expanding clean transportation solutions.



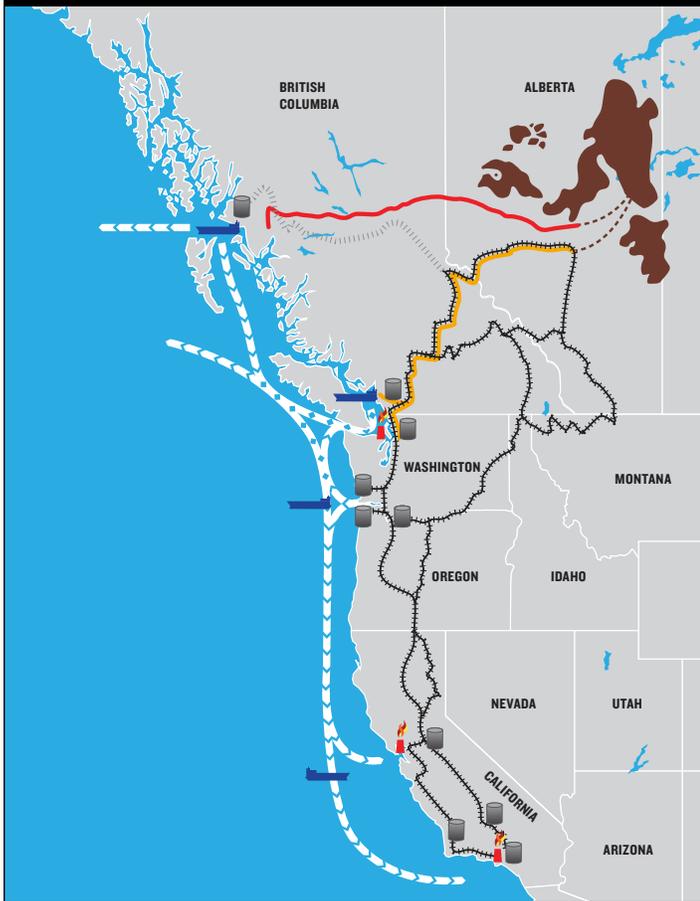


THE CUMULATIVE THREATS OF A TAR SANDS INVASION OF THE WEST COAST

In 2013, refineries in Washington and California processed only 100,000 barrels of tar sands crude oil per day (bpd), representing about 3 percent of the region's daily capacity. Now, an analysis by the Borealis Centre shows that the amount of tar sands processed in these refineries could grow eight-fold, totaling 800,000 bpd by 2040. California's refineries are the key to this projected increase, and the fence-line communities that surround them would bear the brunt of the environmental impact. Across the region, fuel stocks would become more carbon-intensive, leading to annual increases in carbon emissions of up to 26 million metric tons—more than double the annual carbon emissions of San Francisco.

But available heavy oil refining capacity is only half the story. Proposed pipelines and rail terminals could dramatically increase the amount of tar sands transported through the region. Using barges, tankers, trains, and pipelines, the tar sands industry could access export and storage capacity totaling almost 4 million bpd, a six-fold increase over the 690,000 bpd export and storage capacity existing in the region today. If this were to happen, at least 2,000 additional barges and tankers would be loaded at British Columbia, Washington, and Oregon ports, leading to unprecedented quantities of oil traversing the region's critical waterways and coastlines, with California's refineries as the preferred destinations. With the West Coast's heavy crude refining capacity around 800,000 bpd, this surge in transport could also transform the region into a conduit for the tar sands industry's international export goals.

Tar Sands Pathways to the North American West Coast



LEGEND

- Proposed Northern Gateway Pipeline
- Proposed TransMountain Pipeline
- Rail Lines
- Tanker
- Tanker Pathways
- Tar Sands Deposits
- Terminal Area
- Refinery Area

THREATS TO CALIFORNIA

■ **Refining:** California's 17 operating oil refineries currently process 1.9 million bpd, approximately 50,000 bpd of which is tar sands. However, many California refineries have the capacity to process much larger volumes of heavy tar sands crude. Based on recent analysis by the Borealis Centre, the amount of tar sands refined in California could grow by 650,000 bpd by 2040. If this occurs, communities like Richmond, Martinez, Rodeo, Benecia, Wilmington, and Long Beach will be forced to confront the harmful effects of increased tar sands refining.

