BEFORE THE STATE OF WASHINGTON
ENERGY FACILITY SITE EVALUATION COUNCIL

In the Matter of: Application No. 2013-01 TESORO SAVAGE, LLC VANCOUVER ENERGY DISTRIBUTION TERMINAL	)	CASE NO. 15-001 DIRECT TESTIMONY OF IAN GOODMAN

I. INTRODUCTION AND EXPERT QUALIFICATIONS

1. I am the founder of The Goodman Group, Ltd. (TGG). For over 35 years, I have conducted research and consulted in energy regulation and economics (related to conventional, unconventional and renewable energy, and energy efficiency). My practice has addressed a broad range of issues, including pipeline economics and regulation, evolving North American oil, gas and electric markets, and economic development and environmental impacts of various energy supply and transportation options. Since 2011, I have focused on oil supply and transportation (notably Canadian tar sands, shale, pipelines and rail). I also have expertise in the planning and operations of energy systems, as well as inter-jurisdictional energy trade in North America.

2. I have prepared this testimony with the in-depth participation of my colleague at TGG, Brigid Rowan. Ms. Rowan is an energy economist with over 20 years of experience in the areas of energy and regulatory economics. Her practice addresses pipeline economics and regulation, economic development and environmental impacts of various energy supply and transportation options, evolving North American oil, gas and electricity markets, as well as

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regulation of natural gas and electricity. The CVs for Ms. Rowan and me are attached to this testimony.

3. Specifically, this testimony discusses the need for the Vancouver Energy Distribution Terminal (VEDT) to supply Washington State with energy. In the context of this evaluation, we also discuss the economic benefits and costs for Washington.

4. TGG has provided extensive economic and technical analysis (submitted as expert testimony, reports, and comments in numerous regulatory/siting proceedings) on energy logistics facilities (including both crude by rail (CBR) and pipelines). Our analysis includes economic development impacts, crude supply/demand/markets, environmental impacts, cost of accidents/spills and financial assurance. TGG has reviewed CBR facilities including California CBR terminals at Valero Benicia and Phillips 66 Santa Maria refineries.

5. Ms. Rowan and I have co-authored expert reports and testimony on North America‘s most controversial pipeline projects, including:

- TransCanada’s Keystone XL,
- TransCanada’s Energy East,
- Enbridge’s Line 9 Reversal and Capacity Expansion, and
- Kinder Morgan’s Trans Mountain Expansion.

6. TGG has produced crude market analyses (examining the economics of crude oil supply and demand in relevant markets) to evaluate the need for CBR and pipelines. Our reports have also examined the economic costs (with a focus on worst-case spills) and benefits (with a focus on employment and tax revenues) for communities (including states, provinces, and regions). TGG reports have also analyzed the distribution of costs and benefits between communities/governments and pipeline proponents (energy producers/pipeline

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companies/refineries).

7. The TGG expert reports on crude market analysis and energy logistics facilities that are relevant to this testimony include the following:

8. Goodman, Ian and Brigid Rowan, Comments on Draft Environmental Impact Report (DEIR) Analysis of Oil and Gas Well Stimulation Treatments in California, filed on behalf of Natural Resources Defense Council (NRDC), March 16, 2015, incorporated as an attachment to Comments filed by Natural Resources Defense Council (NRDC), Center for Biological Diversity (CBD), Sierra Club, Los Angeles Waterkeeper on the Department of Conservation's, through its Division of Oil, Gas and Geothermal Resources (DOGGR), Draft Environmental Impact Report (DEIR) for Well Stimulation in California (the Project) prepared pursuant to the California Environmental Quality Act (CEQA), March 16, 2015. Ex5570-000077-CRK, *TGG CA Well Stimulation Report.*

9. Goodman, Ian and Brigid Rowan, Economic Costs and Benefits of the Trans Mountain Expansion Project (TMX) for BC and Metro Vancouver in collaboration with Simon Fraser University, Centre for Public Policy Research November 2014, re-released February 2015. Ex5571-000076-CRK, *TGG TMX Report.*

10. Rowan, Brigid and Ian Goodman, Report on the Economics of Transporting and Processing Tar Sands Crudes in Quebec, January 2014. Ex5572-000055-CRK, *TGG Quebec Report.*

11. Rowan, Brigid and Ian Goodman, Analysis of the Potential Costs of Accidents/Spills Related to Crude by Rail, November 8, 2013, on behalf of Oil Change International (OCI), December 5, 2013, attached to Comments filed by NRDC, Sierra Club and OCI before The Pipeline and Hazardous Materials Safety Administration, U.S. Department Of

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Transportation as part of the Advance Notice of Proposed Rulemaking Hazardous Materials: Rail Petitions and Recommendations To Improve the Safety of Railroad Tank Car Transportation, December 5, 2013. Ex5573-000018-CRK, *TGG Costs of CBR Spills.*

12. Goodman, Ian and Brigid Rowan, The Relative Economic Costs and Benefits of Enbridge's Line 9B Reversal and Line 9 Capacity Expansion Project, written expert testimony filed in August 2013 at Canada's National Energy Board on behalf of a coalition of environmental groups. Ex5574-000060-CRK, *TGG Line 9B Report.*

13. Goodman, Ian and Brigid Rowan, Comments on Initial Study/Mitigated Negative Declaration (IS/MND) Valero Crude by Rail Project, July 1, 2013. Ex5575-000029-CRK, *TGG Valero CA CBR Report.*

14. Goodman, Ian and Brigid Rowan, Report evaluating the adequacy of the Keystone XL (KXL) Draft Supplemental Environmental Impact Statement (DSEIS) Market Analysis, filed as an attachment to Comments on KXL DSEIS submitted by Sierra Club, NRDC and 14 other groups in April 2013. Ex5576-000064-CRK, *TGG KXL DSEIS Market Analysis Report.*

15. Goodman, Ian and Brigid Rowan, co-authored with Cornell University, Pipe Dreams? Jobs Gained, Jobs Lost by the Construction of Keystone XL", co-authored with Cornell University, September 2011 and updated January 2012. Ex5577-000040-CRK, *TGG KXL Employment Report.*

II. EXECUTIVE SUMMARY

16. This testimony examines two essential questions before EFSEC: Is there an economic need for the VEDT in Washington and is the VEDT is in public interest of Washington State?

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17. Regarding the question of economic need, TGG will demonstrate that (a) Washington's extensive existing energy facilities already more than meet its energy needs; and (b) the VEDT is a conduit energy logistics facility that will move crude produced outside Washington through Washington and on to refineries outside Washington. Therefore, we conclude that little if any crude from the VEDT will be refined in Washington (or refined elsewhere to provide products to the state). This implies that the VEDT will do little, if anything, to supply Washington with energy.

18. Not only is there no economic need for the VEDT in Washington, but this testimony will show that the VEDT is likely not in Washington's public interest. We examine the experience of other jurisdictions hosting relevant energy logistics facilities. For each of the jurisdictions reviewed (Washington, British Columbia, Ontario, and Quebec), the various technical analyses regarding the economic benefits and costs of energy logistics facilities[1] consistently conclude that:

- the economic benefits tend to be relatively small for hosting jurisdictions;
- the economic costs/risks are relatively large for hosting jurisdictions; and
- the economic benefits and costs/risks tend to be unevenly distributed (across stakeholders and regions), with the project proponents getting the majority of the benefits and the hosting jurisdiction bearing the majority of the costs/risks.

19. This imbalance between the economic benefits and costs is typically even greater in conduit jurisdictions.[2] Put simply, these facilities are typically a bad deal for hosting jurisdictions, and typically an even worse deal for conduit jurisdictions. Moreover, the benefits

[1] See footnote 3 for the definition of an energy logistics facility.

[2] A conduit jurisdiction hosts an energy logistics facility that moves crude produced outside the jurisdiction through the jurisdiction and on to refineries and markets outside the jurisdiction.

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and costs/risks of the VEDT for Washington may be even more imbalanced than the benefits and costs/risks of the relevant energy logistics facilities reviewed in this testimony (i.e., major tar sands pipeline projects in Canada). And recent dramatic shifts in the crude markets may make correcting these imbalances in the allocation of economic benefits and costs/risks even less likely. Washington (as a conduit jurisdiction for the VEDT) would likely receive even smaller benefits than relevant energy logistics facilities.

20. If other relevant jurisdictions (which may receive more benefits) have determined that hosting energy logistics facilities is a bad deal (meaning the costs/risks exceed the benefits), the VEDT (with significantly less benefits for Washington) is likely a very bad deal for Washington. In light of the above, TGG concludes that it is highly likely that the VEDT is not in the public interest of the state.

21. Section IV makes a strong case that there is no economic need for the VEDT. Section IV.C shows in detail that Washington currently hosts extensive energy facilities that already more than meet Washington's energy needs. Washington refineries, energy logistics facilities, and crude supply are described in Section IV.C.1. Washington CBR facilities are examined in Section IV.C.2.

22. Section IV.D rejects Tesoro Savage's claims regarding the principle purpose of the VEDT and demonstrates that the VEDT is not needed to replace crude supply from Alaska, California, and overseas imports. The supply to Washington and California refineries from Alaska North Slope (ANS) crude production, California crude production, and overseas imports are reviewed in Sections IV.D.2, IV.D.3, and IV.D.4.

23. Section IV.E shows that the VEDT is a conduit energy logistics facility for Washington (to move crude produced outside the jurisdiction through Washington and on to

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refineries and markets outside Washington). Section IV.E.2 discusses the uncertainty of VEDT inputs, outputs, and utilization. Section IV.E.3 shows how the design of the VEDT will enable a wide range of pipeline-grade crudes, marine vessels, and out-of-state/foreign imports. Section IV.E.4 provides a non-exhaustive description of potential crude sources (tar sands and Bakken) and destinations (California and Asia) for the VEDT. Section IV.F demonstrates how the VEDT will increase oil transport proximate to Washington. Finally, Section IV.G concludes that there is no economic need for this Project to supply Washington with energy.

24. Section V shows that it is highly likely that the VEDT is not in the public interest of Washington. Section V.B describes (a) the relevant energy logistics facilities in other jurisdictions (California and Canada); and (b) the resistance to these facilities from the public and regulators/governments. Section V.B provides a description of the following projects and the resistance in their respective jurisdictions:

- ●CBR in California (Section V.B.1);
- ●Enbridge's Northern Gateway in British Columbia (Section V.B.2.a);
- ●Kinder Morgan's Trans Mountain Expansion Project in British Columbia (Section V.B.2.b); and
- ●TransCanada's Energy East Project (Section V.B.2.c).

25. Section V.C outlines technical analyses of the costs and benefits of conduit energy logistics facilities by regulators, governments and experts. The technical analyses include the following jurisdictions and projects:

- ●Washington State (Northern Tier) (Section V.C.2);
- ●British Columbia (Northern Gateway and Trans Mountain Expansion Project) (Section V.C.3); and

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●Ontario and Quebec (Energy East) (Section V.C.4).

26. Time and again, technical analyses by regulators and governments in Washington, British Columbia, Quebec, and Ontario expressed concern about the imbalance between the economic benefits and the costs/risks for conduit jurisdictions, as well as the significant environmental and economic risks of these energy logistics facilities.

27. Section V.D analyzes the implications for the VEDT of the experience of other relevant jurisdictions and of the technical analyses. In light of the experience of other relevant jurisdictions and technical analyses of the costs and benefits of conduit energy logistics facilities, Section V.D concludes that it is highly likely that the VEDT is not in the public interest of Washington.

28. Section VI contains TGG's Recommendations and Conclusions.

III. KEY QUESTIONS BEFORE EFSEC

29. As I understand the requirements, when reviewing permit applications for major energy facilities, RCW 80.50.010 and WAC 463-14-020 are relevant, as they pertain to economic need and the balancing of the economic need in conjunction with the public interest.

30. The Council should, therefore, first determine if Washington State has an economic need for the facility to supply Washington State energy consumers "with abundant energy at reasonable cost."

31. If there is an economic need for the VEDT, the Council should then balance this economic need "in conjunction with the broad interests of the public" (including risks to public safety and the environment, as well as other economic benefits).

32. If there is no economic need for the VEDT to supply Washington energy consumers, the Council should then carefully consider whether Washington should host a facility that will generate some economic activity via construction and operations, but will also have

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sizable costs and risk, notably due to air emissions and accident/spill risk.

IV. ECONOMIC NEED FOR THE VEDT

A. Introduction

33. There is no economic need for the VEDT. Washington's extensive energy facilities already more than meet its energy needs, and these energy facilities include extensive energy logistics facilities.[3] The VEDT is a conduit energy logistics facility that will move crude produced outside Washington through Washington and on to refineries outside Washington. We conclude that little, if any, crude from the VEDT will be refined in Washington (or refined elsewhere to provide products to Washington). This implies that the VEDT will do little, if anything, to supply Washington with energy.

B. Definition of Economic Need

34. TGG defines the economic need for the VEDT as the economic need for the facility to supply Washington energy consumers "with abundant energy at reasonable cost."

C. Extensive Energy Facilities Already More than Meet Washington's Energy Needs.

35. This section will demonstrate that Washington is already host to extensive existing energy facilities, which more than meet the state's energy needs.

