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NORTHWEST ROCKY MOUNTAIN WASHINGTON, DC INTERNATIONAL

Tesoro Savage CBR
Scoping Comment
#30946

Docket EF-131590

December 17, 2013

Via U.S. Mail and Email

RECEIVED

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DEC 20 2013

**ENERGY FACILITY SITE
EVALUATION COUNCIL**

Re: Scoping Comments on Proposed Tesoro-Savage Vancouver Energy Distribution Terminal: Application No. 2013-01; Docket No. EF-131590

Dear Mr. Posner:

On October 1, 2013, the Energy Facility Site Evaluation Council ("EFSEC") issued a Determination of Significance Scoping Notice for the environmental impact statement to be prepared under the State Environmental Policy Act ("SEPA") for the proposed Tesoro-Savage Vancouver Energy Distribution Terminal. The following scoping comments are submitted on behalf of Columbia Riverkeeper, Friends of Columbia Gorge, Forest Ethics, Spokane Riverkeeper, Sierra Club, Washington Environmental Council, and Climate Solutions to help EFSEC identify issues that must be addressed during the environmental review process.

The commenters are all non-profit organizations dedicated to (1) protecting the environment and natural resources of Washington State and the Pacific Northwest region; (2) ensuring that all citizens of Washington and the Pacific Northwest have clean and healthy air, water, and communities; (3) seeking positive solutions to the challenge of global climate change caused by combustion of fossil fuels; and (4) working across the region to stop the increase in shipments of crude oil through the Pacific Northwest, as well as ensuring that regulations concerning oil transport, oil spill prevention, and oil spill clean-up are as strong as possible. These joint scoping comments supplement any individual comment letters submitted by each signatory group. We appreciate the opportunity to provide these comments and supporting materials, included on CD submitted with this letter.

EFSEC itself has not previously reviewed a proposed crude-by-rail project, but the environmental review path for similar projects is not completely new to Washington. As you no doubt are aware, the U.S. Army Corps of Engineers, Washington State Department of Ecology, and two Washington State counties have initiated environmental reviews for two coal export

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terminals proposals in Whatcom and Cowlitz Counties. The Ecology scoping decision for the Whatcom County proposal (Gateway Pacific Terminal at Cherry Point) sets the appropriate requirements for review of environmental impacts, including indirect effects of projects that are of major concern to the public like increase in rail traffic, vessel traffic, additional mining, and greenhouse gas emissions of downstream combustion of exported coal. EFSEC should review a similar scope of impacts for this crude oil shipping terminal, including the same or similar indirect effects of (1) increases in rail traffic across the region, (2) increases in vessel traffic in and out of the Columbia River, (3) increased crude oil spill risk from rail transport, terminal storage, and river/marine transport, (4) additional crude oil extraction in North Dakota and the Alberta tar sands, and (5) greenhouse gas emissions of the transport of the crude oil, as well as the life-cycle impacts on the refining and ultimate combustion of the oil.

Like many citizens in the Northwest and nationally, we are deeply concerned about a decision that will authorize the construction of a huge crude oil shipping terminal on the banks of the Columbia River, one which would allow shipment of an estimated 360,000 barrels of crude oil per day. Either alone or combined with other announced or pending proposals to build additional major crude oil and coal export facilities in Washington and Oregon, the decision to authorize construction at Vancouver will undercut Washington State's considerable efforts to combat climate change and promote sustainable alternatives.

On October 28, 2013, Washington Governor Jay Inslee joined with Oregon Governor John Kitzhaber, California Governor Jerry Brown, and British Columbia Premier Cristy Clark in signing the Pacific Coast Action Plan on Climate and Energy. That accord commits Washington to lead national and international policy on climate change, account for the costs of carbon pollution, and invest in infrastructure that is climate smart. The Tesoro-Savage project will hurt Washington's ability to meet all these goals.

In these scoping comments, we raise specific issues and impacts that we feel EFSEC must consider. EFSEC may be titled as a "facility site" agency, but its duties under SEPA (and RCW 80.50) are much broader than the on-the-ground footprint of this proposed facility. We stress our concern about the geographic scope of the environmental review, and EFSEC's addition of a public scoping hearing in Spokane, Washington speaks well for the agency's understanding of the true scope of impacts here. While this project's shipping facility might be physically located at the Port of Vancouver, the area of impact is much greater. On the terrestrial side, the rail impacts, including rail traffic and diesel emissions, stem from drill sites in North Dakota or Alberta, Canada through communities in Montana, Idaho, and Washington. On the marine side, impacts from crude oil shipping, including ocean-going vessel traffic and emissions, risks of collisions, and impacts to near-shore environments, extend from the dock at Vancouver 106 miles to the mouth of the Columbia River and then to the final, undisclosed destinations across open ocean.

