

124 FERC ¶ 61,257
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Joseph T. Kelliher, Chairman;
Suedeen G. Kelly, Marc Spitzer,
Philip D. Moeller, and Jon Wellinghoff.

Bradwood Landing LLC	Docket No.	CP06-365-000
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NorthernStar Energy LLC	Docket Nos.	CP06-366-000 CP06-376-000 CP06-377-000
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ORDER GRANTING AUTHORITY UNDER SECTION 3 OF THE NATURAL GAS
ACT AND ISSUING CERTIFICATES

(Issued September 18, 2008)

1. On June 5, 2006, in Docket No. CP06-365-000, Bradwood Landing LLC filed an application under section 3 of the Natural Gas Act (NGA) and Part 153 of the Commission's regulations to site, construct, and operate a liquefied natural gas (LNG) import terminal on the Columbia River at Bradwood in Clatsop County, Oregon. Concurrently, in Docket No. CP06-366-000, NorthernStar Energy LLC¹ filed an application under section 7(c) of the NGA and Part 157 of the Commission's regulations for a certificate of public convenience and necessity to construct, own, and operate approximately 36.3 miles of pipeline (NorthernStar Energy's Bradwood Pipeline) consisting of approximately 18.9 miles of 36-inch diameter pipeline in Clatsop and Columbia Counties, Oregon and 17.4 miles of 30-inch diameter pipeline in Cowlitz County, Washington. NorthernStar Energy's Bradwood Pipeline would commence at the outlet of the LNG terminal and terminate at an interconnection with the Northwest

¹ Bradwood Landing LLC and NorthernStar Energy LLC are affiliated limited liability companies formed to develop, construct and own the LNG terminal and pipeline, respectively. Hereafter, Bradwood Landing LLC and NorthernStar Energy LLC will be jointly referred to as NorthernStar. The entire proposal, including the LNG import terminal and sendout pipeline, will hereafter be referred to as the Bradwood Project.

Pipeline Corporation (Northwest) interstate pipeline system north of Kelso, Washington. The Bradwood Project will have a natural gas peak sendout capacity of 1.3 billion cubic feet per day (Bcf/d). In addition, in Docket Nos. CP06-376-000 and CP06-377-000, respectively, NorthernStar Energy requests a blanket certificate under subpart F of Part 157 of the Commission's regulations to perform certain routine construction activities and operations and a blanket certificate under subpart G of Part 284 of the Commission's regulations to provide transportation service on NorthernStar Energy's Bradwood Pipeline on an open-access basis.

2. A number of issues related to the proposed project have been raised by state and local government agencies, public officials, non-governmental organizations, and members of the public. In the main, the parties question the need for this project, whether it will endanger the public and whether it will have negative environmental effects on biological resources of the Columbia River and its environs. These concerns have been addressed in detail in the final Environmental Impact Statement (EIS) issued on June 6, 2008, and are summarized in the Environmental Analysis section of this order. After careful review of the information and analysis contained in the EIS we affirm the conclusion reached in the EIS that construction and operation of the Bradwood Project, with the adoption of the proposed mitigation measures, would result in only limited adverse environmental impact. We also conclude that the project is needed to meet the projected energy needs of the Pacific Northwest. Therefore, we will grant the requested authorizations subject to the conditions described in this order.

I. Proposals

3. NorthernStar states that the purpose of the Bradwood Project is to establish an LNG terminal to receive, store and regasify imported LNG to provide a significant new source of diverse, competitively-priced natural gas for the Pacific Northwest market, thus ensuring future natural gas supplies for that region.

A. Bradwood Landing's Proposed LNG Terminal

4. Bradwood Landing seeks authorization under section 3 of the NGA to site, construct, and operate an LNG terminal at Bradwood that will consist of:

- a single marine berth capable of receiving and unloading approximately 125 LNG tankers per year with capacities ranging from 100,000 cubic meters (m³) up to 200,000 m³;
- three unloading arms at the berth to transfer LNG from the carriers to the storage tanks and a fourth vapor return arm to flow LNG vapor to the tanker to compensate for the displacement in the tanker during the

- unloading process;
- two insulated LNG storage tanks with a net tank capacity 160,000 m³;
- seven submerged combustion vaporizers to regasify the LNG into commercial quality natural gas for sendout and delivery into the natural gas pipeline system(s); and
- various buildings and systems for the purposes of safety, security, control, storage and maintenance.

5. Bradwood Landing proposes to construct the LNG terminal and associated facilities on approximately 40 acres of land within an approximately 411-acre parcel of land controlled by Bradwood Landing on the southern shore of the Columbia River in Clatsop County, Oregon.

B. NorthernStar Energy's Proposed Bradwood Pipeline

1. Facilities

6. NorthernStar Energy requests authority pursuant to section 7(c) of the NGA to construct, own and operate an approximately 36.3-mile long pipeline consisting of 36-inch diameter pipeline for the first 18.9 miles and 30-inch diameter pipeline for the remaining 17.4 miles. The NorthernStar Energy Bradwood Pipeline will originate at a pig launcher facility² within the Bradwood Landing LNG terminal and will terminate at an interconnection with Northwest's interstate system. Along the route, the pipeline would also interconnect with Northwest Natural Gas Company's (NW Natural) intrastate pipeline system, providing access to NW Natural's Mist underground natural gas storage facility, and have delivery points at Georgia-Pacific's paper mill at Wauna, Oregon, and Portland General Electric's (PG) Beaver Power Plant at Port Westward, Oregon. No compression is planned for the proposed gas pipeline because the pressure of the natural gas existing at the terminal will be sufficient to overcome line losses and meet the proposed interconnection and delivery point requirements.

7. On April 26, 2006 NorthernStar Energy held a 10-day open season to obtain commitments for firm transportation capacity on the pipeline. NorthernStar Energy Marketing LLC, an affiliate of NorthernStar Energy, submitted a bid for the available 1.3 Bcf/d of capacity. The precedent agreement with NorthernStar Energy Marketing is

² A pipeline "pig" is a device used to clean or inspect the pipeline. A pig launcher is a facility where pigs are inserted into the pipeline.

attached as Exhibit C to NorthernStar Energy's February 9, 2007 response to staff's January 12, 2007 data request.

2. Rates

8. NorthernStar Energy estimates that its proposed pipeline will cost approximately \$150.4 million. NorthernStar Energy proposes to offer firm transportation under Rate Schedule FTS on a non-discriminatory, open-access basis. NorthernStar Energy has revised its originally filed rates³ and requests approval of a revised maximum recourse rate of \$2.6330 per Dth for firm transportation service under Rate Schedule FTS and a revised usage charge of \$0.0866 per Dth for interruptible service under Rate Schedule ITS. NorthernStar Energy states that its proposed rates are based on a 50 percent debt to 50 percent equity capital structure, a 14 percent return on equity and a 20-year depreciation life. NorthernStar Energy requests authority to charge negotiated rates but states that it will provide service to NorthernStar Energy Marketing, its sole customer on the pipeline, at the recourse rate.

3. Requests for Blanket Certificates

9. NorthernStar Energy requests a blanket certificate under subpart G of Part 284 to provide open-access firm and interruptible transportation services for its customers. NorthernStar Energy also requests a blanket certificate under subpart F of Part 157 to perform routine construction, maintenance, and operational activities related to its proposals.

II. Procedural Matters

A. Notice, Interventions, Comments and Protests

10. Notice of NorthernStar's applications was published in the *Federal Register* on June 22, 2006 (71 Fed. Reg. 35,880). The parties in Appendix A filed timely, unopposed motions to intervene. Timely, unopposed motions to intervene are granted by operation of Rule 214 of the Commission's Rules of Practice and Procedure.⁴

³ In its February 1, 2007 data response to staff's January 12, 2007 data request no. 1, NorthernStar Energy states that it used incorrect assumptions to calculate the allowance for funds used during construction to derive the rates proposed in its application and therefore was filing revised rates reflecting the correct assumptions.

⁴ 18 C.F.R. § 385.214 (2008).

11. The Port of Vancouver, Washington, PG, Greenwood Resources, Renewable Resources, LLC, Richard and Judith Peters and James Mitchell, Robert and Gayle Kiser and Sandra M. Davis filed untimely motions to intervene. They have demonstrated an interest in this proceeding and have shown good cause for intervening out of time. Further, the untimely motions to intervene will not delay, disrupt or otherwise prejudice this proceeding. Thus we will grant the untimely motions to intervene.

12. A number of parties filed comments and protests to the Bradwood Project.⁵ On July 25, 2006, NorthernStar filed for leave to answer the comments and protests. Columbia Riverkeeper filed an answer to NorthernStar's answer. Answers to protests and answers to answers are not allowed under our rules.⁶ This rule may be waived, however, for good cause shown.⁷ We find good cause to do so here because admitting the answers will not cause undue delay or unfairly prejudice any party and they provide information that has assisted the Commission in our decision making.

13. The motion to intervene filed by Northwest Industrial Gas Users includes comments supporting the project. Columbia Riverkeeper, Clatsop County, City of Astoria, City of Warrenton, Port Westward LNG, Greenwood Resources, Renewable Resources, Port of Vancouver, National Marine Fisheries Services, The William and Doris Dragich Trust, and Stephen Rasmussen filed comments regarding land use, safety, and environmental impacts of the project. The Commission also received over 900 comments from interested public officials, individuals, and groups raising similar concerns regarding land use, safety, and environmental impacts. These issues are addressed in the environmental section of this order.

14. The comments of Renewable Resources, Greenwood Resources and Stephen Rasmussen also concern the economic effects of the proposed pipeline route on their respective properties. These issues are addressed in the Certificate Policy Statement discussion.

⁵ We also note that a number of parties requested access to non-public information in this proceeding. On August 7, 2006, the Commission issued an order directing NorthernStar to release non-public information requested by any party to the proceeding pursuant to a protective agreement. *Bradwood Landing LLC*, 116 FERC ¶ 61,125 (2006).

⁶ 18 C.F.R. § 385.213(a)(2) (2008).

⁷ 18 C.F.R. § 385.101(e) (2008).

B. Request for an Evidentiary Hearing

15. Columbia Riverkeeper and several other parties request a formal evidentiary hearing to further develop a record regarding the need and potential impacts of the proposed project. However, the Commission has substantial discretion in deciding whether to hold a trial-type evidentiary hearing or to give interested parties an opportunity to participate through written evidentiary submissions. Trial-type hearings are required only where there are material issues of fact that cannot be resolved on the basis of the written record.⁸ The Commission has solicited and accepted written comments from all interested persons and has conducted public scoping meetings in Knappa, Oregon and Cathlamet, Washington in September and October 2005, respectively. Upon issuance of the draft EIS, the Commission extended the period for comment on that document from 45 days to 120 days. During that time staff also held six public meetings - two each in Clatskanie, Oregon and Longview, Washington, and one meeting each in Cathlamet, Washington and Astoria, Oregon – to accept comments on the draft EIS. Additional record evidence has been submitted by government agencies, third-party contractors, and others addressing safety, security and environmental issues. The information contained in these materials has been discussed in considerable detail in the Commission’s final EIS. All interested parties have had a full opportunity to submit evidence and their views and concerns to the Commission. We find that there is no material issue of fact regarding the impact, safety, or environmental issues of the Bradwood Project that we cannot resolve on the basis of the written record in this proceeding. Therefore, we will deny the requests for a trial-type hearing.

III. Discussion

A. Bradwood Landing’s Proposed LNG Terminal

16. Because the proposed LNG terminal facilities will be used to import gas from foreign countries, the construction and operation of the facilities and site of their location require approval by the Commission under section 3 of the NGA.⁹ The Commission’s

⁸ See, e.g., *Southern Union Gas Co. v. FERC*, 840 F.2d 964, 970 (D.C. Cir. 1988); *Cerro Wire & Cable Co. v. FERC*, 677 F.2d 124 (D.C. Cir. 1982); *Citizens for Allegan County, Inc. v. FPC*, 414 F.2d 1125, 1128 (D.C. Cir. 1969).

⁹ The regulatory functions of section 3 were transferred to the Secretary of Energy in 1977 pursuant to Section 301(b) of the Department of Energy Organization Act (Pub. L. No. 95-91, 42 U.S.C. §§ 7101 *et seq.*). In reference to regulating the imports or exports of natural gas, the Secretary subsequently delegated to the Commission the authority to approve or disapprove the construction and operation of particular facilities, the site at which facilities shall be located, and with respect to natural gas that involves

(continued)

authority over facilities constructed and operated under section 3 includes the authority to apply terms and conditions as necessary and appropriate to ensure that the proposed construction and siting is in the public interest.¹⁰ Section 3 provides “that the Commission shall issue such order on application . . .” if it finds that the proposal “will not be inconsistent with the public interest.”

17. In recent years, the Commission has chosen to exercise a less intrusive degree of economic regulation over LNG import terminals, and has not required applicants to offer open-access service or to maintain tariffs or rate schedules for their terminalling services.¹¹ Section 311 of EAct 2005 amends section 3 of the NGA regarding the Commission’s authority over the siting, construction, expansion or operation of an LNG terminal.¹² As pertinent here, section 311 (c) of EAct 2005 adds a new NGA section 3(e)(3) providing that, before January 1, 2015, the Commission shall not condition an order approving an application to site, construct, expand, or operate an LNG terminal on: (1) a requirement that the LNG terminal offer service to customers other than the applicant, or any affiliate of the applicant securing the order; (2) any regulation of the rates, charges, terms, or conditions of service of the LNG terminal; or (3) a requirement to file schedules or contracts related to the rates charges, terms, or conditions of service of the LNG terminal. Our authorization here is consistent with new NGA section 3(e)(3).

18. Many of those filing comments in opposition to the Bradwood Landing Project argue that the project is “not needed;” that current supplies of natural gas are sufficient to meet the future energy demands in Oregon or that future energy demand can be better met with renewable resources, such as wind power. As is set forth in more detail below in our discussion relating to NorthernStar Energy’s Bradwood Pipeline, under the

the construction of new domestic facilities, the place of entry or exit for exports. The most recent delegation is in DOE Delegation Order No. 00-044.00A, effective May 16, 2006. Accordingly, applications for authority to import natural gas must be submitted to the Department of Energy. The Commission does not authorize importation of the commodity itself.

¹⁰ *Distrigas Corporation v. FPC*, 495 F.2d 1057, 1063-64 (D.C. Cir. 1974), *cert. denied*, 419 U.S. 834 (1974); *Dynegy LNG Production Terminal, L.P.*, 97 FERC ¶ 61,231 (2001).

¹¹ *See Hackberry LNG Terminal, L.L.C.*, 101 FERC ¶ 61,294 (2002) (*Hackberry*), *order issuing certificates and granting reh’g*, 104 FERC ¶ 61,269 (2003).

¹² Energy Policy Act of 2005, Pub. L. No. 109-58, § 311, 119 Stat. 594 (2005).

Commission's Certificate Policy Statement a proposed pipeline project is presumed to be in the public interest if it can be constructed without subsidies from current customers; any adverse economic effects on existing pipelines in the market, their captive customers, and landowners and communities affected by the project have been minimized; any residual adverse effects would be outweighed by the public benefits to be achieved by the project; and the project can be constructed and operated in an environmentally acceptable manner. The same rationale is applicable to proposals to site and construct LNG terminals under section 3 of the NGA. However, with regard to LNG import terminals, safety and security of operation concerns are frequently raised. As noted in the final EIS at 4.11.5, since 1959, LNG has been transported by ship without a major release of cargo or a major accident involving an LNG carrier. For 36 years LNG shipping operations have been safely conducted in the United States.

19. Here, as Bradwood Landing is a new entity, there are no concerns relating to subsidization. Further, there has been no evidence presented that the project will have any adverse impact on existing pipelines in the market; to the contrary, the Bradwood Landing terminal will provide an additional source of natural gas to be transported by pipelines downstream of NorthernStar Energy's Bradwood Pipeline. Authorizations under section 3 of the NGA do not convey the right to eminent domain; consequently, Bradwood Landing has had to obtain all property rights from willing sellers.

20. Finally, if constructed and operated in accord with the numerous conditions imposed in the order, we find that the Bradwood Landing Project will provide numerous public benefits, outweighing any residual adverse effects it might have. The Commission recognizes the important role that LNG will play in meeting future demand for natural gas in the United States and has noted that the public interest is served through encouraging gas-on-gas competition by introducing new imported supplies.¹³ The Bradwood Landing Project will provide up to 1.3 Bcf per day of additional natural gas to the Pacific Northwest, introducing a new source of natural gas, imported LNG, to the region, thereby diversifying available sources of energy and increasing the overall supply of natural gas available to meet estimated future demand in the region. We believe that increasing the available supply of natural gas will contribute to natural gas price stabilization.

¹³ *Hackberry*, 101 FERC 61,294 at P 26.

21. The states of Washington and Oregon do not produce much natural gas.¹⁴ Natural gas is currently supplied to the region through the existing interstate pipeline systems operated by Northwest Pipeline Corporation (Northwest) and Gas Transmission Northwest Corporation (GTN). These systems transport natural gas produced in Canada and the Rocky Mountain region to the Pacific Northwest. In total, these existing pipelines have a transportation capacity of 4.1 Bcf per day as they enter the region (from Canada and Idaho), with 2.2 Bcf per day of that capacity targeted for the California market. In 2007, total natural gas consumption in Washington and Oregon was estimated to average about 1.2 Bcf per day.¹⁵

22. In 2007, according to the Energy Information Administration's 2008 Annual Energy Outlook (EIA AEO 2008), natural gas represented over 23 percent of the total energy used in the United States and about 50 percent of the energy currently consumed in the Pacific Northwest. Industrial users account for about 28 percent of the natural gas consumed in the region and about 30 percent of the total gas consumed is used for electric generation. According to ICF, gas-fired electric generation capacity in the Pacific Northwest has increased by 5.5 gigawatts (GW), or a factor of five, since the early 1990s.¹⁶ Residential use represents about 24 percent of the region's natural gas market, growing about 23 percent between 1995 and 2007. The number of residential and commercial customers increased nearly 13 percent between 2000 and 2005, despite a regional economic slump and higher commodity prices.

23. Currently, more than 20 percent of the Pacific Northwest's electric generation is fueled by natural gas. The Northwest Gas Association (NWGA), in its Northwest Gas Outlook – Natural Gas Demand, Supply and Service Capacity in the Pacific Northwest for Years 2007-2012 (2007), estimated that natural gas consumption in the Pacific Northwest should increase at an average of 1.9 percent per year over the next five years, for a total rise of 7.2 percent through 2012, under normal weather conditions and expected economic and population growth. Under the NWGA's base case, residential natural gas consumption is expected to increase about 9 percent in total by 2012, while natural gas use for power generation would increase about 12 percent over that period.

¹⁴ Oregon produced 621,000 Mcf of natural gas in 2006, or about 0.27 percent of its consumption (Response to Governor Kulongoski's Request for LNG and Natural Gas Review, Oregon Department of Energy, May 7, 2008 (ODOE)).

¹⁵ *Review of Pipeline Utility Corridor Capacity and Distribution for Petroleum Fuels, Natural Gas and Biofuels in Southwest Washington*, ICF International, November 16, 2007 (ICF).

¹⁶ *Id.*

And, despite a decline in industrial use in the Pacific Northwest from 1995 to 2007, industrial consumption is expected to increase by almost 4 percent by 2012. ICF projects that natural gas consumption in the Pacific Northwest will increase at a rate (3.1 percent per year) through 2025 that is more than double the expected rate of natural gas consumption for the entire U.S. (1.4 percent per year).

24. As noted above, the Pacific Northwest is currently supplied with natural gas from Canada and the Rocky Mountain region. In 2007, approximately 90 percent of the gas supply entering the Pacific Northwest was from Canada. However, Canadian gas production is in decline while at the same time demand is increasing in Canada. We believe that these factors will contribute to a decline in future Canadian natural gas supplies available for export to the Pacific Northwest. On the other hand, natural gas production in the Rocky Mountain States has shown steady growth. However, due to constraints in existing pipeline capacity, ICF forecasts that deliveries of Rocky Mountain natural gas into the Pacific Northwest will stay at current levels, about 300,000 Mcf per day, for the next several years. Additionally, most of the new Rocky Mountain production is currently proposed for transportation to markets in the Midwest and eastern U.S. Indeed, the majority of pipeline development in the Rockies is to transport production in an easterly direction.

25. Many of those opposing the project argue that the Bradwood Project is primarily intended to serve markets in California, rather than those in Oregon. As the current holder of all the capacity on the project is a marketer, as opposed to a distributor or end-user, the Commission is not in a position to definitively state where the gas delivered by the project will ultimately be consumed. However, the Wood Mackenzie Limited study¹⁷ submitted by NorthernStar indicated that at an average sendout rate of 1.0 Bcf per day, 50.2 percent of the natural gas from the Bradwood Landing terminal would go to Oregon consumers, with 30.2 percent going to Washington consumers and less than 20 percent going to Idaho, northern California, and Nevada combined. At a lower usage rate of 0.4 Bcf per day, the study suggests that 73 percent of the natural gas would go to end-users in Oregon, with 26 percent going to Washington and less than 1 percent going to all other states combined.

26. The record in this case shows that the Bradwood Landing LNG terminal will provide such additional supplies of natural gas to consumers. Because the project is new, Bradwood Landing has no existing customers that might be adversely affected by the costs or risk of recovery of the costs associated with the proposed LNG terminal project. The economic risks will be borne by Bradwood Landing. Further, the environmental

¹⁷ Wood Mackenzie Limited, *An Independent View of Markets Served by Bradwood Landing* (2007).

conditions set forth in this order will ensure that the adverse environmental impacts will be limited. Therefore, we find that, subject to the conditions imposed in this order, the Bradwood Landing LNG terminal is not inconsistent with the public interest.

B. NorthernStar Energy's Proposed Bradwood Pipeline

27. Since the proposed pipeline facilities will be used to transport natural gas in interstate commerce subject to the jurisdiction of the Commission, the construction and operation of the facilities are subject to the requirements of subsections (c) and (e) of section 7 of the NGA.

1. The Certificate Policy Statement

28. On September 15, 1999, the Commission issued a Policy Statement¹⁸ providing guidance as to how proposals for certificating new construction will be evaluated. Specifically, the Policy Statement explains that the Commission, in deciding whether to authorize the construction of new pipeline facilities, balances the public benefits against the potential adverse consequences. Our goal is to give appropriate consideration to the enhancement of competitive transportation alternatives, the possibility of overbuilding, subsidization by existing customers, the applicant's responsibility for unsubscribed capacity, the avoidance of unnecessary disruptions of the environment, and the unneeded exercise of eminent domain in evaluating new pipeline construction.

29. Under this policy, the threshold requirement for existing pipelines proposing new projects is that the pipeline must be prepared to financially support the project without relying on subsidization from the existing customers. The next step is to determine whether the applicant has made efforts to eliminate or minimize any adverse effects the project might have on the applicant's existing customers, existing pipelines in the market and their captive customers, or landowners and communities affected by the route of a new pipeline. If residual adverse effects on these interest groups are identified after efforts have been made to minimize them, the Commission will evaluate the project by balancing the evidence of public benefits to be achieved against the residual adverse effects. This is essentially an economic test. Only when the benefits outweigh the adverse effects on economic interests will the Commission then proceed to complete the environmental analysis where other interests are considered.

30. The threshold requirement is that the pipeline must be prepared to financially

¹⁸ *Certification of New Interstate Natural Gas Pipeline Facilities*, 88 FERC ¶ 61,227 (1999), *order clarifying policy*, 90 FERC ¶ 61,128 (2000), *order clarifying policy*, 92 FERC ¶ 61,094 (2000) (Policy Statement).

support the project without relying on subsidization from its existing customers. NorthernStar Energy is a new pipeline company and has no existing customers. Thus, there will be no subsidization. Therefore, we find that NorthernStar Energy's Bradwood Pipeline has satisfied the threshold requirement of the Policy Statement.

31. NorthernStar Energy's Bradwood Pipeline also meets the remaining criteria for certification of new facilities set forth in the Policy Statement. There will be no adverse effect on existing services because the pipeline has no current customers. The new pipeline should also benefit interconnecting pipelines by providing them with new sources of gas to transport to market, and consumers by giving them access to additional gas supplies. Of the 36.3 miles of pipeline route, approximately 22 percent would be constructed adjacent to the existing KB Pipeline. The remaining 78 percent of the route would be constructed on newly created right-of-way on land that is primarily forest, with agricultural and rangeland being the next two most predominant land uses affected.

32. The pipeline route will traverse a tree farm currently owned by GMO Renewable Resources Forestry Fund 3, LP (Fund 3). Renewable Resources and Greenwood Resources, the parent-company owner and manager, respectively, of Fund 3 object that no pipeline right-of-way currently crosses the tree farm property and contend that allowing a pipeline to cross its property would adversely impact the tree farm's value and operations. Landowner Stephen Rasmussen states that the proposed pipeline will pass within 300 feet of a rental unit on his property and will lower its potential rental income and will also affect the views and value of a vacation home that he plans to build.