1. Washington refineries, logistics, and crude supply

36. Washington's extensive energy facilities include five oil refineries, as well as extensive energy logistics facilities relating to those refineries. Washington refineries and energy logistics facilities not only supply Washington, but also provide sizable energy supply to

[3] For the petroleum industry, energy logistics facilities are the facilities associated with the midstream sector, which involves the transportation (by pipeline, rail, barge, tanker or truck), associated transloading and storage of crude or refined petroleum products. Thus energy logistics facilities can be pipelines or transportation vessels (rail, barge, tanker or truck), terminals (rail, marine, truck, pipeline) and storage. Typically an energy logistic facility involves some combination of transportation, terminals and storage.

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neighboring states and international markets.[4] Washington Refineries, Logistics, and Oil Supply are discussed in the Technical Appendix (Ex5588-000029-CRK) and summarized below.

37. Washington has a combined refining capacity of 657 kbpd. The output of Washington refineries greatly exceeds Washington in-state consumption: Washington refineries are in part an export industry, and Washington is already a sizable net exporter of refined petroleum products.

38. According to Washington's Department of Commerce:

> These refineries produce more refined product than is needed by Washington State. In 2011 approximately 35 percent of the combined refinery output was sent to domestic consumers, mainly in Oregon and California. Approximately 14 percent was shipped to foreign consumers, mostly to British Columbia.[5]

39. Not only do the Washington refineries supply the refined petroleum products needed in Washington, about half of their combined refinery output goes to other states and countries.

40. Washington's extensive oil energy facilities (including refineries and energy logistics facilities) already supply Washington energy consumers "with abundant energy at reasonable cost." The capacity of Washington refineries has not significantly changed in recent years, and it is not expected to change in the future. Likewise, the overall crude supply processed by Washington refineries has remained steady at about 560 kbpd, and it is not expected to change in the future.

41. With the energy logistics facilities now in place, Washington refineries have been

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[4] Washington refineries process crude oil into gasoline and other refined products. While energy logistics facilities move crude into refineries, other energy logistics facilities move products out of the refineries to consumers and to markets both in and outside the state.

[5] Ex5578-000068-CRK, State of Washington Department of Commerce, Petroleum Supply and Use in Washington State, October 2013. http://www.commerce.wa.gov/Documents/Petroleum-Whitepaper-7-15-2013.pdf, p.29.

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able to access sufficient crude supply. Washington refineries have been operating at full capacity, more than meeting the state's energy needs, and sending half their output to consumers outside Washington. The VEDT is not needed to provide crude supply to Washington refineries.

42. The extensive energy logistics facilities related to the refineries include the marine and pipeline infrastructure that until recently was the source of all crude supply to those refineries. More recently, these logistics facilities have expanded to include crude by rail (CBR) unloading terminals.

43. Washington's crude supply comes from four sources via seven routes:

Source and Type of Crude	Route
Alaska (Alaska North Slope (ANS))	1. by tanker to the refineries
Canadian crude from AB (heavy, medium and light)	2. by Trans Mountain Mainline Pipeline to Abbotsford, British Columbia and then by Kinder Morgan's Puget Sound pipeline system to the refineries 3. by Trans Mountain Mainline Pipeline to the Westridge Terminal in Burnaby British Columbia and then by barge to the refineries 4. by rail to refineries in Puget Sound
Inland US, mostly Bakken (mainly light shale crude)	5. by rail to refineries in Puget Sound 6. by rail to marine transload terminals and then by barge to Puget Sound
Overseas imports from Latin America, the Middle East, and other global sources (a mix of heavy, medium and light)	7. by tanker to the refineries

44. The above table demonstrates that Washington already receives crude from multiple sources. Washington refineries can and do process a range of crudes, including heavy crudes, as well as medium and light crudes. With capability to access and process a range of crudes, Washington refineries have continued to operate at full capacity under a wide range of evolving market conditions.

45. There have been major shifts in crude sourcing for Washington refineries since 2003, but the shifts going forward could be more limited and gradual.

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46. The biggest change has related to the decline in Alaska North Slope (ANS) production. Following development of the Trans-Alaska Pipeline System and large-scale crude production, ANS by tanker became the dominant supply for Washington refineries.[6] ANS production peaked in 1988 and by 2003 had dropped by about half. Nonetheless, ANS was still providing over 90% of Washington refinery crude supply in 2003. Since then, Alaskan production and supply to Washington have fallen by half, such total ANS production is now less than 25% of peak and ANS provides about 45% of Washington crude supply. ANS by tanker now provides about 250 kbpd of crude supply for Washington.

47. Meanwhile, Canadian crude supply to Washington refineries by pipeline has grown, rising from less than 10% in 2003 to about 25% from 2011 onward. Canadian crude by pipeline now provides about 140 kbpd of supply for Washington.

48. There has been even more growth in crude by rail, notably to access Bakken crude. CBR was not a significant crude source for Washington refineries prior to 2011. And in 2011 and the first half of 2012, CBR was still only about 2% of total supply. But since, CBR has grown to provide about 25% of Washington crude supply. Bakken and other crude by rail now provide about 140 kbpd of supply for Washington.

49. Washington also receives some foreign (non-Canadian) crude supply by tanker from a variety of global sources. With the growth in supply from CBR, however, these other imports are now only about 5% of Washington supply, down from around 19% in 2011. Foreign (non-Canadian) crude by tanker now provides about 30 kbpd of supply for Washington.

2. Washington CBR facilities

50. Crude by rail has grown very rapidly in Washington. This rapid growth has been

[6] EFSEC, Order and Recommendation, Application 76-2, Northern Tier Pipeline, Order 636, January 27, 1982, pp. 9-14.

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enabled by extensive development of energy logistics facilities in Washington. Information regarding existing and proposed CBR terminals in Washington is provided in the Technical Appendix and summarized below.

51. Four of the five Washington refineries (including Tesoro) have recently constructed and are now operating onsite unit train unloading terminals, with a total capacity of 195 kbpd. The fifth Washington refinery (Shell) is in permitting process for a 61 kbpd unloading terminal.

52. As demonstrated by the experience in Washington, refineries typically prefer to implement CBR via onsite unit train unloading terminals, rather than via off-site facilities such as the VEDT. For refineries, onsite terminals enable greater control, ownership, and simpler logistics. By comparison, off-site facilities such as the VEDT involve third-party logistics and transloading to other another transport mode for final delivery.

53. Refineries (including those in Washington) sometimes use off-site transloading facilities, notably as an interim CBR strategy until they install an onsite unloading terminal. Washington CBR to marine transloading facilities include one already in operation (40 kbpd), and two in permitting (71 kbpd).

54. Future crude supply from CBR will be affected by actual buildout of proposed facilities, as well as how fully existing and proposed facilities are utilized.[7] Even without the VEDT, CBR could potentially provide up to an additional 120 kbpd of crude supply for Washington refineries:

[7] Average actual throughput at CBR facilities is typically less than design or peak capacity. Actual utilization can be as high as 75% (and sometime a bit higher), but can also be substantially lower, especially if economic factors are unfavorable for using CBR. See Ex5579-000056-CRK, Muttit, Greg and Lorne Stockman, Tracking Emissions: The Climate Impact of the Proposed Crude-by-Rail Terminals in the Pacific Northwest, Oil Change International and Sightline Institute, November 2015, pp. 9, 22, 27 (*OCI Tracking Emissions Report.*)

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-25 kbpd from fuller utilization of existing CBR facilities;

-45 kbpd from new refinery unloading facility (Shell Anacortes, if permitted);

-50 kbpd from new marine transload facilities (Westway Grays Harbor and NuStar Vancouver, if permitted).

3. Conclusions

55. Washington is already doing its "share" and more to meet state and regional energy needs in regard to oil refining and logistics (including oil logistics both into and out of refineries).

56. Washington is a net exporter of almost half its combined refinery output.

57. Washington refineries are already well-supplied with crude from a variety of sources with plentiful additional and reasonably priced import options from overseas.

58. Washington's energy needs are already being met by its existing facilities, the output of which considerably exceeds Washington's in-state energy consumption.

D. <u>VEDT Is Not Needed to Replace Crude Supply from Alaska, California, and Overseas Imports.</u>

1. Rejection of claimed VEDT purpose

59. Tesoro Savage claims that the principal purpose of the VEDT is to supply North American sourced crude to US West Coast refineries, to replace declining Alaska North Slope and California crude production, and to offset foreign imports. According to the Application:

> The Applicant is proposing to construct a facility to receive crude oil by rail, store it on site, and load it on marine vessels primarily for delivery to refineries located on the West Coast of North America. [p. 2-85]
>
> The Facility's principal purpose is to provide North American sourced crude oil to U.S. refineries to potentially offset or replace declining Alaska North Slope and California crude oil production and foreign crude oil imports. [p. 2-211]
>
> Under the No Action Alternative, the Facility would not be built. U.S. refineries located along the West Coast would continue to receive crude oil from existing sources, i.e.,

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> domestic sources connected to existing overland transportation systems capable of moving the crude oil to the West Coast, the Alaska North Slope, and foreign sources. Foreign imports would likely make up for declining Alaska North Slope and California crude oil production. [p. 2-214][8]

60. As explained below, the VEDT is not needed to provide crude supply to US West Coast refineries, to replace declining crude production from Alaska North Slope and California, or to offset foreign imports.

2. Alaska North Slope (ANS) crude production

a. Supply to Washington

61. Ongoing declines in ANS production will likely have only a small and gradual impact on crude supply for Washington refineries. The VEDT is not needed to provide a substitute for ANS. Supply to Washington refineries from ANS is discussed in the Technical Appendix and summarized below.

62. The VEDT is a very large facility, with a capacity to handle on average 360 barrels per day of crude. Meanwhile, ANS now provides only about 250 kbpd of supply to Washington refineries. So even in the remote event that ANS ceased to provide any crude supply to Washington, the VEDT would not be fully needed to provide substitute crude supply to Washington.

63. Tesoro Savage has failed to provide a realistic analysis of need. A realistic analysis requires a detailed consideration of potential decline in ANS production and how this might affect crude supply to Washington.

64. There is significant uncertainty regarding the future evolution of ANS production. While some decline is likely, production could also level off, both in the near-term and after

[8] Ex0003-000000-PCE, Tesoro Savage Application, February 2014 Supplement. See also Ex0009-000000-PCE, Corpron, David and Irina Makarow, Tesoro Savage Response to EFSEC Request for Additional Information to Assess EIS Alternatives, February 5, 2015.

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2020. Thus, ANS production might decline by about 10-20% by 2020, and then by another 10-20% by 2025. Based on these scenarios, ANS supply to Washington could be about 200-225 kbpd in 2020 (about 25-50 kbpd lower than current levels), and about 150-200 kbpd in 2025 (about 50-100 kbpd lower than current levels).

65. It should be recognized that only a portion of ANS production goes to Washington refineries. Around half of ANS production goes to Washington refineries, and most of remainder to California refineries. A small portion of ANS goes to Alaska refineries.

66. The recent decline in ANS crude supply to Washington may in part be demand-driven, rather than supply-driven. With the rapid growth in crude supply from CBR, Washington refineries have shifted away from ANS, such that ANS can go to California instead of Washington. From 2011 onward, ANS crude supply to California has leveled off at around 200 kbpd, while ANS supply to Washington refineries has continued to decline.

67. The VEDT is not needed to offset declining ANS production. The amount of substitute crude supply that might be needed by Washington is likely to be small, and any need would develop gradually over time.

b. Supply to California

68. Any decline in ANS production going to California refineries will not create a need in Washington for substitute crude supply; however, it could provide a market in California for crude from the VEDT. But by itself, this would be a very small market. ANS supply to California refineries is discussed in the Technical Appendix and summarized below.

69. Depending on the future evolution of ANS production and the portion going to California, ANS crude supply for California refineries could decline in the future. ANS supply to California could be about 20-40 kbpd lower than current levels in 2020, and about 40-80 kbpd lower than current levels in 2025.

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70. California refineries that process ANS can and do process a range of crudes, including heavy crudes, as well as medium and light crudes. Replacement crude supply for ANS via the VEDT could include both heavy tar sands and light Bakken.

3. California crude production

a. Supply to Washington

71. All California crude production is refined in California to supply consumers in California. The VEDT is not needed to provide a substitute in Washington for California crude production. California crude production and supply to refineries is discussed in the Technical Appendix.

b. Supply to California

72. The VEDT is not needed by Washington to offset declining California crude production. A decline in *California* production refined in *California* does not create a need in *Washington* for substitute crude supply. But a decline in California production could provide a market in California for crude from the VEDT. However, by itself this would be (at most) a relatively small market. California crude production and supply to refineries is discussed in the Technical Appendix and summarized below.

73. There has been a long-term decline in crude production in both California and Alaska. But the decline in California has been much smaller, more gradual, and has recently abated. Since 2011, California production has leveled off, and future production could remain at these levels, or possibly even rebound. But especially if crude prices remain lower for longer, California production could begin to decline. In a decline scenario, California crude production in 2020 could be about 80 kbpd lower than current levels, and in 2025 about 180 kbpd lower than current levels.