Refining tar sands poses serious threats to nearby communities. These include increased levels of highly toxic fugitive emissions; heavy emissions of particulate, metals, and benzene; higher risk of refinery accidents; and the accumulation of petroleum coke (a coal-like, dusty byproduct of heavy oil refining linked to severe respiratory impacts). This possibility would exacerbate the harmful health effects faced by the thousands of low-income families that currently live around the edges of California's refineries. These effects are likely to include harmful impacts to eyes, skin, and the nervous and respiratory systems.

■ **Oil Terminals:** California has eight operating crude oil terminals that accept delivery via train, with handling and



storage capacity of 496,000 bpd.² Now, proposals for five new terminals³ have either been made public or are being considered by state and local regulators. Together, these new terminals would increase California's crude-by-rail and crude-by-barge/tanker handling capacity to more than 1 million bpd, or the equivalent of more than 14 fully loaded unit trains per day. Nearly all proposed terminals are being designed to eventually handle tar sands crude, suggesting that if these projects move forward, California could see substantial quantities of tar sands moving on its rails for decades to come.

■ **Water:** California cannot tolerate another threat to its precious water resources. Growth of crude-by-rail through the state is already placing many rivers and drainages at risk of serious contamination. If increasing volumes of tar sands begin traversing the state's rail lines, the threat posed by derailed tar sands unit trains would be significant. Key rail corridors that link Alberta's tar sands to California's refineries and crude oil terminals travel for hundreds of miles through the Sacramento, San Joaquin, and Tulare Lake watersheds. A tar sands spill could cause tragic and substantial damage to the state's agricultural lifeblood, leading to dangerous long-term contamination, costly cleanup, and significant economic harm.

Meanwhile, California's coasts and major ports could see a major uptick in tanker and barge traffic if pipeline and terminal proposals in the Northwest and British

Columbia come to fruition. It is expected that many of the 2,000 additional tankers and barges loaded as a result of these projects would be destined for San Francisco Bay or the Los Angeles area. If this happened, the entire length of California's iconic coastline would be placed at risk from a tar sands tanker spill—a possibility that could lead to floating and sinking tar sands crude oil that no emergency response agency is currently capable of addressing.

■ **Rail:** In California, as many as 4 million people live within one mile of major crude-by-rail routes that would facilitate the movement of tar sands through the state.⁵ Like the well-known explosive Bakken crude oil that is already threatening California communities, tar sands have been shown, in several recent derailments of tar sands crude trains in Ontario, Canada, to carry similar fiery threats.⁶

This surge in crude-by-rail comes with many concerns. Trains with tar sands are increasingly loaded as unit trains—mile-long trains loaded with a single commodity—carrying 3 million or more gallons of tar sands crude oil. Towns and cities across the state were built around rail, and major business districts, residential areas, and schools often lie within sight of the tracks, placing entire communities at immediate risk of a derailment and the potential release of toxic chemicals, explosions, and fires. A California Interagency Rail Safety Working Group report recently summarized concerns with the state's existing rail infrastructure related to its proximity to population centers, earthquake fault lines, vulnerable natural resources, and “high hazard areas” for derailments (generally near waterways and fragile natural resource areas).⁷ Not only did the report find high levels of risk in relation to the condition and location of California's rail lines, it also documented a lack of sufficient emergency response capacity. The vulnerabilities identified in the report were recently highlighted when a train carrying grain derailed in the Feather River Canyon, sending freight cars tumbling down the canyon's sides. The treacherous route, operated by Union Pacific, is already in use by unit trains transporting Bakken crude from North Dakota.

Oil and Water Don't Mix: Marine Tar Sands Spills

The best-known spill of tar sands into water occurred in 2010 in a tributary of the Kalamazoo River. Following the rupture of an Enbridge tar sands pipeline, more than 800,000 gallons of diluted bitumen eventually found its way into the Kalamazoo. Responders struggled to contain the heavy bitumen, which sank beneath the water's surface and evaded conventional spill response measures that are designed to contain lighter, floating oil. More than four years later, the price tag for cleanup is well beyond \$1 billion—and the tab is still open. Meanwhile, the surrounding community suffered a slew of health impacts, including hundreds of hospitalizations for cardiovascular, dermal, gastrointestinal, neurological, ocular, renal, and respiratory illnesses.