33. NorthernStar Energy will need to acquire new easements or property to construct and operate the pipeline facilities on privately-owned land. Typically, the pipeline would negotiate a one-time payment for the easement which would specify compensation for losses of value and uses of the property due to construction. If NorthernStar Energy is unable to reach an agreement with an individual property owner, issues of compensation will be addressed in an eminent domain proceeding.¹⁹ NorthernStar Energy has indicated that it will initiate discussions with the tree farm landowner before construction to coordinate activities to occur at a time that would minimize impact on the productivity of the tree farm, such as constructing after harvest periods. Environmental condition 8 requires NorthernStar Energy to develop and implement an environmental complaint resolution procedure for each landowner with clear and simple procedures to resolve issues that arise during construction and restoration of the right-of-way. Any landowner

¹⁹ NorthernStar Energy's application to construct the Bradwood Pipeline was filed pursuant to NGA section 7(c). When the Commission issues a certificate of public convenience and necessity under section 7(c), the certificate holder is granted the right of eminent domain under NGA section 7(h).

who is not satisfied with the company's response can contact the Commission's Enforcement Hotline. With these mitigation measures in place, we find that any adverse impacts on existing pipelines, landowners, and communities will be minimized.

34. As discussed above with respect to the Bradwood Landing terminal, the NorthernStar Energy Bradwood Pipeline will provide access to additional sources of natural gas (imported LNG), diversifying the sources of energy available to meet growing demand in the Pacific Northwest. We find that the benefits of the NorthernStar Energy's Bradwood Pipeline proposal will outweigh any potential adverse effects, and that the proposed pipeline is required by the public convenience and necessity.

2. Blanket Certificates

35. NorthernStar Energy requests authority for a Part 284, subpart G, blanket certificate to provide open-access transportation services. We will grant NorthernStar Energy's request for a Part 284 blanket certificate, subject to the conditions imposed below.

36. NorthernStar Energy also requests authority for a Part 157, subpart F, blanket certificate. Under a subpart F blanket certificate, a pipeline may construct and operate certain facilities without filing a case-specific application for a certificate under section 7(c) of the NGA. NorthernStar Energy will become an interstate pipeline when it accepts the certificate to construct and operate the facilities issued in this order and it has stated in its application that it will comply with the provisions of subpart F of Part 157. Therefore, we will issue a blanket construction certificate to NorthernStar Energy.

3. Rates and Tariff

a. Initial and Revised Rates

37. NorthernStar Energy states that the firm and interruptible rates of \$2.539 and \$0.0833 per Dth proposed in its application are incorrect because it miscalculated the allowance for funds used during construction applicable to new pipeline entities.²⁰ NorthernStar Energy informed the Commission of its mistake in its February 9, 2007 response to a January 12, 2007 data request and proposed a corrected, increased reservation charge under Rate Schedule FTS of \$2.6330 per Dth and an increased usage charge under Rate Schedule ITS of \$0.0866. NorthernStar Energy states that its proposed rates are based on a 50 percent debt and 50 percent equity capital structure, 14 percent

²⁰ NorthernStar Energy's February 9, 2007 response to January 12, 2007 data request no. 1.

return on equity, and a 20-year depreciation life. NorthernStar Energy proposes to revise its Pro Forma Original Sheet No. 5 with the corrected reservation and usage charges. NorthernStar Energy also requests authority to charge negotiated rates, although its affiliate and sole customer, NorthernStar Energy Marketing, has agreed to pay the Commission-approved maximum recourse rate for service under Rate Schedule FTS.

38. The Commission finds that NorthernStar Energy's workpapers generally support the revised reservation and usage charges. The maximum recourse rates proposed herein are based on the current design sendout capacity of the Bradwood LNG facility of 1.3 Bcf/d.²¹ The Commission finds that the proposed cost-of-service is reasonable for a new pipeline entity. Additionally, the Commission finds that NorthernStar Energy's proposal to finance the instant project is consistent with other projects approved by the Commission.²² In these projects, the Commission approved a capital structure of at least 50 percent debt, as well as a return on equity of 14 percent. However, the Commission will require NorthernStar Energy to file actual revised tariff sheets incorporating the revised reservation and usage charges thirty days prior to the date the rates go into effect.

39. Consistent with Commission precedent, the Commission will require NorthernStar Energy to file a cost and revenue study at the end of its first three years of actual operation to justify its existing cost-based firm and interruptible recourse rates.²³ In its filing, the projected units of service should be no lower than those upon which the pipeline's approved initial rates are based. The filing must include a cost and revenue study in the form specified in section 154.313 of the Commission's regulations to update cost-of-service data. After reviewing the data, the Commission will determine whether to exercise its authority under NGA section 5 to establish just and reasonable rates. In the alternative, in lieu of this filing, NorthernStar Energy may make an NGA section 4 filing to propose alternative rates to be effective no later than three years after the in-service date for its proposed facilities.

²¹ Should the Bradwood LNG terminal receive subsequent authorization to increase its sendout capacity to 1.5 Bcf/d (matching the design capacity of NorthernStar Energy's Bradwood Pipeline as certificated herein), NorthernStar Energy will be required to file revised recourse rates with the Commission.

²² See *San Patricio Pipeline, LLC*, 112 FERC ¶ 61,101, at P 32-33 (2005). See also *Corpus Christi LNG, L.P.*, 111 FERC ¶ 61,081, at P 33 (2005); *AES Ocean Express, LLC*, 103 FERC ¶ 61,030, at P31 (2003); *Tractebel Calypso Pipeline, LLC*, 103 FERC ¶ 61,106, at P30 (2003); *Greenbrier Pipeline Co., LLC*, 101 FERC ¶ 61,122 (2002); and *Georgia Strait Crossing Pipeline LP*, 98 FERC ¶ 61,271 (2002).

²³ See *Vista del Sol Pipeline LP*, 111 FERC ¶ 61,432, at P 27 (2005).

40. The Commission will grant NorthernStar Energy's request for authority to charge negotiated rates. We find that section 19A of NorthernStar Energy's pro forma tariff²⁴ is consistent with the Commission's 1996 Policy Statement on alternative rate design²⁵ because it gives shippers the option of choosing a cost-of-service based recourse tariff rate and requires NorthernStar Energy to provide all of the necessary information (i.e. name of the shipper, negotiated rate, rate schedule, receipt and delivery point, and contract quantity) required by the Commission for negotiated rate transactions.

b. Pro Forma Tariff Issues

41. NorthernStar Energy proposes to offer firm and interruptible transportation services on an open-access basis under the General Terms and Conditions (GT&C) of its pro forma tariff attached as Exhibit P to its application. We find that NorthernStar Energy's proposed tariff is generally consistent with the Commission's Part 284 regulations, with the exceptions discussed below. The Commission will require NorthernStar Energy to file actual tariff sheets consistent with the directives in this order at least 30 days and no more than 60 days prior to the commencement of service.

i. Gas Quality and Interchangeability

42. Since NorthernStar Energy filed its certificate application in this proceeding several weeks before the Commission issued its 2006 Policy Statement on gas quality and interchangeability,²⁶ NorthernStar Energy filed supplemental information to address the issues raised in the 2006 Policy Statement.²⁷ Intervening parties, Port Westward and

²⁴ NorthernStar Energy, FERC Gas Tariff, Pro Forma Original Volume No. 1, Original Sheet Nos. 99-100.

²⁵ *Alternatives to Traditional Cost-of-Service Ratemaking for Natural Gas Pipelines; Regulation of Negotiated Transportation Services of Natural Gas Pipelines*, 74 FERC ¶ 61,076 (1996) (2006 Policy Statement).

²⁶ *Policy Statement on Provisions Governing Natural Gas Quality and Interchangeability in Interstate Natural Gas Pipeline Company Tariffs*, 115 FERC ¶ 61,325 (2006).

²⁷ NorthernStar Energy's February 1, 2007 response to January 12, 2007 data request no. 8.

PG,²⁸ also filed comments expressing concerns about the quality of incoming regasified LNG to which NorthernStar Energy responded.²⁹

43. The Commission finds that NorthernStar Energy has taken steps to meet the Policy Statement's principles that tariff provisions on gas quality and interchangeability should be flexible and that the pipelines and their customers should attempt to resolve gas quality and interchangeability on their own.³⁰ To these ends, NorthernStar Energy proposes to revise its proposed tariff to remove language that appears to limit gas quality and interchangeability flexibility.³¹ It also proposes to add tariff language to waive gas quality limitations when reasonable.³² Further, NorthernStar Energy states that it will work with Northwest, its main interconnecting pipeline, to ensure compatibility of the gas quality and interchangeability specifications between the pipelines. It responds to Port Westward and PG by stating that any re-vaporized LNG transported to the interstate pipeline grid will have to meet the gas quality standards of the interconnecting pipelines and Commission policies. Finally, NorthernStar Energy states that it is implementing a process to review and address the issue of developing the appropriate tariff provisions to conform to the 2006 Policy Statement.

²⁸ Port Westward is developing a competing LNG terminal along the Columbia River and PG's Beaver Power Plant will purchase regasified LNG from the Bradwood Pipeline.

²⁹ NorthernStar Energy's July 25, 2007 Answer to Protests at 24-25.

³⁰ 2006 Policy Statement, 115 FERC ¶ 61,325 at P 2.

³¹ The deleted language at section 2.5 of Original Sheet 30 reads as follows: Transporter may refuse to accept Gas or may impose additional gas quality specifications and restrictions if Transporter, in its reasonable judgment, determines that harm to Transporter's facilities or operations could reasonably be expected to occur if it receives Gas that fails to meet such additional specifications and restrictions

³² The new language proposed at section 2.11 of Original Sheet 32 reads as follows: Transporter, in its reasonable discretion and judgment, may waive, on a non-discriminatory basis, the Gas quality specifications at any receipt point to accept Gas that does not conform to the quality specifications set forth in this section, if Transporter determines that such acceptance will not interfere with Transporter's ability to: (1) maintain prudent and safe operation of part or all of Transporter's pipeline system; (2) ensure that such Gas does not adversely affect Transporter's ability to provide service to others; and (3) ensure that such Gas does not adversely affect Transporter's ability to tender Gas for delivery to a downstream pipeline or end-user.

ii. OFO Penalties

44. NorthernStar Energy proposes an Operational Flow Order (OFO) penalty equal to the greater of twenty-five dollars per Dth or four times the highest absolute price at Sumas, Washington.

45. Commission regulations provide that a pipeline may include in its tariff transportation penalties only to the extent necessary to prevent the impairment of reliable service.³³ Order No. 637 expands on this regulation by stating that there is not necessarily a connection between the high level of authorized penalties and the level that is necessary to ensure system reliability.³⁴ As a result, the Commission directed all pipelines to either explain or justify their current penalty levels.

46. We find that NorthernStar Energy has not explained or justified its proposed OFO penalty. Although NorthernStar Energy states that it has modeled its pro forma tariff on Northwest's tariff, Northwest imposes a more moderate OFO penalty amount of ten dollars per Dth. Therefore, the Commission will reject NorthernStar Energy's proposed OFO penalty level of twenty-five dollars per Dth, without prejudice to its filing to revise its tariff along with justification for its proposed OFO penalty level.

iii. Waivers

47. NorthernStar Energy requests all necessary waivers including, but not limited to, waiver of sections 284.8, 284.12, 284.13 and 358 of the Commission's regulations, to the extent they require pipelines to post capacity release information, maintain and operate an interactive web site (EDI standards) and comply with NAESB standards relating to the electronic posting of information and use of the internet for business practice and electronic communications (EDM standards).

48. NorthernStar Energy states that the Bradwood Pipeline is a small pipeline with one receipt point at the Bradwood Landing LNG terminal that will be constructed to serve a single affiliated customer and that it does not expect to receive service requests from any other shippers, other than replacement shippers, in the foreseeable future. Because of the nature of the pipeline, NorthernStar Energy asserts that it would be burdensome to operate an interactive web site and to install electronic communications and posting

³³ 18 C.F.R § 284.12 (b)(2)(v) (2008).

³⁴ *See Regulation of Short-Term Natural Gas Transportation Services and Regulation of Interstate Natural Gas Transportation Services*, Order No. 637, FERC Stats. & Regs. ¶ 31,091, at 31,314 (2000).

requirements when there would be no benefit to other shippers if it were required to do so.

49. The Commission will grant NorthernStar Energy's request for waiver of sections 284.8, 284.12 and 284.13 of the Commission's regulations because we have acknowledged that it is reasonable to grant these waivers in situations like NorthernStar's where a pipeline is relatively small with one receipt point, has been constructed primarily to serve a single affiliated customer,³⁵ and no other party would benefit from the display of such information.³⁶ The waiver of the requirements for an interactive web site and NAESB standards will remain in effect only until a shipper receiving service on NorthernStar Energy's pipeline requests that NorthernStar Energy implement such standards. Within 180 days of receiving such a request, NorthernStar Energy must implement an interactive website and EDI/EDM standards in accordance with NAESB standards. Waiver of section 284.8 of the Commission's regulations, which requires the electronic posting of information relating to shippers' releases of capacity, will remain in effect until a shipper requests that capacity release information be posted on an interactive website in accordance with NAESB standards. Within 180 days of the date such a request is received, NorthernStar Energy must implement an interactive website in accordance with NAESB.

50. We will deny NorthernStar Energy's request for limited waiver of section 358 of the Commission's regulations pertaining to standards of conduct between a pipeline and its affiliate to the extent it requires the posting of shared information on the pipeline's website. We find that granting the limited waiver is unnecessary since we are not requiring NorthernStar Energy to operate or maintain an interactive website under the EDI standards for the reasons discussed above. However, if NorthernStar Energy does establish an interactive website in the future, it may request a limited waiver of section 358 at that time.

iv. Miscellaneous

51. Original Sheet No. 129 of NorthernStar Energy's pro forma tariff is blank. We will require NorthernStar Energy to either include tariff language that states that the sheet is reserved for future use or remove this sheet when filing to implement actual tariff sheets.

³⁵ See *Rendezvous Gas Services, L.L.C.*, 112 FERC ¶ 61,141, at P 49 (2005); and *Pinnacle Pipeline Company*, 105 FERC ¶ 61,051, at P 50 (2003).

³⁶ See *USG Pipeline Co.*, 89 FERC ¶ 61,121, at 61,325 (1999).

IV. Accounting

52. An allowance for funds used during construction (AFUDC) is a component part of the cost of constructing NorthernStar Energy's facilities. Gas Plant Instruction 3(17)³⁷ prescribes a formula for determining the maximum amount of AFUDC that may be capitalized as a component of construction cost. That formula, however, is not applicable here, as it uses prior year book balances and cost rates of borrowed and other capital that either do not exist or could produce inappropriate results for initial construction projects of newly created entities such as NorthernStar Energy.

53. In the application, NorthernStar Energy states that it will finance construction and the initial years of operation of the pipeline with equity and/or debt provided by its members and affiliates,³⁸ and estimates the capitalized AFUDC to be \$12,251,089.³⁹ In additional information provided, NorthernStar Energy states that the AFUDC amount is based on a debt cost rate of 7.5 percent with no equity component.⁴⁰

54. In similar cases, the Commission has required the applicant to limit its AFUDC rate to a rate no higher than it could earn on operating assets. The Commission limited the maximum amount of AFUDC that the pipeline could capitalize by limiting the AFUDC rate to a rate no higher than the overall rate of return underlying its recourse rates.⁴¹ We will therefore require NorthernStar Energy to ensure that its maximum AFUDC rate for the entire construction period is no higher than the overall rate of return underlying its recourse rates. Further, NorthernStar Energy must use its actual cost of debt (short-term and long-term) in the determination of its AFUDC rate, if it results in an AFUDC rate lower than the overall rate of return underlying its recourse rates.⁴²

³⁷ 18 C.F.R. Part 201 (2008).

³⁸ NorthernStar Energy's Application, Ex. L, Plan for Financing Proposed Facilities.

³⁹ NorthernStar Energy's Application, Ex. K, Estimate of Proposed Facilities Total Cost.

⁴⁰ NorthernStar Energy's January 4, 2008 response to December 8, 2007 data request.

⁴¹ See *Gulfstream Natural Gas System, L.L.C.*, 91 FERC ¶ 61,119 (2000) and *Buccaneer Gas Pipeline Company L.L.C.*, 91 FERC ¶ 61,117 (2000).

⁴² See *Mill River Pipeline, L.L.C.*, 112 FERC ¶ 61,070 (2005).

V. Engineering

55. The Commission has analyzed NorthernStar Energy's proposal to construct and operate the Bradwood Pipeline. We conclude that the proposed facilities are properly designed to transport re-vaporized LNG to interconnections with Northwest, NW Natural, and the other proposed delivery points. However, while the Bradwood Pipeline was sized for a maximum future capacity of 1.5 Bcf/d, it is limited to the 1.3 Bcf/d, the maximum peak send-out capacity of the Bradwood Landing LNG terminal.

VI. Environmental Analysis

A. Three Phases of Review

56. A number of commenters have questioned the adequacy of the Commission's review of the Bradwood Project, including the level of detail available regarding the project, the opportunity afforded the public to participate in the proceeding, and the attention paid to public comments. We believe it might be instructive to describe how the Commission's review process for LNG import terminals such as the Bradwood Project comprises three distinct phases: pre-filing review, application review, and post-authorization review. Each stage of the review process requires the submission of progressively more detailed information and involves an exhaustive review and consultation with key stakeholders. This order is the culmination of the second phase of review. In the third phase, there will be two additional sets of authorizations necessary; one set prior to any project construction and the second prior to operation of the project. How these phases relate to the review of the Bradwood Project and build upon each other is described below.

57. As required by Section 311 of the Energy Policy Act of 2005⁴³, prospective applicants seeking to obtain Commission authority to construct and operate an LNG import terminal must participate in the Commission's Pre-Filing Process for a period of at least six months. This is the beginning of the Commission review and it involves not only an early analysis of the project proposal, but also provides a transparent forum for consultation and discussion among participants in the process (namely, the prospective applicant, FERC staff, affected landowners, other federal agencies, state and local entities, and the public). During this process, project-specific issues are raised through the environmental scoping process and/or other means, such as open-houses, public meetings, site visits, or filed comments. Information needs are identified and studies are conducted as necessary to fill data gaps.

⁴³ 18 C.F.R. § 153.6(c) (2008).

58. As the end of the Pre-Filing Process approaches, staff will assess the progress made by all the stakeholders. When staff has determined that the project is ready to proceed to the application phase, it will so advise the prospective applicant. Once the applicant files its formal application and Commission staff is satisfied that sufficient information exists in the record to produce a draft EIS, staff will establish a schedule for the completion of the environmental review. During the application review phase, all interested entities have the opportunity to place their concerns regarding the project into the record and file any evidence they feel is important for the Commission to consider. The draft EIS is issued for public comment, and all comments received on that document are addressed in a final EIS.⁴⁴

59. The final EIS contains staff's conclusions regarding the feasibility, safety, and environmental impacts associated with the proposed project and recommended measures for ensuring safety and mitigating any environmental impacts it has identified through analysis of the proposal and consideration of concerns raised during the pre-filing and application review. After issuance of the final EIS, the Commission considers the entire record of the proceeding. If the Commission ultimately finds that the project is in the public interest and authorizes the proposal, the project-specific mitigation measures recommended in the final EIS, and any others identified by the Commission as necessary, are included as conditions to the authorization. Development of the information and the consultation required by these mitigative measures are the subject of the third, post-authorization, phase of the Commission's review process.

60. It is during the post-authorization review phase that detailed plans for the Commission-required mitigation are developed. As an example, pursuant to Section 3 A(e) of the NGA, the Emergency Response Plan (ERP) must include a cost-sharing plan for safety measures. Details of the ERP, including details of the cost-sharing plan, are developed and submitted to the Commission for review and approval during the post-authorization review phase. Approval of this plan, and a number of others specified as conditions of an order, must be received before the Commission's second authorization, the authorization to commence construction, will be issued. The development of plans related to required mitigation plans can be a time-consuming process, both for the project sponsor and for stakeholders that must be consulted and/or participate in their development. Moreover, in many instances it is impossible to develop detailed plans related to certain aspects of a project before the details of the Commission's underlying

⁴⁴ It should be noted that in order to ensure that the public had an adequate amount of time to fully consider the numerous issues presented during the scoping of the Bradwood Project and addressed in the draft environmental document, the usual 45-day comment period on the draft EIS was extended to 120 days.

authorization are known. Hence, it is more effective and efficient for all involved to delay the development of such plans until after the Commission has specified a project as being consistent with the public interest. Authorization to commence construction will not be issued until the conditions requiring pre-construction approval have been satisfied, with input as appropriate from all named agencies and others.

61. During what is typically a three-year construction period, mitigation measures are implemented and monitored. Frequently during this period, on-the-ground conditions are identified that require modifications of the mitigation plans that were developed prior to the start of construction. As part of its ongoing, detailed post-authorization project review, staff inspects the construction in progress, as do third-party inspectors, ensuring that all required measures are implemented. Finally, at the end of construction, the project sponsor files a request for authorization to commence operation of the facility. The information contained in this request must demonstrate how the project sponsor has complied with all of the Commission requirements and be consistent with the results of the Commission's inspections. This final authorization from the Commission will not be granted unless all measures to ensure safe and secure operations and the necessary environmental protections are in place and serving their intended purpose.

B. Pre-Filing Review of the Bradwood Project

62. On March 7, 2005, NorthernStar Energy's request to initiate the environmental review of the Bradwood Project, using our Pre-Filing Process, in Docket No. PF05-10-000, was approved. On March 18, 2005, the Commission issued a *Notice of Pre-Filing Process Review*. The Commission and the U.S. Department of Homeland Security Coast Guard (Coast Guard) issued a joint *Notice of Intent to Prepare and Environmental Impact Statement for the Proposed Bradwood Landing LNG Project, Request for Comments on Environmental Issues, and Notice of Joint Public Meeting* (NOI) on September 15, 2005. These notices were sent to affected landowners; federal, state, and local government agencies, and elected officials; environmental and public interest groups, including regional non-governmental organizations; Indian tribes and Native American organizations; local libraries and newspapers; and other interested parties.

63. The NOI indicated that scoping comments should be submitted by October 17, 2005. About 60 letters were filed with the Commission by end of the NOI comment period. In addition, staff held a public comment meeting with the Coast Guard in Knappa, Oregon on September 29, 2005. Thirty-seven people spoke on the record at that meeting. Staff also held a public informational meeting in Cathlamet, Washington, on October 26, 2005, at the request of the Wahkiakum County Board of Supervisors. About 42 additional letters were received by the Commission between the end of the NOI comment period and June 5, 2006, when NorthernStar filed its applications. The majority of scoping comments raised issues related to concerns over impacts on biological

resources, particularly salmon in the Columbia River (19.2 percent of comments); safety (15.8 percent); and socioeconomics (12.7 percent).

C. Application Review of the Bradwood Project

64. Commission staff evaluated the potential environmental impacts of the proposed Bradwood Project in draft and final EISs that satisfy the requirements of the National Environmental Policy Act of 1969 (NEPA).⁴⁵ The U.S. Army Corps of Engineers (COE), U.S. Coast Guard (Coast Guard), and U.S. Department of Transportation (DOT) served as cooperating agencies in the preparation of the draft and final EISs. Over the course of the environmental review, staff held 36 meetings with the public and agencies to identify and resolve concerns with the project. Each of these meetings is documented in the Commission's public record.

65. On August 17, 2007, we issued a draft EIS. The Notice of Availability for the draft EIS, published in the *Federal Register* on August 24, 2007, established a 120-day comment period. About 1,200 copies of the draft EIS were sent to interested parties, including elected officials, and federal, state, and local government agencies; parties to the proceeding; affected landowners; Indian tribes and Native American organizations; local libraries and newspapers; and non-governmental organizations, environmental and public interest groups, and individuals who requested a copy of the draft EIS. Staff held six public meetings in the project area to take comments on the draft EIS.

66. A total of about 70 people spoke on the record at the public meetings. In addition to oral comments taken at the public meetings, the Commission received about 128 individual letters (not including form letters, attachments, or filings from the applicants) by the comment closing date of December 26, 2007, including 4 letters from federal agencies, 15 letters from state and local agencies, 15 letters from non-governmental organizations, and 1 letter from an Indian tribe. Issues raised in these letters included safety and security (14 percent of the comments), cumulative impacts (13 percent), socioeconomics (8 percent), impacts on aquatic resources including salmon (7 percent), soils and sediments (7 percent), and geological hazards (7 percent).

67. On June 6, 2008, we issued the final EIS. Public notice of the availability of the final EIS was published in the *Federal Register* on June 13, 2008. Copies of the final EIS were mailed to the same parties as the draft EIS, as well as to parties that commented on the draft EIS. The distribution list was provided in Appendix A of the final EIS.

⁴⁵ 42 U.S.C. §§ 4321-4347 (2005).

68. Staff made changes in the final EIS, from the draft EIS text, both in response to comments received on the draft EIS and as a result of updated information that became available after the issuance of the draft EIS. Staff's responses to comments on the draft EIS can be found in Appendix K of the final EIS. The final EIS concludes that construction and operation of NorthernStar's Bradwood Project will result in limited adverse environmental impacts. However, if the Bradwood Project is constructed and operated in accordance with applicable laws and regulations, with the implementation of NorthernStar's proposed mitigation measures, and the additional mitigation measures recommended by staff, environmental impacts would be substantially reduced.