74. On the other hand, the amount of crude refined in California could also begin to

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decline. California is undertaking extensive initiatives to enhance energy efficiency and reduce carbon and other air emissions. Especially over the longer term, less crude may be processed by California refineries, and there may be a shift away from higher carbon intensity heavy crudes.

75. There is significant uncertainty regarding how much, if any, market there will be in California for crude from the VEDT as a substitute for California crude production. Any decline in California production would be mostly heavy crude, and perhaps some medium. While California refineries can and do process a wide range of crudes, there is very large capability to process heavy crudes. Replacement crude supply for California via the VEDT could include both heavy tar sands and light Bakken.

76. California is roughly self-sufficient in terms of refined products; almost all of the products consumed in California are refined in California, and almost all of the products refined in California are consumed in California. Hence, any decline in California crude production will not affect supply of refined products to Washington consumers.

4. Overseas imports

a. Supply to Washington

77. The VEDT (with a capacity to handle 360 kbpd of crude) is not needed by Washington to replace overseas imports into Washington, which are now about 30 kbpd.

78. Washington receives some foreign (non-Canadian) crude supply by tanker from a variety of global sources, but with the growth in supply from CBR, these other imports are now only about 5% of Washington supply, down from around 19% in 2011. The VEDT is unlikely to have a significant effect on the level of overseas imports into Washington. Crude from the VEDT will be supplying refinery markets outside Washington.

79. Put simply, hosting the VEDT in Washington in order to provide substitute crude supply for overseas import to Washington refineries would be a solution to a problem that is non-

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existent.

80. Refining is a highly competitive global industry. Washington refineries have good access to crude by tanker from global markets, and these refineries import overseas crudes when it is profitable to do so.

81. Global crude markets are intensely competitive. The world is currently awash in low-priced crude, and crude prices are expected to remain low for the short- to medium-term. Refineries will continue to adjust their crude supply in response to evolving market conditions. They will buy and process the crudes that provide the highest margins.[9]

82. Overseas imports are now highly competitive with other crude sources. Especially in a low price environment, logistics can be an important competitive factor.

83. Overseas imports are especially competitive in markets where they are logistically advantaged relative to alternative crude supplies, notably due (a) high quality access to crude by tanker (and thus relatively low logistics cost for overseas imports), and/or (b) lower quality access to alternative crude supplies (and thus relatively high logistics and other costs for alternative crude supplies).

84. Washington refineries are in coastal areas with good access to crude by tanker from global markets.[10] But Washington refineries also have good access to alternative crude supplies, and Washington has extensive existing energy logistics facilities that enable lower

[9] Crude selection affects refinery economics and profitability in numerous ways. Refinery economics and crude markets are discussed in the Technical Appendix as part of the California Market Analysis, and specifically in regard to overseas imports.

[10] Compared with Washington refineries, some other refineries (both within and outside the US) have even better access to global crudes. These logistically advantaged refineries have lower shipping times and costs, notably due to location (proximity to crude production and open ocean) and port facilities (capability to efficiently offload larger tankers). But shipping costs by crude tankers are generally quite low (in the order of $1.50-$3.50/bbl). Thus, there may be only small differences in shipping costs between refineries (and especially between Washington refineries and those elsewhere with even better access to global crudes).

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logistics costs and access to a wide range of crude types.

85. As a result, overseas imports have remained a small portion of crude supply for Washington refineries, and these imports have recently declined to very low levels despite these overseas imports being very competitively priced.

86. In part, the recent very low level of overseas imports reflects that Washington refineries have continued to utilize CBR at high levels, despite CBR being a relatively high cost source of crude.[11]

87. Access to global crude markets is helping to provide Washington refineries "with abundant energy at reasonable cost." To the extent that there is a limited need for additional crude supply, such as due to decline in ANS production, overseas imports could provide a flexible and cost-effective replacement.

b. Supply to California

88. The supply mix in California has been stable since 2011, with overseas imports providing half of crude supply to California refineries, about 850 kbpd. Supply to California refineries from overseas imports is discussed in the Technical Appendix and summarized below.

89. In contrast to very small overseas imports into Washington refineries (currently around 30 kbpd), there are very sizable imports into California refineries (about 850 kbpd). Hence, to the extent there is a market to replace overseas imports into California, this is potentially a very large market. As will be further discussed below, the VEDT (with a capacity to handle 360 kbpd of crude) is designed to supply large markets. And in fact, California is the only US market that could feasibly utilize the large amount of crude that could be handled by the

[11] Washington refiners have made sizable commitments to CBR (notably for terminals and tank car leases), so some CBR costs are now "sunk." Fielden (2016), Slow Train Coming – Crude By Rail To Northwest Refineries Still Resilient. Accessed May 12, 2016. https://rbnenergy.com/slow-train-coming-crude-by-rail-to-northwest-refineries-still-resilient.

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VEDT.

90. But regardless of whether there is actually a market in California for crude from the VEDT, this does not create a need in Washington for the VEDT to supply energy to Washington. Instead, this is a potential commercial opportunity for the VEDT to supply the energy needs of a jurisdiction outside Washington.

91. In various ways, the large VEDT facility and large California refinery markets may be well matched. The VEDT needs large markets that can utilize the large amount of crude that can be handled by this facility. Meanwhile, California refineries need large suppliers that can consistently and reliably provide the large amount of crude being imported into California. Moreover, there can be various economies of scale and synergies between large suppliers and large customers.

92. A detailed analysis of the overseas imports into California concludes that the potential market for crude handled by VEDT could include both heavy tar sands and light Bakken. In particular, the crude handled could include a sizable proportion of dilbit, including dilbit blended with Bakken into ANS look-alikes; the VEDT is designed to facilitate crude blending.

c. Supply to Alaska and Hawaii

93. Alaska and Hawaii are small markets where crude from the VEDT may not be competitive owing to Jones Act and other issues. Their demand for the VEDT would be insignificant and therefore these markets will not be extensively considered in this testimony.[12]

[12] Ex5579-000056-CRK, *OCI Tracking Emissions Report*, p. 21.

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E. VEDT: A Conduit Energy Logistics Facility for Washington

1. Introduction

94. The VEDT is an energy logistics facility, a facility in Washington handling energy commodities (crude oil). However, the VEDT will do little if anything to supply Washington with energy.[13] Nor will it facilitate crude production in Washington. Instead, this section will show that the VEDT is a conduit energy logistics facility that will move crude produced outside of Washington through Washington and on to refineries outside Washington.

2. Uncertainty of VEDT inputs, outputs, and utilization

95. Our analysis of potential VEDT inputs, outputs, and utilization concludes that they are characterized with significant uncertainty and variability:

- Crude can come from anywhere in North America by rail and can go anywhere in the world by tanker (and to nearby ports by barge).
- A wide range of crude types can be transported through the VEDT.
- Crudes can be stored and blended at the VEDT; outputs from VEDT can differ from inputs in terms of both quantity and quality.
- Furthermore, the level of utilization of the facility is also highly uncertain.

96. As Tesoro Savage has emphasized, VEDT operations will be driven by the market and customer demands.[14] Thus, VEDT operations will be affected by the ongoing evolution of crude markets and could be both highly uncertain and variable.

97. To the best of our knowledge, Tesoro Savage has not disclosed any existing

[13] It cannot be ruled out that some of the crude transported through the VEDT could be used in Washington refineries, but it is likely to be a small amount and unlikely to be needed by the Washington refineries to meet the energy needs of the state.

[14] Ex0009-000000-PCE, Corpron, David and Irina Makarow, Tesoro Savage Response to EFSEC Request for Additional Information to Assess EIS Alternatives, February 5, 2015.

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contracts with third party customers to EFSEC, or provided any public statement or information as to what extent there are any such contracts. The Facility thus must be evaluated based on the information available. Hence, for the purposes of reviewing the VEDT, it should be assumed that there are no such contracts.

98. Regarding existing contracts (and other commitments) with Tesoro for use of the VEDT, it does not appear that Tesoro Savage has specifically disclosed this information in this proceeding. But Tesoro has elsewhere publically indicated that it has committed to use the VEDT for at least 60 kbpd. So for the purposes of reviewing the VEDT, TGG assumes that there is such a commitment.

99. That said, it appears that any commitment made by Tesoro is financial, as opposed to physical. In other words, as is commonly done in such agreements, Tesoro has made a take-or-pay commitment, guaranteeing a minimum level of revenues. Put more simply, Tesoro is required to pay regardless of whether the facility is actually utilized. This creates a strong financial incentive to actually use the facility, but it is not a binding commitment to physically handle crude. Moreover, since Tesoro is a joint owner, it may (in effect, at least in part) be paying itself. Finally, Tesoro may be able to resell its committed capacity to other parties.

100. Thus, especially in a situation where CBR is in a weak competitive position (as it now is), utilization of the VEDT may be at low levels. But other times, utilization could be at very high levels.

101. As noted above, Tesoro has committed to using (or at least paying to use) the VEDT to handle 60 kbpd of crude. VEDT throughput capacity is an average 360 kbpd by design, but in practice actual throughput is expected to average 300 kbpd. The remaining VEDT throughput capacity (up to 300 kbpd peak,) could also be used by Tesoro, or contracted to third

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parties. Based on publically available info, there does not now seem to be contracts or other formal commitments that predetermine how and how much VEDT capacity will actually be contracted for and used over the life of the facility, including that split between Tesoro and third parties. Instead, it appears that these outcomes will be determined by ongoing and evolving market conditions. These outcomes may also be affected by the lease between the VEDT and Port of Vancouver, but this lease was recently amended, and could be amended or otherwise modified in the future.[15]

3. VEDT design enables a wide range of pipeline-grade crudes, marine vessels, and out-of-state/foreign exports.

102. The VEDT would be the largest CBR terminal in the US and Canada. Tesoro Savage (the Applicant) has designed the facility (VEDT) to enable a very wide range and high volume of activities, including:

-receive a wide range of pipeline-grade crude types by rail from anywhere in North America;

-store and blend large amounts of it; and

-ship it anywhere in the world by tanker and/or barge.

103. Key aspects of the VEDT facility design, which enable this wide range and high volume of activities for multiple pipeline-grade crude types, include:

-heating capability provided at 30 tank car unloading stations (out of 90), which allows the VEDT to unload a wide range of pipeline-grade crudes, including lower-API and higher viscosity crudes;

-multiple loop tracks to allow high throughput for more efficient loading of tankers and handling of a wide range of pipeline-grade crudes (including those requiring heating);

-capability to load a wide range of tankers, as well as barges,[16] including larger tankers

[15] The recent lease amendment is discussed in the Technical Appendix.

[16] As per the Ex0051-000000-PCE, VEDT DEIS (pp. 2-68,69):

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(up to 160,000 to 165,000 MDWT), which can be used to economically ship crude longer distances (notably to Asia), and smaller tankers and barges, which can be used for shipping crude shorter distances (to California and possibly to Washington refineries);

-very large storage capacity (2,160 kb) and capability for crude blending;

-storage necessary to manage logistics variability (delays or advances in rail or tanker schedules due to weather, mechanical failures or other disruptions) and to provide slack in the transportation system;

-a large storage capacity greatly facilitates loading large tankers, and thus makes it logistically possible and economically viable for a CBR facility to host a wide range of tanker sizes;[17]

-capability to store and segregate multiple pipeline-grade crude types, including lower-API and higher viscosity crudes requiring heating;

-capability to blend various crude types, and thus makes it logistically possible to ship blended crudes and to locate energy logistics (blending) at the VEDT instead of at destination refineries.

4. Potential crude sources (tar sands and Bakken) and destinations (California and Asia)

104. In light of the uncertainty and lack of contract information from Tesoro Savage and the facility design enabling a wide range and high volume of activities, TGG has assessed the most likely sources and destinations for the crude transported through the VEDT. VEDT Crude Supply and Destination Markets is discussed in the Technical Appendix and summarized below.

Handymax vessels (46,000 metric deadweight tons [MDWT]) are the type of vessel that would most commonly be used, all of the vessel types in Table 2-11 may be used to transfer crude oil from the proposed Facility. For the purposes of this Draft EIS, approximately 15 percent of the vessels used to transport crude oil are assumed to be 105,000 to 115,000 MDWT oil tankers and approximately 5 percent are assumed to be 160,000 to 165,000 MDWT oil tankers.

The vessel types in DEIS Table 2-11 include six tankers (ranging from 46,000 to 160,000 MDWT), and articulated tug barges (ATBs, 27,500 MDWT).

[17] See Ex5579-000056-CRK, *OCI Tracking Emissions Report*, pp. 22-23 for a discussion on why storage is important and how tanker size affects the economic viability of shipping crude over longer distances (notably to Asia).

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105. Crude produced outside Washington (most likely from Canadian tar sands and Bakken) can be economically shipped through Washington and on to refineries outside Washington (in California and Asia). Federal restrictions on US crude exports have recently been removed, facilitating exports of both Bakken and tar sands crudes from the US. The VEDT has extensive storage, blending, and port facilities, enabling both

- larger tankers (up to 160,000 to 165,000 MDWT), which can be used to economically ship crude longer distances (notably to Asia, and possibly to California refineries), and
- smaller tankers and barges, which can be used for shipping crude shorter distances (to California and possibly to Washington refineries).

