
EXECUTIVE SUMMARY

This draft environmental impact statement (EIS) for the Jordan Cove and Pacific Connector Gas Pipeline Project, proposed by Jordan Cove Energy Project, L.P. (Jordan Cove) and Pacific Connector Gas Pipeline, L.P. (Pacific Connector), has been prepared by the staff of the Federal Energy Regulatory Commission (FERC or Commission) to fulfill the requirements of the National Environmental Policy Act of 1969 (NEPA) and the Commission's implementing regulations under Title 18 Code of Federal Regulations Part 380. The purpose of this document is to inform the public and the permitting agencies about the potential adverse and beneficial environmental impacts of the proposed project and its alternatives, and to recommend mitigation measures that would avoid or reduce any significant adverse impacts.

The FERC is the federal agency responsible for authorizing onshore liquefied natural gas (LNG) import and interstate natural gas transmission facilities under the Natural Gas Act, and is the lead federal agency for the preparation of this EIS in compliance with the requirements of the NEPA. The U.S. Department of Homeland Security, Coast Guard (Coast Guard); the U.S. Army Corps of Engineers (COE); U.S. Environmental Protection Agency (EPA); U.S. Department of Interior, Bureau of Land Management (BLM), and Bureau of Reclamation (BOR); U.S. Department of Agriculture, Forest Service (USFS); U.S. Department of Transportation (DOT), and Douglas County, Oregon are cooperating agencies for the development of this EIS.

The Coast Guard has authority over the safety and security of LNG carriers, and the waterway for LNG marine traffic. The Coast Guard determines the suitability of the waterway for LNG marine traffic by issuing a Letter of Recommendation (LOR). The COE has authority to issue dredging and wetland permits for the project under section 10 of the Rivers and Harbors Act and section 404 of the Clean Water Act (CWA). The EPA has responsibilities under the Clean Air Act (CAA) and CWA. The DOT has authority to enforce safety regulations and standards for the LNG terminal beginning at the last valve before the LNG storage tanks and the design and operation of the natural gas sendout pipeline.

All actions on the federal lands proposed in Pacific Connector's application must comply with the respective Land and Resource Management Plans (LRMP) of the affected federal land management agencies. In implementing the NEPA process to assess the proposed action on federal lands, this EIS is tiered by reference to these management plans, as amended by the Northwest Forest Plan. The USFS has identified the possible need to amend the existing Umpqua, Rouge River-Siskiyou, and Fremont-Winema National Forest LRMPs. The BLM has identified the possible need to amend the existing Resource Management Plans of the Coos Bay, Roseburg, and Medford Districts and the Klamath Falls Resource Area. The EIS examines the proposed action and alternatives that require amendment or other administrative actions by the federal land management agencies.

PROPOSED ACTION

The purpose of Jordan Cove's and Pacific Connector's proposed action (collectively referred to as the JCE & PCGP Project, or Project) is to provide a new access point for liquefied natural gas (LNG) supplies and a new source of natural gas to the Pacific Northwest, northern California, and northern Nevada markets to diversify the supply sources for these markets. Jordan Cove and Pacific Connector propose to provide up to 1.0 billion cubic feet per day of natural gas to the region through interconnects at one intrastate pipeline and four interstate pipeline systems.

The LNG terminal facilities would include:

- access channel from the existing Coos Bay navigation channel and slip;
- LNG unloading berth and transfer pipeline;
- two full-containment LNG storage tanks, each with a capacity 160,000 m³ (or 1,006,000 barrels);
- vapor handling system, and vaporization equipment capable of regasifying the LNG for delivery into the natural gas sendout pipeline;
- piping, ancillary buildings, safety systems, and other support facilities;
- a natural gas liquids (NGL) extraction facility, with the NGL to be sold to an entity other than Jordan Cove and likely transported from the terminal using existing railroad lines; and
- a 37-megawatt, natural gas-fired, simple-cycle combustion turbine powerplant to provide electric power for the LNG terminal.

The natural gas pipeline facilities would include:

- a 229.5-mile-long, 36-inch-diameter, underground high-pressure welded steel sendout pipeline; and
- one natural gas compressor station, four natural gas meter stations, four pig¹ launchers and/or receivers, sixteen mainline block valves, five new communication towers, and additional communications equipment installed at eight existing towers.