D. Major Environmental Issues Addressed in the Final EIS

The Need for a Supplemental EIS

69. Many commenters expressed the opinion that a supplemental EIS is necessary to evaluate the impacts and potential effectiveness of the post-authorization design plans and studies recommended in the final EIS and that Commission approval of the Bradwood Project should not be issued until review of those plans and studies has been completed. We disagree. As noted above, it is impractical, and sometimes impossible, to complete all studies and develop the plans necessary to successfully mitigate potential aspects of a natural gas project prior to the issuance of a Commission order specifying to the extent possible the scope of its authorization. As described in the final EIS, while the vast majority of impacts have been identified and necessary mitigation has been described, additional post-authorization plans and studies will serve to refine the mitigation to address site-specific circumstances prior to construction. In addition, many of the post-authorization conditions requiring site-specific plans and surveys are necessary because NorthernStar Energy cannot gain access to certain land parcels to complete the surveys without the use of eminent domain. Lastly, the conditions we have imposed will enable the Commission to ensure compliance with all statutory and regulatory requirements and verify that the required mitigation measures are implemented at the appropriate points in the project.

Alternatives – No Action, Alternative Pipeline Proposals, and Alternative LNG Proposals

70. The final EIS addressed alternatives, including the no action or postponed action alternative, system alternatives, LNG terminal site alternatives, LNG terminal layout alternatives, and pipeline route alternatives. In our discussion of the no action alternative, we considered alternative energy sources, and the potential for energy conservation and the use of renewable energy resources. While denying project approval would eliminate the environmental impacts resulting from the Bradwood Project, the no action alternative would mean that the project objective of providing a new source of natural gas for the

Pacific Northwest would not be achieved. Energy conservation cannot replace the natural gas needed in the future, but can be a complementary component in the overall energy supply and demand mix. Renewable energy resources would not be able to provide the amount of energy equivalent to the Bradwood Project.

71. Throughout our review of these proposals, commenters have questioned the need for the project and argued that future demand for energy can be met with renewable resources or other projects. Section 3 of the final EIS addresses alternatives, including the no action or postponed action alternative, system alternatives, LNG terminal site alternatives, LNG terminal layout alternatives, and pipeline route alternatives. In our discussion of the no action alternative, we considered alternative energy sources, and the potential for energy conservation and the use of renewable energy resources. While denying project approval would eliminate the environmental impacts resulting from the Bradwood Project, the no action alternative would mean that the project objective of providing a new source of natural gas for the Pacific Northwest would not be achieved. While energy conservation can serve as a complementary component in the overall energy supply and demand mix, we do not believe it can eliminate the need for additional supplies of natural gas in the foreseeable future. Likewise, we do not believe that renewable energy resources would be able to provide an amount of energy equivalent to the Bradwood Project to the same market area and in a similar timeframe.

72. The final EIS discussed the May 7, 2008 LNG and Natural Gas Review conducted by the Oregon Department of Energy (ODE) for the Governor of Oregon⁴⁶ in sections 1.1, 3.1.1.3, and 4.10.1.4. The ODE Review indicated that Oregon would need additional supplies of natural gas in the future. However, the ODE prefers that this gas be delivered from domestic sources via newly proposed interstate pipelines, rather than from imported LNG. The ODE asserts that imported LNG, when combusted in a conventional electric power plant, would produce life-cycle green house gas (GHG) emissions greater than domestically produced natural gas. The ODE also claims that Rocky Mountain gas may be lower in price than imported LNG.

73. Sections 3.1.1.3 and 4.10.1.4 of the EIS discuss the ODE's estimate of life-cycle GHG emissions for imported LNG, which includes fuel burned during liquefaction at the export facility, long-distance transport by carriers across oceans to the United States, processing, and end use. The EIS took no position on the assertions in the ODE Review, other than in section 4.10.1.4 of the EIS, where staff pointed out that the carbon capture and storage technologies referenced in some of the ODE's assumptions are not currently

⁴⁶ ODE, 7 May 2008, "Response to Governor Kulongoski's Request for LNG and Natural Gas Review," filed under a cover letter dated May 9, 2008, from the Governor to the Secretary of the Commission.

feasible. While it is possible that reliance on an LNG facility for new supplies of natural gas may delay meeting Oregon's GHG 2020 target, it is also possible that under some proposed but not yet legislated regulatory regimes to lower GHG emissions in the future, such as cap and trade or carbon tax, LNG importation may accelerate Oregon's ability to meet its 2020 GHG goals.

74. Staff's analysis in section 3.1.1.3 of the final EIS indicates that if the Bradwood Project is not authorized, one possible outcome may be that electric power plants in the region would use oil or coal instead of natural gas, which may result in higher GHG emissions. Table 3.1.1-1 of the EIS quantifies GHG produced by natural gas in comparison to coal and fuel oil. As discussed in section 1.1 of the EIS, most of the new power plants that have come online in the Pacific Northwest since 2001 have used natural gas as fuel, to reduce air pollution and GHG emissions. The ODE wrote, on page 3 of its May 2008 Review, that: "Over 40 percent of the electricity consumed in Oregon comes from coal-fired generation. As climate change legislation is enacted, it is likely that financial conditions will encourage the switch from coal to natural gas since natural gas has much lower life-cycle GHG emissions. It is unlikely that Oregon will be able to replace all of the coal-fired power it uses with renewables in the short-term, so natural gas consumption is likely to rise."

75. Some of the ODE claims were challenged in a May 28, 2008 filing by NorthernStar.⁴⁷ NorthernStar believes that the Carnegie Mellon University study on which the ODE relied in calculating GHG emissions has been disputed because it was based on assumptions regarding carbon capture technologies which are not yet viable. NorthernStar also stated that the ODE is incorrect in assuming that natural gas produced from the Rocky Mountains could be provided to Oregon by newly proposed interstate pipelines to meet future demand at lower prices than imported LNG. Staff's research indicated that between January and May 2008 domestic natural gas prices at the Henry Hub ranged between \$7.93 and \$11.23 per MM/Btu while LNG imported into the United States fluctuated in price between \$8.02 and \$10.76. Therefore, LNG at particular times could cost more or less than domestic natural gas, depending on market conditions.

76. Commenters also suggested that there are other proposed pipeline projects that could provide additional gas to the Pacific Northwest with less environmental impact than the proposed Bradwood Project. Section 3.1.2.2 of the final EIS discussed the proposed Palomar, Ruby, Bronco, and Sunstone/Blue Bridge pipelines as potential system alternatives to the Bradwood Project. It is clear that these proposals would not

⁴⁷ NorthernStar Energy LLC and Bradwood Landing LLC, "Answer of NorthernStar Energy LLC and Bradwood Landing LLC to Motion of the State of Oregon," filed May 29, 2008 in Docket Nos. CP06-365-000 and CP06-366-000.

meet all of the major objectives of the Bradwood Project. For example, the Ruby, Bronco, and Sunstone projects seek to deliver Rocky Mountain natural gas to target markets in northern California, while the Bradwood Project aims at providing a new source of natural gas (imported LNG) to Oregon and Washington

77. The Bronco project, proposed by Spectra Energy, has been cancelled. The Sunstone project has not yet initiated the Pre-Filing review process. Both Palomar and Ruby are currently in the Pre-Filing review stage, and should applications be filed, the Commission staff will prepare a separate EIS for each proposal. However, based on our review of the data available on these projects to date, there is little reason to expect that either project would be significantly superior from an environmental perspective to the Bradwood Project. Direct impacts of the Bradwood LNG terminal would be largely restricted to the 40-acre plant site, the 58-acre ship berthing and maneuvering area, and the 476 acres affected by the 36-mile long Bradwood Pipeline. In comparison, the proposed Palomar pipeline would be 215 miles long, and the Ruby pipeline would be 655 miles in length. Palomar estimated construction of its proposed pipeline would impact about 3,124 acres⁴⁸ and Ruby estimated construction of its pipeline would impact about 9,130 acres.⁴⁹ As a general proposition, the impacts on wetlands, waterbodies, soils, and forested areas associated with the significantly longer Palomar and Ruby pipelines would be greater than the impacts associated with the Bradwood Project.

78. There was also some suggestion that a pipeline bringing Alaskan natural gas to the continental United States could meet the supply diversity goal of the Bradwood project. However, the earliest that natural gas from Alaska could be expected to reach the lower 48 states would be 2018.⁵⁰

79. Section 3.1.2.3 of our final EIS for the Bradwood Project considered the alternative of converting one of the five existing LNG “peak shaving” storage facilities located in the Pacific Northwest into an import terminal, and found that this would not be feasible due to the limited storage capacity and expansibility of the facilities. Section 3.1.4 of the final EIS discussed the potential for an offshore LNG terminal alternative near the mouth of the Columbia River. Staff found this alternative would not be viable due to rough sea conditions off the Oregon Coast, technological limitations

⁴⁸ Palomar Gas Transmission LLC, “Draft Resource Report 1, General Project Description,” filed September 28, 2007 in Docket No. PF07-13-000.

⁴⁹ Ruby Pipeline LLC, “Draft Resource Report 1, General Project Description,” filed April 1, 2008 in Docket No. PF08-9-000.

⁵⁰ EIA AOE 2007 at 52.

related to offshore LNG import terminal designs, and additional environmental impacts associated with a longer sendout pipeline.

80. In section 3.1.2 of the final EIS, staff considered other proposed LNG import terminal locations along the Pacific Coast, including in British Columbia, Canada, northern Mexico, and California as potential alternatives to the Bradwood Project. One of the proposed Canadian LNG terminals, WestPac in British Columbia, has not yet gotten through its environmental reviews, while the other, Kitimat, is likely to send most of its natural gas to the Alberta oil sands area or other eastern markets.

81. Of all the proposals for LNG terminals on the West Coast of northern Mexico, only one, Costa Azul, near Ensenada, Mexico, has been approved and constructed. Although the Costa Azul terminal is now operational, its target markets are in northern Mexico and southern California. Of the LNG terminals proposals in California, the onshore Long Beach proposal has been withdrawn, and the offshore Cabrillo terminal, proposed under the Deepwater Port Act, has been denied by the U.S. Department of Transportation's Maritime Administration (MARAD). Two other deepwater port proposals, Pacific Gateway and Esperanza, both proposed to be located off the California coast, have not yet filed applications with MARAD and are considered speculative. While the Clearwater and Ocean Way LNG offshore terminals, designed to serve markets in southern California, have filed applications with the MARAD, these projects are currently on-hold pending responses to detailed Coast Guard data requests. In any case, the development of an LNG terminal in southern California is unlikely to meet the objectives of the Bradwood Project, and would need a pipeline several hundred miles long to reach Oregon, with associated environmental impacts likely greater than the 36-mile-long Bradwood Pipeline.

82. Section 3.1.3.4 of the EIS discussed other potential LNG terminal locations in Oregon, including Port Westward, Tansy Point, Skipanon, and Coos Bay. No applications have been filed with the Commission for the terminals at Port Westward, at about Columbia River Mile (CRM) 58 in Columbia County, Oregon, or Tansy Point, at about CRM 10, in Clatsop County, Oregon. The Commission has rejected a request to initiate Pre-Filing review from the developer associated with the Port Westward terminal because ownership and control of the property on which the terminal would be constructed could not be demonstrated.⁵¹ The Tansy Point site is the current location of a wood processing facility operated by Warrenton Fiber within the city of Warrenton, and is surrounded by a residential neighborhood. No developer has come forward to promote this site.

⁵¹ Director, Office of Energy Projects letter dated April 28, 2005, to Port Westward LNG LLC.

83. The Commission is currently in the application review phase of the proceeding related to the Jordan Cove LNG and Pacific Connector Gas Pipeline Project at Coos Bay, in Coos County, Oregon. The Oregon LNG Project is still in the Pre-Filing review stage. However, at this stage of our analyses, neither appears to be clearly environmentally superior to the Bradwood Project because the Pacific Connector pipeline for the Jordan Cove LNG Project would be about 230-miles-long, affecting a total of about 2,763 acres, while the pipeline associated with the Oregon LNG Project would be about 130-miles-long, impacting approximately 1,461 acres.⁵²

84. As is highlighted by the discussion above, the Commission has looked at a large number of arguable alternatives to the proposed Bradwood Project. It has not been shown that any of the alternatives could ultimately meet all the stated objectives of the Bradwood Project as proposed, and certainly not within the timeframe for initiation of service offered by the Bradwood Project. While it appears that existing pipeline capacity and local storage facilities may be adequate to meet overall regional demand through 2012, the NWGA has indicated that winter peak demand may not be met by current capacity. The Bradwood Project may be ready to be placed into service by the end of 2011. If so, it could provide the infrastructure and additional gas supply to eliminate a possible future gap between natural gas supply and regional demand, especially during periods of peak demand.

85. We note that there is no guarantee that applications for all of the projects currently being contemplated will ultimately be filed. As noted above, the Bronco Project has been cancelled, apparently due to a lack of market support, and sponsors of the Port Westward Project have, to date, been unable to secure the necessary property rights. In the same vein, there is no guarantee that the LNG projects for which applications have been filed, either with the Commission or with MARAD, will ultimately be approved. The Long Beach proposal which had been pending before the Commission for some time was recently withdrawn and Cabrillo's proposal was denied by MARAD.

86. However, it is equally important to note that nothing in this authorization will necessarily preclude any other meritorious proposal from going forward or foreclose the range of options available to the market. Many of the commenters urge the Commission to engage in a regional planning exercise and choose one winning proposal to provide additional natural gas to the Pacific Northwest. We decline to substitute our judgment for that of the market. Should potential gas customers determine, for example, that Rocky Mountain gas supply will provide a cost benefit, or that additional energy from renewable

⁵² The final EIS presents a comparison of environmental variables between the Bradwood Project and Port Westward, Tansy Point, Oregon LNG, and Jordan Cove in table 3.1.3-1.

sources is necessary to enable them to achieve Federal- or state-imposed environmental requirements, they can choose to support a project which they believe is better suited to their objectives. Our policy prohibiting subsidization of new construction by existing customers works to ensure that an authorized project will not be constructed without adequate support from the market. Further, our policy of authorizing only those projects where adverse impacts have been minimized to the extent possible and potential benefits outweigh any residual impacts serves to adequately protect the public interest when any authorized project is constructed.

Pipeline Route Alternatives Considered

87. When the Commission initiated its Pre-Filing review of the Bradwood Project, NorthernStar's proposed pipeline route headed southeast from the Bradwood LNG terminal to a crossing of the Columbia River near the decommissioned Trojan nuclear power plant south of Prescott, Oregon, interconnecting with the Northwest pipeline system north of Kalama, Washington. However, numerous parties, including the Port of Kalama, objected to that route (which staff labeled the Northern Route Alternative in its analysis of Pipeline Route Alternatives in section 3.1.8 of the EIS). Therefore, NorthernStar modified its proposal, moving the pipeline to its currently proposed route in the application filed in June 2006. These types of route changes are the desired result of the pre-filing process.

88. In section 3.1.8 of the EIS, staff considered three major alternatives to the Bradwood Pipeline route proposed in the application: 1) the Railroad Route Alternative, 2) the Northern Route Alternative, and 3) the Southern Route Alternative. It was determined that the Railroad Route Alternative would require more blasting along basalt ledges, and would be in close proximity to more residences and commercial structures. Also, NorthernStar Energy would be unable to deliver natural gas to the Beaver Power Plant at Port Westward without constructing a lengthy pipeline lateral. The Northern Route (which was the route initially put forward by NorthernStar in March 2005), would be longer than the proposed route. The Port of Kalama raised concerns about potential impacts that route alternative could have on operations at the port. Staff had concerns about the feasibility of a horizontal directional drill (HDD) at the crossing of the Columbia River along this route alternative. This alternative would also require construction of a lateral to deliver gas to the Beaver Power Plant. The Southern Route Alternative would be 55 miles long and affect more land than the proposed route. It would also result in the clearing of more forest. Again, a lateral would be needed to reach the Beaver Power Plant.

89. In addition, a route alternative requiring crossing of the Columbia River at Bradwood was initially considered by NorthernStar. However, due to the limitations of HDD technology and the length of the river crossing at this location, its HDD exit point near the city of Cathlamet, and difficulties anticipated in installing the pipeline across the

rugged topography on the north side of the Columbia River in Wahkiakum and Cowlitz Counties, Washington, NorthernStar determined this alternative route to be unconstructable and it was eliminated from further consideration.

90. For the reasons discussed above, staff concluded that none of the route alternatives considered would be environmentally superior to the proposed Bradwood Pipeline route.

Geology and Soils

Seismic Design of the Pipeline and LNG Terminal

91. A number of commenters expressed concern that sufficient design standards and mitigation did not exist to adequately protect the public from pipeline ruptures or LNG spills in the event of an earthquake or landslide. Several comments were filed regarding the impacts of earthquakes and other geological hazards at the terminal site and along the pipeline route. Section 4.1 of the final EIS addressed geology, and section 4.2 addressed soils. Appropriate studies have been done to identify the site-specific seismic design requirements for the design of the LNG facility. We find that NorthernStar's proposed mitigation, together with the conditions attached to this order, will ensure that the facility is designed and constructed with a high level of attention to minimizing the effects of earthquakes and in compliance with all regulatory and code requirements, including DOT regulations, and the Commission's "*Draft Seismic Design Guidelines and Data Requirements for LNG Facilities*" (January (2007)). We also believe that the project would comply with the ODE's facility siting and seismic design guidelines and the Oregon Structural Safety Specialty Code.

92. The facilities are designed to survive a Magnitude 9.0 earthquake without a major LNG spill. Ground improvement/subgrade densification would be necessary to mitigate the potential for seismic soil liquefaction. Due to its distance upriver, we find that tsunamis are not a hazard to the proposed LNG terminal.

93. Several commenters assert that the Commission should not approve the proposed project because of the earthquake potential in the area. However, it should be noted that LNG facilities have been built and safely operated in other areas around the world with similar or greater earthquake potential, including Alaska, Puerto Rico, Georgia, Japan, Greece, and Indonesia. This order incorporates a number of environmental conditions (numbers 57 to 70) to ensure that the final engineering design for the LNG terminal includes detailed seismic specifications and other measures to mitigate the impacts of seismic hazards. The final engineering design will be subject to final review and approval by the Director of the Office of Energy Projects (OEP) prior to the authorization of construction. We are also requiring an engineering peer review process (in environmental conditions 16 and 17) whereby NorthernStar must retain the services of an independent Board of Consultants to provide oversight of the design and construction of

all civil and structural components of the project, with particular emphasis on the seismic design requirements and geological hazard mitigation measures for both the LNG terminal and Bradwood Pipeline.

94. Landslide areas along the pipeline route would be mitigated by one or more of the following: relocation of the pipeline route; HDD crossing of the feature to place the pipeline below potential failure surfaces; and instrumentation of the pipe and/or the surrounding rock or soil to monitor strain in the pipe and movement of the surrounding ground. NorthernStar will be required to conduct additional studies and produce a Final Pipeline Design Geotechnical Report with site-specific mitigation measures which would be subject to review by the Board of Consultants and approval by the Director of OEP prior to authorization being granted to commence construction. Any necessary pipeline route relocations would be subject to environmental condition 6.

Contaminated Sediments and Soils

95. Some commenters raised concerns about the potential for the project to encounter contaminated sediments within the area dredged for the turning basin in the Columbia River, at the LNG terminal, or along the pipeline. NorthernStar tested samples of sediments from the area it proposes to dredge for its LNG carrier turning basin adjacent to the existing Columbia River navigation channel. Although some contaminants were detected in the samples, the concentrations were relatively low, and none exceeded screening levels or threshold affects levels used to identify concentrations of concern. As stated in the EIS, staff believes that the hydraulic dredging proposed by NorthernStar would only have short-term and limited impacts on fish species, because the sediments are primarily sands that would settle quickly and the plume would be small and confined to the immediate area.

96. NorthernStar proposes to place up to the entire 700,000 cubic yards of material dredged to create the turning basin on the terminal site to raise its elevation above floodwater levels. Any sediments not placed at the terminal site would be deposited at the existing Wahkiakum County Sand Pit site on the northwestern end of Puget Island via a temporary pipeline. Some commenters on the final EIS questioned whether the FERC staff had fully analyzed the different dredge material disposal options. Concerns were also raised about whether or not the Wahkiakum County Sand Pit would be permitted to allow the disposal of dredged materials from the Bradwood Project. Section 3.1.9.2 of the draft EIS discussed the alternative of placing all of the materials dredged during creation of the turning basin at the LNG terminal instead of using the Wahkiakum County Sand Pit. The final EIS acknowledged that NorthernStar could only deposit dredged material at the sand pit location if the county received its permit, otherwise another approved site would be used for disposal of materials dredged during maintenance of the turning basin.

97. In order to fulfill a condition of its Clatsop County's Conditional Use Permit, NorthernStar prepared a *Shoreline Monitoring Plan* for its LNG terminal. However, as pointed out by some commenters and recognized by staff, that plan did not address the potential for LNG carrier and tug boat propeller wash and wakes to cause erosion on the west side of Puget Island while turning in the maneuvering area to dock at the terminal. Therefore, we are requiring (in environmental condition 18) NorthernStar to prepare a *Shoreline Monitoring Plan* for the west end of Puget Island, for review and approval by the Director of OEP prior to operation of the LNG terminal. Environmental condition 21 requires that NorthernStar prepare a plan to monitor erosion of side slopes of the maneuvering area after dredging.

98. According to a study conducted by a consultant for NorthernStar, historical use of the Bradwood LNG terminal parcel as a lumber mill and townsite may have resulted in the burial of underground gasoline storage tanks and other materials that could contaminate soils and groundwater. In addition, a literature search performed by NorthernStar indicated that there may be 10 potential contamination sites located within 1,500 feet of the pipeline route. Therefore, we are requiring (in condition 20) that NorthernStar submit a *Contaminated Materials Management Plan*, for the review and approval of the Director of OEP prior to construction, to address the potential discovery of contaminated soils or groundwater during construction.

Water and Wetlands

99. Section 4.3 of our final EIS addresses water resources, and section 4.4.1 addresses wetlands. NorthernStar did hydrodynamic modeling which indicated that the dredging to create the turning basin could result in minor changes to the navigation channel of the lower Columbia River and may cause a reduction of flow through Clifton Channel. The National Marine Fisheries Service (NMFS) and other parties raised concerns about project-related impacts on Clifton Channel. Working with Staff and the agencies, NorthernStar agreed to conduct additional studies. Staff will include the results of those studies in its revised Biological Assessment (BA) and Essential Fish Habitat (EFH) Assessment.

100. During operation of the LNG terminal, water from the Columbia River would be taken on by LNG carriers at berth during offloading for ballast and engine cooling. To minimize the entrainment and impingement of juvenile fish, the order requires NorthernStar to design and install a water intake system that would meet criteria established by the NMFS and Oregon Department of Fish and Wildlife (ODFW). Detailed design requirements would be addressed in the BA/EFH Assessment process.

101. Commenters have argued that the final design of the water intake screening system must be completed before the Commission authorizes the project. As previously discussed, the conditions to this order allow for staff review of refined mitigation plans; therefore, we do not agree that the design needs to be complete at this time. Fish screening is a proven technology and has a long history of effective application at numerous water intakes of various types in North America and Europe, including irrigation canals, industrial and municipal water supply pipes, and FERC-regulated hydropower projects on the Columbia River and elsewhere in the Pacific Northwest.⁵³ In addition, fish swimming capabilities and their ability to avoid obstacles has long been researched and applied in the designs of various physical (screening), behavioral, diversion, and collection devices used to prevent fish from entering intakes or contacting other obstacles that could cause harm to them.⁵⁴ NMFS has used this information to develop specific fish screen design criteria, including criteria for screening material, mesh size, and water velocity at the screen face.⁵⁵ In order to meet its own state law requirements,⁵⁶ Oregon generally uses the screening criteria developed by the NMFS,⁵⁷ the specifics of which are discussed at page 4-161 of our final EIS. Consistent with those criteria, the screen mesh opening would not exceed 3/32 inch (2.38 mm) for a woven wire or perforated plate screen, or 0.0689 inch (1.75 mm) for a profile wire screen, with a minimum 27 percent open area. The intake would be mounted parallel with flow in the river and aligned with the adjacent bankline. The current intake design assumes a maximum approach velocity at the screen of 0.33 ft/s.

⁵³ See *e.g.*, Clay, C.H. Design of Fishways and Other Fish Facilities. 2nd ed. Boca Raton, FL.: Lewis Publishers, 1995.

⁵⁴ *Id.*

⁵⁵ See National Marine Fisheries Service. 2008. Anadromous salmonid passage facility design. NMFS, Northwest Region. Portland, Oregon.

⁵⁶ Oregon State Law (ORS 498.306) requires that “any person who diverts water from any body of water in this state in which any fish, subject to the State Fish and Wildlife Commission’s regulatory jurisdiction, exist may be required to install, operate and maintain screening or by-pass devices to provide adequate protection for fish populations present at the water diversion in accordance with the provisions of this section.”