Within that geographic scope, particular issues should be addressed, including crude oil spill risks and impacts along the rail route, at the facility, in the Columbia River, and in the Pacific Ocean; increased rail and vessel traffic and necessary coordination; impacts to streams, wetlands, salmon, and fishing areas; air quality and respiratory impacts; rail tank car safety; impacts of the terminal on local businesses and proposed developments; types of crude oil shipped and their unique properties for health risks, spill clean-up, and climate impacts; impacts on historic and cultural resources; particular impacts to the Columbia River Gorge National Scenic Area; and global warming impacts from transportation, refining, and combustion of the oil.

This project, by itself or in combination with other proposed crude oil and coal shipping facilities, will cause significant, harmful impacts to the air, water, marine environment, fish and wildlife, economics, public health, culture, and communities across our region. It will further harm global climate change and Washington State's leadership role in addressing causes of climate change. In our view, full evaluation of all direct, indirect, and cumulative impacts of Tesoro-Savage is the first step toward a reasoned decision to ultimately reject this project proposal.

I. BACKGROUND ON THE TESORO-SAVAGE VANCOUVER PROPOSAL.

Extensive crude-by-rail oil transport systems are a recent phenomenon. Instead of pipelines, which are both expensive to build and subject to greater environmental review and regulation, crude oil is loaded onto rail tank cars for deliveries to refineries. In 2012, major U.S. railroads transported at least 20 times as many carloads of crude oil as they did in 2008. In Washington State, several proposals—including Tesoro-Savage—would add marine vessels to this patchwork system: the crude oil would arrive by rail, be pumped into large storage tanks on fragile shorelines, and then pumped into ocean-going barges or tankers to be taken to U.S. refineries or, in certain circumstances, exported. The crude oil can come from domestic or Canadian oil fields, leading to concern that more Alberta tar sands crude will be traveling by rail and tanker.

Tesoro-Savage Vancouver is the third officially proposed crude-by-rail terminal in Washington State. The Tesoro-Savage proposal would accept crude oil shipped by rail to the Port of Vancouver, Washington, where it would be stored, then loaded onto ships or barges. The oil will come by train from North Dakota and Alberta, Canada. Tesoro-Savage proposes six new storage tanks, each with the capacity to store 380,000 barrels of crude oil. Tesoro-Savage will add two rail lines to the Port's existing loops in order to be able to unload an average of four unit trains of crude per day. The project plans to receive up to 360,000 barrels per day (11,340,000 gallons) at its facility. The project would add 730 ship transits in and out of the Columbia River annually.

Because the current dock at the Port of Vancouver site requires seismic retrofitting, a U.S. Army Corps of Engineers permit for that work will be required. The federal permit will trigger consultation with the U.S. Fish and Wildlife Service and National Marine Fisheries Service under the Endangered Species Act. The Army Corps must also review environmental impacts and project alternatives under the National Environmental Policy Act; the Army Corps must also consult with affected Native American Tribes pursuant to the National Historic Preservation Act. EFSEC should coordinate its SEPA analysis with these federal environmental and endangered species reviews to ensure the use of the best available science.

II. STATE LAW REQUIRES AGENCIES TO FULLY DISCLOSE AND CONSIDER ALL ENVIRONMENTAL IMPACTS FROM PROPOSED PROJECTS.

A. Washington’s State Environmental Policy Act

In adopting the State Environmental Policy Act, the Washington legislature declared the protection of the environment to be a core state priority. RCW 43.21C.010. SEPA declares that “[t]he legislature recognizes that each person has a fundamental and inalienable right to a healthful environment and that each person has a responsibility to contribute to the preservation and enhancement of the environment.” RCW 43.21C.020(3). This policy statement, which is stronger than a similar statement in the federal counterpart of NEPA, “indicates in the strongest possible terms the basic importance of environmental concerns to the people of the state.” *Leschi v. Highway Comm’n*, 84 Wn.2d 271, 279-80 (1974).