The Pacific Connector pipeline would deliver natural gas to the Williams Northwest Pipeline Corporation (Williams Northwest) Grants Pass Lateral interstate pipeline near Clarks Branch, Oregon, and would terminate near the California border, east of Malin, Oregon, with interconnections with the existing natural gas systems of Gas Transmission Northwest Corporation, Tuscarora Gas Transmission Company, and Pacific Gas and Electric Company. The Pacific Connector pipeline would also deliver gas to Avista Corporation, a local distribution company that is not regulated by the FERC, at an interconnection near Shady Cove, Oregon.

In addition to the LNG terminal and natural gas pipeline facilities, the JCE & PCGP Project would require construction of facilities that do not fall under the Commission's jurisdiction. These include electric generation and NGL facilities at the LNG terminal, utility connections at the LNG terminal and compressor and meter stations, and facilities that might be constructed by Avista as a result of the interconnect to the Pacific Connector pipeline.

PROJECT IMPACTS AND MITIGATION

The major issues identified in our² analysis are geologic hazards, dredging-related impacts, potential impacts on waterbodies and wetlands, forest clearing, federally listed endangered and threatened species, and safety. These are discussed below. The EIS includes 141 recommended measures to mitigate or avoid environmental impacts.

Geology and Soils

The proposed LNG terminal is within the active Cascadia Subduction Zone (CSZ) covering parts of the Pacific Northwest which is a moderate- to low-activity seismic region subject to numerous

¹ A "pig" is a tool for cleaning and inspecting the inside of a pipeline.

² The pronouns "we," "us," and "our" refer to the environmental staff of the FERC's Office of Energy Projects.

historical earthquakes of magnitude 4.0 or greater. However, the Coos Bay area itself is an area of low historical seismicity, and there is no historical record of earthquakes of magnitudes greater than 3.0 within a 31-mile radius of the proposed LNG terminal site. Nonetheless, based on studies of historic seismicity, probabilistic estimates, and geotechnical studies at the LNG terminal site, the facility would be designed to survive a magnitude of earthquake on the CSZ without loss of LNG from the tanks. Subsurface conditions are suitable for the LNG terminal facilities provided adequate site preparation and foundation design are implemented. Jordan Cove would design the facilities accordingly and to satisfy both the FERC Seismic Guidelines and the 2007 Oregon Structural Safety Specialty Code.

The proposed LNG terminal is within an area that could be affected by a tsunami generated by a megathrust earthquake on the CSZ. Current models predict a wave height of up to 45 feet at the site, however the Commentors suggest that wave heights could be greater. Jordan Cove proposes to enclose portions of the site within a protective barrier with a top elevation of 55 feet, and foundations for all critical process equipment and structures located within the barrier would be installed at an elevation of +20 feet and all others at a nominal grade of +55 feet. Jordan Cove is coordinating additional studies with state agencies and research facilities to provide updated estimates of tsunami run-up at the North Spit. In addition, we have recommended that Jordan Cove provide a site-specific tsunami impact analysis that takes into account the proposed topographic modifications at the site. We are also recommending that an independent Board of Consultants provide oversight on seismic design and construction of both the LNG terminal and sendout pipeline.

Pacific Connector selected the proposed pipeline route to avoid areas with high risk of geological hazards. However, supplemental site-specific analyses of landslide hazards, potential soil liquefaction, lateral spreading and potentially active fault crossing must be completed prior to construction. We are also recommending that Pacific Connector prepare a Landslide Emergency Response Plan in coordination with affected agencies.

Permanent impacts to soils would occur at the proposed aboveground facilities where sites would be graveled or where permanent facilities would be constructed. Long-term impacts to soils are not anticipated within the areas temporarily affected by pipeline construction. Potential impacts on soils would be minimized through measures specified in Jordan Cove's Plan and Procedures and Pacific Connector's Erosion Control and Revegetation Plan (ECRP). These plans were based on the FERC staff's Plan and Procedures, and Pacific Connector's ECRP was also modified based on input from the BLM and USFS.