⁵⁷ See www1.wrd.state.or.us/pdfs/ODFW_Fish_Screening_Criteria.pdf

102. Further, in environmental condition 32, we are requiring that NorthernStar conduct post-installation water flow assessments of the screens for review and approval by the Director of OEP prior to operation. We are confident that through application of these well-established design criteria, staff's technical review and consultation with NMFS, FWS and ODFW the final design of a fish screening system will be protective of fish that come near the LNG carrier intakes.

103. Staff recommended in the final EIS, that within 30 days after the issuance of the final EIS, NorthernStar either ensure that only LNG carriers retrofitted to use the screened water delivery system at the wharf be allowed to unload cargos at the Bradwood Landing LNG terminal, or develop a plan for delivering screened water for ballast and engine cooling for LNG carriers at berth that does not require retrofitting. In response, on July 7, 2008, NorthernStar filed a concept for a Permeable Curtain System to be employed when an LNG carrier arrives at the terminal that has not been retrofitted to use the screened water delivery system. Consequently, we have revised environmental condition 33 in this Order to require NorthernStar to submit comprehensive plans, including engineering designs, within 60 days of issuance of the order.

104. It is significant to note that fish screening is not currently required by NMFS for any other ships on the Columbia River. Despite NorthernStar's objection to the requirement, we are going beyond precedent to ensure satisfaction of the Endangered Species Act (ESA). By this order the Bradwood Project LNG carriers would be the only type of cargo vessel that would have ballast and cooling water intakes screened to exclude juvenile fish, and therefore may set a new standard for NMFS in protecting salmon on the Columbia River.

105. In addition to concerns about the water intake system, LNG carriers could routinely discharge cooling water at the wharf. Staff recommended in the final EIS that NorthernStar develop performance standards that address water quality impacts from cooling water discharges at the LNG terminal and file that data within 30 days after issuance of the final EIS. In response, on July 7, 2008, NorthernStar filed performance standards that would be implemented during operation of the Bradwood Landing Project. In addition, NorthernStar stated that biocides would not be discharged in any form or concentration into the Columbia River. Therefore, this recommendation of the final EIS is no longer applicable and is not included in this order.

106. The NMFS and other parties raised concerns about potential project impacts on Hunt Creek resulting from the proposed replacement of the bridge over the creek during improvements to Bradwood Road. Therefore, we are requiring, in environmental condition 23, that NorthernStar monitor water quality in Hunt Creek during bridge replacement activities.

107. To minimize impacts on up to 23 of the waterbodies crossed by NorthernStar Energy's Bradwood Pipeline, HDD or conventional bore method would be used. Some commenters, such as the EPA, raised concerns about how NorthernStar would handle a leak of drilling mud, or "frac-out," during an HDD. To minimize any potential impacts of frac-outs during HDD stream crossings we are requiring that NorthernStar submit a final *HDD Contingency Plan* for the review and approval of the Director of OEP prior to pipeline construction (environmental condition 24).

108. Construction of the LNG terminal and pipeline facilities combined would affect about 113 acres of wetlands, of which about 13 acres of wetlands would be permanently lost at the terminal, and 15 acres of forested wetlands within the pipeline permanent right-of-way would be converted to an herbaceous state. NorthernStar has proposed a *Preliminary Engineering Design Draft Mitigation Plan* (Compensatory Mitigation Plan), including restoration and/or preservation programs at Hunt Creek, Svensen Island, and Delameter Creek, to create or enhance wetland habitats as compensation for wetlands and habitats impacted by its project. We received comments questioning the adequacy of NorthernStar's draft plan. Therefore, in environmental condition 13 we are requiring that prior to construction NorthernStar file a final Compensatory Mitigation Plan developed in consultation with, and acceptable to, the COE, NMFS, ODFW, ODSL, Washington Department of Ecology and other appropriate resource agencies.

Vegetation and Wildlife

109. There have been comments about potential project related impacts on forest and private timberlands, and questions about mitigation measures and compensation to private landowners. Section 4.7.3.1 of the EIS discusses the acquisition of the pipeline easement from private landowners, including negotiated compensation for losses. As discussed in section 4.4.2 of the final EIS, construction and operation of the LNG terminal and Bradwood Pipeline combined would have long-term impacts on about 62 acres of forest. Upland forest would be replanted in-kind with trees, except for a 30-foot-wide strip over the pipeline centerline. Routine maintenance of a 10-foot-wide corridor centered on the pipeline would keep that area in an herbaceous state. To reduce impacts on vegetation, NorthernStar would implement the provisions of its *Erosion and Sediment Control Plan* (ESCP) for Oregon, and its *Stormwater Pollution Prevention Plan* (SPPP) for Washington. In environmental condition 22, we are requiring that NorthernStar revise the ESCP and SPPP, for the review and approval of the Director of OEP prior to construction of the pipeline, to include measures from the FERC staff's *Upland Erosion Control, Revegetation, and Maintenance Plan* that provide greater protection to resources.

110. One of the many plans developed to by NorthernStar to address issues raised on this project was a draft *Noxious Weed and Soil-borne Plant Disease Control Plan*. The

purpose of the draft plan was to develop measures to prevent the spread of invasive plants during pipeline construction. We received comments questioning the adequacy of NorthernStar's plan and the final EIS recommended that NorthernStar consult with the COE, NMFS, FWS, and the Oregon and Washington Departments of Agriculture and file a revised *Noxious Weed and Soil-borne Plant Disease Control Plan* within 30 days after the issuance of the final EIS. In response, on July 7, 2008, NorthernStar filed a revised plan based on the recommendations of the Oregon Department of Agriculture, Plant Division, Noxious Weed Control Program. However, NorthernStar did not provide documentation of consultations with other agencies. Therefore, we have included environmental condition number 28 in this Order to require that NorthernStar file documentation of agency consultations along with their comments on and appropriate approvals of the revised plan prior to construction.

111. As pointed out by numerous commenters, the lower Columbia River estuary, where the Bradwood LNG terminal would be located, is considered an important habitat for aquatic species, including salmonids, because tidal cycles, freshwater runoff, and variations in salinity offer shallow, protected, nutrient rich, freshwater, brackish, and marine environments within the estuary. Resource agencies and the public are concerned about potential project impacts on habitats along the lower Columbia River, and the species that occupy those habitats. In particular, there are worries about how the project may affect salmon species, which have an almost iconic status in the Pacific Northwest. Sections 4.5 and 4.6 of the final EIS discuss EFH and federally listed threatened and endangered species that may be affected by the proposed project. Staff identified EFH for groundfish, coastal pelagic species, Pacific Coast salmon, and highly migratory species within the project area. There are 13 species of salmonids within the project area that are federally listed as threatened or endangered, with critical habitat designated for 12 of those species. All 13 species of listed salmonids use the lower Columbia River as a migratory corridor, 6 species utilize nearshore areas for juvenile rearing, and 1 species has potential spawning habitat.

112. The final EIS indicates that there are a number of project activities that may directly or indirectly result in impacts on aquatic species, including salmonids and their habitats. These activities include LNG or fuel/oil spills during carrier transit to the terminal; LNG carrier traffic causing shoreline erosion from prop wash and fish strandings from wakes; dredging of the terminal turning basin; in-water work during construction of the berth; water intake during construction of the terminal; improvements to the bridge over Hunt Creek; relocation of the railroad within the terminal parcel adjacent to Hunt Creek; water intake by LNG carriers at berth during operation of the terminal; water disposal by LNG carriers at berth; water disposal during construction and operation of terminal; and pipeline crossings of 94 waterbodies, almost all of which are tributaries to the Columbia River, and some of which offer habitat for aquatic species including salmon. NorthernStar has agreed to implement a number of measures that

would avoid or minimize impacts on salmonids and their habitats, and is required by this order to implement additional measures.

113. In section 5 of the final EIS, staff recommended that within 30 days after the issuance of the final EIS NorthernStar file documentation of consultations with the NMFS about measures that could be implemented to avoid or minimize wake stranding and shoreline erosion due to LNG carrier transit along the waterway. In a July 7, 2008 filing, NorthernStar presented data about wake stranding and shoreline erosion, but did not document consultations with NMFS on these issues. Therefore, in environmental condition 29, we are requiring that NorthernStar file, within 60 days after the issuance of this Order, documentation of consultations with the NMFS, and based on those consultations provide more information about measures to reduce the potential for fish stranding and shoreline erosion related to LNG marine traffic in the waterway. Staff would use that additional information to revise the BA and EFH Assessment. Regarding the potential for oil spills, because of the safety and security measures recommended in the Coast Guard's WSR, staff believes there is a very low likelihood of an LNG spill during carrier transit. The double-hull of LNG carriers would prevent spills and leaks of fuel or oil. In addition, each LNG carrier would maintain a *Shipboard Oil Pollution Emergency Plan* which would contain measures to be implemented in the event of a petroleum release (see section 4.3.2.2 of the EIS).

114. In addition to describing the impact to sensitive fish species, in section 4.6 of the EIS staff identified four species of sea turtles, seven whales, the Steller sea lion, Columbian white-tailed deer, six birds, one invertebrate, and three plants that are federally listed as threatened or endangered that may occur in the project area. The sea turtles and whales could be affected by vessel strikes during LNG carrier transit in the ocean or the waterway. Although haul-out sites for pinnipeds, such as California sea lions and Pacific harbor seals, are located near the mouth of the Columbia River, these species, and the federally listed Steller sea lion, travel up river as far as Bonneville Dam. The Columbian white-tailed deer utilizes forest and shrub habitat along portions of the pipeline route, and would be most sensitive to impacts during their fawning season. Botanical surveys have not been completed along the entire route of the pipeline because access was not granted for all parcels, and there may be locations that contain habitat for federally listed plants, such as Kincade's lupine. Additional surveys for bald eagles are needed to assess if that species could be affected by the project.

115. Table 4.6.2-1 of the final EIS lists ways in which NorthernStar would avoid or minimize its actions that may affect federally listed species. In addition, staff recommended additional measures or plans to ensure that these species are protected, and we have adopted those recommendations into the environmental conditions of this Order. To address concerns raised by the NMFS about the potential for LNG carrier strikes on whales offshore, staff recommended condition 38 in section 5 of the final EIS requesting

that NorthernStar file within 30 days after the issuance of the final EIS documentation of consultations with the NMFS regarding measures to avoid or reduce the potential for whale strikes. On July 7, 2008, NorthernStar filed data about the potential for whale strikes by LNG carriers in transit to the terminal. However, NorthernStar was unable to schedule a meeting with the NMFS to discuss these data. Therefore, in environmental condition 37 of this Order, we are requiring that NorthernStar document consultations with the NMFS about potential project related impacts on whales, and file any additional data resulting from those consultations within 60 days after the issuance of this Order. The FERC staff will incorporate these additional data into the revised BA and EFH Assessment.

116. To address concerns raised by the NMFS about potential project related impacts on marine mammals, including pinniped, protected under the Marine Mammal Protection Act, we have included condition 40 in this Order, requiring that NorthernStar implement measures to protect Steller sea lions and other pinnipeds from project related impacts. Environmental condition 30 requires that a Bubble Curtain Contingency Plan be finalized to protect aquatic species from noise impacts during pile driving for the terminal berth. The FWS and others have commented that the project has the potential to impact habitat for Columbia white tail deer that reside in the project vicinity, including populations that occupy portions of Puget Island and the islands that form the Julia Butler Hanson National Wildlife Refuge. To protect Columbian white tailed deer during their fawning season, condition 42 restricts pipeline construction through deer habitat from mileposts (MP) 4 to 19 between June 1 and July 16.

117. Condition 39 requires surveys for bald eagles prior to construction. Condition 41 requires that NorthernStar develop a *Migratory Bird Nest Avoidance Plan*, in consultation with the FWS and other appropriate agencies, to minimize impacts during the peak nesting season. Also, to ensure compliance with the ESA, we will not allow construction to begin until after we have completed formal consultations with the NMFS and FWS regarding potential project-related impacts on federally listed threatened or endangered species (environmental condition 43). Staff expects that the NMFS and FWS will provide us with their Biological Opinions in response to staff's submittal of its revised BA and EFH Assessment.

Land Use

118. There were concerns expressed by various commenters that the Bradwood Project would not adhere to local land use zoning requirements. In March 2008, Clatsop County accepted zoning changes requested by NorthernStar for its Bradwood Project. NorthernStar also filed an application with the Oregon Department of Land Conservation and Development (ODLCD) to obtain a determination of consistency with the Coast Zone Management Act (CZMA). We will not allow construction to begin until

NorthernStar can document concurrence from the ODLCD that the Bradwood Project is consistent with the CZMA (environmental condition 44).

119. Members of the public have expressed fear about the potential dangers presented by LNG marine traffic in the waterway, close to population centers, including the communities of Warrenton, Astoria, and Cathlamet. As explained in section 4.11.5 of the final EIS, and later in this Order, staff believes that the conditions outlined in the Coast Guard's Waterway Suitability Report (WSR) offer sufficient protections for public safety. The closest residences to the LNG terminal are about 0.5 mile away on Puget Island in Wahkiakum County, Washington. Impacts on these residences could include inconvenience caused by noise during construction, and visual impacts from terminal lighting during operation. We are requiring (in environmental condition 35) that NorthernStar consult with the NMFS, FWS, ODFW and other appropriate agencies and submit a final *Lighting Plan* to mitigate operational impacts. In addition, to reduce construction noise impacts on residences near the LNG terminal or along the pipeline route, we are requiring the submittal of a final *Blasting Management Plan* (environmental condition 36), a final *Dredging Noise Mitigation Plan* (condition 52), and a final *Noise Mitigation Plan for HDD Sites* (condition 54) for the review and approval of the Director of OEP.

120. Landowners expressed safety concerns about the proximity of the Bradwood pipeline to houses. As explained in sections 2.4, 2.8, and 4.11 of the final EIS, and later in this Order, the sendout pipeline would be designed to meet DOT and other standards, and would present minimal safety risk. Three homes have been identified within 50 feet of the construction right-of-way for the pipeline, but civil surveys along the entire pipeline route cannot be completed until after the Commission issues a certificate and NorthernStar can obtain access to parcels previously denied. We are requiring that NorthernStar file site-specific residential mitigation plans for houses in close proximity to the pipeline, for the review and approval of the Director of OEP prior to construction (environmental condition 45). In addition, we are requiring that NorthernStar consult with Cowlitz County to make certain the pipeline would not affect planned residential developments (condition 46), and consult with Columbia County so that the pipeline does not impact county improvements within the Port Westward Industrial Area (condition 47).

Socioeconomics

121. There have been comments that the project may impact parks, recreational facilities, tourism, commercial shipping, commercial fishing, and recreational fishing and boating. As explained in sections 4.7 and 4.8 of the final EIS, no project facilities would be located in, cross, or directly affect any parks or developed recreational facilities. Visitors to regional parks and recreational areas along the waterway will see LNG carriers for a few minutes while they pass through the viewshed. However, the lower

Columbia River is already used by about 2,000 commercial ships a year. As discussed in section 4.8.1.7 of the final EIS, there may be slight delays for commercial ships due to LNG marine traffic in the waterway. To lessen impacts on other commercial ships using the Columbia River channel, NorthernStar filed a proposal for navigation protocols. The Coast Guard's WSR contains conditions that address potential conflicts with other river users, including development of a Transit Management Plan, and restrictions on two-way traffic in the waterway at narrow meeting places. As explained in section 4.8.1.8 of the final EIS, the WSR also has conditions to protect cruise ships that dock at Astoria. Although conditions in the WSR establish a safety and security zone around LNG carriers in transit and at dock at the terminal, these zones would not halt recreational boat traffic from going up or down the river. Fishing and other recreational boats would merely move out of the way of an LNG carrier as it passes, much as they currently do when encountering deep-draft commercial ships in the channel. Nor would conditions in the WSR prohibit use of fishing grounds along the waterway.

122. Sections 4.8.2.4 and 4.8.3.4 of the final EIS discuss economic benefits that may result from the Bradwood Project. NorthernStar estimated that an average of 331 workers would be temporarily employed during the three years it takes to construct the LNG terminal, 133 workers would be temporarily employed on average during construction of the pipeline, and operation of the LNG terminal would permanently employ a staff of about 65 people. Total payroll and expenditures during construction of the LNG terminal would be \$600 million, while construction of the pipeline would generate \$126 million in total payroll and expenses. NorthernStar estimated it would pay about \$7.8 million annually in property taxes during operation of the LNG terminal.

Cultural Resources

123. NorthernStar had cultural resources consultants conduct archaeological surveys of 28 acres at the LNG terminal and along about 25 miles of the pipeline route. These surveys resulted in the identification of two resources (the Lewis and Clark National Historic Trail [LCNHT] and Astoria and Columbia River Railroad [ACRR]) that may qualify for nomination to the National Register of Historic Places (NRHP). However, we and the Oregon State Historic Preservation Officer (SHPO) agree that the Bradwood Project would have no adverse effects on the LCNHT and ACRR. Because NorthernStar could not obtain access to all lands along the pipeline, we have not yet completed compliance with National Historic Preservation Act (NHPA). Therefore, in accordance with environmental condition 52 of this order, we will not allow construction to commence until NorthernStar files all required cultural resources survey and evaluation reports and treatment plans; provides copies of the comments from the Oregon and Washington SHPOs on all reports and plans; the ACHP has been given an opportunity to comment if any properties listed or eligible for listing on the NRHP would be adversely

effected; and the Director of OEP reviews and approves all reports and plans and notifies NorthernStar that treatment measures can be implemented or construction can begin.

Air Quality and Noise

124. We received several comments challenging the conclusions that the air quality emissions from the project would not be regionally significant. The comments are critical of the EIS's technical analysis of air quality impacts. These include a criticism of the basis used for determining significance, and technical details related to the air quality model used to determine the air quality impacts. Staff uses the National Ambient Air Quality Standards to determine impact. These were developed by the U.S. Environmental Protection Agency (EPA) precisely for the protection of public health and welfare.

125. Operation of the proposed LNG terminal would result in air emissions from stationary equipment (submerged combustion vaporizers and emergency engines), LNG carriers, and tugs. Based upon the modeling provided by NorthernStar, construction and operational emissions from the LNG terminal and pipeline would not have a significant effect on regional air quality.

126. We recognize that noise would be generated during construction of the pipeline and during construction and operation of the LNG terminal. In most areas, the increase in noise during construction would be localized, temporary, and limited primarily to daylight hours. However, noise associated with dredging operations could occur up to 24 hours per day, 7 days per week for a period of approximately 2 months. NorthernStar would incorporate noise attenuation measures during construction and operation to minimize impacts on nearby noise-sensitive areas and meet the FERC and local requirements. We are including environmental conditions requiring NorthernStar to provide plans to mitigate noise from construction and operation of the facilities.

Technical Design Review

127. As part of its application and in response to the FERC staff's data requests, NorthernStar provided a front-end engineering design (FEED) for the proposed project. The FEED and specifications submitted for the proposed facilities to date are considered to be preliminary but would be the basis for any detailed design to follow. Although preliminary, this filed information provides an adequate basis to evaluate the safety and reliability of the proposed project. As discussed in section 4.11.2 of the final EIS, FERC staff conducted a technical review of the FEED in order to assess the design and operational measures for addressing potential events which could create an off-site hazard and impact public safety.

128. As discussed in section 4.11.2 of the final EIS, the evaluation resulted in recommended design changes in the following areas: hazard detection and hazard control, instrumentation redundancy, materials and specifications, incident reporting conditions, and additional valves, relief systems, and procedures to improve the safety and reliability of the facility. Environmental conditions 71 to 109 ensure that the LNG terminal would be constructed and operated in a manner that does not impact public safety. Information detailing compliance with these conditions must be filed for review and approval by OEP.

Waterway Suitability

129. The Coast Guard reviewed the maritime aspects of the project and provided the FERC with a preliminary determination on the suitability of the waterway for LNG vessel traffic. As part of this review process, the Coast Guard used criteria developed by the Department of Energy / Sandia National Laboratories to define the outer limits of the hazard zones for assessing potential risks from LNG marine traffic associated with the proposal. These “Zones of Concern” provide guidance to the Coast Guard in developing the operating restrictions for LNG carrier movements in the waterway, as well as in establishing potential impact areas for emergency response and evacuation planning.

130. As discussed in sections 4.7.1.2, 4.8.1.1, and 4.11.5.3 of the final EIS, communities located within the Zones of Concern along the Washington side of the waterway include portions of Pillar Rock, Rockland, and Bayview that are overlapped by Zone 1; Altoona, Brookfield, and Skamokawa in Zone 2; and portions of Pigeon Bluff and Cathlamet in Zone 3. The western one-third of Puget Island is within the Zones of Concern, with about 22 structures overlapped by Zone 1, about 52 structures within Zone 2, and additional homes and farm areas in Zone 3. On the Oregon side of the waterway, in Clatsop County, waterfront portions of the communities of Hammond, Warrenton, and Astoria are overlapped by Zone 1; other portions of Warrenton and Astoria are in Zone 2; and parts of Warrenton, Astoria, and Clifton are in Zone 3.

131. The Coast Guard, with input from the Area Maritime Security Committee, local law enforcement, and emergency response organizations, reviewed NorthernStar’s proposal to assess the navigation safety and maritime security risks posed by LNG marine traffic, and the measures needed to responsibly manage these security risks. In its WSR, the Coast Guard has advised the FERC that, to make the Columbia River suitable for the LNG marine traffic associated with the Bradwood Project, specific risk mitigation measures are necessary. These measures are further detailed in the Appendix G of the final EIS and include, among others, operational conditions related to: safety/security zones for the LNG vessel transit and the LNG facility dock; development of a Coast Guard-approved Facility Security Plan; use of safety measures such as security boardings, waterway monitoring, shoreline patrols and vessel escorts; use of one-way traffic along sections of the waterway; annual Coast Guard inspections of LNG vessel

and facilities; required tug escorts for LNG carriers; and implementation of a Coast Guard-approved LNG Vessel Transit Management Plan.

132. In addition, the WSR recommends additional facilities and infrastructure to make the waterway suitable for LNG marine traffic. The Coast Guard consulted with a variety of stakeholders, including state and local emergency responders, Marine Pilots, towing industry representatives, members of the Port Waterway Safety Committee, and the Area Maritime Security Committee to preliminarily identify the additional resources, public and/or private, that would be needed to implement prevention and mitigation strategies necessary for LNG operations. These measures include: upgrades to navigational aids; installation of systems which report real-time river and traffic conditions; augmentation of shoreside firefighting capabilities; development of regional communication plans for responders and notification systems for the public; and increased training to first responders.

133. As the Coast Guard's determination in the WSR is contingent on the availability of Coast Guard, as well as other safety and security resources, to implement the additional mitigation measures, environmental condition 105 requires that NorthernStar ensure that the facility and any LNG vessel transiting to and from the facility comply with all requirements set forth by the Coast Guard, including all risk mitigation measures recommended in the WSR.

State Safety Advisory Report

134. In accordance with the NGA, as modified by the Energy Policy Act of 2005, the governor of Oregon designated the ODE as the state agency that the FERC should consult with on safety and siting matters for the Bradwood Project. In its Safety Advisory Report to the Commission, the ODE addressed state and local considerations for the project and provided comments from the Columbia River Estuary Taskforce, Clatsop County, and the Cities of Astoria and Warrenton. The ODE identified concerns regarding exclusion zone siting requirements and emergency planning and response. The ODE's Safety Advisory Report, and staff's responses to it, were included in Appendix J of the final EIS.

135. The radiant heat and flammable vapor dispersion exclusion zones required by federal regulations to protect the off-site public were examined by FERC staff. The exclusion zones associated with the proposed terminal site would be in compliance with DOT regulations at 49 C.F.R.193.

136. In addition to the ODE, a number of organizations and individuals also commented on the need to consider emergency response procedures and expressed concern that the local community would have to bear some of the cost of ensuring the security and emergency management of the LNG facility and the LNG vessels while in transit and unloading at the berth.

137. As stated in the section 4.11.6 of the final EIS, NorthernStar submitted a draft ERP to the FERC for review. From staff's review of the draft ERP, additional effort is required by NorthernStar in development of both emergency response procedures and the plan to cover the costs of state and local resources responsible for security and safety; and documentation of consultation and coordination with the appropriate state and local agencies and Coast Guard in developing the plan.

138. In accordance with the Energy Policy Act of 2005, environmental condition 77 requires NorthernStar to develop the ERP in coordination with the Coast Guard, local fire and police departments, emergency responders, and other applicable agencies. As the ERP must be reviewed and approved prior to any project-related construction, staff will ensure that appropriate state and local agencies have been involved in preparing the plan and that the Coast Guard has been consulted and concurs. In situations where resource gaps are identified, the Cost Sharing Plan required by environmental condition 78 must identify the mechanisms for funding any capital costs associated with any necessary security/emergency management equipment and personnel base. In the absence of appropriate security/emergency response resources or funding, the ERP and the Cost Sharing Plan could not be approved and project construction would not be allowed.

E. Comments Received after the Final EIS was Issued

139. As of August 4, 2008, we received comments on the final EIS from 13 individuals and government agencies⁵⁸ as well as comments from five members of Congress.⁵⁹ The comments to the final EIS are discussed below.