106. A reasonable case can be made that some or possibly all the crude from the VEDT will go to California, but a reasonable case can also be made that some or possibly all the crude from the VEDT will go to Asia.

107. There are large potential markets for both Canadian tar sands crudes and Bakken in California, notably to offset overseas imports. And numerous reports have concluded there are large markets for both tar sands crudes and Bakken in both California and Asia.

108. Tesoro Savage's 2014 Application[18] focused on the transportation of Bakken crude to and through the VEDT to US West Coast (PADD 5) refinery markets; but North American crude markets have evolved dramatically since then in the following ways, which are quite divergent for Bakken and Tar Sands.

109. The crash in crude prices has resulted in much less investment (less drilling and fracking) in the Bakken Formation, such that production has peaked and started to decline.

110. CBR is a relatively high cost transport mode; with the crash in crude prices,

[18] Tesoro Savage's Application was originally submitted in August 2013, and then amended in January 2014. See also Ex0009-000000-PCE, Corpron, David and Irina Makarow, Tesoro Savage Response to EFSEC Request for Additional Information to Assess EIS Alternatives, February 5, 2015.

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falling production, and ongoing buildout of pipelines, CBR is now much less economically attractive for Bakken, and CBR volumes are declining.

111. Bakken is a relatively shorter distance to Washington by rail than to other coastal refinery markets; CBR to Washington is cheaper than CBR to other markets. Washington CBR volumes have remained relatively high.[19]

112. Canadian tar sands are increasing as a potential crude input for the VEDT. Compared with Bakken, tar sands production and expansion cannot be rapidly adjusted in response to lower crude prices. Thus, tar sands production is likely to increase over the next few years, even if crude prices remain lower for longer.

113. Pipelines are by far the preferred option of the industry for crude transport (especially for tar sands), because pipelines have relatively low costs and high capacity.

114. But as discussed below, tar sands pipeline capacity is highly constrained, such that there could be widespread use of CBR, despite its relatively high cost.[20]

115. The remote and pipeline-constrained Canadian tar sands are a relatively shorter distance to Washington by rail than to other points of access to tidewater (outside British Columbia); CBR to Washington is cheaper than CBR to other markets. Therefore, in the absence of pipeline alternatives, CBR to Washington is a viable substitute for pipelines for crude

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[19] WA refiners have made sizable commitments to CBR (notably for terminals and tank car leases), so some CBR costs are now "sunk." Fielden (2016), Slow Train Coming – Crude By Rail To Northwest Refineries Still Resilient.

[20] Ex5580-000073-CRK, Enbridge, Investment Community Presentation, April 2016. Accessed May 10, 2016. http://www.enbridge.com/~/media/Rebrand/Documents/Investor%20Relations/2016/Investment%20Community%20Presentation.pdf. See pp. 18-21 and especially p. 6 (emphasis removed):

> Mainline at full capacity:
> Record 2.6 mmbpd throughput in January
> ~800 kbpd oil sands supply growth through 2019 [footnote in original omitted]
> WCSB short >500 kbpd pipeline capacity through 2021

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producers.

116. Therefore, if Canadian tar sands remain pipeline-constrained, the VEDT could become key transportation logistics for Canadian tar sands; and California and/or Asia could become key destinations for this crude. Access to Asian markets is valuable for tar sands producers both in terms of increasing options/diversification and because these markets may have less stringent environmental restrictions/social license concerns.

117. Bakken production and CBR are declining. But especially if crude prices rebound, Bakken production could rebound, perhaps quite rapidly. US refinery markets for light Bakken crude are limited. So in a scenario where Bakken (and other shale production) is growing, there could be a market for Bakken crude exports via Washington.

118. In summary, there are markets in both California and Asia for Bakken and Canadian tar sands crudes, and it could be commercially attractive for these crudes to be shipped by rail through the VEDT and then by tanker to Asia or by tanker or barge to California. Some or possibly all the crude from the VEDT could be shipped to California, but some or possibly all could go to Asia.

5. Conclusion: the VEDT is a conduit energy logistics facility

119. The crude from the VEDT is most likely to go mostly or completely to refineries outside Washington that do not supply Washington consumers.

120. VEDT is an energy logistics facility, a facility in Washington handling energy commodities (crude oil). But the VEDT will do little if anything to supply Washington with energy.[21] Nor will it facilitate crude production in Washington. Instead, the VEDT is a conduit

[21] It cannot be ruled out that some of the crude transported through the VEDT could be used in WA refineries, but it is likely to be a small amount and unlikely to be needed by the WA refineries to meet the energy needs of the state.

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energy logistics facility that will move crude produced outside Washington (most likely from Canadian tar sands and Bakken) through Washington and on to refineries outside Washington (to California and Asia).

121. Since the Application was filed, Canadian tar sands are increasing as a potential crude input for the VEDT, and Asia could become a key destination for this crude. This evolution will further decrease the economic benefit of the VEDT for Washington. Washington is being asked to host an energy facility that could mainly be transloading foreign (Canadian) crude for delivery to a foreign destination (Asia).

122. CBR to the Pacific NW and particularly to the VEDT could become a Plan B for the Canadian tar sands in the event that Canada is unwilling/unable to construct any of the new major pipeline projects to enable tar sands to reach tidewater (either in British Columbia or by Energy East to the Atlantic).

123. Similarly California has been highly resistant to hosting CBR facilities. As a result, the VEDT could also become a Plan B for California refineries, which will most directly benefit from the facility.

124. So in effect, Tesoro Savage is asking EFSEC permission for Washington to host a conduit energy logistics facility because other jurisdictions, which produce and consume the energy (notably Canada and California), are resistant to hosting the associated energy logistics.

F. VEDT Will Increase Oil Transport Proximate to Washington

125. Washington is not a crude producer, but it nonetheless has a very large concentration of oil-related energy facilities, which more than meet the state's energy needs. These extensive energy facilities include five oil refineries, as well as extensive energy logistics facilities relating to those refineries. Washington refineries and energy logistics facilities not only supply Washington, but also provide sizable energy supply to neighboring states and

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international markets.

126. The configuration of the logistics system serving the Washington state refineries (which supply markets both within and outside Washington) results in very sizable oil transport into, around, and out of Washington:

> Washington State's refineries supply more than just Washington itself with refined petroleum products. They also supply other states, British Columbia, and other parts of the world with refined product, as well. […] In 2011, […] 42% of what came in over the water to Washington's refineries proceeded to go back out over the water during 764 tanker and tank barge berthings.
>
> In addition to cargo exports, oil leaves Washington State as ship's bunkers. The primary bunker suppliers in Puget Sound are Tesoro, Phillips 66, and U.S. Oil. Typically a barrel of Puget Sound bunkers will be transferred five times before it leaves the state.[22]

127. Traditionally, most of the oil transport was by water, supplemented by pipelines, moving crude into Washington refineries and products out. More recently, a substantial amount of crude into Washington is by rail.

128. Operation of the VEDT would substantially increase oil transport proximate to Washington, for both rail and water. Most, and possibly all, of the crude handled by the VEDT would be destined for refineries outside Washington. VEDT is a conduit energy logistics facility. Thus, the oil transport associated with the VEDT would be in addition to the existing high level of oil transport associated with the Washington refineries.

129. In addition to the VEDT, there are numerous other energy facilities proposed for Washington, including conduit energy logistics facilities for natural gas liquids and coal.[23] The fuel transport associated with these proposed facilities would be in addition to the existing high

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[22] Ex0064-000570-PCE, Washington Department of Ecology, Washington 2014 Marine and Rail Oil Transportation Study, March 1, 2015, p. 282.

[23] Ex5581-000012-CRK, "Fracked Fuel and Petrochemical Proposals in the Northwest," Sightline Institute, February 2016; Ex5582-000010-CRK, "The Northwest's Pipeline on Rails," Sightline Institute, July 2015.

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level of oil transport associated with the Washington refineries and the sizable potential increase in oil transport associated with the VEDT.

130. Washington is not a fossil fuel producer. Washington is a consumer of fossil fuels, but its level of consumption is below average given the size of state's population and economy.[24] Nonetheless, Washington could be hosting a very large and growing concentration of fossil fuel-related energy facilities, far greater than the state's energy needs.

G. TGG Conclusion: No Economic Need for the VEDT

131. Given that (a) Washington's extensive existing energy facilities already more than meet its energy needs and (b) the VEDT is a conduit energy logistics facility that will move crude produced outside Washington through Washington and on to refineries outside Washington, TGG concludes that little if any crude from the VEDT will be refined in Washington (or refined elsewhere to provide products to Washington). This implies that the VEDT will do little if anything to supply Washington with energy.

V. THE EXPERIENCE OF OTHER JURISDICTIONS AS CONDUITS FOR ENERGY LOGISTICS FACILITIES

A. Introduction

132. This section will demonstrate that not only is there no economic need for the VEDT in Washington, but that the VEDT is likely not in Washington's public interest. The VEDT is proposed in Washington partly because other jurisdictions outside Washington (especially in California and Canada) have been resistant to hosting major energy logistics facilities.

133. These facilities have met with significant and widespread public opposition for a

[24] Ex5578-000068-CRK, State of Washington Department of Commerce (2013), pp. 11-13; Ex5583-000016-CRK, U.S. Energy Information Administration, Washington State Energy Profile, Accessed May 1, 2016. http://www.eia.gov/state/print.cfm?sid=WA.

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wide variety of reasons (environmental/climate, public safety, and resistance to oil transportation in close proximity to property and communities). However, regulators and governments in other jurisdictions, informed by technical analyses (economic and scientific), have also delayed, restricted and/or opposed major energy logistics facilities. Technical analyses in many jurisdictions have shown that the costs and risks of hosting such facilities exceed, and often greatly exceed, their economic benefits.

134. Resistance to energy logistics facilities (from the public and regulators/governments) has been particularly intense in conduit jurisdictions. A conduit jurisdiction hosts an energy logistics facility that moves crude produced outside the jurisdiction through the jurisdiction and on to refineries and markets outside the jurisdiction.

135. However even in jurisdictions where (a) energy logistics facilities may supply local refineries (i.e. not purely conduit jurisdictions); and/or (b) energy logistics facilities may result in sizable numbers of temporary construction jobs or increased tax revenues, there has been significant resistance from the public and regulators/governments.

136. In summary, the purpose of this section is to describe the resistance to relevant energy logistics facilities from the public as well as regulators and governments informed by technical analyses. Technical analyses have shown that resistance to energy logistics facilities is economically rational and justified to protect the public interest. This resistance is not just due to generic resistance to fossil fuels, local concerns or other factors often cited and criticized. Technical analyses by regulators and governments (as well as TGG's previous and extensive work) demonstrate that the economic benefits of energy logistics facilities tend to be relatively small for hosting jurisdictions (and typically overstated by project proponents), while the economic costs/risks of energy logistics facilities are relatively large for hosting jurisdictions

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(and typically understated stated by project proponents). Additionally, the economic benefits and costs/risks tend to be unevenly distributed (across stakeholders and regions), with the project proponents getting the majority of the benefits and the conduit jurisdiction bearing the majority of the costs/risks.

137. This imbalance in the distribution of the economic benefits and costs is typically even greater in conduit jurisdictions. Put more simply, these facilities are typically a bad deal for hosting jurisdictions, and typically an even worse deal for conduit jurisdictions.

138. Washington (as a conduit jurisdiction for the VEDT) would likely receive even smaller benefits than other relevant jurisdictions (in particular, British Columbia) that have resisted hosting energy logistics facilities. Put simply, if other relevant jurisdictions (which may receive more benefits) have determined that hosting energy logistics facilities is a bad deal (meaning the costs/risks exceed the benefits), the VEDT (with less significant benefits for Washington) is likely a very bad deal for Washington, and not in the public interest of the state.

B. Description of and Resistance to Relevant Energy Logistics Facilities in Other Jurisdictions

139. The VEDT is being proposed in Washington partly because other relevant energy logistics facilities have been delayed, restricted and opposed in many other North American jurisdictions.

140. For the VEDT, the most relevant energy logistics facilities are (a) CBR in California; and (b) pipelines and marine terminals in British Columbia (Enbridge's Northern Gateway Project and Kinder Morgan's Trans Mountain Expansion Project). These facilities are to a certain extent direct substitutes for the VEDT, so they will be analyzed in this section.

141. TransCanada's Energy East and KXL and Enbridge's Line 9 projects are also somewhat relevant to the VEDT. Of these somewhat relevant projects, only Energy East will be

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analyzed in detail in this section, as it is a major energy logistics facility that is currently under review before Canada's National Energy Board (NEB).[25] The outcome of the review (i.e. the approval or rejection of Energy East) impacts the available options enabling Canadian tar sands producers to transport pipeline-grade crudes (notably dilbit) from landlocked and pipeline-constrained Alberta to tidewater-accessible markets. And the availability of options for accessing tidewater will help to determine the VEDT's potential status as a key alternative logistics to tar sands pipelines.