Water and Wetlands

Water requirements for the LNG terminal would be supplied by the Coos Bay North Bend Water Board (CBNBWB). There are no public groundwater supply wells within 400 feet of the proposed pipeline, however the pipeline would cross 6 wellhead protection areas. Pacific Connector identified 5 private wells within 200 feet of the proposed pipeline, but none of these are used for drinking water. Groundwater wells beyond 200 feet of the construction work areas are not expected to be adversely affected by the proposed Project.

Dredging the slip and access channel would have limited temporary impacts on water quality in Coos Bay. No ballast water from LNG carriers would be discharged into Coos Bay during their transit to the terminal. However, once at dock each LNG carrier would take in water from Coos

Bay for ballast and engine cooling during offloading operations. All water intake by LNG carriers at the terminal dock would be screened to prevent the entrainment of juvenile fish.

About 28.25 million gallons of water obtained from the CBNBWB would be used to hydrotest the LNG storage tanks, of which about 10 million gallons would be retained in the firewater pond on site and the remaining 18.25 million gallons discharged to an existing, permitted, industrial wastewater pipeline that drains into Coos Bay. During operation, the submerged combustion vaporizer would produce excess water, which would be slightly acidic and would be neutralized before being transferred to the firewater pond, and then discharged through the existing industrial wastewater pipeline. Jordan Cove would apply for a new NPDES permit for this discharge.

The Pacific Connector pipeline would cross or run adjacent to 379 waterbodies in six subbasins including the Coos, Coquille, South Umpqua, Upper Rogue, Upper Klamath, and Lost River subbasins. Construction activities at waterbody crossings would be conducted in accordance with all federal and state regulations and permit requirements. Pipeline construction at waterbody crossings would be conducted during low-flow periods whenever possible and within ODFW recommended in-water construction windows. Construction of the pipeline would result in minor, short-term impacts to waterbodies. After backfilling, the pipeline would be hydrostatically tested in accordance with DOT regulations.

Construction and operation of the Jordan Cove LNG terminal facilities would not directly affect wetlands. Construction of the slip and access channel would result in the permanent loss of approximately 4.15 acres of intertidal habitat, 7.1 acres of shallow subtidal habitat, and 39.5 acres of deep subtidal habitat. About 0.1 acre of wetlands would be affected at the Port Commercial Sand Stockpile Site. The Port has proposed mitigation to offset the permanent impact to wetlands. The Pacific Connector pipeline would cross approximately 14.9 miles of wetlands within 554 wetland systems, affecting about 405 acres of wetlands. Construction and operation of the proposed Pacific Connector pipeline would result in the permanently filling of 0.14 acre of wetlands. The remaining wetlands affected by the pipeline would be restored. Forested wetlands would be converted to herbaceous shrub-scrub wetlands.

Wildlife and Aquatic Resources

We identified EFH for groundfish, coastal pelagic species, Pacific Coast salmon, and highly migratory species within the proposed project area. We consolidated EFH consultations for the proposed Project with the consultations required under the ESA, and will include an EFH assessment with our Biological Assessment for the Project. Based on modeling results it is anticipated that turbidity generated by dredging the access channel and slip would not present an adverse impact to the aquatic species located in the vicinity of the dredging. We identified federally listed endangered or threatened species that potentially occur in the vicinity of the proposed Project. We conclude that the proposed Project would have no effect on 4 species or their designated critical habitat; may affect, but not likely adversely affect 16 species; and we conclude that the proposed Project is likely to adversely affect 9 species or their designated critical habitat.

Land Use, Recreation, and Visual Resources

Areas within the Zones of Concern along the LNG transit route include the unincorporated communities of Charleston, Barview, and Empire and the city of North Bend and a portion of the city of Coos Bay. The Zones of Concern also overlap the Coos Bay Shorelands SRMA, portions of the Oregon Coast National Wildlife Refuge the Siuslaw National Forest, and some state and local parks. Under normal operations, LNG carriers transiting the waterway would have no adverse impacts on current land uses, recreation, or visual resources.

The LNG terminal would be located on a tract of about 160 acres of vacant, open land, including a former dredge disposal area. The area of the North Spit where the LNG terminal would be located is zoned for water dependant development. Although Coos County approved Jordan Cove's application for a land use permit, the case was recently remanded by the Oregon Land Use Board of Applicants back to the county to resolve issues regarding impacts on wetland and cultural resources.