⁵⁸ The commenters are: the Association of Lower Columbia River Flood Control Districts (Flood Control Districts) filed June 25, 2008; the U.S. Department of the Interior National Park Service (NPS) filed July 2, 2008; Sandra Davis filed July 7 and 9, 2008; Carolyn Eady filed July 8, 2008; R. Duncan MacKenzie filed July 8, 2008; Columbia Riverkeeper filed July 10 and August 1, 2008; the Governor of Oregon filed July 11, 2008; the Willapa Hills Audubon Society filed July 11, 2008; the NMFS filed July 14, 2008; the U.S. Environmental Protection Agency (EPA) filed July 15, 2008; the Columbia River Inter-Tribal Fish Commission (CRITFC) filed July 25, 2008 and August 1, 2008; the Nez Perce Tribe filed August 1, 2008; and the Washington Department of Ecology (WDE) filed August 4, 2008. We also received other letters commenting on the project that did not raise specific issues about the final EIS and therefore are not addressed in this order.

⁵⁹ U.S. Representative David Wu filed letters on June 5 and 24, 2008, and July 24, 2008. In a letter signed by U.S. Representatives David Wu, Peter DeFazio and Darlene Hooley the Oregon Congressional Delegation submitted comments on June 12, 2002.

(continued)

140. The Governor of Oregon's comment letter also conveyed comments on the final EIS from Oregon state agencies. We disagree with the Governor's contention that the EIS is deficient. In fact, the EIS complies with the Council on Environmental Quality's regulations for implementing the National Environmental Policy Act. There is no basis on which to issue a supplement to the EIS, as requested by the Governor and others⁶⁰ because the project did not substantially change between the draft EIS and the final EIS as they contend. The pipeline route shown in the draft EIS is exactly the same as the route illustrated in the final EIS (see Appendix B of the EIS). There is no need to examine the impact of an open rack regasification system as requested because NorthernStar proposes to use submerged combustion vaporizers (SCV) at its LNG terminal and the potential impacts resulting from operation of the SCVs are addressed in sections 4.3.2.3 and 4.10.1.2 of the final EIS. There was no substantial change between the draft EIS and final EIS that would require further examination of the impact of depositing dredge soils entirely at the Bradwood site. Section 3.1.9.2 of the draft EIS discussed the alternative of placing all of all dredged materials resulting from creation of the turning basin in the Columbia River at the LNG terminal site if the Wahkiakum County Sand Pit is not available, and the final EIS addressed the impacts of depositing all dredge spoil at the terminal in sections 4.2.2.2 and 4.3.2.3. Finally, in response to concerns regarding the intake of water by LNG carriers at the terminal berth, this order contains a condition requiring the screening of intake water to prevent the entrainment or entrapment of juvenile fish.

141. We found no new environmental issues raised by Oregon state agencies, WDE, NPS, Columbia Riverkeeper, and the CRITFC that were not previously addressed in the final EIS. In Appendix K of the final EIS, staff responded to specific comments on the

U.S. Representative Brian Baird filed a letter on June 20, 2008, U.S. Senator Ron Wyden filed a letter on August 4, 2008. Representatives Wu, DeFazio, Hooley and Baird all request that the Commission grant sufficient time to consider the application. Representative Wu requests the Commission to delay issuing an order until after all the necessary permits have been issued by Oregon. Senator Wyden comments that the Commission has not sufficiently analyzed the need for and alternatives to the Bradwood Project.

⁶⁰ The Nez Perce Tribe, NPS, and Columbia Riverkeeper also request that the Commission issue a supplemental EIS. However, for the reasons stated in this paragraph and elsewhere in this order, we do not believe that a supplemental EIS is necessary. We note that the NMFS states that it agrees with the Commission that the proposed action has not changed in concept from the original proposal and the EPA comments that the project described in the final EIS is generally consistent with the project detailed in the August 2007 draft EIS.

draft EIS filed by Oregon state agencies (SA1 and SA7), WDE (SA4), NPS (FA-4), CRITFC (NA-2), Columbia Riverkeeper (CO-11), and the public. In particular, the May 2008 ODE report mentioned by the Governor, and the Willapa Hills Audubon Society was discussed in sections 1.1, 3.1.1.3, and 4.10.1.4 of the final EIS.

142. In response to Senator Wyden's concern that the Commission did not examine the alternatives to the Bradwood Project, we note that Section 3 of the final EIS presented a range of alternatives and discussed which are reasonable or feasible and could achieve the objectives of the Bradwood Project. As explained in section 3.1.2.2 of the final EIS, we consider the Palomar pipeline to be an independent project. Despite the contentions of Columbia Riverkeeper and others⁶¹ even if the Palomar project is not authorized, the Bradwood Project could still go forward because it has its own sendout pipeline and therefore is not dependent upon the Palomar pipeline. We intend to produce a separate, stand-alone EIS for the Palomar pipeline after Palomar files its application with the Commission.⁶²

143. The Nez Perce Tribe raise concerns about potential project impacts on threatened and endangered fish species and the effect of the project on the Tribe's treaty-reserved rights. As documented in section 4.9.3 of the final EIS, the Commission sent copies of the NOI issued September 13, 2005 to 10 Indian tribes that we determined may attach religious or cultural significance to sites in the region. In response to that notice the Nez Perce Tribe filed comments on October 17, 2005. The Commission issued a Notice of Application on June 15, 2006, and the Nez Perce was the only Indian tribe to file a motion to intervene. The Nez Perce Tribe commented on the draft EIS in a December 21, 2007 filing, and staff addressed the Tribe's comments in Appendix K of the final EIS (responses to comments NA-1). As discussed in section 4.9.3 of the EIS, tribal representatives were invited to attend interagency meetings about the project. In addition, staff made a presentation to members of the Nez Perce Tribal Council at a meeting of the CRITFC.

144. The Nez Perce Tribe is a federally-recognized tribe which entered into a treaty with the United States government.⁶³ While the project is not located on tribal lands, the

⁶¹ The NMFS and EPA also imply that the Bradwood Project and the Palomar pipeline are interrelated activities.

⁶² The Palomar project is currently being reviewed under our pre-filing process in Docket No. PF07-13-000.

⁶³ See Treaty with the Nez Perce, Treaty of June 11, 1855 at Camp Stevens, 12 Stat. 957.

1855 treaty provides for fishing by tribal members at usual and customary places which, for the Nez Perce Tribe includes fishing in the Columbia River upstream from the project. The Commission recognizes the unique relationship between the United States government and Indian tribes as defined by treaties, statutes, and judicial decisions. In keeping with our *Policy Statement on Consultations with Indian Tribes in Commission Proceedings* we considered whether our decision would have the potential to adversely affect Indian tribal trust resources. Project-related impacts on fish considered important to the Nez Perce Tribe are addressed in sections 4.5 and 4.6 of the final EIS. We believe that the mitigation measures proposed by NorthernStar, together with the environmental conditions appended to this order, will reduce potential impacts on the lower Columbia River estuary and the aquatic resources that inhabit the estuary to less than significant levels. This project would not substantially degrade critical habitat for salmon, and would not have adverse impacts on the Tribe's treaty-reserved fishing rights.

145. We disagree with the Nez Perce Tribe and others⁶⁴ that all environmental studies or mitigation plans must be completed prior to issuing the final EIS or the Commission making a decision about the project. As described above, it is Commission practice to issue an order containing environmental conditions to ensure compliance with certain applicable laws, such as the CZMA, ESA, and the NHPA. We will not allow construction to commence until compliance has been documented. Environmental condition 43 states that construction cannot begin until after we complete formal consultations with the NMFS and FWS under the ESA; environmental condition 44 states that construction cannot begin until after NorthernStar documents that the ODLCD has determined that the Bradwood Project is consistent with the CZMA; and environmental condition 51 states that construction cannot begin until NorthernStar has completed certain tasks that would comply with the NHPA in accordance with the ACHP's implementing regulations at 36 CFR 800. We also note that NorthernStar could not conduct certain required biological, archaeological, and civil surveys because some private landowners along portions of the proposed pipeline route denied NorthernStar's access to their property. Thus NorthernStar will only be able to conduct the necessary surveys after it receives the certificate of public convenience and necessity authorizing its pipeline in this order and uses its right of eminent domain granted to certificate holders under section 7(h) of the NGA to acquire easements and gain access to those properties.

⁶⁴ The Governor of Oregon, Representative Wu, NPS, CRITFC, and WDE also argue that the Commission should not make a decision about this project until after permits have been issued by various Oregon state agencies according to federally delegated responsibilities under the Clean Water Act (CWA), Clean Air Act (CAA), and Coastal Zone Management Act (CZMA).

146. The Flood Control Districts state that the final EIS did not specifically mention the Flood Control Act. Under the Flood Control Act, work performed within a right-of-way for a levee covered under the Act should be done according to a permit obtained from the COE. The final EIS addressed comments made by the Flood Control Districts on the draft EIS in staff's response to comment PM1-32 in Appendix K. Further, section 4.3.2.4 of the final EIS points out that NorthernStar would construct its pipeline under levees in accordance with the Flood Control Districts' easement requirements and in accordance with COE guidance. Section 1.3 of the final EIS indicated that NorthernStar would need to obtain appropriate permits from the COE.

147. The NPS, in a letter dated July 2, 2008, signed by Willie Taylor, Director of the Office of Environmental Policy and Compliance of the U.S. Department of the Interior, mistakenly believes that the final EIS did not address potential project-related impacts from proposed improvements to Clifton Road, Bradwood Road, and the construction workers parking lot at the Taylorville intersection. The road improvements are discussed in sections 2.4.1.1, 4.7.2.2, and 4.8.3.7, and the workers parking lot is discussed in section 4.2.2.1 of the final EIS. As mentioned in section 4.7.2.2 of the final EIS, the March 2008 Clatsop County land use decision had conditions that NorthernStar agreed to fulfill, including signage along Taylorville Road, and making improvements to Clifton and Bradwood Roads consistent with county requirements. Environmental condition 19 of this Order requires that NorthernStar file additional information about improvements to Clifton and Bradwood Roads and the workers parking lot for the review and approval of the Director of OEP prior to construction. In addition, environmental condition 50 requires NorthernStar to file a final *Traffic Management Plan* prior to construction, for the review and approval of the Director of OEP, which documents consultations with the Oregon and Washington Departments of Transportation and appropriate local agencies, and includes the design for improvements along Highway 30 and Clifton Road.

148. The NPS states concerns about potential project impacts on the Lewis and Clark National Historic Trail (LCNHT). In accordance with the ACHP's regulations for implementing the NHPA at 36 C.F.R. 800, it is the Commission, as lead federal agency, that is responsible for making determinations of NRHP eligibility and project effects, in consultation with the SHPOs. As discussed in section 4.9 of the final EIS, we consulted with the Oregon and Washington SHPOs. The Oregon SHPO indicated that the Bradwood Project would have no adverse effects on the LCNHT, and we concur.

149. The NPS is also concerned about visual impacts for recreational users of the Lower Columbia River Water Trail. The final EIS addresses impacts on recreation in sections 4.7 and 4.8. The visual simulations discussed in section 4.7.2.7 of the final EIS include views of the LNG terminal that are similar to what would be seen by users of the Lower Columbia River Water Trail. Our analysis indicates that those views show that the LNG terminal would not have significant visual impacts on recreational visitors along

the Columbia River. However, to reduce visual impacts on residents of Puget Island, this Order includes environmental condition 36, requiring NorthernStar to file a final *Lighting Plan* for the review and approval of the Director of OEP prior to construction.

150. In her comments, Carolyn Eady expresses a number of concerns. Her concerns about seismic issues are addressed in section 4.1 of our final EIS and in environmental conditions 16 and 17 and 57 through 70 in Appendix B of this Order. She also raises the issue of tsunami hazards to LNG tankers enroute to the terminal site. As with other matters relating solely to LNG carrier operations, any measures or protocols deemed necessary for LNG carrier response to tsunamis would be imposed by the Coast Guard at the appropriate time. Environmental condition 105 requires NorthernStar to comply with all requirements set forth by the Coast Guard. Her concerns about critical fish habitat and mitigation of impacts are addressed in sections 4.3, 4.4, 4.5 and 4.6 of our final EIS and in environmental conditions 25, 29, 30, 31, 32, 33, and 34.

151. Carolyn Eady and R. Duncan MacKenzie raise issues related to air quality. The final EIS addressed air emissions in section 4.10. Mr. MacKenzie states that the Air Contamination Discharge Permit prepared for the ODEQ does not match the analysis contained in the final EIS. He contends that in the ODEQ permit air emissions are based on a worst case potential of all 7 SCVs operating at full capacity continuously for the entire year, while NorthernStar's estimated carbon dioxide (CO₂) emissions are based upon 6 SCVs operating at the 1Bscf/d sendout figure, not at their full capacity. We believe that for permitting purposes it is an accepted practice to estimate worst case emissions, and it is also appropriate to estimate the unregulated CO₂ emissions reflective of actual planned operation of the facility.

152. Mr. MacKenzie also notes that the rates of CO₂ emissions in the final EIS at table 4.10.1-8 are incorrect. NorthernStar transposed the numbers in the tons per year (tpy) column with the pounds per hour (lb/hr) column. Further, NorthernStar miscalculated the hourly rate of CO₂ emissions, listed as 65,500 lb/hr, when the correct total should be 71,728 lb/hr.

153. In her comments Sandra Davis misinterprets the data presented in section 4.3.2.4 of the final EIS about HDD crossings along the pipeline route. According to table 4.3.2-6 of the EIS, NorthernStar proposes to use HDDs at six locations in Oregon and nine locations in Washington. When adding the proposed length of the HDDs listed in Appendix F of the final EIS, about 17,952 feet of pipeline route in Oregon would be crossed using HDDs, and 14,256 feet in Washington. NorthernStar's HDD Contingency Plan, referenced in the final EIS (page 4-95), discussed three kinds of HDD failures: pilot hole failure, hole reaming failure, and pullback failure. After mentioning contingencies for each of these stages, the plan indicated that in the event of a total HDD failure the Commission would be notified and approval sought for an alternative crossing method.

154. Ms. Davis raises concerns about NorthernStar's ERP and the proposed water screening system for LNG carriers at the terminal berth. The Cost-Sharing component of NorthernStar's draft ERP is discussed in sections 4.8.1.6 and 4.11.6 of the final EIS. We agree with numerous parties⁶⁵ that have commented on the record that NorthernStar's draft ERP is in need of revision. Therefore, in environmental condition 77, we are requiring that, prior to initial site preparation, NorthernStar file a final ERP for review and approval of the Director of OEP, and in environmental condition 78 we require that the ERP include a Cost-Sharing Plan developed in consultations with local first responder agencies. On July 7, 2008, NorthernStar filed performance standards for the monitoring of the temperature of engine cooling water discharged from LNG carriers at the terminal berth. Environmental condition 33 requires the screening of all water taken in by LNG carriers for ballast and engine cooling.

155. Ms. Davis also comments on burning timber during clearing of the pipeline right-of-way; NorthernStar's vegetation maintenance schedule; the use of Environmental Inspectors (EIs) during construction; the crossing of steep slopes and waterbodies; and NorthernStar's decommissioning plan. General pipeline construction techniques, including the clearing of the pipeline right-of-way, are discussed in section 2.4.2.1 of the final EIS. Sections 2.4.2.2 and 4.1.4 of the final EIS address how the pipeline would cross steep side slopes. Section 4.3.2.4 of the final EIS discusses potential impacts from constructing the pipeline across streams. Environmental condition 45 requires that NorthernStar file a plan prior to construction, for the review and approval of the Director of OEP, to mitigate impacts on domestic water systems. With regard to maintenance activities, NorthernStar would follow the measures outlined in the Commission staff's Plan, as required by environmental condition 22. The staff's Plan states that routine vegetation maintenance clearance shall not be done more frequently than every three years. However, a 10-foot-wide corridor over the pipeline may be maintained in an herbaceous state annually. No vegetation maintenance can be performed between April 15 and August 1. Ms. Davis contends that one of the owners of NorthernStar has been designated as an EI. This is not possible, because it is too early in the process to select EIs. NorthernStar will provide data about EIs in its *Implementation Plan* which is due at least 60 days prior to construction in accordance with environmental condition 7 of this Order. As stated in section 2.9 of the final EIS, NorthernStar has submitted a decommissioning plan to Clatsop County. NorthernStar may not abandon its facilities without filing an application with the Commission, for our review and approval. At that time, the Commission would consider the proposal for abandonment, including a separate environmental review.

⁶⁵ See comments filed on June 4, 2008 and May 20, 2008, respectively, by the City of Astoria and the City of Warrenton.

156. The Willapa Hills Audubon Society raises questions about the purpose and need for the Project. We discuss the need for the Bradwood Project in this order. The CEQ regulations at 40 C.F.R. 1502.12 require that an EIS only provide a brief explanation of the underlying purpose and need for a project, as can be found in section 1.1 of our final EIS.

F. Environmental Conclusions

157. The Commission has reviewed the information and analysis contained in the final EIS regarding the potential environmental effect of the project. Based on our consideration of this information, we agree with the conclusions presented in the final EIS and find that the Bradwood Project is environmentally acceptable, if the project is constructed and operated in accordance with the recommended environmental mitigation measures in Appendix B to this order. Thus, we are including the environmental mitigation measures recommended in the final EIS as conditions to the authorizations granted by this order for the Bradwood Project.

158. Any state or local permits issued with respect to the jurisdictional facilities authorized herein must be consistent with the conditions of this certificate. We encourage cooperation between interstate pipelines and local authorities. This does not mean, however, that state and local agencies, through application of state or local laws, may prohibit or unreasonably delay the construction or operation of facilities approved by this Commission.⁶⁶

VII. Conclusion

159. For the reasons set forth herein, and subject to the conditions set forth below, we find that Bradwood Landing's LNG import terminal is not inconsistent with the public interest under section 3. We further find, subject to the conditions below, that NorthernStar Energy's Bradwood Pipeline is required by the public convenience and necessity under section 7(c). Thus we will grant the requested authorizations to Bradwood Landing and NorthernStar Energy.

160. At a hearing held on September 18, 2008, the Commission, on its own motion, received and made part of the record in these proceedings all evidence, including the application and exhibits thereto, submitted in support of the authorizations sought herein, and upon consideration of the record,

⁶⁶ See, e.g., *Schneidewind v. ANR Pipeline Co.*, 485 U.S. 293 (1988); *National Fuel Gas Supply v. Public Service Comm'n.*, 894 F.2d 571 (2d Cir. 1990); and *Iroquois Gas Transmission System, L.P.*, 52 FERC ¶ 61,091 (1990) and 59 FERC ¶ 61,094 (1992).

The Commission orders:

(A) In Docket No. CP05-365-000, Bradwood Landing is authorized under section 3 of the NGA to site, construct, and operate its LNG terminal in Clatsop County, Oregon, as more fully described in this order and in the application.

(B) In Docket No. CP06-366-000, a certificate of public convenience and necessity is issued to NorthernStar Energy authorizing it to construct and operate 18.9 miles of 36-inch diameter pipeline and 17.4 miles of 30-inch diameter pipeline, as more fully described in the order and in the application.

(C) In Docket No. CP06-376-000, a blanket construction certificate is issued to NorthernStar Energy under subpart F of Part 157.

(D) In Docket No. CP06-377-000, a blanket transportation certificate is issued to NorthernStar Energy under subpart G of Part 284.

(E) The certificate issued in Ordering Paragraph (B) above is conditioned on NorthernStar Energy's compliance with all of the applicable regulations under the NGA, particularly the general terms and conditions set forth in Parts 154, 157 and 284, and paragraphs (a), (c), (e), and (f) of section 157.20 of the regulations.

(F) The construction of the proposed facilities shall be completed and made available for service within five years of the date of this order in accordance with section 157.20(b) of the Commission's regulations.

(G) NorthernStar Energy's initial rates and proposed tariff are approved, as conditioned and modified in this order.

(H) NorthernStar Energy shall file actual tariff sheets consistent with the modifications in this order not less than 30 days and not more than 60 days prior to commencing service.

(I) Within three years after its in-service date, NorthernStar Energy shall make a filing to justify its existing cost-based firm and interruptible recourse rates. In its filing, the projected units of service shall be no lower than those upon which NorthernStar Energy's initial rates are based. The cost and revenue study shall be in the form specified in section 154.313 of the regulations to update cost-of-service data. In the alternative, in lieu of such filing, NorthernStar Energy may make a section 4 filing to propose alternative rates to be effective no later than three years after the in-service date for its proposed facilities.

(J) Bradwood Landing and NorthernStar Energy shall comply with the environmental conditions set forth in Appendix B to this order.

(K) Bradwood Landing and NorthernStar Energy shall notify the Commission's environmental staff by telephone, e-mail, and/or facsimile of any environmental non-compliance identified by other federal, state, or local agencies on the same day that such agency notifies Bradwood Landing or NorthernStar Energy. Bradwood Landing or NorthernStar Energy shall file written confirmation of such notification with the Secretary within 24 hours.

(L) The untimely motions to intervene are granted.

By the Commission. Commissioner Wellinghoff dissenting with a separate statement attached.

(S E A L)

Kimberly D. Bose,
Secretary.

Appendix A

Interventions in Docket Nos. CP06-365-000, CP06-366-000, CP06-376-000, and CP06-377-000

City of Astoria, Oregon
City of Clatskanie, Oregon
City of Warrenton, Oregon
Clatsop County, Oregon
Columbia County, Oregon and the Columbia County Development Agency
Columbia River Inter-Tribal Fish Commission⁶⁷
Columbia RiverKeeper⁶⁸
Cowlitz County, Washington
Gas Transmission Northwest Corporation
Greenwood Resources, Inc.
Knappa-Svensen-Burnside Rural Fire Protection District, Astoria, Oregon
Lawrence N. and Wanda B. Derby
National Marine Fisheries Service
Nez Perce Tribe
Northwest Industrial Gas Users
Northwest Natural Gas Company
Oregon Department of Energy
Port of Astoria
Port of Kalama
Port of Vancouver, Washington
Port Westward LNG, LLC
POSH of St. Helens
Richard and Judith Peters and James Mitchell
Robert and Gayle Kiser and Sandra M. Davis
Salmon for All
Southwest Gas Corporation
State of Washington, Department of Ecology

⁶⁷ Member tribes of the Commission are: Nez Perce Tribe, Confederated Tribes of the Umatilla Indian Reservation, Confederated Tribes of the Warm Springs Reservation of Oregon, and the Yakama Nation.

⁶⁸ Columbia Riverkeeper is joined in its motion to intervene by Landowners and Citizens for a Safe Community, Rivervision, Wahkiakum Friends of the River, Friends of Living Oregon Waters, Willapa Hills Audubon Society, Fisherman's Protective Union, Peter Huhtala and Christian Bock.

State of Washington Department of Fish and Wildlife
State of Washington Department of Natural Resources
Stephen C. Fulton
The William and Doris Dragich Trust
United States Department of the Interior
Wahkiakum County, Washington
Washington Utilities and Transportation Commission

Appendix B
Environmental Conditions for the Bradwood Landing Project

1. NorthernStar shall follow the construction procedures and mitigation measures described in its applications, supplemental filings (including responses to staff data requests), and as identified in the final Environmental Impact Statement (EIS), unless modified by the Commission's Order. NorthernStar must:
 - a. request any modification to these procedures, measures, or conditions in a filing with the Secretary of the Commission (Secretary);
 - b. justify each modification relative to site-specific conditions;
 - c. explain how that modification provides an equal or greater level of environmental protection than the original measure; and
 - d. receive approval in writing from the FERC's Director of the Office of Energy Projects (OEP) **before using that modification.**

2. For pipeline facilities, the Director of OEP has delegated authority to take whatever steps are necessary to ensure the protection of all environmental resources **during construction and operation** of the Bradwood Project. This authority shall allow:
 - a. the modification of conditions of the Commission's Order; and
 - b. the design and implementation of any additional measures deemed necessary (including stop work authority) to assure continued compliance with the intent of the environmental conditions as well as the avoidance or mitigation of adverse environmental impact resulting from project construction and operation.

3. For LNG facilities, the Director of OEP has delegated authority to take all steps necessary to ensure the protection of life, health, property, and the environment **during construction and operation** of the project. This authority shall include:
 - a. stop-work authority and authority to cease operation; and
 - b. the design and implementation of any additional measures deemed necessary to assure continued compliance with the intent of the conditions of the Commission's Order.

4. **Before any construction** for the LNG terminal and the pipeline, NorthernStar shall file an affirmative statement with the Secretary, certified by a senior company official, that all company personnel, Environmental Inspectors (EIs), and contractor personnel will be informed of the EI's authority and have been or will be trained on the implementation of the environmental mitigation measures appropriate to their jobs before becoming involved with construction and restoration activities.