At the heart of SEPA is a requirement to fully analyze the environmental impact of projects that have a significant impact on the environment. RCW 43.21C.031(1). An EIS is required for any action that has a significant effect on the quality of the environment. WAC 197-11-330. Significance means a “reasonable likelihood of more than a moderate adverse impact on environmental quality.” WAC 197-11-794. The purpose of this analysis is not to generate paperwork. Rather, the EIS allows decision-makers to make judgments based on a fully informed appreciation for the environmental impacts of decisions, the available alternatives, and any mitigation that may be appropriate.

SEPA regulations also explicitly direct that environmental impacts outside the jurisdiction of the deciding agency should be considered. WAC 197-11-060(c). Crucially, agencies are required to assess both the direct impacts of the proposal as well as the indirect impacts. WAC 197-11-060(4)(d). For example, when considering a government action, a SEPA document must also consider the effects of private growth that may be encouraged by this government action. *Id.*; *Cheney v. City of Mountlake Terrace*, 87 Wn.2d 338, 344 (1976) (SEPA requires that decision makers consider more than the “narrow, limited environmental impact” of the current proposal...agency “cannot close its eyes to the ultimate probable environmental consequences” of its current action).

B. Under SEPA, EFSEC Must Evaluate Direct, Indirect, and Cumulative Impacts.

The primary purpose of an environmental impact statement “is to ensure that SEPA’s policies are an integral part of the ongoing programs and actions of state and local government.” WAC 197-11-400. “A proposal’s effects include direct and indirect impacts caused by the proposal. Impacts include those effects resulting from growth caused by a proposal, as well as the likelihood that the present proposal will serve as precedent for future actions.” WAC 197-11-060(4)(d). The scope of impacts includes direct, indirect, and cumulative impacts. WAC 197-11-792. “The range of impacts to be analyzed in an EIS (direct, indirect, and cumulative impacts, WAC 197-11-792) may be wider than the impacts for which mitigation measures are required of applicants.” WAC 197-11-060(4)(e). The environmental impact statement must address “reasonable alternatives” to the proposed action, including a “no-action” alternative, WAC 197-11-440(5). It is implicit in SEPA that an “agency cannot close its eyes to the ultimate probable environmental consequences of its current action.” *Cheney v. City of Mountlake Terrace*, 87 Wn.2d 338, 344, 552 P.2d 184 (1976).

For cumulative impacts, the federal National Environmental Policy Act’s (“NEPA”) ¹ definition stresses that they must be “reasonably foreseeable”:

Cumulative impact is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency ... or person undertakes such other actions.

40 C.F.R. § 1508.7.

Courts applying the “reasonably foreseeable” standard routinely require governmental entities to consider impacts from future actions that are still in the planning stages, provided that enough is known about those future projects for meaningful consideration to be given to their effects. In *W. North Carolina Alliance v. North Carolina Dep’t of Transp.*, the district court held that the state agency erred in not taking into account the cumulative impacts of certain future freeway expansion projects when making a finding of no significant impact (“FONSI”) under NEPA on a freeway expansion project. *W. N.C. Alliance v. N.C. Dep’t of Transp.*, 312 F. Supp. 2d 765, 771-73 (E.D.N.C. 2003). At the time the FONSI was issued, one of the future projects still required the state to acquire rights of way, *id.* at 771, and another of the projects had not yet undergone a feasibility study, *id.* at 771-72. The court concluded that “NEPA’s language and

¹ NEPA provisions and case law interpreting NEPA are used in Washington to discern the meaning of SEPA and its implementing regulations. *See, e.g., ASARCO v. Air Quality Coal.*, 92 Wn.2d 685, 709 (1979); *Kucera v. State Dep’t of Transp.*, 140 Wn.2d 200, 215-16 (2000).

focus on considering environmental impacts before acting ... undermine [the agency's] position that [it was] not required to consider the cumulative impacts from the other connected projects because they were not fully funded or planned.” *Id.* at 773.