There are no residences closer than one mile from the proposed LNG terminal. The most visible part of the LNG terminal would be the LNG storage tanks. Visual impact of the LNG terminal in general would be minor because views would be screened by landscape, topography, and distance and the site is within an existing industrial area. The pipeline would have limited visual impacts, because it would be buried underground. The clearing of forest within the pipeline right-of-way and work areas would have long term visual impacts.

The majority of the pipeline route (64 percent) would cross forested land, and 14 percent of the route is categorized as agricultural land. The pipeline centerline would be within 50 feet of one residence, and the edge of the construction right-of-way would be less than 50 feet from 13 residences. We are recommending that Pacific Connector prepare site-specific plans to mitigate impacts on residences within 25 feet of the construction right-of-way.

Socioeconomics

The proposed Project is expected to benefit the local economy. Construction of the LNG terminal would employ an average of about 160 workers per month, with total wages of \$117 million, and \$74 million to be expensed on goods and services. Construction of the pipeline would employ an average of 1,400 workers per month, with a total payroll of \$166 million, and \$320 million would be spent on materials and equipment. The proposed Project would probably not have an adverse impact on regional housing because construction of the pipeline would be done over 2 years using 5 spreads, and there are about 13,479 total housing units in the four counties crossed by the pipeline including rental houses, motel rooms, and recreational vehicle park hookups. The Port estimated it may charge Jordan Cove up to \$60 million for capital investment services. In addition, the Port may collect receipts from users of the terminal up to \$5.5 million per year, and \$2 million and year in maintenance fees. Jordan Cove estimates that during operation it would spend about \$4 million on salaries per year, and up to \$10 million per year in direct expenditures for goods and services. Marine vessel services associated with operation of the terminal are estimated to result in 26 direct jobs, and 38 indirect and 21 induced jobs in Coos County, with total associated personal income of approximately \$5.9 million. One estimate developed for the South Coast Development Council concluded that operation of the proposed LNG terminal, the Pacific Connector pipeline, and LNG vessel operations would generate annual net tax revenues of approximately \$34.4 million by 2016, with \$13.6 million generated in Coos County and \$20.8 million generated elsewhere in Oregon.

Cultural Resources

Jordan Cove identified one archaeological site within the LNG terminal tract and testing has been recommended to evaluate the National Register of Historic Places (NRHP) eligibility of this site. Pacific Connector consultants surveyed about 20 acres of the pipeline route and identified 98 sites with area of potential effect. The Oregon State Historic Preservation Office (SHPO) reviewed the Pacific Connector report and determined that 12 sites are not eligible for the NRHP. Additional investigations are necessary at all other sites.

We have not yet completed the process of complying with the National Historic Preservation Act (NHPA) for this Project. For example, not all ethnographic studies and results of consultations with Indian tribes to identify sites of religious or cultural importance in the area of potential effect have been filed with the Commission, and cultural resources inventories been not yet been completed for the entire route of the proposed Pacific Connector pipeline. We would not allow construction to begin until all studies and consultations necessary to comply with the NHPA have been completed.

Air Quality and Noise

Operation of the proposed LNG terminal would result in air emissions from stationary equipment, LNG carriers, and tugs. Jordan Cove would minimize air emissions through the use of clean fuel, best management practices for operation and maintenance procedures, and limiting annual hours of operation from the diesel-fired units. Based upon the air quality modeling, operational emissions from the proposed LNG terminal would not have a significant effect on regional air quality. Operation of the Butte Falls Compressor Station would also not have a significant impact on air quality. In addition, the emissions from construction of the proposed LNG terminal and the Pacific Connector project facilities would not be regionally significant. Jordan Cove and Pacific Connector have applied for an air quality permit from the Oregon Department of Environmental Quality.

Noise would be generated during construction of the pipeline and during construction and operation of the LNG terminal and Butte Falls Compressor Station. In most areas, the increase in noise during construction would be localized, temporary, and limited primarily to daylight hours. Jordan Cove and Pacific Connector would incorporate noise attenuation measures during construction and operation to minimize impacts on nearby noise-sensitive areas to meet the FERC and local requirements. We are recommending that Pacific Connector conduct post-construction noise surveys to ensure that operational noise at the Butte Falls Compressor Station would be at or below the predicted levels.