1. Significant challenges for building CBR in California

142. California has been very limited and restrictive in regard to developing CBR unloading terminals. Consequently CBR supplies a tiny proportion of crude for California refineries. Therefore some CBR in Washington (notably the VEDT) could be a substitute for CBR in California. CBR in California is discussed in the Technical Appendix and summarized below.

143. The California refinery crude oil market is about three times that of Washington's, but (a) California has permitted far fewer CBR unloading projects and far less CBR capacity; (b) there are no recently constructed CBR unit train unloading terminals at California refineries.

144. Even during the CBR boom, California was very slow and reluctant to develop and approve CBR unloading terminals. As a result, CBR is not now and has never been a significant part of crude source for California refineries. CBR into California peaked at around

[25] Enbridge's applications to expand the capacity and reverse the flow of its Line 9 pipeline (in order to carry tar sands crude and Bakken crude eastward) were approved by the NEB in two phases in 2012 and 2014. Final approval was granted in 2015 and the crude began to flow in the newly reversed pipeline in late 2015. Conversely, Obama rejected KXL in late 2015. With a capacity of 1,100 kbpd, Energy East can carry as much product as KXL and Enbridge's Line 9 combined.

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1% of total California crude supply in 2013 and 2014, dropped to 0.3% in 2015, and in recent months has been averaging only 3 kbpd.

145. Since the beginning of the CBR boom, there have been a number of proposals in California for CBR unloading terminals designed to handle larger unit train shipments. However to date, only one terminal was permitted and built: a Plains All American terminal went online in December 2014 near Bakersfield for unloading from rail to pipeline. Other proposals have been either turned down, under appeal, or put on hold. TGG has had extensive involvement in the permitting processes for California CBR projects.[26]

146. Several key factors explain why CBR is so limited in California, and why California has been so limited and restricted in developing CBR:

- California has very extensive and restrictive regulations regarding environmental quality and project permitting, in part due to the state's severe air quality problems.
- The regulatory processes are complex and allows for significant public input.
- There is significant public opposition to CBR in California.
- California has a very large population and areas of high population density, with substantial proximity to refineries, proposed CBR facilities, and the rail network relating to CBR.
- California refineries are concentrated in coastal areas, facilitating access to crude supply (by water and in some cases local production) and retail markets; CBR to these refineries entails extensive routings throughout California with high proximity to people, water and economic activity.

147. The combination of these key factors has resulted in significant delays and rejections for proposed CBR projects. Resistance to building unloading terminals delayed refiners' plans such that shipments never really took off. Unlike Washington, California was not part of the CBR boom; hence, in the ensuing bust, California refineries do not now have large

[26] See Ex5575-000019-CRK, *TGG Valero CA CBR Report* and Technical Appendix.

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sunk costs encouraging continued use of CBR. So in the face of currently unfavorable economics, California refineries have cut back their already minimal use of CBR.

148. Given the important resistance to CBR in California,[27] we conclude that CBR in Washington (notably the VEDT) could be a substitute for CBR in California. This argument is strengthened by the fact that Tesoro, a proponent in the VEDT joint venture, is seeking permission to develop the VEDT rather than rail unloading facilities near its large California refineries.

149. One of two proponents in the VEDT joint venture is Tesoro Refining & Marketing Company LLC, a subsidiary of Tesoro Corporation. Tesoro is the largest US West Coast refiner. In particular, Tesoro has refineries in California with an overall capacity of 546 kbpd, with 380 kbpd in Los Angeles (Wilmington/Carson) and 166 kbpd in the Bay Area (Martinez).

150. It is quite possible (and perhaps likely) that a large portion of the crude from the VEDT going to California will be destined for Tesoro's California refineries. This may also be advantageous to Tesoro (via lower cost crude supply and using logistics owned by Tesoro).

151. There are various statements that indicate that Tesoro has committed to use the VEDT for at least 60 kbpd. Furthermore, in Tesoro's own investor presentations, Tesoro validates the point that it is seeking to develop the VEDT in Washington versus rail unloading terminals in California. According to Tesoro's presentations, logistics cost is competitive for crude to California via the VEDT (CBR to the VEDT, water to California) versus CBR direct to California; Tesoro is using CBR via off-site transloading terminals as an interim strategy until

[27] Ex5577-000040-CRK, *TGG's KXL DSEIS Market Analysis Report* (pp. 45-50) predicted and explained why attempts to build CBR would lead to problems and resistance.

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they install the VEDT to supply their California refineries.[28] While Tesoro will be a major customer for the VEDT, it also expects significant revenue from third parties.[29]

152. Therefore, according to Tesoro, the VEDT will serve Tesoro, as well as other customers (hence the expectation of significant third party revenue), and is competitive with CBR direct to California. Taken together, these statements indicate that (a) Tesoro is seeking to develop a very large CBR facility (the VEDT) in Washington instead of rail unloading terminals at Tesoro's two large California refineries, (b) Tesoro has plans to use the VEDT for at least 60 kbpd (to supply crude to its refineries, notably in California), (c) it could use the VEDT more than that, but (d) it is not currently intending to be the sole user of the VEDT.

2. Significant opposition to building new pipelines for Canadian tar sands

153. Currently pipelines to transport Canadian tar sands are constrained. Pipelines are the preferred transportation logistics for crude producers (as they can transport high volumes at

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[28] Ex5584-000032-CRK, Tesoro Presentation, "Transformation through Distinctive Performance," Barclay's Energy-Power Conference, September 4, 2014, p. 10. Accessed April 25, 2016. http://phx.corporate-ir.net/External.File?item=UGFyZW50SUQ9NTU0MjgxfENoaWxkSUQ9MjUwNDA1fFR5cGU9MQ==&t=1.

Ex5585-000021-CRK, Q3 2013 Tesoro Corporation Earnings Conference Call, November 7, 2013, pp. 1, 4, 12, 18.

http://phx.corporate-ir.net/External.File?item=UGFyZW50SUQ9NTI0NzA0fENoaWxkSUQ9MjEwNjc1fFR5cGU9MQ==&t=1;

Ex5584-000032-CRK, Tesoro Presentation, "Transformation through Distinctive Performance," Barclay's Energy-Power Conference, September 4, 2014, pp. 9-11. Accessed May 12, 2016.

http://phx.corporate-ir.net/External.File?item=UGFyZW50SUQ9NTU0MjgxfENoaWxkSUQ9MjUwNDA1fFR5cGU9MQ==&t=1.

[29] Ex5586-000027-CRK, Tesoro Presentation, "Driven to Create Value," Scotia Howard Weil 2016 Energy Conference, March 2016, p. 16. Accessed April 25, 2016. http://phx.corporate-ir.net/External.File?item=UGFyZW50SUQ9NjE0NDc4fENoaWxkSUQ9MzI4NjYzfFR5cGU9MQ==&t=1.

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low cost.

154. And as previously discussed, Canadian tar sands are increasing as a potential crude input for the VEDT. Tar sands production is likely to increase over the next few years, even if crude prices remain lower for longer. Existing pipelines to transport Canadian tar sands are at or near full capacity. However, there has been significant opposition in Canada and the US to all major pipeline projects to transport Canadian tar sands to tidewater (for export to Asia and California (Northern Gateway and Trans Mountain Expansion Project (TMX)) or the US Gulf Coast (Keystone XL (KXL)).[30] Especially if no new Canadian pipelines are approved, the VEDT could be a key project providing logistics for the transport of Canadian tar sands.

155. Tar sands pipelines have become a lightening rod for opposition in both the US and Canada. There has been significant public opposition throughout North America to all major tar sands pipeline projects starting with KXL. This controversial pipeline was originally proposed in 2008 to transport Canadian tar sands from Alberta to the US Gulf Coast. After an acrimonious seven-year review process, KXL was eventually rejected by the Obama Administration in November 2015.

156. The most relevant tar sands logistics are pipelines and marine terminals in British Columbia (Enbridge's Northern Gateway Project and Kinder Morgan's Trans Mountain Expansion Project), since these are to some extent direct substitutes for the VEDT. These projects will be analyzed in this section. While Energy East is less relevant to the VEDT than the British Columbia pipeline projects, it is a major energy logistics facility that is currently under review before the NEB. The outcome of the review (i.e. the approval or rejection of Energy East)

[30] Pipeline projects to the US Gulf Coast provide access to both the large refinery markets there (with large heavy crude processing capabilities), as well to tidewater ports (for exports to global markets).

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impacts the available options enabling Canadian tar sands producers to transport pipeline-grade crudes (notably dilbit) from landlocked and pipeline-constrained Alberta to tidewater-accessible markets. And the availability of options for accessing tidewater will help to determine the VEDT's potential status as a key alternative logistics to tar sands pipelines. Therefore Energy East will also be reviewed below.

a. Enbridge's Northern Gateway Project

157. The Northern Gateway Project, which includes a major Canadian tar sands pipeline and port, has encountered intense public opposition, particularly in British Columbia, and has been considerably delayed. The project is comprised of a new twin pipeline system extending from near Edmonton, Alberta, to a new marine terminal in Kitimat, British Columbia to export tar sands crude to Asian markets and import condensate.[31] The Project would export 525 kbpd of dilbit across British Columbia's rugged territory to a new deep-water port in Northwestern British Columbia, built to accommodate "very large crude carriers" or VLCCs.[32] Super-tankers en route to Asia would then have to navigate through British Columbia's Inside Passage to reach the open ocean. The Passage is made up of chains of islands and narrow channels and is home to rich and complex marine ecosystems and important salmon fisheries.

158. Enbridge filed its Application at Canada's National Energy Board (NEB) in 2010. In 2014, after lengthy public hearings in British Columbia in which thousands of intervenors participated, the Canadian government approved Enbridge's proposal, but attached 209 conditions, which had to be resolved. These conditions include consultation with First Nations groups, many of whom remain strongly opposed to Gateway. Since the 2014 decision, there has

[31] Condensate is used as tar sands diluent; it is the "dil" blended with bitumen (the "bit") in "dilbit."

[32] The proposed port at Kitimat could export crude by tankers up to VLCCs (very large crude carriers, or more colloquially, supertankers) and import condensate by tankers up Suezmax.

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been no significant movement on Gateway. Moreover, the government of British Columbia, which determined in 2012 that it could not support Northern Gateway as proposed, continues to maintain its opposition to the Project. A January 2016 British Columbia Supreme Court ruling also requires a separate environmental assessment for Gateway. Many believe that the project has been quietly shelved because public resistance, coupled with the 209 conditions, is insurmountable.

b. Kinder Morgan's Trans Mountain Expansion Project (TMX)

159. Of all the major pipeline projects described in this section, TMX is the most relevant to the VEDT and to Washington's concerns. TMX is a conduit energy logistics facility enabling inland crude producers (notably Canadian tar sands) to transport pipeline-grade crudes west from landlocked and pipeline-constrained inland locations (notably Alberta) to Pacific markets (notably in Asia and California).[33] The VEDT is a conduit energy logistics facility enabling inland crudes producers (notably Canadian tar sands and Bakken) to transport pipeline-grade crudes west from landlocked and pipeline-constrained inland locations (notably Alberta and North Dakota) to Pacific markets (notably in Asia and California).

160. Both projects (TMX and the VEDT) include port facilities in or near Washington[34] that are designed for similar marine vessels (tankers and barges).

161. Marine vessels accessing TMX's expanded Westridge Terminal and Washington refineries (including from the VEDT) (respectively) follow similar routings on the Salish Sea.

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[33] Final Argument of Trans Mountain before the National Energy Board (in the Matter of the TMX Application), December 15, 2015, pp. 398-402. Accessed May 1, 2016. https://docs.neb-one.gc.ca/ll-eng/llisapi.dll/fetch/2000/90464/90552/548311/956726/2392873/2451003/2887981/B444-2_-_Trans_Mountain_Revised_Final_Argument_%28clean%29_-_A4W6L8.pdf?nodeid=2887518&vernum=-2 .

[34] The TMX port facilities (Westridge Terminal) are located in Metro Vancouver (Burnaby), British Columbia.

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Some marine vessels from Westridge (notably to California) and from the VEDT (notably to Washington refineries) (respectively) also follow similar routings along Washington's Pacific coast.

162. Both projects significantly increase the quantity of crude (and specifically heavy tar sands crude) being transported by marine vessels in and near Washington State and British Columbia and thus increase the risk of marine accidents/spills; these accidents/spills would be in the same or similar rich and complex ecosystems, and thus put at risk valuable natural resources and tourism.

163. TMX's pipeline and tanker routings are proximate to important salmon fisheries on the Fraser River and the Salish Sea. Similarly, rail and marine vessel routings for the VEDT are proximate to important salmon fisheries on the Columbia River, as well as along Washington's Pacific Coast and on the Salish Sea.

164. Both projects significantly increase the quantity of crude (including heavy tar sands crude) being transported overland (in and near Washington State and British Columbia) and thus increase the risk of terrestrial accidents/spills, which could be particularly catastrophic in urban areas such as Metro Vancouver/Portland (Washington/Oregon) and Metro Vancouver (British Columbia).