5. The authorized facility locations shall be as shown in the final EIS, as supplemented by filed alignment sheets, and shall include all of the staff's recommended facility locations. **As soon as they are available, and before the start of construction** for the LNG terminal and the pipeline, NorthernStar shall file with the Secretary any revised detailed survey alignment maps/sheets at a scale not smaller than 1:6,000 with station positions for all facilities approved by the Commission's Order. All requests for modifications of environmental conditions of the Commission's Order or site-specific clearances must be written and must reference locations designated on these alignment maps/sheets.
6. NorthernStar shall file with the Secretary detailed alignment maps/sheets and aerial photographs at a scale not smaller than 1:6,000 identifying all route realignments or facility relocations, and staging areas, pipe storage yards, new access roads, and other areas that would be used or disturbed and have not been previously identified in filings with the Secretary. Approval for each of these areas must be explicitly requested in writing. For each area, the request must include a description of the existing land use/cover type, and documentation of landowner approval, whether any cultural resources or federally listed threatened or endangered species would be affected, and whether any other environmentally sensitive areas are within or abutting the area. All areas shall be clearly identified on the maps/sheets/aerial photographs. Each area must be approved in writing by the Director of OEP **before construction** in or near that area.

This requirement does not apply to extra workspace allowed by the FERC staff's *Upland Erosion Control, Revegetation, and Maintenance Plan* (FERC's Plan), minor field realignments per landowner needs, and requirements which do not affect other landowners or sensitive environmental areas such as wetlands.

Examples of alterations requiring approval include all route realignments and facility location changes resulting from:

- a. implementation of cultural resources mitigation measures;
 - b. implementation of endangered, threatened, or special concern species mitigation measures;
 - c. recommendations by state regulatory authorities; and
 - d. agreements with individual landowners that affect other landowners or could affect sensitive environmental areas.
7. **At least 60 days before construction** of the LNG terminal and the pipeline begins, NorthernStar shall file an initial Implementation Plan (IP) with the Secretary for review and written approval by the Director of OEP describing how NorthernStar will implement the mitigation measures required by the

Commission's Order. NorthernStar must file revisions to the plan as schedules change. The IP shall identify:

- a. how NorthernStar will incorporate these requirements into the contract bid documents, construction contracts (especially penalty clauses and specifications), and construction drawings so that the mitigation required at each site is clear to onsite construction and inspection personnel;
 - b. the number of EIs assigned per spread, and how the company will ensure that sufficient personnel are available to implement the environmental mitigation;
 - c. company personnel, including EIs and contractors, who will receive copies of the appropriate material;
 - d. the training and instructions NorthernStar will give to all personnel involved with construction and restoration (initial and refresher training as the project progresses and personnel change), with the opportunity for OEP staff to participate in the training session(s);
 - e. the company personnel (if known) and specific portion of NorthernStar's organization having responsibility for compliance;
 - f. the procedures (including use of contract penalties) NorthernStar will follow if noncompliance occurs; and
 - g. for each discrete facility, a Gantt or PERT chart (or similar project scheduling diagram), and dates for:
 - i. the completion of all required surveys and reports;
 - ii. the mitigation training of onsite personnel;
 - iii. the start of construction; and
 - iv. the start and completion of restoration.
8. NorthernStar shall develop and implement an environmental complaint resolution procedure. The procedure shall provide landowners with clear and simple directions for identifying and resolving their environmental mitigation problems/concerns during construction of the project and restoration of the right-of-way. **Before construction** of the LNG terminal and the pipeline, NorthernStar shall mail the complaint procedures to each landowner whose property would be crossed by the project.
- a. In its letter to affected landowners, NorthernStar shall:
 - (1) provide a local contact that the landowners shall call first with their concerns; the letter shall indicate how soon a landowner shall expect a response;

- (2) instruct the landowners that, if they are not satisfied with the response, they shall call NorthernStar's Hotline; the letter shall indicate how soon to expect a response; and
 - (3) instruct the landowners that, if they are still not satisfied with the response from NorthernStar's Hotline, they shall contact the Commission's Enforcement Hotline at (888) 889-8030.
 - b. In addition, NorthernStar shall include in its weekly status report a copy of a table that contains the following information for each problem/concern:
 - (1) the date of the call;
 - (2) the identification number from the certificated alignment sheets of the affected property;
 - (3) the description of the problem/concern; and
 - (4) an explanation of how and when the problem was resolved, will be resolved, or why it has not been resolved.
9. NorthernStar shall employ at least one EI at the LNG terminal and one EI per pipeline spread. The EI shall be:
 - a. responsible for monitoring and ensuring compliance with all mitigation measures required by the Commission's Order and other grants, permits, certificates, or other authorizing documents;
 - b. responsible for evaluating the construction contractor's implementation of the environmental mitigation measures required in the contract (see condition 7 above) and any other authorizing document;
 - c. empowered to order correction of acts that violate the environmental conditions of the Commission's Order, and any other authorizing document;
 - d. responsible for documenting compliance with the environmental conditions of the Commission's Order, as well as any environmental conditions/permit requirements imposed by other federal, state, or local agencies; and
 - e. responsible for maintaining status reports.
10. NorthernStar shall file updated status reports prepared by the EI with the Secretary **on a weekly basis until all construction and restoration activities are complete**. On request, these status reports will also be provided to other federal and state agencies with permitting responsibilities. Status reports shall include:
 - a. the current construction status of the project, work planned for the following reporting period, and any schedule changes for stream crossings or work in other environmentally sensitive areas;

- b. a listing of all problems encountered and each instance of noncompliance observed by the EI(s) during the reporting period (both for the conditions imposed by the Commission and any environmental conditions/permit requirements imposed by other federal, state, or local agencies);
 - c. corrective actions implemented in response to all instances of noncompliance, and their cost;
 - d. the effectiveness of all corrective actions implemented;
 - e. a description of any landowner/resident complaints which may relate to compliance with the requirements of the Commission's Order, and the measures taken to satisfy their concerns; and
 - f. copies of any correspondence received by NorthernStar from other federal, state or local permitting agencies concerning instances of noncompliance, and NorthernStar's response.
11. NorthernStar must receive written authorization from the Director of OEP **before commencing service** from the project. Such authorization will only be granted following a determination that the LNG facility has been constructed in accordance with Commission approval and applicable standards, can be expected to operate safely as designed, and the rehabilitation and restoration of the right-of-way is proceeding satisfactorily.
12. **Within 30 days of placing the authorized facilities in service**, NorthernStar shall file an affirmative statement with the Secretary, certified by a senior company official:
 - a. that the facilities have been constructed in compliance with all applicable conditions, and that continuing activities will be consistent with all applicable conditions; or
 - b. identifying which of the conditions of the order NorthernStar has complied with or will comply with. This statement shall also identify any areas affected by the project where compliance measures were not properly implemented, if not previously identified in filed status reports, and the reason for noncompliance.
13. NorthernStar shall continue to consult with the U.S. Army Corps of Engineers (COE), National Marine Fisheries Service (NMFS), U.S. Fish and Wildlife Service (FWS), Oregon Department of Fish and Wildlife (ODFW), Oregon Department of State Lands (ODSL), Washington Department of Ecology (WDE), and other appropriate agencies to finalize its Compensatory Mitigation Plan. NorthernStar shall file the final Compensatory Mitigation Plan along with agency comments and appropriate approvals with the Secretary **prior to construction** of the LNG terminal and pipeline facilities.

14. **Prior to pipeline construction**, NorthernStar shall file with the Commission the following information on the nonjurisdictional lateral pipeline facilities:
 - a. final routing and design information, including maps depicting the location of the facilities;
 - b. documentation of consultations with the appropriate agencies and the status of federal, state, or local permits or approvals required for their construction; and
 - c. status and copies of agency clearances (or copies of any surveys and reports prepared) for wetlands, threatened and endangered species, and cultural resources.

15. NorthernStar shall develop and fund a third-party environmental monitoring program to be implemented **during construction** of the Bradwood Project. The program shall allow for on-site, third-party compliance monitors representing the FERC to be present full-time during all pipeline construction phases, and periodically during LNG terminal construction, to ascertain that the project is being built as outlined in this EIS, and in accordance with the environmental conditions of the Commission's Order. **Prior to construction**, NorthernStar shall file a plan describing the third-party environmental monitoring program with the Secretary for the review and written approval of the Director of OEP.

16. NorthernStar shall be required to implement the following peer review process:
 - a. **Prior to construction** of the LNG terminal and pipeline, NorthernStar shall retain a "Board of Consultants" (Board) composed of three or more qualified independent engineering consultants experienced in the critical disciplines of geotechnical, civil, structural, and mechanical engineering, to review the final design and to perform construction quality inspections of the civil and structural aspects of the project in accordance with the specifications contained in the FERC's Draft Seismic Design Guidelines and Data Submittal Requirements for LNG Facilities (FERC Seismic Guidelines) and other measures agreed to by NorthernStar.
 - b. NorthernStar shall file with the Secretary the names and qualifications of the Board members for approval by the Director of OEP.
 - c. The Board shall certify that all civil and structural detailed design calculations, analyses, and construction documents are in compliance with all applicable codes and standards, project-specific civil, structural, and mechanical design criteria, and other engineering requirements of the Order, including the FERC Seismic Guidelines. The Board shall further certify, based on construction inspections by the Board that all civil and structural construction of the terminal facilities is in conformance with the project construction documents. The Board shall also certify that all

procured equipment has been properly seismic qualified in conformance with the project-specific seismic qualification requirements, and the FERC Seismic Guidelines, that seismic detailing of structures has been properly implemented, and the pipeline has been designed to minimize the hazard of rupture due to ground instability.

- d. Among other things, the Board shall assess the adequacy of the following:
- final geotechnical investigations necessary to support all final foundation designs in satisfying the FERC Seismic Guidelines, and final pipeline routing/mitigation measures through geologically hazardous areas;
 - field tests and associated results used to verify ground improvement, pile driving, and all civil and structural construction;
 - selection and implementation of the final seismic design categorization of all structures, systems, and components of the LNG terminal in satisfying the FERC Seismic Design Guidelines;
 - proposed seismic recording instrumentation and shutdown alarms in satisfying the FERC Seismic Guidelines;
 - construction procedures and progress; and
 - continuous and/or periodic inspections made by the Board to ensure that the construction quality of all Seismic Category I, II, and III structures, systems, and components is acceptable.
- e. The Board shall meet as necessary to allow the timely progress of the final design approvals and construction of the project in accordance with NorthernStar's production of acceptable interim and final design data.
- f. Before each meeting, NorthernStar shall file the following material with the Commission and furnish copies to members of the Board, and other appropriate federal and/or state agencies at the request of the Director of OEP:
- i. a statement of the specific level of review the Board is expected to provide;
 - ii. an agenda for the meeting;
 - iii. a list of the items to be discussed;
 - iv. a discussion of significant events in the design and construction that have occurred since the previous Board meeting;
 - v. drawings of the design and construction features; and
 - vi. documentation of the details, calculations, and analyses of the design and construction features to be discussed.
- g. NorthernStar shall ensure that the Commission and the Board has sufficient time to review all pertinent materials before each meeting.

- h. **Within 30 days** of each Board meeting, NorthernStar shall file with the Commission copies of the Board's report and a statement of intent to comply with the Board's recommendations or a statement of a plan to resolve the issue(s). NorthernStar must provide detailed reasons for any recommendation of the Board not implemented.
 - i. The Board's review comments shall be submitted prior to or simultaneously with NorthernStar's request(s) for approval to proceed with any specific construction-related activities that may be required by the Order. The Director of OEP must approve in writing all requests to proceed with construction.
17. **Prior to commissioning** of the LNG terminal or commencing service through the pipeline, NorthernStar shall file the Board's final report, which shall contain a statement indicating the Board's opinion with respect to the construction, safety, and adequacy of the LNG terminal structures and mitigation measures employed along the pipeline route in areas subject to ground instability.
18. NorthernStar shall prepare a Shoreline Monitoring Plan for the west end of Puget Island that is similar in scope to the monitoring plan prepared for the Clatsop County Conditional Use Permit. The plan shall be filed with the Secretary for the review and written approval of the Director of OEP **prior to operation** of the LNG terminal.
19. **Prior to construction** of the LNG terminal, NorthernStar shall file with the Secretary the following information regarding the new proposed construction worker parking lot, Bradwood Road, and Clifton Road: map of disturbed area; soils; impacts on upland vegetation, waterbodies and wetlands, and wildlife habitat; occurrence of state or federally listed species; land use and zoning; cultural resources, and restoration plans. NorthernStar shall include status and copies of agency clearances for wetlands, threatened and endangered species, and cultural resources, as applicable.
20. NorthernStar shall prepare its *Contaminated Materials Management Plan* (CMMP) to address the discovery and management of contaminated soils and groundwater. The CMMP shall comply with applicable state and federal regulations and shall include procedures for the identification and management of unknown contaminants if any are encountered during construction of the proposed LNG terminal and pipeline facilities. The CMMP shall be filed with the Secretary for the review and written approval of the Director of OEP **prior to construction**.
21. NorthernStar shall prepare a plan to monitor the side slopes of the maneuvering area after dredging. The plan shall include slope protection measures, shall such

mitigation be necessary. The plan shall be filed with the Secretary for the review and written approval of the Director of OEP **prior to construction** of the LNG terminal.

22. NorthernStar shall revise its pipeline *Erosion and Sediment Control Plan for Oregon* (ESCP) and its *Construction Stormwater Pollution Prevention Plan for Washington* (SWPPP) to include the measures from the FERC's Plan that provide greater protections. NorthernStar's revised ESCP and SWPPP shall be filed with the Secretary for the review and written approval of the Director of OEP **prior to construction** of the pipeline.
23. NorthernStar shall conduct water quality monitoring at points both 100 feet downstream and 100 feet upstream from the Hunt Creek Bridge **during demolition or construction activities**. In the event that water clarity exceeds a level approximately 10 percent above the baseline observation at either monitoring point, work would cease **until** either the turbidity was cleared or it could be ascertained that the difference in turbidity levels was not due to construction activities.
24. NorthernStar shall revise its *Horizontal Directional Drill (HDD) Contingency Plan* to include mitigation measures for frac-outs to uplands. **Prior to pipeline construction**, the revised *HDD Contingency Plan* shall be filed with the Secretary for the review and written approval of the Director of OEP.
25. NorthernStar shall continue to consult with the COE, NMFS, FWS, and other appropriate federal and state agencies to finalize its *Waterbody and Wetland Construction and Mitigation Procedures Plan*. The final plan shall include the following:
 - a. a description of the specific methods of in-water habitat mitigation to be conducted;
 - b. measures to prevent the spread of invasive species due to construction activities within waterbodies; and
 - c. procedures for monitoring the success of the revegetation and weed control efforts.

The plan, including agency comments on the plan, shall be filed with the Secretary for review and written approval by the Director of OEP **prior to pipeline construction**.

26. **Prior to activities** within the pipe storage and contractor yard in Washington, wetlands potentially affected by activities within the yard shall be fenced. Construction activities shall not occur within 50 feet of any wetland without prior review and written approval by the Director of OEP.

27. **During construction**, NorthernStar shall implement the following measures at the three extra temporary workspaces listed below and in table 4.4.1-7 of the final EIS that would be within 50 feet of wetlands:
 - a. B0505 – Wetland shall be fenced and avoided regardless of the presence of saturated conditions during construction activities.
 - b. EST-3 – The pull string section for the Abernathy Creek HDD shall avoid this wetland and the waterbody located within the wetland boundaries.
 - c. AA0424 – The extra workspace shall be relocated and centered on the upland area approximately 250 feet west of the current location.
28. NorthernStar shall file documentation of consultations with the COE, FWS, NMFS, Oregon and Washington Departments of Agriculture, and other appropriate resource agencies regarding its revised *Noxious Weeds and Soil-borne Plant Disease Control Plan* (filed July 7, 2008), and agency comments on the plan with the Secretary **prior to pipeline construction**.
29. NorthernStar shall coordinate with the NMFS to determine appropriate LNG carrier speed, or other applicable measures, to avoid or minimize impacts on juvenile fish from wake stranding and shoreline erosion due to LNG carrier transit along the waterway. Results of modeling and coordination, including any specific measures to be implemented, shall be filed with the Secretary, **within 60 days** after issuance of the Commission order.
30. NorthernStar shall consult with the appropriate federal and state agencies to develop a revised *Bubble Curtain Contingency Plan* that establishes a performance standard to assess whether or not bubble curtains are adequately working. The plan shall describe specific noise attenuation methods to be implemented if monitoring indicates poor noise attenuation performance. The plan, including agency comments on the plan, shall be filed with the Secretary for the review and written approval of the Director of OEP **prior to beginning offshore pile driving activities** at the LNG terminal.
31. **During fish collection efforts** at the former mill log pond at the LNG terminal, NorthernStar shall place nets at the outlet of the log pond that only allow emigration from the pond (e.g., winged fyke net without collection chamber attached or two disconnected block nets oriented outward from the pond).
32. NorthernStar shall conduct **post-installation** water flow mapping through all intake screens at the LNG terminal, and develop and implement a monitoring program to assess the effects of impingement and entrainment from use of the screened water supply system on juvenile salmonids during terminal operations. The monitoring program and water flow mapping plans shall be developed in consultation with the NMFS and ODFW and, as appropriate, incorporate adaptive

management strategies to identify and mitigate any adverse effects specifically associated with the project. The final monitoring program and water flow mapping results, as well as any agency comments, shall be filed with the Secretary for the review and written approval of the Director of OEP **prior to operation of the screens**. In addition, NorthernStar shall provide **annual reports** to both the FERC and NMFS regarding the efficacy of the screened water intake system, which would identify any problems and address how such problems would be rectified.

33. **Within 60 days of the Commission order**, NorthernStar shall:
- a. prepare a plan that outlines how NorthernStar would ensure only LNG carriers that are retrofitted to use the proposed screened water supply system at the wharf are allowed to unload cargo at the Bradwood Landing terminal. The plan shall include a method of certifying to the FERC, in advance of a LNG carrier's initial call to the Bradwood Landing terminal, that the LNG carrier has been retrofitted to utilize NorthernStar's screened water intake system; or
 - b. develop a comprehensive plan, including engineering designs, for delivering screened engine cooling and ballast water to LNG carriers at the Bradwood Landing terminal that does not require carrier retrofitting.

The proposed screened water supply system design plan shall include monitoring, reporting, and adaptive management strategies to assure the system's efficacy at minimizing entrainment and impingement of sensitive species of juvenile fish.

34. **Prior to initial site preparation** at the LNG terminal, NorthernStar shall file the final screened water system design plans and performance standards, along with NMFS comments on the plans and standards, with the Secretary for review and written approval by the Director of OEP.
35. NorthernStar shall continue to consult with the NMFS, FWS, ODFW, and other appropriate agencies regarding revisions to its *Lighting Plan*. NorthernStar shall file its final *Lighting Plan* along with agency comments with the Secretary for review and written approval by the Director of OEP **prior to operation** of the LNG terminal.
36. NorthernStar shall consult with the NMFS, FWS, ODFW, and other appropriate agencies in developing its *Blasting Management Plan* relative to the proposed noise mitigation measures. NorthernStar shall file its *Blasting Management Plan* along with agency comments on the plan with the Secretary **prior to blasting activities**.

37. NorthernStar shall coordinate with the NMFS to determine appropriate LNG carrier speed and seasonal restrictions, or other restrictions to be implemented, to avoid or minimize impacts on whales. Results of the coordination, including a discussion of restrictions to be implemented, shall be filed with the Secretary, within 60 days after issuance of the Commission's order.
38. **Prior to construction** of the LNG terminal and pipeline facilities, NorthernStar shall conduct additional botanical surveys, where necessary, for federally listed endangered and threatened plants in the appropriate habitats within the project area during the appropriate survey period. **Before the initiation** of surveys, NorthernStar shall consult with the FWS for appropriate survey methods and periods for each species. If project facilities are not constructed **within 1 year** from the date of issuance of authorizations, NorthernStar shall consult with the appropriate offices of the FWS to update the species list and to determine if additional surveys are required. The survey reports and any FWS comments on the survey and its conclusions shall be filed with the Secretary. The survey reports shall include the following information:
- a. name(s) and qualifications of the person(s) conducting the survey;
 - b. method(s) used to conduct the survey;
 - c. date(s) of the survey;
 - d. area surveyed (include the mileposts surveyed); and
 - e. proposed mitigation measures that would substantially minimize or avoid potential impacts on listed endangered or threatened plants found in the project area.

NorthernStar must receive written approval from the Director of OEP **before implementing any mitigation measures.**

39. NorthernStar shall conduct a survey for bald eagles, where necessary, **prior to construction** of the LNG terminal and pipeline facilities. **Before the initiation** of surveys, NorthernStar shall consult with the FWS, ODFW, and Washington Department of Fish and Wildlife (WDFW) for appropriate survey methods and periods for the surveys. The survey reports and any agency comments on the survey and its conclusions shall be filed with the Secretary. The survey reports shall include the following information:
- a. name(s) and qualifications of the person(s) conducting the survey;
 - b. method(s) used to conduct the survey;
 - c. date(s) of the survey;
 - d. area surveyed (include the mileposts surveyed); and
 - e. proposed mitigation measures that would substantially minimize or avoid potential impacts on bald eagles found in the project area.

NorthernStar must receive written approval from the Director of OEP **before implementing** any mitigation measures.

40. NorthernStar shall expand the protective measures that would be used to avoid or minimize impacts on Steller sea lions **during construction** of the LNG terminal (e.g., safety, buffer, and noise impact zones) to include all pinnipeds.
41. NorthernStar shall consult with the FWS and other appropriate agencies to develop a *Migratory Bird Nest Avoidance Plan* to minimize impacts on migratory birds during the peak nesting season. NorthernStar shall file its *Migratory Bird Nest Avoidance Plan* along with agency comments with the Secretary **prior to the commencement** of clearing activities at the LNG terminal and the pipeline.
42. Pipeline construction activities shall not occur within potential habitat for Columbian white-tailed deer (mileposts [MPs] 4 to 19) **between June 1 and July 15**.
43. NorthernStar shall not begin construction activities at the LNG terminal and the pipeline **until**:
 - a. the staff completes formal consultation with the NMFS and FWS;
 - b. NorthernStar completes consultation with the NMFS under section 101(a)(5)(D) of the Marine Mammal Protection Act (MMPA); and
 - c. NorthernStar has received written notification from the Director of OEP that construction or use of mitigation may begin.
44. **Prior to construction** of the LNG terminal and the pipeline, NorthernStar shall file with the Secretary documentation of concurrence from the Oregon Department of Land Conservation and Development (ODLCD) that the project is consistent with the Coastal Zone Management Act (CZMA).
45. **Before pipeline construction** begins, NorthernStar shall file with the Secretary, for the review and written approval of the Director of OEP, a plan outlining measures that shall be implemented to mitigate pipeline construction impacts on domestic water supply systems and septic systems. For all residences located within 50 feet of the pipeline construction work area, **during construction** of the pipeline, NorthernStar shall:
 - a. not remove mature trees and landscaping within the edge of the construction work area, unless necessary for safe operation of construction equipment;
 - b. immediately after backfilling the trench, restore all lawn areas and landscaping within the construction work area consistent with the requirements of the FERC's Plan;

- c. fence the edge of the construction work area adjacent to the residence for a distance of 100 feet on either side of the residence to ensure that construction equipment and materials, including the spoil pile, remain within the construction work area;
 - d. try to maintain a minimum distance of 25 feet between the residence and the edge of the construction work area; and
 - e. for any residence closer than 25 feet to the construction work area, file a site-specific plan with the Secretary for the review and written approval of the Director of OEP **before construction**. The plan shall include:
 - (1) a description of construction techniques to be used (such as reduced pipeline separation, centerline adjustment, use of stove-pipe or drag-section techniques, working over existing pipelines, pipeline crossover, bore, etc.), and include a dimensioned site plan that shows:
 - i. the location of the residence in relation to the new pipeline and, where appropriate, the existing pipelines;
 - ii. the edge of the construction work area;
 - iii. the edge of the new permanent right-of-way; and
 - iv. other nearby residences, structures, roads, or waterbodies.
 - (2) a description of how NorthernStar would ensure the trench is not excavated until the pipe is ready for installation and the trench is backfilled immediately after pipe installation; and
 - (3) evidence of landowner concurrence if the construction work area and fencing would be located within 10 feet of a residence.
46. **Prior to construction** of the pipeline, NorthernStar shall study Cowlitz County records to determine all plans for future residential and commercial developments along the proposed pipeline route in Washington, and file the results of that study with the Secretary, for the review and written approval of the Director of OEP. The study shall specifically include the Castle family house plans, and provide details about how NorthernStar would avoid or mitigate impacts on that future residence, including the distance (in feet) from the proposed house to the pipeline construction right-of-way.
47. **Prior to pipeline construction**, NorthernStar shall document that it has consulted with the Port of St. Helens, the Columbia County Development Agency, and other appropriate agencies and representatives of Columbia County, to determine if its pipeline may have impacts on county improvements in the vicinity of the Port Westward Industrial Area, and file with the Secretary a plan to avoid or mitigate those impacts, for the review and approval of the Director of OEP.