C. SEPA Requires Review of Climate Change Impacts.

SEPA and its implementing regulations explicitly require consideration of direct and indirect climate impacts. *See* RCW 43.21C.030(f) (directing agencies to “recognize the world-wide and long-range character of environmental problem); WAC 197-11-444 (listing “climate” among elements of the environment that must be considered in SEPA review); *Rech v. San Juan Cnty.*, 2008 WL 5510438 (Wash. Shorelines Hearings Bd. June 12, 2008) at *12 n.8 (“We further note an emerging trend in the case law under the National Environmental Policy Act (“NEPA”) and state NEPA analogues in which courts are increasingly requiring agencies to analyze climate change impacts during environmental assessments.”). The Washington Supreme Court has ruled that the state should look to NEPA for guidance. “Since much of the language from SEPA is taken verbatim from NEPA (signed into law January 1, 1970), we look when necessary to the federal cases construing and applying provisions of NEPA for guidance.” *Eastlake Cmty. Council v. Roanoke Assocs., Inc.*, 82 Wn.2d 475, 488 n.5 (Wash. 1973).

In recent years, state and federal agencies have made efforts to better define how climate analysis should be performed, and to provide tools to enable agencies to meaningfully assess and mitigate the greenhouse gas contribution of proposed projects. For example, in late 2008, Ecology and the State’s Department of Community, Trade and Economic Development (“CTED”) issued a “comprehensive plan to address the challenges and opportunities of climate change.” (“2008 Climate Plan”).² That plan recognized the increasing pressure on local governments to better identify climate impacts in their SEPA analyses, and noted that SEPA analysis provided an opportunity to evaluate climate impacts of government decisions and to identify changes to proposals to reduce or mitigate those impacts. *Id.* at 50.

Also in 2008, a governor-appointed working group provided a list of recommendations on how to ensure that climate change is considered in meeting SEPA’s directives.³ Notably, those recommendations identified the following categories of greenhouse gas emissions to be considered pursuant to SEPA: a) off-site mining of materials purchased for the project; b) transportation of raw materials to the project, and transport of the final product offsite; c) use of products sold by proponent to consumers or industry, including “emissions generated from combustion of fuels manufactured or distributed by the facility.” *Id.* at App. D.

² Available at <http://www.ecy.wa.gov/pubs/0801025.pdf>.

³ Available at http://www.ecy.wa.gov/climatechange/2008CATdocs/IWG/sepa/103008_sepaiwg_report.pdf.

Ecology first issued draft SEPA guidance for considering greenhouse gas emissions.⁴ That Draft Guidance confirms that SEPA is a crucial tool in helping the state and political subdivisions “address the threats that greenhouse gas emissions and climate changes pose to our health, our economy, and our environment.” *Id.* at 2. In fact, the Draft Guidance specifically observes that the failure to evaluate the climate impacts of a proposal “could result in a successful legal challenge regarding the adequacy of an agency’s review.” *Id.*

Accordingly, the Draft Guidance makes clear that SEPA requires climate to be considered in its environmental analysis. Specifically, agencies should consider “if and how” greenhouse gases will contribute to environmental impacts and “how those impacts could be mitigated.” *Id.* at 7-8. The Draft Guidance notes that SEPA’s substantive authority “may be used to deny a proposal if the proposal will result in significant environmental impacts identified in a final or supplemental EIS and reasonable mitigation measures are insufficient to mitigate the identified impacts.” *Id.* at 10.

Ecology’s Draft Guidance makes clear that climate impacts cannot be ignored simply because they are a step removed from the decision under review. It defines “Scope Three” emissions as those that are produced as a consequence of the activities in the proposal, albeit from sources not owned by the proponent or that are not part of the proposal itself. *Id.* at 12. While noting that “Scope Three” emissions may be harder to calculate, the Draft Guidance acknowledged that these emissions “can be critically important to consider when reviewing the overall long-term greenhouse gas emissions associated” with a proposal. *Id.*

The Draft Guidance proposes that the documents consider whether the proposal will “significantly contribute” to greenhouse gas concentrations, “either directly, indirectly, or cumulatively.” While it does not propose a particular numerical threshold at which greenhouse gas emissions become “significant,” it references the federal NEPA climate guidance, which proposes a significance threshold of 25,000 tons/year of CO₂ equivalent. Projects with emissions above this threshold should be considered in a full EIS if not mitigated. It should be noted that states like California have proposed far lower thresholds under their own state NEPA provisions, and that many national and regional conservation organizations have opposed the proposed CEQ threshold as too high.

Most recently, Ecology re-issued the Draft Guidance in the form of a “working paper.”⁵ That working paper provides a “table of tools” that can be used to calculate emissions from projects. That table, in turn, lists various sources of emissions from projects, methods to

⁴ Available at <http://www.ecy.wa.gov/climatechange/sepa.htm>.