165. Trans Mountain Expansion Project is a proposed expansion of the pipeline system, which would nearly triple the TMPL's capacity from 300 kbpd to 890 kbpd. According to the NEB website: "It would include approximately 987 km of new pipeline, new and modified facilities, such as pump stations and tanks, and the reactivation of 193 km of existing pipeline. The Westridge Marine Terminal (located in Metro Vancouver, British Columbia) would also be

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expanded."[35] Kinder Morgan is seeking to increase loading capacity at the Westridge Terminal, which currently has the ability to load one Aframax-size tanker (approximately 120,000 MDWT) at a time, as well as barges. The proposed expansion would provide loading capacity for three Aframax-size tankers, as well as barges.

166. The marine vessels accessing the port facilities at Westridge are similar to those proposed for the VEDT (at the Port of Vancouver, Washington), but the VEDT can access even larger tankers (up to 160,000 to 165,000 MDWT).

167. Kinder Morgan/Trans Mountain filed its project application with Canada's NEB in December 2013. The TMX regulatory process has also been the focus of intense public opposition particularly in Metro Vancouver, and fraught with controversy and numerous delays. In January 2016, the government of British Columbia also determined that it could not support TMX as proposed and continues to maintain its opposition to the Project. British Columbia has also recently begun a separate environmental assessment for TMX.[36] The NEB review process is still ongoing although a recommendation from the NEB to the Canadian government is expected in May 2016.[37] The newly elected Canadian federal government under Justin Trudeau has indicated that its decision on TMX will be made in December 2016.

c. TransCanada's Energy East Project

168. According to the NEB website for the Energy East application, Energy East is a

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[35] NEB website, Trans Mountain Pipeline ULC - Trans Mountain Expansion - OH-001-2014, pp. 398-402. Accessed April 29, 2016. http://www.neb-one.gc.ca/pplctnflng/mjrpp/trnsmntnxpnsn/index-eng.html.

[36] Order under Section 10(1)(c) of the Act, which confirms Trans Mountain Expansion Project has entered the environmental assessment process, April 8, 2016. http://a100.gov.bc.ca/appsdata/epic/documents/p459/1460132504449_F0dFXHGMj23p05d05gVmL4xVb1GrPcFTH2Q1SJ5cn8thhFM9Qm9v!-983293721!1460127340784.pdf.

[37] NEB website, Key milestones for Trans Mountain Expansion Project review, Accessed April 29, 2016. http://www.neb-one.gc.ca/pplctnflng/mjrpp/trnsmntnxpnsn/mlstns-eng.html.

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4,500-kilometre pipeline proposed to carry 1.1-million barrels of crude oil per day from Alberta and Saskatchewan to refineries in Eastern Canada.[38]

169. The Energy East project would include deep-water port facilities in New Brunswick proximate to the open ocean and accessible to tankers including VLCCs (supertankers). The project would also provide connections to an adjacent refinery in New Brunswick, which is not now pipeline connected.

170. Energy East would also connect with two refineries in Quebec, both of which already have long-term commitments to access inland crudes via other pipelines (notably Enbridge Line 9). Hence, it is unclear to what extent (if any) that Energy East would provide crude supply to Quebec.

171. Energy East is an energy logistics facility enabling inland crudes producers (notably Canadian tar sands and Canadian and US Bakken) to transport pipeline-grade crudes (notably dilbit and Bakken) east from landlocked and pipeline-constrained inland locations (notably AB, SK, and ND) to Atlantic and global markets. For most of its routing (notably in Ontario and Quebec), Energy East is a conduit energy logistics facility.

172. TransCanada filed its initial application in October 2014 and has filed subsequent amendments to address controversies. On April 26, 2016, the NEB released a preliminary timetable, which allows for a 21-month review starting with the Filing of Consolidated Application by mid-May 2016 and ending with a recommendation from the NEB to the Government of Canada by March 2018.[39]

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[38] NEB website, Energy East Project. Accessed April 29, 2016. http://www.neb-one.gc.ca/pplctnflng/mjrpp/nrgyst/index-eng.html#s1.

[39] Government of Canada website, NEB releases preliminary timetable for Energy East, April 26, 2016. Accessed April 29, 2016. http://news.gc.ca/web/article-en.do?mthd=tp&crtr.page=1&nid=1057109&crtr.tp1D=1.

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173. Like the other major tar sands pipeline projects in Canada, Energy East has met with significant public resistance across Canada and especially in the conduit jurisdictions of Quebec and Ontario. Resistance has been particularly strong in the province of Quebec, which would host the second longest section of the pipeline (over 700 km) and the most new pipeline construction.[40] The proposed route in Quebec traverses the province's highly urbanized regions (Montreal and Quebec City), as well as many important bodies of water. A pipeline rupture could pose a serious threat to municipal water supply for Greater Montreal, and in January 2016, the mayor of Montreal, representing a grouping of 82 Montreal-area municipalities announced their opposition to the project. The government of Quebec has also recently announced a separate provincial environmental review process for Energy East.

174. In November 2013, the Ontario Ministry of Energy asked the provincial energy regulator, the Ontario Energy Board (OEB),[41] "to examine and report on TransCanada Pipelines Limited's proposed Energy East Pipeline from an Ontario perspective [...] To support the preparation of the report, the Minister asked the OEB to undertake a consultation process."[42] In August 2015, the OEB's assessment of the potential benefits and impacts of the proposed Energy East from an Ontario perspective was submitted to the Minister.[43] This report raises some serious concerns about the risks and benefits of Energy East for Ontario.

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[40] The Energy East pipeline in Quebec is all new construction.

[41] The OEB regulates the province's electricity and natural gas sectors in the public interest, including economic regulation and siting for transmission facilities.

[42] Ontario Energy Board website, "The Ontario Energy Board Energy East Consultation and Review," Accessed May 6, 2016. http://www.ontarioenergyboard.ca/html/oebenergyeast/EEindex.cfm#.VzCXbub2bDA.

[43] Giving a Voice to Ontarians on Energy East: Report to the Minister, Ontario Energy Board, August 13, 2015. Accessed May 6, 2016. http://www.ontarioenergyboard.ca/html/oebenergyeast/documents/report_to_minister/energyeast_report_to_minister_EN.pdf.

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175. In particular, the report discusses an imbalance between the modest economic benefits of the pipeline for Ontario and the economic and environmental risks. According the OEB website, "[t]he Government of Ontario intends to participate as an intervenor in the National Energy Board's (NEB) review of the proposed Energy East Pipeline and the Minister will use the OEB's report to help formulate the Government's position."[44]

176. Given the concerns raised in the OEB report, it is uncertain whether the government of Ontario will support Energy East. Potential support would likely be highly conditioned. Ontario would likely expect a better balance of economic benefits and costs/risks.

177. Because of important public opposition, the approval process for Energy East has been slowed, and it is highly uncertain that Canadians (and particularly Quebeckers) will grant the social license for this project to be built.

178. In light of the widespread public resistance in Canada to all major tar sands pipeline projects, tar sands producers are facing serious pipeline constraints at a time when tar sands crude production is expected to expand for several more years. As such, the VEDT is becoming increasingly important transportation logistics for Canadian tar sands crudes (notably dilbit).

C. Technical Analyses of Conduit Energy Logistics Facilities by Provincial and State Governments, Regulators and Experts

1. Introduction

179. As demonstrated above, energy logistics facilities relevant to the VEDT have met with resistance from the public and from regulators and governments informed by technical analyses. Technical analyses (based on economics, engineering and science) show that the

[44] Ontario Energy Board website, "The Ontario Energy Board Energy East Consultation and Review," Accessed May 6, 2016. http://www.ontarioenergyboard.ca/html/oebenergyeast/EEindex.cfm#.VzCXbub2bDA.

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resistance to energy logistics facilities is economically rational and justified to protect the public interest. These analyses demonstrate that for hosting jurisdictions, the economic benefits of energy logistics facilities tend to be relatively small while the economic costs/risks are relatively large.

180. Moreover, the economic benefits and costs/risks tend to be unevenly distributed (across stakeholders and regions), with the project proponents getting the majority of the benefits and the conduit jurisdiction bearing the majority of the costs/risks. This imbalance in the allocation of the economic benefits and costs is typically even greater in conduit jurisdictions.

181. Not surprisingly, then, resistance to energy logistics facilities has been particularly intense in conduit jurisdictions, such as British Columbia, where pipeline proponents are seeking approval to move Alberta tar sands crude produced outside British Columbia through British Columbia and on to refineries and markets outside British Columbia. Since Washington is also a conduit jurisdiction for the VEDT, this section will focus on technical analyses of the costs and benefits of conduit energy logistics facilities by regulators, governments and experts.

2. Washington State (Northern Tier)

182. EFSEC has previously considered issues in regard to a proposed energy logistics facility in Washington, specifically in regard to a conduit energy logistics facility: Northern Tier, a crude oil pipeline and port project. Northern Tier comprised "a common carrier crude oil receiving superport in the harbor of Port Angeles, Washington; a nearby tank farm; associated facilities; and also a crude oil pipeline capable of moving oil from Port Angeles to points east as far as Clearbrook, Minnesota."[45] Although the excerpts below from EFSEC's Order and Recommendation on Northern Tier is lengthy and concerns a Project from 1982, it is highly

[45] EFSEC, Order and Recommendation, Application 76-2, Northern Tier Pipeline, Order 636, January 27, 1982, p. 6.

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relevant to our analysis of the VEDT. Moreover, the conclusions regarding the benefits and costs of the Project are being echoed by regulators and governments and experts in British Columbia, Ontario, and Quebec more than 30 years later.

> On July 6, 1976, the Northern Tier Pipeline Company […] filed an application with the Energy Facility Site Evaluation Council for authority to **construct and operate an energy facility consisting of a crude oil receiving port, a crude oil transmission pipeline, and associated storage and other facilities** […] **capable of moving crude oil** […] **to points east as far as Clearbrook, Minnesota**. [p. 3, ¶1]
>
> Northern Tier did not produce testimony of any witness who indicated a willingness to ship or receive crude petroleum on the company's proposed facility. **Northern Tier produced no contracts or other written agreements for use of its proposed facility.** [p. 12, ¶11]
>
> **To the extent that Northern Tier would be able to offer a competitive tariff for transportation charges, monetary benefits realized from transportation price savings would flow largely to producers of petroleum rather than to consumers of petroleum products.** Producers normally charge a delivered price for petroleum sold and retain the balance of that price, after subtraction of transportation and other expenses. [p. 13, ¶13]
>
> Should operation or construction of the project bring about liability claims or other events requiring state participation, the State will bear the attendant financial burdens to the extent that the project is not adequately insured or bonded. [p. 16, ¶3]
>
> While the Council has attempted to inform itself on the broad question of national need for **crude oil transshipment facilities**, it is neither possible nor appropriate for the Council as a state agency to make a definitive determination on the national need for the facility proposed by the applicant. [p. 475, ¶6]
>
> At least three major benefits to the citizens of this state have been set forth in the application for the proposed facility. The first is that, should the facility be built, monetary benefits in the form of jobs and taxes would accrue, and would provide economic benefits directly and indirectly to affected citizens, some local governments, and the state itself. **These economic benefits, while valuable, would be limited in amount and over time, in comparison to the economic resources placed at risk through construction and operation of the proposed facility.** The second projected benefit […] a promised application to the Council for facilities necessary to hook up the Puget Sound refineries was never delivered […] The third projected benefit, that petroleum supplies to eastern Washington would be assured, has some merit, but now appears less plausible for the following reasons: Northern Tier no longer contends that a refinery might be built in eastern Washington; […] **no supply-induced shortages of petroleum in eastern Washington have been shown** [.] [pp. 476-7, ¶8]

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> On balance, it is not possible for the Council to determine that the projected benefits of the proposed facility will outweigh the projected risks to the environment, health, welfare, and safety of the people of this state. [p. 478, ¶10]
>
> […] vast inland marine waters […] constitute one of the state's greatest resources. The proposed facility threatens to have substantial adverse impacts on […] the waters […] **The size, depth and protected portions of these waters make them suitable as a practical matter for consideration as a future locale for the transshipment of petroleum. Any transshipment proponent** should carefully consider the intricacy, cleanliness and richness of these waters. Any such proponent should approach these waters with a sensible respect for the complex currents, soils and geology, wind and biota, which have been shown to exist there. [p. 480, ¶14]
>
> Protecting the public's interest may outweigh permitting a particular proposed facility. The Council is not limited to mitigation measures in meeting the public's legitimate concerns. The determination of whether a facility of this kind should be built and placed in operation cannot be left to the financial marketplace; private markets are not a proper forum for determination of the public interest. [p. 483-4, ¶21]
>
> **The Council recommends that the Governor of the State of Washington reject Application 76-2 for certification of a crude oil port, tank farm and crude oil transshipment pipeline and associated facilities.** [p. 485]

183. The bolded areas in the quote above show parallels between Northern Tier and the VEDT, notably in regard to (1) the imbalance of the economic benefits and costs; (2) Washington's need for the facility; and (3) lack of contract information and other documentation pertaining the use of the facility.

184. EFSEC's 485-page Order and Recommendation on Northern Tier is supported by extensive technical (scientific, engineering and socioeconomic) analysis. In the Conclusions of Law (pp. 474-485), EFSEC recommended that Governor of Washington reject the Northern Tier Application. We note that EFSEC concluded that the "**economic benefits, while valuable, would be limited in amount and over time, in comparison to the economic resources placed at risk through construction and operation of the proposed facility.**" (p. 476). EFSEC concluded that the economic benefits of this conduit energy logistics facility were relatively

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small, while the economic costs/risks are relatively large.