48. NorthernStar shall file with the Secretary a copy of the final Railroad Relocation Agreement **prior to LNG terminal construction.** (*EIS Section 4.8.2.7*)
49. NorthernStar shall consult with the Oregon Department of Transportation (ODOT), Washington Department of Transportation (WDOT), and appropriate local agencies in the development of its final *Traffic Management Plan*. The final *Traffic Management Plan* shall include the design for improvements along Highway 30 and Clifton Road, and measures to reduce impacts on narrow roads that would be used to access the construction right-of-way. **Prior to construction** of the LNG terminal and the pipeline, NorthernStar shall file its final traffic management plan, and documentation of consultations with the ODOT, WDOT, and local county government agencies, with the Secretary for the review and written approval of the Director of OEP.
50. **Prior to construction** of the LNG terminal and the pipeline, NorthernStar shall file with the Secretary:
 - a. documentation that it re-initiated consultations with all Indian tribes listed on table 4.9.3-1 of the final EIS, and copies of correspondence to and from Indian tribes that expressed interest in its project after the issuance of the draft EIS; and
 - b. documentation that it provided copies of revised reports of cultural resources investigations to all Indian tribes that have expressed an interest in the project, including the Confederated Tribes of the Grande Ronde Reservation, and copies of any comments the tribes may have on those reports.
51. NorthernStar shall defer construction and use of its proposed facilities, including related ancillary areas for staging, storage, temporary work areas, and new or to-be-improved access roads **until**:
 - a. NorthernStar files with the Secretary all additional required cultural resources survey and evaluation reports, any necessary treatment/avoidance plans, and a cultural resources management plan;
 - b. NorthernStar files with the Secretary comments of the Oregon and Washington State Historic Preservation Officers (SHPOs) on all cultural resources investigation reports and plans;
 - c. the Advisory Council on Historic Preservation (ACHP) has been given an opportunity to comment, if any historic properties would be adversely affected by the project; and
 - d. the Director of OEP reviews and approves all cultural resources investigation reports and plans, and notifies NorthernStar in writing that

treatment plans/mitigation measures may be implemented or construction may proceed.

All material filed with the Commission containing **location, character, and ownership information** about cultural resources must have the cover and any relevant pages therein clearly labeled in bold lettering: “**CONTAINS PRIVILEGED INFORMATION - DO NOT RELEASE.**”

52. **Prior to LNG terminal construction**, NorthernStar shall file with the Secretary, for review and written approval by the Director of OEP, a finalized *Dredging Noise Mitigation Plan*. This plan shall identify all noise mitigation which NorthernStar would implement during dredging to reduce noise at the noise sensitive areas (NSAs). Specifically, during dredging operations NorthernStar shall monitor noise and make all reasonable efforts to restrict noise increases from operations to no more than 10 dBA above ambient if the resulting impact is above 55 dBA L_{dn} .
53. NorthernStar shall file a noise survey for the terminal with the Secretary **no later than 60 days** after placing the LNG terminal in service. If the noise attributable to the operation of the LNG terminal exceeds 55 dBA L_{dn} at any nearby NSAs, NorthernStar shall file a report on what changes are needed and shall install additional noise controls to meet the level **within 1 year** of the in-service date. NorthernStar shall confirm compliance with these requirements by filing a second noise survey with the Secretary **no later than 60 days** after it installs the additional noise controls.
54. **Prior to pipeline construction**, NorthernStar shall file with the Secretary, for the review and written approval by the Director of OEP, a finalized *Noise Mitigation Plan* for HDD sites Nos. 3, 5, 7, 8, 9, 10, 11, 12, 13, as identified in table 4.10.2-6 of the final EIS. This plan shall identify all noise mitigation that NorthernStar would implement during drilling activity to reduce noise at any nearby NSAs. Specifically, during HDD operations NorthernStar shall monitor noise and make all reasonable efforts to restrict noise increases from HDD operations to no more than 10 dBA above ambient if the resulting impact is above 55 dBA L_{dn} .
55. NorthernStar shall file noise surveys with the Secretary **no later than 60 days** after placing the Wauna Mill, NW Natural, Beaver Power Plant, and Northwest pipeline valves into service. If the noise attributable to the operation of the authorized pipeline valves exceeds an L_{dn} of 55 dBA at any nearby NSAs, NorthernStar shall file a report on what changes are needed and shall install the additional noise controls to meet the level **within 1 year** of the in-service date. NorthernStar shall confirm compliance with the above requirement by filing a

second noise survey with the Secretary **no later than 60 days** after it installs the additional noise controls.

56. **Prior to construction**, NorthernStar shall either: a) submit a determination from the U.S. Department of Transportation (DOT) documenting agreement with the proposed pipeline valve locations, or b) submit for the review and written approval by the Director of OEP modified pipeline design plans demonstrating compliance with 49 C.F.R. 192.179.

Condition numbers 57 through 70 shall apply to the project design and construction details. Information pertaining to these specific conditions shall be filed with the Secretary for review and approval by the Director of OEP either: prior to initial site preparation; prior to commencing final design; prior to construction; or prior to commissioning as indicated by each specific condition. All detailed design documents (drawings, calculations, specifications, etc.) and design submittals shall satisfy the requirements of Section 4, Part II of the FERC's draft "Seismic Design Guidelines and Data Submittal Requirements for LNG Facilities," January 2007 (FERC Seismic Guidelines).

57. Seismic specifications to be used in conjunction with the procuring equipment as described in section 3.10 of Part II of the FERC Seismic Guidelines shall be submitted for review **prior to commencing final design**.
58. Quality Control and Assurance procedures as described in section 3.11 of Part II of the FERC Seismic Guidelines that will be used for design and construction shall be submitted for review **prior to commencing final design** of the project.
59. A list of Seismic Category assignments for all structures, systems and components shall be submitted **prior to commencing final design** for review as described in section 3.6 of Part II of the FERC Seismic Guidelines.
60. Seismic Design Criteria shall be provided for all Seismic Design Category I, II, and III structures, systems, and components as described in section 3.7 of Part II of the FERC Seismic Guidelines **prior to commencing final design**. The Seismic Design Criteria shall satisfy Part I of the FERC Seismic Guidelines.
61. LNG Tank (including outer containment tank) and Foundation Preliminary Design shall comply with Part I of the FERC Seismic Guidelines. In particular, site response analysis and soil structure interaction analysis shall comply with section 6 of Part I and section 3.5.1 (10) and (11) of Part II of the FERC Seismic Guidelines. LNG tank preliminary design drawings and structural calculations as requested in Section 3.9 of Part II of FERC Seismic Guidelines shall be submitted for review **prior to commencing final design**. Final LNG Tank (including outer tank) and foundation detailed design drawings and structural calculations that

- demonstrate compliance with Part I of FERC Seismic Guidelines shall be submitted for review **prior to construction**.
62. MCE and DE seismic design ground motions shall satisfy section 5 of Part I of the FERC Seismic Guidelines. Submittals that demonstrate compliance shall be provided **prior to commencing final design**.
 63. SSE and OBE seismic design ground motions shall satisfy section 5 of Part I of the FERC Seismic Guidelines. Submittals that demonstrate compliance shall be provided **prior to commencing final design**.
 64. Details of the liquefaction mitigation method(s), procedures, plan extent, and verification methods proposed to verify mitigation of liquefaction potential shall be provided **prior to commencing final design**.
 65. Detailed calculations of seismic slope stability and lateral movements anticipated after the liquefaction mitigation is implemented shall be provided **prior to commencing final design** to verify the stability of critical structures for the project design earthquake motions.
 66. Details of the types of piles finally selected for supporting the LNG tanks and results of indicator pile program, including load tests, shall be submitted for review and approval **prior to construction/pile installation**.
 67. Final foundation design recommendations including pile foundation design and/or liquefaction mitigation measures for all other structures shall be submitted for review and approval **prior to construction**. The foundation design and/or liquefaction measures shall satisfy the FERC Seismic Guidelines.
 68. All other items identified in the submitted geotechnical/seismic reports which were proposed to be addressed during the detailed design shall be submitted for review and approval **prior to construction**.
 69. A seismic instrumentation plan as described in section 3.12 of Part II of the FERC Seismic Guidelines shall be provided **prior to commissioning**.
 70. The results of the hydrostatic load tests on the LNG storage tanks, including settlement data as described in section 7.4.1 shall be provided **prior to commissioning**.

Condition numbers 71 through 104 shall apply to the project design and construction details. Information pertaining to these specific conditions shall be filed with the Secretary for review and approval by the Director of OEP either: prior to initial site preparation; prior to construction of final design; prior to commissioning; or prior to commencement of service as indicated by each specific

condition. Specific engineering, vulnerability, or detailed design information meeting the criteria specified in Order No. 683 (Docket No. RM06-24-000), including security information, shall be submitted as CEII pursuant to 18 C.F.R. 388.112. See *Critical Energy Infrastructure Information*, Order No. 683, 71 Federal Register 58,273 (October 3, 2006), FERC Statutes & Regulations ¶ 31,228 (2006). Information pertaining to items such as: off-site emergency response; procedures for public notification and evacuation; and construction and operating reporting requirements would be subject to public disclosure. All information shall be submitted a minimum of 30 days before approval to proceed is required.

71. **Prior to initial site preparation**, NorthernStar shall file calculations or a re-designed configuration showing how the troughs feeding the impoundment sumps would adequately handle a spill from the unloading line at the maximum unloading line rate.
72. Complete plan drawings and a list of the hazard detection equipment shall be filed **prior to initial site preparation**. The list shall include the instrument tag number, type and location, alarm locations, and shutdown functions of the proposed hazard detection equipment. Plan drawings shall clearly show the location of all detection equipment.
73. NorthernStar shall provide a technical review of its proposed facility design that:
 - a. identifies all combustion/ventilation air intake equipment and the distances to any possible hydrocarbon release (LNG, flammable refrigerants, flammable liquids and flammable gases); and
 - b. demonstrates that these areas are adequately covered by hazard detection devices and indicate how these devices would isolate or shutdown any combustion equipment whose continued operation could add to or sustain an emergency.

NorthernStar shall file this review **prior to initial site preparation**.

74. Complete plan drawings and a list of the fixed and wheeled dry-chemical, fire extinguishing, and other hazard control equipment shall be filed **prior to initial site preparation**. The list shall include the equipment tag number, type, size, equipment covered, and automatic and manual remote signals initiating discharge of the units. Plan drawings shall clearly show the planned location of all fixed and wheeled extinguishers.
75. Facility plans showing the proposed location of, and area covered by, each monitor, hydrant, deluge system, hose, and sprinkler, as well as piping and

instrumentation diagrams, of the fire water system shall be filed **prior to initial site preparation**.

76. A copy of the hazard design review and list of recommendations that are to be incorporated in the final facility design shall be filed **prior to initial site preparation**.
77. NorthernStar shall develop a final *Emergency Response Plan* (ERP) (including evacuation) and coordinate procedures with the U.S. Coast Guard (Coast Guard); state, county, and local emergency planning groups; fire departments; state and local law enforcement; and appropriate federal agencies. This plan shall include at a minimum:
 - a. designated contacts with state and local emergency response agencies;
 - b. scalable procedures for the prompt notification of appropriate local officials and emergency response agencies based on the level and severity of potential incidents;
 - c. procedures for notifying residents and recreational users within areas of potential hazard;
 - d. evacuation routes/methods for residents and public use areas that are within any transient hazard areas along the route of the LNG vessel transit;
 - e. locations of permanent sirens and other warning devices; and
 - f. an “emergency coordinator” on each LNG carrier to activate sirens and other warning devices.

The ERP shall be filed with the Secretary for review and written approval by the Director of OEP **prior to initial site preparation**. NorthernStar shall notify FERC staff of all planning meetings in advance and shall report progress on the development of its ERP at **3-month intervals**.

78. The ERP shall include a Cost-Sharing Plan identifying the mechanisms for funding all project-specific security/emergency management costs that would be imposed on state and local agencies. In addition to the funding of direct transit-related security/emergency management costs, this comprehensive plan shall include funding mechanisms for the capital costs associated with any necessary security/emergency management equipment and personnel base. The Cost-Sharing Plan shall be filed with the Secretary for review and written approval by the Director of OEP **prior to initial site preparation**.
79. The **final design** of the fixed and wheeled dry-chemical, fire extinguishing hazard control equipment shall identify manufacturer and model.
80. The **final design** shall include an updated fire protection evaluation carried out in accordance with the requirements of NFPA 59A, 2001 edition, chapter 9.1.2.

81. The **final design** shall include a minimum of eight permanent bench marks located equally spaced around the top of the concrete base slab for each LNG tank.
82. The **final design** shall include a discretionary vent valve for each LNG tank, operable through the distributed control system.
83. The **final design** shall include a shutoff valve at the suction and discharge of each high pressure LNG pump.
84. The **final design** shall specify that dual temperature elements and transmitters are provided for low temperature alarm and shutdown at the discharge of each vaporizer.
85. The **final design** shall include a check valve between the LNG vaporizer discharge shutoff valve and the discharge manual isolation valve.
86. The **final design** shall include a pilot relief valve or operated vent valve sized for thermal relief at the discharge of the vaporizer.
87. The **final design** shall include provisions for the future installation of LNG pumps for the vapor return KO out drum and the boil-off compressor suction drum.
88. The **final design** shall specify that for LNG and natural gas service, branch piping and piping nipples less than 2 inches are to be no less than schedule 160.
89. The **final design** shall specify that spiral wound gaskets for LNG, natural gas service, or other hydrocarbon fluid service are to be equipped with inner and outer stainless steel retaining rings.
90. The **final design** shall specify that piping and equipment that may be cooled with liquid nitrogen is to be designed for liquid nitrogen temperatures, with regard to allowable movement and stresses.
91. The **final design** shall specify that the wharf area switchboards are connected to the backup generator.
92. The **final design** shall include details of the shutdown logic, including cause and effect matrices for alarms and shutdowns.
93. The **final design** shall include emergency shutdown (ESD) of equipment and systems activated by hazard detection devices for flammable gas, fire, and cryogenic spills, when applicable.
94. The **final design** shall include details of the air gaps to be installed downstream of all seals or isolations installed at the interface between a flammable fluid system and an electrical conduit or wiring system. Each air gap shall vent to a safe

- location and be equipped with a leak detection device that: shall continuously monitor for the presence of a flammable fluid; shall alarm the hazardous condition; and shall shutdown the appropriate systems.
95. The **final design** shall include a hazard and operability review of the completed design. A copy of the review and a list of the recommendations shall be filed with the Secretary.
96. The **final design** shall provide up-to-date Piping & Instrument Diagrams (P&IDs) including a description of the instrumentation and control philosophy, type of instrumentation (pneumatic, electronic), use of computer technology, and control room display and operation. Drawings and all information shall be clearly legible on 11- by 17-inch paper and the piping legend and symbology shall be in accordance with accepted practice. All drawings shall be filed in black and white. The following information shall be included on the P&IDs:
- a. equipment tag number, name, size, duty, capacity and design conditions;
 - b. piping with line number, piping class specification, size and insulation;
 - c. LNG tank pipe penetration size or nozzle schedule;
 - d. piping specification breaks and insulation limits;
 - e. isolation flanges, blinds and insulating flanges;
 - f. valve type, in accordance with the piping legend symbol;
 - g. all control valves numbered;
 - h. all valve operator types and valve fail position;
 - i. instrumentation numbered;
 - j. control loops including software connections;
 - k. alarm and shutdown set points;
 - l. shutdown interlocks;
 - m. relief valves numbered, with set point;
 - n. relief valve inlet and outlet piping size;
 - o. car sealed valves and blinds;
 - p. equipment insulation;
 - q. drawing revision number and date;
 - r. all manual valves numbered, including check, vent, drain, and car sealed valves; and
 - s. alarm and shutdown set points.
97. The **final design** shall specify that all hazard detection equipment shall include redundancy, fault detection and fault alarm monitoring.
98. All valves including drain, vent, main, and car sealed valves shall be tagged in the field during construction and **prior to commissioning**.

99. The design details and procedures to record and to prevent the tank fill rate from exceeding the maximum fill rate specified by the tank designer shall be filed **prior to commissioning**.
100. A tabulated list of the proposed hand-held fire extinguishers shall be filed **prior to commissioning**. The information shall include a list with the equipment number, type, size, number, and location. Plan drawings shall include the type, size, and number of all hand-held fire extinguishers.
101. Operation and Maintenance procedures and manuals, as well as safety procedure manuals, shall be filed **prior to commissioning**.
102. The FERC staff shall be notified of any proposed revisions to the security plan and physical security of the facility **prior to commencement of service**.
103. Progress on construction of the LNG terminal shall be reported in **monthly** reports filed with the Secretary. Details shall include a summary of activities, projected schedule for completion, problems encountered and remedial actions taken. Problems of significant magnitude shall be reported to the FERC **within 24 hours**.
104. NorthernStar, until commencement of service, shall **annually** review its Waterway Suitability Assessment (WSA) relating to LNG marine traffic for the project; update the assessment to reflect changing conditions which may impact the suitability of the waterway for LNG marine traffic; provide the updated assessment to the cognizant Captain of the Port/Federal Marine Security Coordinator (COTP/FMSC) for review and validation and if appropriate, further action by the COTP/FMSC relating to LNG marine traffic; and provide a copy to the FERC staff.

Condition Numbers 105 through 109 shall apply throughout the life of the facility:

105. **Throughout the life of the facility**, NorthernStar shall ensure that the facility and any LNG vessel transiting to and from the facility comply with all requirements set forth by the Coast Guard COTP, including all risk mitigation measures recommended in the Waterway Suitability Replot (WSR).
106. The facility shall be subject to regular FERC staff technical reviews and site inspections on at least an **annual basis or more frequently** as circumstances indicate. Prior to each FERC staff technical review and site inspection, NorthernStar shall respond to a specific data request including information relating to possible design and operating conditions that may have been imposed by other agencies or organizations. Up-to-date detailed piping and instrumentation diagrams reflecting facility modifications and provision of other pertinent information not included in the semi-annual reports described below, including

facility events that have taken place since the previously submitted semi-annual report, shall be submitted.

107. **Semi-annual** operational reports shall be filed with the Secretary to identify changes in facility design and operating conditions, abnormal operating experiences, activities (including ship arrivals, quantity and composition of imported LNG, vaporization quantities, boil-off/flash gas, etc.), plant modifications including future plans and progress thereof. Abnormalities shall include, but not be limited to: unloading/shipping problems, potential hazardous conditions from off-site vessels, storage tank stratification or rollover, geysering, storage tank pressure excursions, cold spots on the storage tanks, storage tank vibrations and/or vibrations in associated cryogenic piping, storage tank settlement, significant equipment or instrumentation malfunctions or failures, non-scheduled maintenance or repair (and reasons therefore), relative movement of storage tank inner vessels, vapor or liquid releases, fires involving natural gas and/or from other sources, negative pressure (vacuum) within a storage tank and higher than predicted boiloff rates. Adverse weather conditions and the effect on the facility also shall be reported. Reports shall be submitted **within 45 days** after each period ending **June 30 and December 31**. In addition to the above items, a section entitled "Significant plant modifications proposed for the next 12 months (dates)" also shall be included in the semi-annual operational reports. Such information would provide the FERC staff with early notice of anticipated future construction/maintenance projects at the LNG facility.
108. In the event the temperature of any region of any secondary containment, including imbedded pipe supports, becomes less than the minimum specified operating temperature for the material, the Commission shall be notified **within 24 hours** and procedures for corrective action shall be specified.
109. Significant non-scheduled events, including safety-related incidents (i.e., LNG or natural gas releases, fires, explosions, mechanical failures, unusual over pressurization, and major injuries) and security related incidents (i.e., attempts to enter site, suspicious activities) shall be reported to the FERC staff. In the event an abnormality is of significant magnitude to threaten public or employee safety, cause significant property damage, or interrupt service, notification shall be made **immediately**, without unduly interfering with any necessary or appropriate emergency repair, alarm, or other emergency procedure. In all instances, notification shall be made to the Commission staff **within 24 hours**. This notification practice shall be incorporated into the LNG facility's emergency plan. Examples of reportable LNG-related incidents include:
 - a. fire;
 - b. explosion;
 - c. estimated property damage of \$50,000 or more;

- d. death or personal injury necessitating in-patient hospitalization;
- e. free flow of LNG that results in pooling;
- f. unintended movement or abnormal loading by environmental causes, such as an earthquake, landslide, or flood, that impairs the serviceability, structural integrity, or reliability of an LNG facility that contains, controls, or processes gas or LNG;
- g. any crack or other material defect that impairs the structural integrity or reliability of an LNG facility that contains, controls, or processes gas or LNG;
- h. any malfunction or operating error that causes the pressure of a pipeline or LNG facility that contains or processes gas or LNG to rise above its maximum allowable operating pressure (or working pressure for LNG facilities) plus the build-up allowed for operation of pressure limiting or control devices;
- i. a leak in an LNG facility that contains or processes gas or LNG that constitutes an emergency;
- j. inner tank leakage, ineffective insulation, or frost heave that impairs the structural integrity of an LNG storage tank;
- k. any condition that could lead to a hazard and cause a 20 percent reduction in operating pressure or shutdown of operation of a pipeline or an LNG facility;
- l. safety-related incidents to LNG vessels occurring at or en route to and from the LNG facility; or
- m. an event that is significant in the judgment of the operator and/or management even though it did not meet the above criteria or the guidelines set forth in an LNG facility's incident management plan.

In the event of an incident, the Director of OEP has delegated authority to take whatever steps are necessary to ensure operational reliability and to protect human life, health, property or the environment, including authority to direct the LNG facility to cease operations. Following the initial company notification, Commission staff would determine the need for an on-site inspection by Commission staff, and the timing of an initial incident report (normally within 10 days) and follow-up reports.

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Bradwood Landing LLC

Docket No. CP06-365-000

NorthernStar Energy LLC

Docket Nos. CP06-366-000
CP06-376-000
CP06-377-000

(Issued September 18, 2008)

WELLINGHOFF, Commissioner, dissenting:

The Congress of the United States in the Energy Policy Act of 2005 (EPAAct 2005) amended section 3 of the Natural Gas Act to clarify the Commission's authority over the siting, construction, and operation of liquefied natural gas (LNG) terminals.¹ In exercising that authority, the Commission, by statute, must ensure that the LNG project under consideration is in the public interest. That determination must be made in a reasoned, responsible manner that reflects careful judgment with respect to evidence concerning the particular LNG project. My analysis below demonstrates that there are reasonable alternatives to the Bradwood Project to serve the projected energy needs of the Pacific Northwest in a more efficient, more reliable, and environmentally preferable manner. For these reasons, I conclude that the Bradwood Project is not in the public interest.

In contrast to my determination, the majority today grants authorizations to site, construct, and operate the Bradwood Project. In support of that conclusion, the majority finds that the Bradwood Project is needed to meet the projected energy needs of the Pacific Northwest. The majority also finds that there are no reasonable alternatives to the Bradwood Project.

My dissent in this case is premised on a number of considerations. First, the evidence contradicts the majority's finding that the Bradwood Project is needed to meet the projected energy needs of the Pacific Northwest. Second, despite the majority's finding to the contrary, there are reasonable alternatives for serving the projected energy needs of the Pacific Northwest, including construction of new domestic natural gas infrastructure and deployment of renewable and distributed

¹ Energy Policy Act of 2005, Pub. L. No. 109-58, § 311, 119 Stat. 685-88 (2005).

energy resources that are abundantly available in the Pacific Northwest.² These alternatives are more efficient, more reliable, and environmentally preferable to the Bradwood Project. Finally, significant environmental concerns about the Bradwood Project have not been fully or fairly evaluated.

Project Purpose and Need

The Bradwood Project would consist of an LNG import terminal 38 miles from the mouth of the Columbia River at Bradwood in Clatsop County, Oregon, and 36.3 miles of pipeline that would interconnect the terminal with the natural gas system of Northwest Pipeline Corporation. The Bradwood Project would have the capability of receiving and unloading approximately 125 LNG tankers per year, with a proposed sendout capacity of 1.3 Bcf per day.

Many commenters who express opposition to the Bradwood Project argue that the project is primarily intended to serve markets in California. They also argue that the Bradwood Project is not needed because supplies for the Pacific Northwest are sufficient at present, and future energy demand can better be met with domestic natural gas infrastructure and renewable and distributed energy resources.

The majority disagrees with these concerns.³ As noted above, the majority concludes that the Bradwood Project is needed to meet the projected energy needs of the Pacific Northwest.⁴ In an attempt to support its conclusion that the project is needed to meet future Pacific Northwest energy requirements, the majority points to three studies conducted, respectively, by Wood Mackenzie Limited (WML),⁵

² Renewable energy resources include energy derived from wind, geothermal, biomass, hydro including hydrokinetic systems, and solar. Distributed energy resources include energy efficiency, conservation, demand response, and distributed generation such as distributed solar photovoltaic systems, combined heat and power systems, and waste heat recovery systems.

³ The majority states that our Certificate Policy Statement presumes that a proposed project is in the public interest if the project can be constructed without subsidies from current customers and if any adverse economic or environmental effects can be mitigated. While I agree with a market-based approach, the Commission cannot authorize a project solely on this basis. Such facts alone do not satisfy the requirement to analyze and consider reasonable alternatives before finding that a proposed project is in the public interest.

⁴ 124 FERC ¶ 61,257 at P2 (2008).