In addition to this lack of preparedness for and understanding of containing tar sands spills, review of cleanup measures has also revealed that some response activities may have actually worsened the spill's impacts. Subsequent studies have only raised the level of concern regarding tar sands and water. An Environment Canada study concluded that a spill into salt water is likely to lead to a combination of floating and sinking oil due to the presence of wave mixing energy and higher levels of sedimentation.⁴ Other studies have shown that oil dispersants—the chemicals often sprayed on offshore oil spills to aid in oil decomposition—do not work at all on tar sands.



KEEPING THE FLOW OF TAR SANDS OUT OF CALIFORNIA

To counter these numerous threats, decision-makers must ensure policies and regulations are in place to slow the influx of dirtier fuels like tar sands while phasing out heavy use of all environmentally harmful fuel sources. Generally, this will require policies that prevent new tar sands infrastructure from being built and reduce dependence on oil through low carbon transportation and energy solutions such as electric vehicles, renewable fuel sources, and clean fuels. California can accomplish this by continuing to pursue or adopting some of the following policy solutions:

- Understand and prevent harmful air pollution impacts from tar sands refining.
- Strengthen environmental review of new oil infrastructure projects, including an assessment of both the direct impacts as well as all cumulative impacts related to upstream production and downstream consumption.
- Reject new tar sands-related infrastructure.
- Stop tar sands tanker traffic until federal and state officials understand the unique risks associated with tar sands spills and how to respond to them.
- Readopt a strong low-carbon fuel standard reducing carbon-intensity of transport fuels by 10 percent by 2020 and establish aggressive and more robust 2030 targets.
- Continue accounting for the carbon-intensity of crude oils such as tar sands while strengthening current protections by requiring individual refiners or importers to offset any increased emissions.
- Continue to extend policies to meet the governor's goal of cutting petroleum use in half by 2030 and adopt 2030 greenhouse gas reduction targets.
- Reject oil industry attempts to exempt transportation fuels from the requirements of the cap-and-trade program.
- Work with Washington, Oregon, and British Columbia to develop and harmonize low-carbon transportation solutions for the region.
- Push for electric vehicle policies that support rapid deployment of vehicles, encouraging a strong utility role and grid support capabilities around vehicle electrification.

Endnotes

- 1 Unless otherwise noted, the information in this fact sheet is based on Swift, A., Axelrod, J., and Droitsch, D., "West Coast Tar Sands Invasion," NRDC, April 2015. www.nrdc.org/land/files/west-coast-tar-sands-threat-report.pdf.
- 2 These include Tesoro Martinez, NuStar Selby, Kinder Morgan Richmond, Plains All American Bakersfield, Alon Bakersfield, Kern Oil Bakersfield, Alon Paramount, and Alon Long Beach. Plains All American Bakersfield and Alon Bakersfield are in the process of expanding and the number used above reflects these expansions.
- 3 These include Targa Stockton, WesPac Energy Pittsburg, Valero Benicia, Phillips 66 Santa Maria, and Questar North Palm Springs. At the time of publication, WesPac Energy had dropped its crude-by-rail plans, and is pursuing solely crude-by-tanker/barge for its Pittsburg project.
- 4 Government of Canada, "Properties, Composition, and Marine Spill Behavior, Fate, and Transport of Two Diluted Bitumen Products from the Canadian Oil Sands," Government of Canada, November 30, 2013, www.ec.gc.ca/scitech/6A2D63E5-4137-440B-8BB3-E38ECED9B02F/1633_Dilbit%20Technical%20Report_e_v2%20FINAL-s.pdf.
- 5 Bailey, D., "It Could Happen Here: The Exploding Threat of Crude by Rail in California," NRDC, June 2014, www.nrdc.org/energy/files/ca-crude-oil-by-rail-FS.pdf.
- 6 Mikulka, J., "Tar Sands by Rail Disasters: The Latest Wave in the Bomb Train Assault," Desmogblog.com, March 9, 2015, www.desmogblog.com/2015/03/09/tar-sands-rail-disasters-latest-wave-bomb-train-assault.
- 7 California Interagency Rail Safety Working Group, "Oil by Rail Safety in California: Preliminary Findings and Recommendations," California Interagency Rail Safety Working Group, June 10, 2014, pp. 4–5, [www.caloes.ca.gov/HazardousMaterials/Documents/Oil By Rail Safety in California.pdf](http://www.caloes.ca.gov/HazardousMaterials/Documents/Oil%20By%20Rail%20Safety%20in%20California.pdf).