3. British Columbia (Northern Gateway and Trans Mountain Expansion Project)

185. Technical analyses by the British Columbia Government and TGG[46] have confirmed that for both Northern Gateway and TMX:

- the benefits for British Columbia are very small in the context of the overall provincial economy;
- the benefits and costs/risks are very unevenly allocated across stakeholders and regions;
- the lion's share of the benefits flows to logistics companies (Enbridge and KM/TMP), the Alberta tar sands producers and Alberta, whereas British Columbia, and regions along the projects in particular, will bear the lion's share of the risks and receive very small benefits.

a. Enbridge Northern Gateway Costs and Benefits

186. The British Columbia government undertook a technical analysis in regard to Northern Gateway's economic benefits, costs, and risks. The technical analysis focused on how these economic benefits, costs and risks were allocated between, British Columbia, Alberta, and the rest of Canada. This analysis was in part based on the economic analysis submitted by Enbridge to the NEB, and this analysis was intended to assist the British Columbia government in developing its position in the federal review process for Gateway.

187. The British Columbia government technical analysis concluded the following:[47]

> Our government recognizes there are significant environmental risks associated with this project as well as economic benefits to Canada, Alberta, B.C. and northern aboriginal and non-aboriginal communities of our province. […] we recognize that there are some projects for which the environmental and social risks outweigh the economic benefits. [p. 3]

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[46] Ex5571-000076-CRK, *TGG TMX Report*, pp. 1-3. TGG's technical analysis of the costs and benefits of TMX will be further discussed in Section V.C.3.b.

[47] Government of British Columbia, Technical Analysis: Requirements for British Columbia to Consider Support for Heavy Oil Pipe, September 2012, page references in citation. Accessed April 30, 2016. http://www.env.gov.bc.ca/main/docs/2012/TechnicalAnalysis-HeavyOilPipeline_120723.pdf.

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> According to Enbridge, the Project is anticipated to generate significant revenues to both governments and individuals. […] However, the incremental revenues that accrue to British Columbia are a fraction of those accruing to Canada or Alberta. […] Our government does not agree that we should bear the majority of risk with the minority share of benefits being returned to our citizens. [p. 6]
>
> The Northern Gateway Pipeline is being built to carry a large amount of bitumen from the oil sands in Alberta. Bitumen, or "heavy oil," represents a significant risk and cost to British Columbia should a spill occur on land or sea. Recovery from a "heavy oil" spill in British Columbia would result in significant direct and indirect long-term costs. This fact differentiates bitumen from other commodities, such as potash or grain, that are also shipped through our Province from other jurisdictions. [p. 47]
>
> The Project is forecast to provide significant benefits to governments, communities and individuals through taxation and royalty revenues, employment and indirect and induced jobs. It is important to note that British Columbia is assuming a majority of the risks associated with the transportation of bitumen to the coast by pipeline, 100 per cent of the risk in exporting bitumen by tanker from our coastline, and a minority of the fiscal and economic benefits. [p. 47]
>
> Based on this report, the fiscal and economic benefits of the proposed project are significant and long term for the national economy. However, for British Columbia, the degree of environmental risks compared to the level of fiscal and economic benefits is greatly imbalanced. [p. 48]
>
> […] Enbridge's analysis shows both Canada and Alberta gain benefits that exceed those to British Columbia even though the majority of environmental risk related to bitumen transportation would be located in this province, as the pipeline crosses our land before being shipped off of our coastline. [p. 49]
>
> The great majority of revenue from bitumen transported to the coast will be realized by Alberta because the resource originates in the oil sands. […] New resource developments, like the Bakken play in North Dakota, promise increased, new competition for oil from Alberta and Saskatchewan. […] This new production will result in greater United States self sufficiency of supply and result in less reliance on Canadian oil thus making access to Asian markets through British Columbia critical. [p. 51]

188. British Columbia's technical analysis thus makes a very strong case that the economic benefits for British Columbia are relatively small and greatly imbalanced with the majority of the benefits flowing to AB and Canada. At the same time, the economic costs/risks are relatively large with British Columbia assuming a disproportionate share of these costs/risks.

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This large imbalance between costs and benefits is typical for jurisdictions hosting conduit energy logistics facilities. During the federal review process for Gateway, the British Columbia government, informed by this technical analysis, determined that it could not support Northern Gateway as it was proposed.[48]

b. Trans Mountain Expansion Project (TMX) Costs and Benefits

189. British Columbia's technical analysis applies to both TMX and Northern Gateway. Like the VEDT, TMX is a conduit energy logistics facility and the most relevant of the major pipeline projects examined herein to the VEDT and to Washington's concerns. The British Columbia government has recently reiterated that it will maintain its opposition to TMX.

190. In November 2014, Ian Goodman and Brigid Rowan of TGG, in collaboration with Simon Fraser University's Centre for Public Policy, released a report on the Economic Costs and Benefits of the Trans Mountain Expansion Project (TMX) for British Columbia and Metro Vancouver. See Ex5576-000064-CRK, *TGG KXL DSEIS Market Analysis Report*.

191. TGG has analyzed the potential economic benefits of TMX to British Columbia, Alberta, and the rest of Canada and found that:

192. For British Columbia, the economic benefits of the pipeline are very small and have been significantly overstated by Kinder Morgan, whereas the worst-case costs of a catastrophic accident/spill are very large and have been vastly understated.

193. The employment, property tax and fiscal benefits are very small in the context of the overall provincial economy and significantly overstated by KM/TMP (Kinder Morgan/Trans

[48] Government of British Columbia website, "B.C. makes final written argument to Northern Gateway Panel," May 31, 2016. Accessed May 8, 2016. https://news.gov.bc.ca/stories/bc-makes-final-written-argument-to-northern-gateway-panel; British Columbia Submission to Northern Gateway Joint Review Panel, May 31, 2013. Accessed May 8, 2016. http://www.env.gov.bc.ca/main/docs/2013/BC-Submission-to-NGP-JointReviewPanel_130531.pdf.

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Mountain Pipeline).

194. Under a range of bad to worst-case scenarios, we concluded that the costs of a major rupture can be catastrophic. "The lion's share of the benefits flows to KM/TMP, the Alberta tar sands producers and Alberta, whereas the citizens of British Columbia, and Metro Vancouver in particular, will bear the lion's share of the risks and receive very small benefits."[49]

195. TGG's findings regarding the imbalance of the costs and benefits for British Columbia, a conduit jurisdiction for TMX, are consistent with the findings of British Columbia's technical analysis, and generally apply to Northern Gateway as well. Furthermore these findings are typical of the imbalance of costs and benefits for other conduit jurisdictions in this testimony. It is possible that British Columbia and the rest of Canada (especially Alberta) could get some economic benefits from these projects. But any benefits, especially for British Columbia, are likely to be small, especially relative to the costs and risks.

4. Ontario and Quebec (Energy East)

196. There has been very strong public resistance to Energy East in Quebec and considerable opposition in Ontario, both of which are mainly conduit jurisdictions for TransCanada's ambitious and controversial 1,100 kbpd energy logistics facility.

197. Given that the NEB review process is just getting underway, neither Ontario or Quebec has taken a position on the project. However, Quebec is undertaking more technical analysis on economic costs and benefits, and will also collect more information on environmental impacts during the environmental assessment.

198. Municipalities in the Montreal region, which is the largest urban area on the Energy East route, are taking a much more oppositional stand regarding the Project. On January

[49] Ex5571-000076-CRK, *TGG TMX Report*, pp. 1-3, 4-8 (Figures 1-4) for a summary of the Economic Benefits, and Chapter 3, pp 13-45 (for details on Economic Benefits).

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21, 2016, Montreal Mayor Denis Coderre, representing a grouping of 82 Montreal-area municipalities announced their formal opposition to the Energy East pipeline project.

199. The grouping has concluded that the potential benefits for the city (and Quebec) are negligible while the potential costs could be disastrous (with worst-case spill costs ranging from $1 to $10 billion).[50] Mayor Coderre's decision was based on a report entitled *Rapport de consultation publique de la Commission de l'environnement Projet Oléduc Énergie Est TransCanada*. This report was derived from extensive consultations with the community, which recommended that Montreal oppose the Energy East.[51]

200. TGG's 2014 Report on the Economics of Transporting and Processing Tar Sands Crudes in Quebec (prepared by Brigid Rowan and Ian Goodman)[52] is cited several times in the Montreal report to demonstrate the insignificant economic benefits of Energy East in the context of the Quebec economy and the potentially large environmental and economic costs/risks. Our recommendations and conclusions regarding Energy East are consistent with those of the Montreal report and Mayor Coderre's announcement.

201. A 2015 OEB report to the Ontario government raises some serious concerns about the risks and benefits of Energy East for Ontario. The first point in the report's conclusion, which

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[50] Taber, Jane et al, "Notley Ontario-bound, aiming to rescue Energy East," The Globe and Mail, January 21, 2016. Accessed May 6, 2016. http://www.theglobeandmail.com/report-on-business/industry-news/energy-and-resources/quebec-mayors-opposed-to-energy-east-pipeline-warn-of-environmental-risk/article28309715/.

[51] Communauté Métropolitaine de Montréal, Rapport de consultation publique de la Commission de l'environnement Projet Oléduc Énergie Est TransCanada, Décembre 2015. Accessed May 6, 2016. http://cmm.qc.ca/fileadmin/user_upload/documents/20160121_transCanada_RapportConsultation.pdf.

[52] Ex5572-00055-CRK, *TGG Quebec Report*.

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contains the highlights of the OEB's advice to government, is the following:[53]

> BALANCING RISKS AND BENEFITS FOR ONTARIANS
>
> Even though almost half of Energy East runs through Ontario, the OEB believes the pipeline will result in only modest economic benefits for the province. As with all pipelines, the benefits will largely accrue to the region producing the goods going into the pipeline and the region taking the goods out of it. This leads to an imbalance between the economic and environmental risks of the Project, and the expected benefits for Ontarians. While there may be economic benefits, Energy East has costs and risks that Ontarians […] do not currently have to bear.

202. As evidenced in the above conclusion, the OEB report discusses an imbalance between the modest economic benefits of the pipeline for Ontario and the economic and environmental risks. Again this is consistent with the typical imbalance of risks and benefits found our review of conduit jurisdictions.

203. Ontario will participate as an intervenor in the NEB's review of the proposed Energy East Pipeline, and the Minister will use the OEB report to help formulate the Government's position."[54]

204. Given that the NEB review process for Energy East is just getting underway, neither Quebec nor Ontario has taken a position on the project. By relying on technical analyses and by conducting separate provincial consultations and assessments, both provinces appear to be building upon the experience of British Columbia with Gateway and TMX.

D. Implications of Experience in Other Jurisdictions for the VEDT

1. Summary of experience in other jurisdictions

205. There has been resistance across North America to all the major energy logistics facilities that are relevant to the VEDT, and resistance has been particularly intense in conduit

[53] Giving a Voice to Ontarians on Energy East: Report to the Minister, Ontario Energy Board, p. 82 (see footnote 43).

[54] See footnote 44.

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jurisdictions. These facilities have generated significant and widespread resistance from the public, as well as regulators and governments, informed by technical analyses.

206. For the VEDT, the most relevant energy logistics facilities for comparison are (a) CBR in California; and (b) pipelines and marine terminals in British Columbia (Enbridge's Northern Gateway Project and Kinder Morgan's Trans Mountain Expansion Project). These facilities are to a certain extent direct substitutes for the VEDT.

207. In light of widespread resistance in Canada to all major tar sands pipelines, tar sands producers are facing serious pipeline constraints at a time when tar sands crude production is expected to expand for several more years. As such the VEDT is becoming a key alternative logistics to Canadian tar sands pipelines (notably dilbit). Because of this situation, the approval or rejection of Energy East is relevant to the VEDT because it will impact the demand for the VEDT as a key alternative logistics to Canadian tar sands pipelines.

208. Similarly, in California, there have been significant challenges to building CBR mainly due to California's extensive and restrictive environmental regulations, as well as significant public opposition in California to CBR. Some of the CBR in Washington (notably the VEDT) could be a substitute for CBR in California.

209. The review of public and regulatory/government resistance to major energy logistics facilities that are relevant to the VEDT (CBR in California and the three tar sands energy logistics facilities in Canada) validates the assumption that the VEDT is being proposed in Washington partly because other jurisdictions outside Washington (especially in California and Canada) have been very resistant to hosting these facilities.

210. For each of the conduit jurisdictions reviewed (Washington, British Columbia, Ontario, and Quebec), the various technical analyses regarding the economic benefits and costs

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of energy logistics facilities consistently conclude that:

- ●the economic benefits tend to be relatively small for hosting jurisdictions;
- ●the economic costs/risks are relatively large for hosting jurisdictions; and
- ●the economic benefits and costs/risks tend to be unevenly distributed (across stakeholders and regions), with the project proponents getting the majority of the benefits and the hosting jurisdiction bearing the majority of the costs/risks.