⁵ Available at <http://www.ecy.wa.gov/climatechange/sepa.htm>.

calculate those emissions, and options to mitigate them. Included on that list is the “extraction, processing and transportation” of raw materials and feedstocks, and “emissions from the future combustion of fossil fuels,” which is defined to include “emissions that will result from the combustion of fossil fuels transported, distributed or imported as a result of the project (e.g., natural gas pipeline).” *Id.* at 2; *see also id.* at 3 (including emissions from “combustion of fuels distributed by a proposed facility” as an emission that should be quantified and mitigated in SEPA documents).

While the Washington Courts have not yet had an opportunity to evaluate the obligation to consider indirect climate impacts under SEPA, such questions arise regularly under NEPA and parallel laws in other states. Washington courts regularly turn to federal National Environmental Policy Act (“NEPA”) interpretations for guidance on interpreting SEPA. *See, e.g., Gebbers v. Okanogan PUD No. 1*, 144 Wn. App. 371 (2008).

In a landmark 2008 case, the Ninth Circuit Court of Appeals—which has jurisdiction over Washington State—found that a federal agency violated NEPA when it failed to prepare a full EIS on proposed corporate average fuel economy (“CAFÉ”) standards for light trucks. *Ctr. for Biological Diversity*, 538 F.3d 1172. There, the Ninth Circuit rejected the argument that individual actions represent too minor of a contribution to the global problem to merit consideration. Even more recently, the Ninth Circuit again emphasized that “‘reasonably foreseeable future actions need to be considered [under NEPA] even if they are not specific proposals.’” *N. Plains Res. Council v. Surface Transp. Bd.*, 668 F.3d 1067, 1079 (9th Cir. 2011) (quoting EPA guidance document).

Several cases confirm that NEPA requires evaluation of indirect impacts of projects that facilitate movement of fossil fuels, including GHG emissions. For example, in *Mid-States Coal. for Progress v. Surface Transp. Bd.*, 345 F.3d 520 (8th Cir. 2003), the Eighth Circuit Court of Appeals invalidated an EIS for a rail construction project intended to supply coal from the Powder River basin to power plants because it failed to analyze the emissions of burning the coal that would be transported by the rail project. The Court found that the project was likely to affect the country’s long-term demand for coal and hence the impacts of coal burning should have been considered in the EIS. Similarly, in *Border Plant Working Grp. v. Dep’t of Energy*, 260 F. Supp. 2d 997 (S.D. Cal. 2003), a federal district court invalidated a decision to approve transmission lines that would connect proposed power plants in Mexico to the U.S. power grid because indirect effects were not considered. The Court found that the decision violated NEPA because decision-makers failed to consider the impacts of the operation of the Mexican power plants—including impacts on air quality and climate—that were closely linked to the transmission lines. The Court found that the operation of the power plants were an “indirect effect” of the transmission line project because the two were causally linked. The Court specifically struck down the agency’s decision that the project’s impacts were too minimal to require preparation of an EIS. *Id.*

A valid SEPA analysis must also consider the climate and other air emissions of transporting these huge volumes of oil. Fully loaded tankers use tons of fuel per trip, generating both significant CO₂ emissions as well as a variety of toxic and harmful air emissions, including diesel particulates that are highly damaging to human health. Transportation of oil over long distances via rail also has significant environmental impacts, including the fossil fuel consumption of moving large volumes of material hundreds or thousands of miles. Moreover, as with the greenhouse gas impacts, this analysis must be viewed in the context of all existing and reasonably foreseeable similar impacts, including pending proposals to build other oil shipping terminals in Washington. These kinds of impacts are “indirect effects” of the decision to authorize the oil shipping facility and should be evaluated in the environmental impact statement.

III. ALL ISSUES AND IMPACTS CAUSED BY CONSTRUCTION AND OPERATION OF THE TESORO-SAVAGE PROJECT MUST BE CONSIDERED IN THE ENVIRONMENTAL IMPACT STATEMENT.

Crude-by-rail shipping at the proposed Tesoro-Savage project will affect people and places far beyond the immediate construction zone. Every community located along the rail line between the drill sites and the Port of Vancouver will be harmed, and communities and places along the Columbia River will be exposed to greater vessel traffic and risk of endemic or catastrophic crude oil spills. People outside Washington will be affected by the climate impacts of drilling, transporting, refining, and ultimately burning this crude oil. The EIS must, of course, analyze the impacts of construction and operations at and near the terminal, but it also must analyze the impacts of crude oil trains, crude oil vessels, and oil use on a much broader scale. This includes the direct, indirect, and cumulative impacts of crude oil shipping on public health, public safety, economics, marine health, public investment, and climate change.