⁵ *An Independent View of Markets Served by Bradwood Landing*, Wood Mackenzie Limited, July 2007.

ICF International (ICF),⁶ and Northwest Gas Association (NWGA).⁷

The majority suggests that the WML study demonstrates a need for LNG in the Pacific Northwest. Examination of that study reveals that this is not the case. In fact, the WML study is not an analysis of need for energy resources in the Pacific Northwest, but rather a projection of physical gas flows from the Bradwood Project if the project is constructed and operated at its design capacity.⁸ The WML study assumes a utilization rate and then determines which current Pacific Northwest gas supplies would be displaced by the LNG volumes. Critically, the WML study does not demonstrate or conclude that the Bradwood Project's sendout capacity of 1.3 Bcf per day is required to meet the projected demand for gas in the Pacific Northwest.

Moreover, other evidence strongly suggests that the primary purpose of the Bradwood Project is not to meet the projected energy needs of the Pacific Northwest, but rather is to serve other markets. For example, the ICF study finds that local load in the Pacific Northwest is too variable and not large enough to be economic for an LNG terminal.⁹ The ICF study further finds that access to Northern California markets would be necessary to site an LNG terminal in the Pacific Northwest at a size that would be economic, at an initial send out rate of at least 1.0 Bcf per day.¹⁰ It is also noteworthy that in its December 15, 2006 S-1 filing with the Securities and Exchange Commission (S-1 Filing), NorthernStar Natural Gas identified the target markets for the Bradwood Project as the states of California, Idaho, Nevada, Oregon, and Washington.¹¹

The conclusion that the Bradwood Project must serve markets outside the Pacific Northwest to be economically sustainable is also supported by the gas demand and supply projections for the Pacific Northwest in the studies cited by the majority. On the demand side, in 2007, total natural gas consumption in Oregon

⁶ *Review of Pipeline Utility Corridor Capacity and Distribution for Petroleum Fuels, Natural Gas and Biofuels in Southwest Washington*, ICF International, November 16, 2007.

⁷ *Northwest Gas Outlook*, Northwest Gas Association, Fall 2007.

⁸ Cover letter from Bradwood Landing submitting the WML study to the Clatsop County Planning Board, Volume 4 of 7, Tab 16.

⁹ ICF at 69.

¹⁰ ICF at 69.

¹¹ S-1 Filing at 4.

and Washington was estimated to average 1.2 Bcf per day.¹² The NWGA study estimates that natural gas consumption in the Pacific Northwest will increase at an average of 1.9 percent per year, for a total rise of 7.2 percent through 2012.¹³ The ICF study projects Pacific Northwest gas consumption to increase at an annual rate of 3.1 percent.¹⁴ Based on these figures, gas consumption in 2012 for Oregon and Washington would be approximately 1.3 or 1.4 Bcf per day, a difference from current levels of 0.1 to 0.2 Bcf per day.

On the supply side, the Pacific Northwest currently receives 0.3 Bcf of gas per day from the Northern Rocky Mountain area (Rockies) and 0.9 Bcf of gas per day from the Western Canadian Sedimentary Basin (Western Canada). The ICF study states that the Rockies and Western Canada have significant reserves and estimated remaining resources to meet future market needs.¹⁵ The ICF study estimates that Rockies production will increase from the current level of 8.1 Bcf per day to 12.2 Bcf per day by 2025. However, the ICF study projects that Rockies gas serving the Pacific Northwest will remain at 0.3 Bcf per day, due to “[m]inor growth in consumption in these markets” and pipeline capacity constraints.¹⁶ The ICF study also projects that imports from Western Canada into the Pacific Northwest will trend downward through 2015 at an average annual decrease of 0.05 Bcf per day.¹⁷ Based on this projection, the total reduction in those imports would be 0.25 Bcf per day by the projected 2012 in-service date of the Bradwood Project.

The Bradwood Project’s 1.3 Bcf per day sendout capacity far exceeds the above-noted estimated increase in gas demand for the Pacific Northwest of 0.1 to 0.2 Bcf per day. Even if the potential decline in Canadian imports of 0.25 Bcf per day were assumed to reduce supplies to the Pacific Northwest,¹⁸ the total increase in gas demand would be 0.35 to 0.45 Bcf per day, less than half of the Bradwood Project’s 1.3 Bcf per day sendout capacity. Furthermore, the Bradwood Project

¹² ICF at 55.

¹³ NWGA at 2.

¹⁴ ICF at 59.

¹⁵ ICF at 64, Exhibit 2.9.

¹⁶ ICF at 68 (emphasis added).

¹⁷ ICF at 67.

¹⁸ In contrast to this assumption, the ICF study states that the net result of decreased Canadian imports and increased Pacific Northwest consumption would be fewer physical gas imports from Canada to California. ICF at 67.

has been pre-engineered to expand to 2.0 Bcf per day of sendout capacity.¹⁹

The above analysis undermines the majority's finding that the primary purpose of the Bradwood Project is to meet the projected energy needs of the Pacific Northwest. There is no credible support for that conclusion. It is not objectionable, in and of itself, for the Bradwood Project to serve markets outside of the Pacific Northwest. However, if the primary purpose of the Bradwood Project is to serve markets outside of the Pacific Northwest, then, at a minimum, the scope of reasonable project alternatives analyzed in the Final Environmental Impact Statement (FEIS) is insufficient and must be expanded to include alternative energy resources available to the wider region that the project is actually intended to serve.

Project Alternatives

Setting aside the majority's errors discussed above, an examination of the evidence concerning the Bradwood Project leads to the conclusion that there are reasonable, environmentally preferable alternatives for serving the future energy needs of the Pacific Northwest. Such alternatives include other domestic natural gas infrastructure and renewable and distributed energy resources.

Rockies Gas

A recent study by Navigant Consulting, commissioned by the American Clear Skies Foundation, indicates a 50 percent increase in estimated natural gas reserves from estimates made as little as two years ago. The increase is attributable to new technology allowing for economically recoverable unconventional natural gas. Navigant Consulting concludes that the rapid escalation of unconventional gas production is continuing, and that the resource base is adequate to support significantly increased volumes of unconventional gas production for decades.²⁰ With regard to Rockies gas specifically, ICF estimates that the Rockies have a combined volume of proven reserves and estimated remaining resources of 142 Tcf, or 37 years of remaining supply at the current production level of 8.1 Bcf per day (2.9 Tcf per year). Furthermore, the Rockies producing area is projected to be one of the fastest growing production areas in

¹⁹S-I Filing at 2.

²⁰ *North American Natural Gas Supply Assessment*, Navigant Consulting, Inc, prepared for American Clear Skies Foundation, July 4, 2008 at 14 and 15.

North America, increasing to 12.2 Bcf per day (4.4 Tcf per year) in 2025.²¹

The effective delivery of Rockies natural gas to the Pacific Northwest could be accomplished with a direct pipeline or pipeline expansion to the region, or by displacement of capacity now used for other markets that passes through the region. It is noteworthy that there are several pipeline projects in development that would bring Rockies gas to the Pacific Northwest and California markets. These projects include the 655-mile Ruby Project and the 215-mile Palomar Project, both of which are in the Commission's pre-filing environmental review process. On June 25, 2008, El Paso Corporation announced that the Ruby Project had received more than 1.1 Bcf per day of binding commitments under 10 to 15 year contracts.²² In addition, the Sunstone Project is a 618-mile pipeline that would parallel the existing Northwest Pipeline Corporation system between Opal, Wyoming and Malin, Oregon. On June 18, 2008, Energy Business Review reported that Sempra Pipelines & Storage, a unit of Sempra Energy, signed a memorandum of understanding to acquire a 25 percent ownership interest in Sunstone Pipeline and for a Sempra affiliate to contract for a significant amount of capacity.²³

In its LNG and Natural Gas Review conducted for the Governor of Oregon, Oregon Department of Energy (ODE) details several considerations that make gas from domestic sources via newly proposed pipelines preferable to imported LNG.²⁴ One reason is price. Based on its analysis, ODE concludes that Rockies gas will continue to cost substantially less than LNG.²⁵ The majority responds to the ODE conclusion by stating that natural gas and LNG prices at Henry Hub were comparable for the January to May 2008 period. This comparison has no probative value. Because LNG will be imported only when it is competitively priced with domestic supplies, as the majority acknowledges, the price of actual volumes sold at Henry Hub should converge.

²¹ ICF at 64 and 66.

²² [http://investor.elpaso.com/phoenix.zhtml?c=97166&p=irol-newsArticle&ID=1169301&highlight=.](http://investor.elpaso.com/phoenix.zhtml?c=97166&p=irol-newsArticle&ID=1169301&highlight=)

²³ http://www.energy-business-review.com/article_news.asp?guid=D4E8C283-CF67-4969-A36F-904101368876.

²⁴ Response to Governor Kulongoski's Request for LNG and Natural Gas Review, Oregon Department of Energy, May 8, 2008.

²⁵ ODE at 14-16.

There is other evidence, however, that supports ODE's conclusion regarding the relative cost of Rockies gas to LNG. For example, WML conducted a separate study assessing the availability of LNG in the global market.²⁶ The LNG Supply study finds that the development of new LNG supply capacity is increasingly failing to keep pace with demand. Exporting countries are delaying projects due to concerns about their own increasing demand for gas, rising exploration and production costs, environmental pressures, and political/geo-political issues. In short, the LNG Supply study concludes that, from 2011 forward, the probability of an LNG market in which demand is constrained on a sustained basis by lack of supply looks increasingly realistic.²⁷ Another indication is the growing gap between the number of countries importing and exporting LNG. Shell Gas and Power estimates that by 2012, importing countries will increase from 17 to 29, but the number of exporting countries will only increase from 15 to 18.²⁸

We are already seeing market signals that are consistent with these findings that LNG supply capacity is struggling to keep pace with demand. Korea Gas Corp recently agreed to buy LNG for the 2010 to 2012 period for \$20 per MMBtu.²⁹ Also, the existing LNG terminals in the United States are only operating at 50 percent of capacity, with imports clustered around the summer months.³⁰ These analyses and facts support ODE's conclusion that Rockies gas will continue to cost substantially less than LNG.³¹

Environmental considerations are also relevant to this comparison. The FEIS indicates that at full capacity the Bradwood Project would receive 125 LNG tankers per year, or approximately 10 tankers per month. Year after year, these LNG tankers would continually traverse round trip a 76 mile section of the Columbia River. By contrast, construction of a domestic pipeline over the high desert of Utah, Nevada and eastern Oregon would involve a one-time intrusion,

²⁶ *Seller's Market for LNG Set to Last*, Wood Mackenzie, April 2007 (LNG Supply).

²⁷ LNG Supply at 4.

²⁸ *LNG: Demand Opportunities and Supply Challenges*, A presentation by Shell Gas and Power at the EIA 2008 Energy Conference, (April 7, 2008).

²⁹ http://www.downstreamtoday.com/News/Articles/200807/Korea_Gas_To_Pay_Record_Price_for_Indone_12056.aspx

³⁰ FEIS at 1-3.

³¹ It is also noteworthy that, in a letter to Governor Kulongoski dated July 10, 2008, ODE stated that information received in response to the LNG and Natural Gas Review indicates that the amount of available Canadian imports had been understated and greater volumes are likely to be available from British Columbia.

which is likely to be environmentally preferable to continual ecological damage done by LNG tankers to the Columbia River biota over the lifetime of the project.

Renewable and Distributed Energy Resources

In the FEIS, each type of renewable resource is assessed as a substitute, on a stand-alone basis, for the total sendout capacity of the Bradwood Project. For example, the FEIS finds 220 MW of existing and under construction wind power capacity in Oregon³² and concludes that this amount is only 4.3 percent of the 5,200 MW equivalent of the 1.0 Bcf sendout capacity of the Bradwood Project.³³

There are several significant problems with this analysis of the reasonable alternatives to the Bradwood Project. First, the analysis erroneously assumes that the entire 5,200 MW equivalent of the 1.0 Bcf of sendout capacity is required to meet the energy needs of the Pacific Northwest. The gas demand and supply projections discussed above indicate that, at most, 45 percent (or an equivalent of 2,340 MW) of the capacity from the Bradwood Project is needed to meet the future energy needs of the Pacific Northwest. Consequently, the majority's approach is a mismatch between the source of the renewable energy to be evaluated and the purpose of the project. The analysis must either take into consideration renewable resources in the larger market area that includes California, Nevada, and Idaho, or constrain the analysis to the Bradwood Project capacity actually required to meet the projected energy needs of Pacific Northwest.

A second error in the majority's approach is that it is inconsistent with the well understood practice and goals of integrated utility system resource planning, which many states conduct in order to spread risk of resource acquisition over a diversified supply portfolio that takes into consideration cost, performance, and risk factors of potential alternatives. For example, both Oregon and Washington

³² The 220 MW is derived by de-rating to one-third 660 MW of existing and under construction wind power capacity in Oregon as of 2005.

³³ FEIS at 3-8. There is no explanation for the use of a sendout rate of 1.0 Bcf in the discussion of alternatives instead of the maximum sendout rate of 1.3 Bcf that is authorized. In addition, the FEIS states that 34,000 wind turbines would be necessary to produce an amount of electricity equivalent to what could be generated by the total capacity of the Bradwood Project. That calculation is inaccurate. Using the assumptions made in the FEIS (3.6 MW units operating at 33 percent of nameplate capacity), 4,337 wind turbines would be necessary. However, as discussed in the analysis above, even this number is inaccurate and substantially overstates the number of wind turbines necessary to equate to the Bradwood capacity necessary to meet the energy needs of the Pacific Northwest.

have established renewable portfolio standards (RPS) that encourage a diversified portfolio of renewable energy resources to meet required targets. Oregon's target is to have 25 percent of its electricity needs supplied by a portfolio of renewable resources by 2025. Washington's target is 15 percent by 2020.³⁴ Because the states are developing and analyzing renewable resources on a portfolio basis, it would be more appropriate and consistent with state law for the FEIS analysis of renewable resources available in those states to also reflect that approach.

Third, the majority's above-noted 220 MW figure is a significant understatement of the existing and proposed wind power in Oregon. Currently, Oregon has 3,743 MW of wind power that is either operating or proposed, consisting of 759 MW operating, 1,441 MW approved for construction, and 1,543 MW under siting review.³⁵

Fourth, even if the majority's above-noted 220 MW figure were accurate for wind resources in Oregon, it would inappropriately fail to account for other wind resources in Washington. Currently, Washington has 2,011 MW of wind power that is either operating or proposed, consisting of 1,164 MW operating, 439 MW approved for construction, and 408 MW under siting review.³⁶

Based on these figures, as of March 2008, Oregon and Washington have a total of 3,831 MW of wind power approved for construction or under siting review.³⁷ Using the assumption made in the FEIS to discount this figure for the average capacity factor of wind at 33 percent produces a net output for planned Oregon and Washington wind systems of 1,277 MW, not the majority's 220 MW figure. Further, assuming the Pacific Northwest needs 45 percent of the capacity of the Bradwood Project or an equivalent of 2,340 MW, the 1,277 MW of wind resources for the Pacific Northwest could supplant as much as 57 percent of the energy to be supplied by Bradwood, not the 4.3 percent calculated by the majority.

³⁴ In addition, on a regional basis, the Northwest Power and Conservation Council prepares a diversified plan recommending the development of a portfolio of resources, including distributed resources and renewables, to assure an adequate supply of electric power for the Pacific Northwest.

³⁵ <http://oregon.gov/ENERGY/RENEW/index.shtml> (at link to Wind Energy in the Columbia Plateau Region).

³⁶ *Id.*

³⁷ The technical potential for wind power in Oregon and Washington is estimated to be over 16,000 MW. Renewable Energy Transmission Initiative, Phase 1A Final Report for RETI Stakeholder Steering Committee, Black & Veatch, April 2008, at 6-65 to 6-67 (RETI Phase 1A).

Moving from wind to other renewable resources, the Northwest Power and Conservation Council estimates the geothermal potential in the region to be between 340 and 3,300 MW, with 940 MW most likely to be developed.³⁸ The Geothermal Energy Association states that there are currently 322 MW of developing geothermal projects in Oregon and Washington.³⁹ If only the geothermal resources currently being developed are considered, rather than the 940 MW projected as most likely to be developed, then geothermal resources could displace 13 percent of the Pacific Northwest's maximum potential need for capacity from the Bradwood Project. Keeping in mind the above-noted discussion of a portfolio approach to renewable resources, it is noteworthy that 70 percent of the potential need for the Bradwood Project in the Pacific Northwest could be supplanted by these two energy sources alone.

Although the FEIS concludes that biomass has no role as an alternative to the Bradwood Project, Oregon currently has 280 MW of biomass-fired generation capacity.⁴⁰ ODE estimates that an additional 524 MW is currently available from unused or underutilized woody biomass, agricultural residue, and other forms of biomass in the state.⁴¹ Also, Washington has 300 MW of operational biomass generation capacity and estimates an additional 1,600 MW in technical potential.⁴² Only 300 MW of potential of biomass development would be required to meet the remaining 30 percent of potential need for the Bradwood Project in the Pacific Northwest.

Even beyond these three renewable resources, there are other resources that could and will contribute significantly to the supply portfolio to serve the projected energy needs of the Pacific Northwest.⁴³ For example, the FEIS finds that due to

³⁸ *Biennial Monitoring Report on the Fifth Power Plan*, Northwest Power and Conservation Council, (January 5, 2007) at Appendix G-3 (Fifth Power Plan).

³⁹ Geothermal Energy Association, U.S. Geothermal Power Production and Development Update, Aug. 2008, at 9.

⁴⁰ RETI Phase 1A at 6-15.

⁴¹ http://oregon.gov/ENERGY/RENEW/Biomass/resource.shtml#Summary_of_Biomass_Energy_Resources

⁴² RETI Phase 1A at 6-19.

⁴³ No analysis is provided here for the potential of hydrokinetic ocean power and in river resources in the Pacific Northwest, but it should be noted that the Commission currently has approved preliminary permits for the development of hydrokinetic systems in the region constituting a potential of 333 MW in Oregon and 45 MW in Washington.

weather conditions, solar has never made a significant contribution to the energy mix in the Pacific Northwest. In contrast, according to ODE, solar energy is Oregon's largest renewable resource.⁴⁴ The state has significant efforts underway to encourage development of this resource through tax credits, loans, and other incentives for residences and businesses to substitute solar power for other fuels in hot water and space heating.⁴⁵ It should be noted that these two end uses often use natural gas or electricity that may be produced by natural gas. In addition, Washington has enacted extremely progressive legislation to promote investment in solar power.⁴⁶

In addition to renewable energy resources, a comprehensive portfolio analysis of alternatives should assess distributed resources such as energy efficiency, conservation, demand response, combined heat and power, and waste heat recovery. Citing the benefits of lower cost and lower risk, a key conclusion by the Northwest Power and Conservation Council was to improve energy efficiency at an aggressive and sustained pace.⁴⁷ The integrated resource plans of utilities in the region also emphasize energy efficiency and conservation.⁴⁸ The Northwest Power and Conservation Council reports that the region has been largely successful in meeting these aggressive targets, which call for an incremental level of 700 MW of energy efficiency and conservation by 2009.⁴⁹ In order to achieve these targets, Oregon has established 58 programs to accelerate the installation of new energy efficiency measures in the state's residences and commercial structures.⁵⁰ Washington currently has in place 79 distinct state and

⁴⁴ State of Oregon Energy Plan 2007-2009 at 20.

⁴⁵ Oregon currently has over 17,000 solar water heating systems installed and provides tax credits up to \$1,500 or 35 percent of a solar water heating system costs.
<http://www.energytrust.org/solar/water/index.html>.

⁴⁶ Washington will provide tax breaks for renewable energy businesses that locate themselves in economically depressed and low population counties. Further, Washington has established a renewable energy "feed-in" production incentive. Under this program, homes and businesses with solar photovoltaics, wind power systems, and anaerobic digesters will earn 15 cents per kWh of electricity generated by their renewable energy systems. The earnings can increase, if the project's components are manufactured in Washington, to as much as 54 cents per kWh or \$2000 annually. The program will be in effect for nine years.
<http://www.iinet.com/~solarwashington/action/WABills/BillsSigned.htm>.

⁴⁷ Fifth Power Plan at 1.

⁴⁸ Fifth Power Plan at Appendix K-2.

⁴⁹ Fifth Power Plan at Appendix I-1-4.

⁵⁰ <http://www.dsireusa.org/library/includes/map2.cfm?CurrentPageID=1&State=OR&RE>

utility sponsored rebate, loan, and grant programs to promote and foster the accelerated adoption of energy efficiency.⁵¹

In summary, a portfolio of renewable resources is a reasonable alternative to the new energy capacity proposed by the Bradwood Project. The renewable resources that would be needed for that purpose appear to be not only possible in the Pacific Northwest, but also likely to develop given state RPS requirements and other state renewable incentives, rebates, and tax credits.

Adverse Environmental Impacts

A combined 20 to 50 million gallons of ballast and engine cooling water is typically taken on during offloading operations of each LNG tanker.⁵² The FEIS finds that the impacts on sensitive aquatic resources would not be adequately mitigated to a less than significant level without a screening mechanism that minimizes entrainment and impingement of juvenile fish.⁵³ The FEIS also finds that the Columbia River is currently listed as impaired for water temperature. Because engine cooling water is approximately 19.4°F higher than the ambient waters, a direct discharge of engine cooling water into the Columbia River could exacerbate elevated temperatures in the vicinity of the wharf.⁵⁴

As mitigation measures, Bradwood Landing and NorthernStar Energy propose to construct an on-site water supply system using a screened water intake located at the wharf. The applicants state that the screened water intake would avoid entrainment and impingement of juvenile fish. Moreover, the engine cooling water would be cycled through the ballast tanks to avoid the discharge of warm water back into the river.

LNG carriers, however, must be retrofitted to use such an on-site system. Although financial incentives will be offered for carriers to retrofit such systems, the applicants acknowledge that not all LNG carriers will do so. Therefore, the applicants filed a conceptual solution based on developing an external screening

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⁵¹<http://www.dsireusa.org/library/includes/map2.cfm?CurrentPageID=1&State=WA&RE=1&EE=1>

⁵² FEIS at 2-7 and 4-84.

⁵³ FEIS at 4-163.

⁵⁴ FEIS at 4-85 and 86.

system for tankers that have not been retrofitted.⁵⁵ The majority requires the applicants to file a comprehensive plan for the external screening system, including engineering designs, within 60 days.

Commenters argue that there is no evidence that the planned screening system will be effective. They suggest that a final design should be completed and subject to public review and comment. The majority disagrees that the final design needs to be completed at this time. The majority expresses confidence that an adequate final design will be developed by requiring compliance with the fish screen design criteria used by the National Marine Fisheries Service and the Oregon Department of Fish and Wildlife, along with technical review by Commission staff and post-installation water flow mapping.

As the Supreme Court has stated “NEPA does not require a complete plan be actually formulated at the onset, but only that the proper procedures be followed for ensuring that the environmental consequences have been fairly evaluated.”⁵⁶ The evidence does not support a finding that the planned screening system will effectively mitigate the project’s impact on sensitive aquatic resources to a less than significant level. While fish screening is a proven technology, its application to LNG carriers is novel. Thus, contrary to the majority’s suggestion, the use of fish screen technology on irrigation canals, industrial and municipal water supply pipes, and hydropower projects is not necessarily transferrable to LNG carriers. Further, the conceptual proposal for external screening for unmodified LNG carriers is particularly incomplete and uncertain. Even the applicants do not claim that the external screening system will adequately mitigate the project’s impact on juvenile fish to a less than significant level. The applicants only assert that the external screening system will reduce the risk of fish entrainment for unmodified LNG carriers.⁵⁷ Moreover, the LNG carriers that would use the external screening system would discharge engine cooling water directly into the Columbia River. The applicants have proposed performance metrics and monitoring methods for water temperature.

The appropriation of water by the LNG carriers during offloading for ballast and engine cooling is a significant aspect of the project. The record lacks the

⁵⁵ Applicants’ Response to FERC Staff’s Recommended Mitigation Measures in the Final Environment Impact Statement, (July 7, 2008) (Applicants’ Response).

⁵⁶ *Robinson v. Methow Valley Citizens Council*, 490 U.S. 332, 352 (1989).

⁵⁷ Applicants’ Response at 2.

information necessary to fairly evaluate whether the proposed screening system, in particular the external screening concept, will adequately mitigate to a less than significant level the impacts on sensitive aquatic resources. Further, interested parties should have the opportunity to comment and provide evidence on these new proposals.

Conclusion

The evidence demonstrates that the Bradwood Project is not in the public interest and, therefore, the subject application should be denied. There is inadequate support for the majority's finding that the Bradwood Project is needed to meet the projected energy needs of the Pacific Northwest. Moreover, there are reasonable alternatives to the Bradwood Project to serve the projected energy needs of the Pacific Northwest in a more efficient, more reliable, and environmentally preferable manner. Finally, significant environmental concerns about the Bradwood Project have not been fully or fairly evaluated.

For these reasons, I respectfully dissent from today's order.

Jon Wellinghoff
Commissioner