211. This imbalance between the economic benefits and costs is typically even greater in conduit jurisdictions. Time and again, technical analyses by regulators and governments in Washington, British Columbia, Quebec, and Ontario and expressed concern about the imbalance between the economic benefits and the costs/risks, as well as the significant environmental and economic risks of these energy logistics facilities.

212. These findings are consistent with those of TGG in our significant body of expert reports on the costs and benefits of energy logistics facilities, including TMX in British Columbia, Energy East in Quebec, Enbridge's Line 9B Project in Ontario and Quebec, and Keystone XL in the US.[55]

213. It is noteworthy that over 30 years ago, EFSEC considered these same issues in regard to Northern Tier, a conduit energy logistics facility proposed for Washington. At that time, Council expressed very similar concerns in its 1982 Order and Recommendations.

2. Relevance of provincial analyses for tar sands pipelines to VEDT

214. It cannot be ruled out that British Columbia (or Ontario or Quebec) could reach an agreement with Alberta (and even the Canadian federal government) to better balance the economic costs and benefits of the tar sands pipelines. That said, there do not appear to be any mechanisms currently in place or likely to implemented that would substantially reallocate the

[55] See Section I on Expert Qualifications for a complete listing TGG's relevant expert reports on energy logistics facilities.

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costs and especially the benefits which (based on currently proposed projects) are very unevenly allocated across stakeholders and regions.

215. As discussed above, for British Columbia, heavy oil projects are conduit energy logistics facilities. As noted by the Ontario Energy Board in regard to the Energy East pipeline project, the costs and especially the benefits for conduit energy logistics facilities are typically very unevenly allocated across stakeholders and regions.

216. The VEDT in Washington is also a conduit energy logistics facility. Moreover, the VEDT, TMX and Northern Gateway in British Columbia, and Energy East in Ontario and Quebec have important similarities. They are all conduit energy logistics facilities enabling inland crudes producers (notably Canadian tar sands and Bakken) to transport pipeline-grade crudes (notably dilbit and Bakken) from landlocked and pipeline-constrained inland locations (notably Alberta, Saskatchewan, and North Dakota) to tidewater and global markets.

217. The context for the VEDT is in some ways especially problematic in terms of resolving any imbalance between economic benefits and economic and environmental costs and risks. In the case of the VEDT, there are substantial uncertainty and variability of crude sourcing, types, destination, etc. This uncertainty complicates evaluation of benefits and costs/risks.

218. As such, it could be even less likely that effective mechanisms could be in place to ensure and equitable allocation of benefits and costs in Washington. Moreover, in the case of the VEDT, the crude producers are likely to be far removed from Washington and quite possibly in another country. By comparison, in the case of British Columbia pipelines, the crude producers are in Alberta, a neighboring province with a variety of strong linkages. Moreover, enabling Canadian tar sands to access tidewater is a very strong priority for Alberta tar sands producers and the Alberta government, and (to an extent), for the Canadian federal government.

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Therefore Canadian conduit jurisdictions are better positioned than Washington to negotiate for a more equitable allocation of costs and benefits.

3. The costs and benefits may be even more imbalanced for Washington than for British Columbia, Ontario, and Quebec.

219. It is also likely that the costs/risks and benefits of the VEDT for Washington may be even more imbalanced than the costs/risks and benefits of the tar sands pipelines for British Columbia, Ontario, and Quebec. There are three main reasons for this:

- the VEDT could have fewer benefits for Washington than tar sands pipelines for conduit jurisdictions in Canada;
- the VEDT increases the already large concentration of oil-related facilities in Washington, and this increased concentration increases the cumulative impacts risk of accidents;
- the VEDT increases CBR in Washington and CBR has particular risk factors compared to pipelines. Depending on the rail routing, CBR can have even higher risk factors than pipelines.

220. First, as we have determined from our review of energy logistics facilities in relevant jurisdictions, the VEDT is being proposed in Washington partly because other jurisdictions outside Washington (especially in California and Canada) have been very resistant to hosting these facilities. And this resistance on the part of regulators and governments is informed by technical analyses demonstrating that resistance is economically rational and justified to protect the public interest.

221. Washington would likely receive even smaller benefits than other relevant jurisdictions in Canada that are resisting hosting tar sands pipelines. Put simply, if other relevant jurisdictions (which may receive more benefits) have determined that hosting energy logistics facilities is a bad deal (meaning the costs/risks exceed the benefits), the VEDT (with insignificant benefits for Washington) is likely a very bad deal for Washington, and not in the public interest of the state.

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222. Second, Washington already has a very large concentration of oil-related energy facilities. A 360 kbpd transloading facility adds a significant amount of CBR in Washington, which already has more than enough energy facilities to satisfy its own needs. Washington already has 235 kbpd of CBR facilities. With the VEDT added, Washington CBR facilities would grow to 595 kbpd, which is comparable in size to major crude pipelines such Northern Gateway (525 kbpd) or Trans Mountain Expansion (590 kbpd).[56] There are increased cumulative impacts and accident risks associated with scaling up to become a transloading hub for the global economy, particularly when there is already a significant concentration of oil-related energy facilities in the state.

223. The VEDT will result in more crude being transported through Washington by rail and more crude being transported by water in and near Washington. And increased crude transportation by rail or by ship significantly increases the crude accident/spill risk in Washington.

224. Third, as we have discussed in the TGG expert report on the KXL DSEIS Market Analysis, there are some particular risk factors associated with CBR:

> Rail routings often have particularly high proximity to water bodies and human and industrial activity, both absolutely and relative to typical routings for crude pipelines.[57] As such, rail spills can have significant impacts on waterways and in

[56] Washington has existing CBR capacity of 195 kbpd at refinery onsite unloading terminals and 40 kbpd at marine transloading facilities. With the VEDT added, Washington CBR capacity at marine transloading facilities alone would grow to 400 kbpd (40 kbpd existing + 360 kbpd VEDT), which is twice the capacity at existing refinery terminals (195 kbpd). The VEDT will be mainly (or completely) supplying refineries outside Washington. Thus, with the VEDT added, the crude being transported through Washington by rail would be mainly supplying refineries outside of Washington.

[57] Especially for lines with heavy freight traffic, rail routings are designed to minimize elevation changes and were first established many years ago prior to most other infrastructure and development. Put simply, for rail routes, flatter is preferable, even if longer. As a result, rail routings are typically in low lying areas, often paralleling water bodies for long distances, in close proximity to shorelines and with many water crossings. Moreover, rail lines have

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populated areas. [58]

225. The major energy logistics facilities in relevant jurisdictions are mainly tar sands crudes pipelines. Technical analyses have determined that a major rupture on any one of these pipelines could have catastrophic costs. However, as described above, CBR has its own particular set of risks, including the fact that rail routings are often closer to people, water and economic activity.[59] This is certainly true for rail routings into the VEDT, which follow the Columbia River and end in high proximity to Vancouver/Portland urban areas. A major accident near the Columbia River or in an urban area could have much greater costs than a pipeline rupture in areas less proximate to water and human activity.

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historically had strong growth-inducing effects and often pass through populated areas and other concentrations of human and industrial activity. In comparison with the rail network, the crude pipeline network is less extensive and newer. Put simply, for pipeline routes, shorter is preferable, even if somewhat steeper. And especially for newer pipelines, routings may be designed to be somewhat less proximate to water and human activity.

[58] Ex5576-000064-CRK, *TGG KXL DSEIS Market Analysis Report*, pp. 49-50. Shortly after this report was submitted, the catastrophic rail accident in Lac-Mégantic, Quebec involved a unit train transporting Bakken crude, in an area with particularly high proximity to water bodies and human activity, See Ex5573-000018-CRK, *TGG Costs of CBR Spills*, pp. 4-10.

[59] The Draft Environmental Assessment for the proposed Dakota Access Pipeline discusses the particular risk factors of CBR versus pipelines, rejecting CBR as a viable alternative:

> Rail operations on the scale of the DAPL Project do not exist in the U.S. An oil-by-rail facility designed to handle an average of 360,000 bpd has been proposed in the Port of Vancouver, Washington. Known as the Vancouver Energy proposal, the project would be the largest rail terminal in the country (Florip, 2014).
> [...] From a safety standpoint, railroad transport consistently reports a substantially higher number of transportation accidents than pipelines (DOT, 2005). A series of major accidents taking place in 2013 to 2014 in Canada and the U.S. has heightened concern about the risks involved in shipping crude by rail (Fritelli, 2014).
> […] While rail tanker cars are a vital part of the short-haul distribution network for crude oil, pipelines are a more reliable, safer, and more economical alternative for the large volumes transported and long distances covered by the DAPL Project. As such, rail transportation is not considered a viable alternative.

Ex5587-000004-CRK, Dakota Access, LLC, Draft Environment Assessment Dakota Access Pipeline Project Crossings of Flowage Easements and Federal Lands, November 2015, p. 5.

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4. Dramatic shifts in the crude market may make correcting imbalances in the allocation of economic costs and benefits even less likely.

226. Dramatic shifts in the crude markets, and particularly the crash in world crude prices, have undercut the economic viability of Bakken and tar sands crude producers. The crash in crude prices has resulted in much less investment in the Bakken Formation, such that production has peaked and started to decline.

227. Canadian tar sands are also economically challenged in the current context, but tar sands production and expansion cannot be rapidly adjusted in response to lower crude prices. Thus, tar sands production is likely to increase over the next few years, even if crude prices remain lower for longer.

228. In this context of boom turned to bust, it is even less likely that facility proponents (e.g. crude producers, logistics developers and possibly Alberta itself) would be willing to correct the imbalances between the economic costs/risks (mainly borne by conduit jurisdictions) and the economic benefits (mainly flowing to facility proponents).

229. Put simply, if tar sands pipeline proponents and Alberta were unwilling to correct the imbalances in the allocation of the economic costs and benefits for the conduit jurisdictions during the boom period, it is extremely unlikely they would be willing to do it in the current crude market downturn.

230. Perhaps even more worrisome for Washington (and other conduit jurisdictions for major energy logistics facilities), in the current crude market downturn, there is also the risk that host jurisdictions would be forced to assume a higher proportion of clean up costs in the event of a major rupture. As EFSEC concluded in the Northern Tier decision[60]:

[60] EFSEC, Order and Recommendation, Application 76-2, Northern Tier Pipeline, Order 636, January 27, 1982, p. 16 (see footnote 45).

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> Should operation or construction of the project bring about liability claims or other events requiring state participation, the State will bear the attendant financial burdens to the extent that the project is not adequately insured or bonded. [p. 16, ¶3]

5. It is highly likely that VEDT is not in the public interest of Washington.

231. Technical analyses regarding the economic benefits and costs of energy logistics facilities consistently conclude that:

- the economic benefits tend to be relatively small for hosting jurisdictions;
- the economic costs/risks are relatively large for hosting jurisdictions; and
- the economic benefits and costs/risks tend to be unevenly distributed (across stakeholders and regions), with the project proponents getting the majority of the benefits and the hosting jurisdiction bearing the majority of the costs/risks.

232. This imbalance between the economic benefits and costs/risks is typically even greater in conduit jurisdictions. Technical analyses by regulators and governments of relevant conduit jurisdictions expressed concern about the imbalance between the economic benefits and the costs/risks, as well as the significant environmental and economic risks of these energy logistics.

233. Moreover, the benefits and costs/risks of the VEDT for Washington may be even more imbalanced than the benefits and costs/risks of the tar sands pipelines for British Columbia, Ontario, and Quebec. Additionally, recent dramatic shifts in the crude market may make correcting imbalances in the allocation of economic benefits and costs/risks even less likely.

234. In light of the above, TGG concludes that it is highly likely that the VEDT is not in the public interest of Washington.

VI. RECOMMENDATIONS AND CONCLUSION

235. First, there is no economic need for the VEDT to supply Washington. Given that (a) Washington's extensive existing energy facilities already more than meet its energy needs

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and (b) the VEDT is a conduit energy logistics facility that will move crude produced outside Washington through Washington and on to refineries outside Washington, TGG concludes that little if any crude from the VEDT will be refined in Washington (or refined elsewhere to provide products to Washington). The VEDT will do little if anything to supply Washington with energy. Therefore, there is no economic need for this project to supply Washington.

236. Second, as there is no economic need for the VEDT to supply Washington energy consumers, the Council must then carefully consider whether Washington should host a facility that will generate some economic activity via construction and operations, but will also have sizable costs and risk, notably due to air emissions and accident/spill risk.

237. Third, given our consistent findings regarding the imbalance between the economic benefits and costs/risks for relevant conduit energy logistics facilities, TGG recommends that EFSEC review the economic costs/risks of the VEDT with a particularly high level of scrutiny.

238. Fourth, the costs/risks and benefits of the VEDT for Washington may be even more imbalanced than the benefits and costs/risks of the tar sands pipelines in Canada. Furthermore, recent dramatic shifts in the crude market may make correcting imbalances in the allocation of economic costs and benefits even less likely.

239. In light of our analysis, TGG has concluded that that it is highly likely that the VEDT is not in the public interest of Washington.

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I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge.

Executed this 12th day of May, 2016, at Berkeley, California.

IAN GOODMAN

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