To be clear, we believe the EIS must examine the full direct, indirect, and cumulative impacts of the proposed Tesoro-Savage project from the drilling of the oil in North Dakota and Alberta, Canada, the transport of crude by rail, with associated train derailment and oil spill risks, through several states, hundreds of communities, and hundreds of river crossings and banks, the loading and shipping of crude via large ocean-going vessels, including the vessel traffic, accident, and oil spill risk, to the refining and burning of the oil.

Below we briefly describe the impacts in each category and reference specific documents, reports, and studies that EFSEC should consider as it conducts its analysis. A non-exhaustive collection of documents and reports are included in a CD of materials accompanying this scoping letter for inclusion in the administrative record.

A. Transportation and Oil Spill Risks (Inland and Aquatic).

1. *Rail transport of crude oil is inherently risky.*

Crude oil is a hazardous material as defined by the U.S. Department of Transportation,⁶ and crude has certain properties that make it uniquely dangerous. First, it is a liquid, meaning that it can migrate away from the site of an accident or other release and travel into communities, down waterways, or into groundwater. Crude oil is also generally less flammable than other hazardous liquids (like ethanol and gasoline), meaning that it is more likely to migrate some distance before reaching an ignition source and catching fire.⁷

Second, unlike other liquids transported by rail, unrefined crude oil contains a wide range of contaminants, including sulfur and arsenic; toxic metals like mercury, nickel, and vanadium; and organic compounds like phenols, ketones, and carboxylic acids.⁸ Hydraulic fracturing, or “fracking” contributes an additional suite of contaminants, including hydrochloric acid and in some cases hydrogen sulfide.⁹ Indeed, the Federal Railroad Administration has observed “an increasing number of incidents involving damage to tank cars in crude oil service in the form of severe corrosion of the internal surface of the tank, manway covers, and valves and fittings,” and suggested that this involves contaminated oil.¹⁰

Domestic crude oil production is undergoing a major boom, chiefly because of the increase in fracking. U.S. Energy Information Administration (“EIA”) Administrator Adam Sieminski recently testified that:

⁶ 49 C.F.R. § 172.101. Hazardous materials are materials that have been determined by the Secretary of Transportation to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce. *See* 49 **Error! Main Document Only**.C.F.R. § 171.8.

⁷ *See* Exh. 1, BP West Coast Products LLC, “Material Safety Data Sheet – Crude Oil,” May 13, 2002. (flash point of **Error! Main Document Only**.20° - 90° F).

⁸ *See* Exh. 2, EPA, “Screening-Level Hazard Characterization, Crude Oil Category,” Mar. 2011.

⁹ **Error! Main Document Only**.*Enbridge Pipelines (North Dakota), LLC*, FERC Docket No. IS13-273-000, 2013. (FERC order granting pipeline operation authority to reject certain Bakken crude oil supplies, due to evidence that hydrogen sulfide levels can rise to dangerous or even lethal levels.). *See also* **Error! Main Document Only**. Exh. 3, Abrams, L., “*Fracking chemicals may be making oil more dangerous*,” Aug. 13, 2013.

¹⁰ **Error! Main Document Only**.*See* Exh. 4, Herrmann, T., FRA, Letter to Jack Gerard, American Petroleum Institute, July 29, 2013 at 4.

Domestic oil production in the United States has increased significantly, and at 7.4 million barrels per day as of April 2013 is now at the highest level since October 1992. Over the five year period through calendar year 2012, domestic oil production increased by 1.5 million barrels per day, or 30%. Most of that growth occurred over the past 3 years. Lower 48 onshore production (total U.S. Lower 48 production minus production from the federal Gulf of Mexico and federal Pacific) rose more than 2 million barrels per day (bbl/d), or 64%, between February 2010 and February 2013, primarily because of a rise in productivity from oil-bearing, low-permeability rocks.¹¹

This dramatic increase in production has caused a corresponding boom in crude-by-rail. In May 2013, AAR profiled how crude production and crude-by-rail are undergoing twin booms:

Historically, most crude oil has been transported via pipelines. However, in places like North Dakota that have seen huge recent increases in crude oil production, the existing crude oil pipeline network lacks the capacity to handle the higher volumes being produced. Pipelines also lack the operational flexibility and geographic reach to serve many potential markets. Railroads, though, have capacity, flexibility, and reach to fill the gap.