Safety and Reliability

We evaluated the safety of both the proposed facilities and the related LNG carrier transit through the Coos Bay navigation channel. As part of our evaluation, we performed a cryogenic design and technical review of the proposed terminal design and safety systems including the proposed seismic design measures. Several areas of concern were noted with respect to the proposed facility, and we identified specific recommendations to be addressed by Jordan Cove prior to initial site preparation, prior to final design, prior to construction, prior to commissioning, and prior to commencement of service.

Thermal radiation distances were calculated for an LNG storage tank and marine area impoundment fire. Because portions of the resulting thermal exclusion zones extend beyond the

plant fence line, Jordan Cove entered into an option for an easement with the Port to satisfy the thermal exclusion zone requirements of 49 CFR 193.2057. This option for an easement would give Jordan Cove an easement on and over the portion of land that is required by FERC.

Thermal radiation and flammable vapor hazard distances were calculated for an accident or an attack on a 140,000 m³ capacity LNG carrier. The results of these calculations are in agreement with the Zones of Concern used by the Coast Guard in assessing the waterway suitability. However, the evaluation of safety is more than an exercise in calculating the consequences of worst-case scenarios. Rather, it is a determination of the acceptability of risk which considers: the probability of events, the effect of mitigation, and the consequences of events. Based on the extensive operational experience of LNG shipping, the structural design of an LNG carrier, and the operational controls imposed by the Coast Guard and the local pilots, the likelihood of a cargo containment failure and subsequent LNG spill from a vessel casualty is highly unlikely. As a result, the risk to the public from accidental spills from LNG carriers should be considered negligible.

Unlike accidental causes, historical experience provides little guidance in estimating the probability of a terrorist attack on an LNG carrier. For an LNG import terminal proposal that would involve having a large volume of energy transported and stored, the perceived threat of a terrorist attack is a primary concern of the local population and requires that resources be directed to mitigate possible attack paths. While the risks associated with the transportation of any hazardous cargo can never be entirely eliminated, they can be managed.

If an accidental or intentional breach of an LNG carrier resulting in a release of LNG were to occur during transit along the waterway, impacts on the various environmental resources within the Zones of Concern could result. LNG would not contaminate water, because it is not soluble, it floats, and the LNG would vaporize shortly after being spilled. The primary hazard from an LNG spill would be a pool fire if the vapors are ignited. A pool fire could have adverse effects on vegetation, wildlife, structures, and people. In general, the area of effect of an LNG release and any resulting fire would be fairly limited in area and short-lived. The severity and duration of the impacts would vary depending on the resource and its distance from the source, as resources in Zone 1 would be more severely impacted than resources in Zone 3. However, with implementation of the mitigation measures described in the Coast Guard's Waterway Suitability Report (WSR), a release would be highly unlikely and the potential impact on resources would be less than significant.

Based on its review of Jordan Cove's Waterway Suitability Assessment (WSA), the Coast Guard advised the FERC in its WSR dated July 1, 2008 that to make the Coos Bay navigation channel suitable for the LNG marine traffic, specific risk mitigation measures would be necessary. These measures would include, among others, a 500-yard moving safety and security zone around LNG carriers in transit, and a 150-yard fixed security zone around the LNG carriers moored at the proposed LNG terminal.

ALTERNATIVES CONSIDERED

Alternatives considered by the FERC include no action or postponed action, system alternatives, LNG terminal site alternatives, LNG terminal layout alternatives, and pipeline route alternatives. While denying project approval or taking no action (or postponing action) would prevent the environmental impacts identified in this EIS, the project objective would not be met of providing a new source of natural gas for the Pacific Northwest.

We considered five newly proposed jurisdictional interstate pipelines as possible system alternatives to the proposed JCE & PCGP Project. We do not consider the Palomar Project to be a preferable alternative because it could not meet one of the main objectives, to provide new sources of natural gas through imported LNG to markets in southern Oregon, northern Nevada, and northern California. We do not consider the Sunstone, Blue Bridge, Ruby, or Bronco pipeline projects to be environmentally preferable alternatives because they would be substantially longer than the proposed Pacific Connector pipeline. However, if they file applications, the FERC would review each of these projects individually on their own merits, and if authorized, market conditions would determine which projects are ultimately put into service.

We considered if other LNG import terminals proposed for the west coast of North America could serve as reasonable alternatives to meet the objectives of the proposed JCE & PCGP Project. The existing Costa Azul LNG terminal in Baja Mexico is too far away from the target market in southern Oregon, and is committed to servicing customers in northern Mexico and southern California. Only one LNG terminal (Kitimat) in British Columbia, Canada has been authorized and it would serve customers in Alberta and eastern Canada. The other LNG terminals proposed in California have not been authorized. We concluded that some of these projects are not feasible, and none would meet all the objectives of the proposed JCE & PCGP Project.

We considered alternative LNG terminal locations along the coast of northern California, Oregon, and Washington that would be accessible to LNG carriers and within a reasonable distance of an interstate pipeline system. Sites in the Puget Sound area or Grays Harbor area of Washington do not appear to be environmentally preferable to the proposed JCE & PCGP Project, and those locations have constraints which have prevented them so far from being considered by potential developers as LNG import terminals. The FERC recently completed a final EIS for the Bradwood Landing LNG Project on the Columbia River, which includes a 36.3-mile sendout pipeline in Oregon and Washington. The Oregon LNG Project in Warrenton, Oregon, and its associated 121-mile-long sendout pipeline, are currently being studied under the FERC's Pre-filing Review Process. We do not consider either the Bradwood Landing nor the Oregon LNG Project to be preferable alternatives to the proposed JCE & PCGP Project because neither could meet one of its main objectives, to serve markets in southern Oregon, northern Nevada, and northern California. However, the Commission does not choose between competing projects, and if either of the other LNG terminals in Oregon are authorized, the market would ultimately determine which projects are viable.

We evaluated major route alternatives for the proposed sendout pipeline, but none would provide significant environmental advantages over Pacific Connector's proposed pipeline route. A number of minor route variations were also considered in an effort to eliminate or minimize potential impacts on specific localized resources, including residences, old-growth forest, wildlife habitat, or waterbodies. These included several minor route variations requested by federal land management agencies. In some cases Pacific Connector adopted minor route variations that we agree are environmentally preferable, in other cases we agree that the minor route variation alternative offered no clear environmental advantages over Pacific Connector's proposed route. We recommend that Pacific Connector incorporate an upland route variation that would avoid extensive construction in Coos Bay between mileposts 0.5 and 7.5.

The proposed action for the Coast Guard is to issue an LOR finding the waterway suitable for LNG marine traffic with conditions. Reasonable alternatives to the Coast Guard's proposed

action with conditions include: 1) issuance of a Coast Guard LOR finding the waterway suitable for LNG marine traffic without conditions; and 2) issuance of a Coast Guard LOR finding the waterway not suitable for LNG marine traffic (no action alternative). The no action alternative for the Coast Guard would avoid any project-related environmental effects in the waterway; however, it would also prevent LNG carriers from delivering LNG to the proposed import terminal and the project objectives would not be met. A reasonable alternative to the Coast Guard action of issuing an LOR, which finds the waterway suitable for LNG marine traffic with certain conditions, is to issue an LOR without any conditions. With this alternative, some of the adverse economic effects of the conditions would be lessened. However, the potential for adverse environmental effects would be greater if conditions were not imposed.

PUBLIC INVOLVEMENT AND AREAS OF CONCERN

As part of the Commission's Pre-filing Process, on June 23, 2006, the FERC issued a Notice of Intent to Prepare an Environmental Impact Statement for the Proposed Jordan Cove LNG and Pacific Connector Gas Pipeline Projects, Request for Comments on Environmental Issues, and Notice of a Joint Public Meeting. This notice was sent to elected federal, state, and local government officials; agency representatives; environmental and public interest organizations; Native American tribes; affected landowners as identified by the applicants; and local libraries and newspapers. The notice encouraged project stakeholders or interested parties to provide input on environmental issues that should be addressed during the environmental review process. Between the beginning of Pre-filing and the filing of applications we received 332 letters commenting on the proposed Project.