Small amounts of crude oil have long been transported by rail, but since 2009 the increase in rail crude oil movements has been enormous. As recently as 2008, U.S. Class I railroads (including the U.S. Class I subsidiaries of Canadian railroads) originated just 9,500 carloads of crude oil. By 2011, carloads originated were up to nearly 66,000, and in 2012 they surged to nearly 234,000. Continued large increases are expected in 2013. In the first quarter of 2013, Class I railroads originated a record 97,135 carloads of crude oil, 20 percent higher than the 81,122 carloads originated in the fourth quarter of 2012 and 166 percent higher than the 36,544 carloads originated in the first quarter of 2012.

Crude oil accounted for 0.8 percent of total Class I carload originations for all of 2012, 1.1 percent in the fourth quarter of 2012, and 1.4 percent in the first quarter of 2013. It was just 0.03 percent in 2008.

Assuming for simplicity, that each rail tank car holds about 30,000 gallons (714 barrels) of crude oil, the 97,135 carloads originated in the first quarter of 2013 equal approximately 762,000 barrels per day moving by rail. As a point of reference, according to EIA data, total U.S. domestic crude oil production was

¹¹ Exh. 5, **Error! Main Document Only.** *Hearings Before the Committee on Energy and Natural Resources, U. S. Senate*, July 16, 2013 (Statement of EIA Administrator Sieminski at 2).

approximately 7.1 million barrels per day, so the rail share is around 11 percent—up from a negligible percentage a few years ago.¹²

As also noted by AAR, “North Dakota, and the Bakken region more generally, have accounted for the vast majority of new crude oil originations.” During 2013, crude-by-rail out of North Dakota has fluctuated between 600,000 to 700,000 barrels per day, transporting 61-75% of total Bakken production.¹³

As shown in the data from AAR,¹⁴ crude-by-rail volumes increased rapidly from 2009 into the second quarter of 2013, then dipped for several months as a result of crude pricing that encouraged a shift to pipeline transport. Later in 2013, pricing was again favorable for rail and crude production continues to increase, such that crude-by-rail volumes have rebounded.¹⁵

Unit trains are long freight trains composed of at least 50 and sometimes 100 or more cars used to transport single bulk products between two points. Unit trains are unloaded on arrival and returned for another load. Unit trains cut costs (and save time) by eliminating the need for intermediate yarding and switching between origin and destination.

These cost savings, combined with the boom in mid-continent production of crude oil have driven a corresponding boom in the construction of rail terminals designed to handle unit trains. According to one recent industry analysis:

The number of rail terminals in producing regions loading crude oil onto rail tank cars has increased from a handful at the end of 2011 to 88 and growing today. A

¹² Exh. 6, American Association of Railroads, “Moving Crude Petroleum by Rail,” May 2013, at 3-5.

¹³ See North Dakota Pipeline Authority [http://northdakotapipelines.com/directors-cut/Monthly Updates for April 2013-November 2013 \(February 2013-September 2013 data\)](http://northdakotapipelines.com/directors-cut/Monthly%20Updates%20for%20April%202013-November%202013%20(Feb%202013-Sept%202013%20data)); Exh. 8, “How oil is transported from North Dakota’s Williston Basin,” *The Globe and Mail*, Dec. 2, 2013.

¹⁴ U.S. Class I railroads (including the U.S. Class I subsidiaries of Canadian railroads) originated 108,605 carloads of crude oil in the second quarter of 2013 (12 percent higher than the 97,135 carloads in the first quarter) and 93,312 carloads in the third quarter. See Exh. 9, American Association of Railroads, “AAR Reports Record Second Quarter Crude-by-Rail Data; Decreased Weekly Rail Traffic,” Aug. 29, 2013; Exh. 10, “AAR Reports October and Weekly Rail Traffic Gains, 3Q Crude Oil Up Year Over Year,” Nov. 7, 2013.

¹⁵ Fielden, Sandy, RBN Energy, “On the Rails Again? – Bakken Crude Rail Shipments Return to April Highs,” <http://www.rbnenergy.com/on-the-rails-again-bakken-crude-rail-shipments-return-to-april-highs>, Oct. 30, 2013.

further 66 crude oil unloading terminals have been built or are under construction.¹⁶

Various industry reports indicate that unit trains account for the vast majority of the recent boom in crude-by-rail transportation.