The FERC conducted seven public scoping meetings in the Project area to provide an opportunity for the public to learn more about the proposed Project and to provide comments on environmental issues to be addressed in this EIS. The public scoping meeting in Coos Bay on July 12, 2006, was held jointly with the Coast Guard. Additional public meetings were held in North Bend (January 24, 2007), Rosebury (July 10, 2006 and January 23, 2007), Medford (July 12, 2006 and January 25, 2007), and Klamath Falls (February 13, 2006).

MAJOR CONCLUSIONS

We conclude that construction and operation of the JCE & PCGP Project would have limited adverse environmental impacts. However, the implementation of the applicant's proposed mitigation measures, and additional measures we recommend, would substantially reduce the environmental impact of the proposed Project. The primary reasons for our decision are:

- the final engineering design for the LNG terminal would incorporate detailed seismic specifications and other measures to mitigate the impacts of earthquakes, and mitigation measures would be implemented along the pipeline route to address landslides and other geological hazards;
- an engineering peer review process is recommended to ensure compliance with all applicable regulations, codes, design specifications, and conditions of the Commission Order;
- Jordan Cove would implement its project-specific Upland Erosion Control and Revegetation Plan (ECRP) and Wetland and Waterbody Construction and Mitigation Procedures, and Pacific Connector would implement its project-specific ECRP, which would minimize impacts on soils, wetlands, and water resources;

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- Jordan Cove and Pacific Connector would implement various mitigation plans to compensate for impacts on waterbodies, wetlands, vegetation, and habitats;
 - Pacific Connector would continue to consult with the BLM, USFS, and BOR to address impacts and mitigation measures on federal lands managed by these agencies, and would incorporate project-specific design and mitigation measures into Plans of Development for each affected federal land unit;
 - consultations with the COE, Coast Guard, National Marine Fisheries Service, U.S. Fish and Wildlife Service, Oregon Department of Land Conservation and Development, Oregon Department of Environmental Quality, Oregon Department of State Lands, Oregon Department of Fish and Wildlife, SHPO, and other appropriate agencies and issuance of relevant permits and authorizations would be completed before Jordan Cove and Pacific Connector would be allowed to begin construction;
 - the proposed LNG terminal would meet the federal safety regulations regarding the thermal radiation and flammable vapor dispersion exclusion zones, and appropriate safety features would be incorporated into the design and operation of the LNG import terminal and LNG carriers; and
 - an environmental inspection and mitigation monitoring program would be implemented to ensure compliance with all mitigation measures that become conditions of any FERC authorization.

In addition, our conclusions are based on the Coast Guard's preliminary determination in the WSR that the waterway may be suitable for LNG marine traffic if additional measures and operational controls are implemented. Some of these additional measures and controls include:

- a 500-yard moving safety/security zone around the LNG vessel during transit of the waterway, and a 150-yard fixed security zone while the LNG vessel is moored;
- a security zone covering the entire LNG terminal slip and extending 25 yards into the waterway when there is not a vessel at the dock;
- a restriction on the size of LNG carriers transiting the Port of Coos Bay to a vessel with physical dimensions of a 148,000 m³ and capacity class vessel;
- requirement that LNG vessels must board Pilot(s) at least 5 miles outside the Coos Bay Sea Buoy;
- requirement that for the first 6 months, all transits must be during daylight hours, unless approved in advance by the Captain of the Port (COTP);
- LNG vessel transits and bar crossings must be coordinated to minimize conflicts with other deep draft vessels, recreational boaters, seasonal fisheries, and other Marine Events;
- escort of the vessel by at least two tugs along the waterway with a third to assist with turning and mooring;
- requirement that LNG vessel transit is limited to periods of high tide and 25 knot winds or less;
- installation of four new navigational aids and relocation of eight existing aids;
- a Physical Oceanographic Real-Time System (PORTS) must be contracted with NOAA to provide real time river, current, and weather data;
- augmentation of regional emergency response planning resources to adequately develop, and continuously update, regional emergency response procedures;

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- augmentation of shoreside firefighting capabilities to provide protection services to the facility as well as communities along the transit route;
 - implementation of a comprehensive public notification system to notify the public along the transit route, including deployment of associate equipment and training; and
 - installation of gas detection equipment at strategic points along the waterway, and appropriate training and maintenance infrastructure.