For the Tesoro-Savage project, the rail lines that will bring oil into the Port run through the city of Vancouver east to west along the Columbia River and north to south along the western boundary of the city. An accident at or near the terminal could result in vast environmental damage, horrifying personal damage, including loss of life, and millions of dollars of economic harm. In fact, the local International Longshoremen's Union voted to oppose the Tesoro-Savage project because it believes the project poses too great a threat to other commercial river traffic.

Predictably, the rise in crude transportation by rail has resulted in soaring numbers of crude oil releases to the environment in the form of both accidents and “non-accident” releases such as leaks. PHMSA incident records underscore these growing risks. The number of incidents” involving crude oil transportation by rail are as follows:

2009: 0
2010: 9
2011: 34
2012: 86
2013: 85 (partial)¹⁷

Unfortunately, the surge of incidents and releases has not been matched by an increase in the resources available to responders and regulators. The same has been true in Canada.

Lac-Mégantic

On July 5, 2013, a train hauling 72 tanker cars loaded with 2.0 million gallons of crude from the Bakken shale oil field in North Dakota slammed into Lac-Mégantic, a town of 6,000 located in Quebec. Owned by an American company—Montreal, Maine and Atlantic Railway—the train had only a single staffer, who abandoned the train in order to sleep in a motel before a replacement crew arrived to complete the train's journey to an oil refinery on Canada's east

¹⁶ Fielden, Sandy, RBN Energy, “Crude Loves Rock'n Rail,” <http://www.rbnenergy.com/154-terminals-operating-bnsf-the-dominant-railroad>, May 12, 2013.

¹⁷ Data derived from PHMSA incident reports—**Error! Main Document Only**.<http://www.phmsa.dot.gov/hazmat/library/data-stats/incidents>.

coast. The brakes on the five-locomotive train malfunctioned, and it began a seven-mile roll toward the small town. Reaching a speed in excess of 60 mph, the train reached a bend in the tracks, derailed and dumping 1.6 million gallons of its contents, which caught fire and incinerated dozens of buildings. Forty-seven people were killed.¹⁸

Information regarding the Lac-Mégantic accident is provided in Exh. 14, “Analysis of the Potential Costs of Accidents/Spills Related to Crude by Rail.”¹⁹ This analysis demonstrates that the costs of crude-by-rail accidents/spills can be very large, and that a major unit train accident/spill could cost \$1 billion or more for a single event.

As explained in Exh. 14, the Lac-Mégantic rail accident/spill will likely have costs on the order of \$500 million to \$1 billion excluding any civil or criminal damages. Costs/damages for a similar incident could have been substantially higher had it occurred in a more populated area. Lac-Mégantic is also relevant in that it shows how an accident involving highly flammable light crude (such as the Bakken crude) can have devastating consequences even in a small town in terms of loss of human life and widespread explosion and fire damage to surrounding property.

Exhibit 14 also analyzes the spill of tar sands dilbit from Enbridge’s Line 6B in Marshall, Michigan: This rupture in 2010 had costs of about \$1 billion for Enbridge. The spill volumes at Marshall (840,000 gallons) were within the range of the amount of spill possible (and, in fact, substantially less than the maximum spill) if a crude by rail unit train released much of its cargo. Costs/damages for similar incident could have also been substantially higher had it occurred in a more populated area. Marshall is also relevant in showing the high potential cost of dilbit spills into water (and rail lines are often highly proximate to water).

Alabama

On November 8, 2013, a 90-car unit train carrying 2.7 million gallons of crude oil derailed and exploded in a rural wetland in western Alabama, spilling crude oil into the surrounding wetlands and igniting a fire that burned for several days.²⁰ No injuries resulted from the accident, but a similar accident in a more populated location would certainly have caused serious risk to public safety.

¹⁸ Transportation Safety Board of Canada, “Railway Investigation R13D0054,” <http://www.bst-tsb.gc.ca/eng/enquetes-investigations/rail/2013/R13D0054/R13D0054.asp#sal>, Sept. 11, 2013.

¹⁹ This analysis was prepared by The Goodman Group, Ltd, a consulting firm specializing in energy and regulatory economics, on behalf of Oil Change International.

²⁰ Exh. 15, Karlamangla, Soumya, “Train in Alabama oil spill was carrying 2.7 million gallons of crude.” Los Angeles Times, Nov. 9, 2013.