

## EXECUTIVE SUMMARY

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### INTRODUCTION

On April 17, 2013, Aguirre Offshore GasPort, LLC (Aguirre LLC), a wholly owned subsidiary of Excelerate Energy, LP (Excelerate Energy), filed an application with the Federal Energy Regulatory Commission (Commission or FERC) under Section 3 of the Natural Gas Act (NGA) and Part 153 of the Commission's regulations. The application was assigned Docket No. CP13-193-000, and a Notice of Application was issued on April 30, 2013, and noticed in the Federal Register on May 6, 2013. Aguirre LLC is seeking authorization from the FERC to develop, construct, and operate a liquefied natural gas (LNG) import terminal off the southern coast of Puerto Rico.

The purpose of the environmental impact statement (EIS) is to inform FERC decision-makers, the public, and the permitting agencies about the potential adverse and beneficial environmental impacts of the proposed Aguirre Offshore Gasport Project (Project) and its alternatives, and recommend mitigation measures that would reduce adverse impacts to the extent practicable. We<sup>1</sup> prepared this draft EIS to assess the environmental impacts associated with construction and operation of the Project as required under the National Environmental Policy Act (NEPA) of 1969, as amended. Our analysis was based on information provided by Aguirre LLC and further developed from data requests, field investigations, scoping, literature research, and contacts with or comments from federal, state, and local agencies, and individual members of the public.

The FERC is the lead agency for the preparation of the draft EIS. The U.S. Environmental Protection Agency (EPA), U.S. Army Corps of Engineers (COE), U.S. Coast Guard (USCG), Puerto Rico Permits Management Office, Puerto Rico Environmental Quality Board (EQB), Puerto Rico Planning Board, Puerto Rico Department of Natural and Environmental Resources (DNER), and Puerto Rico Department of Health are participating in the NEPA review as cooperating agencies.<sup>2</sup>

### PROPOSED ACTION

The Project is being developed in cooperation with the Puerto Rico Electric Power Authority (PREPA) for the purpose of receiving, storing, and regasifying LNG to be acquired by PREPA; and delivering natural gas to PREPA's existing Aguirre Power Complex (Aguirre Plant) in Salinas, Puerto Rico. The Project would include the construction and operation of an offshore marine LNG receiving facility (Offshore GasPort) and a 4.1-mile-long (6.6 kilometers [km]) subsea pipeline connecting the Offshore GasPort to the Aguirre Plant. A Floating Storage and Regasification Unit (FSRU) would be moored at the Offshore GasPort on a semi-permanent basis. Ships would dock at the Offshore GasPort and deliver LNG to the FSRU. Both the ships and the FSRU would be under the jurisdiction of the USCG. The LNG receiving facility would be located approximately 3 miles (4.8 km) off the southern coast of Puerto Rico, about 1 mile (1.6 km) outside of Jobos Bay, near the towns of Salinas and Guayama. Aguirre LLC is also proposing to utilize a construction office, contractor staging area, and existing access construction pier within the Aguirre Plant property.

The purpose of the Project is to provide LNG storage capacity and sustained deliverability of natural gas directly to the Aguirre Plant, which would facilitate PREPA's conversion of the Aguirre Plant from fuel oil only to a dual-fuel generation facility, capable of burning diesel and natural gas for the combined cycle units and fuel oil and natural gas for the thermoelectric plant. The Project would contribute to the diversification of energy sources in Puerto Rico, allow the Aguirre Plant to meet the requirements of the EPA's Mercury and Air Toxics Standard rule, reduce fuel oil barge traffic in Jobos

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<sup>1</sup> "We," "us," and "our" refer to the environmental staff of the Federal Energy Regulatory Commission's Office of Energy Projects.

<sup>2</sup> A cooperating agency is an agency that has jurisdiction over all or part of a project area and must make a decision on a project, and/or an agency that provides special expertise with regard to environmental or other resources.

Bay, and contribute to energy price stabilization in the region. Aguirre LLC is proposing to place the Project facilities in service in 2016.

## AGENCY AND PUBLIC REVIEW AND COMMENT OPPORTUNITIES

On December 21, 2011, Aguirre LLC filed a request with the FERC to implement the Commission's pre-filing process for the Project. On January 1, 2012, we granted Aguirre LLC's request and established a pre-filing docket number (PF12-4-000) in which to place information filed by Aguirre LLC, comments provided by stakeholders, and documents issued by the FERC and other agencies into the public record. Aguirre LLC held three informational open houses in February 2012, September 2012, and May 2013. The purpose of the open houses was to provide the general public with information about the Project and to give them an opportunity to ask questions and express their concerns. We participated in the open houses and provided information regarding the Commission's environmental review process to interested stakeholders. The substantive questions and concerns raised by the public at the open houses are addressed in the draft EIS.

On February 28, 2012, we issued a *Notice of Intent to Prepare an Environmental Impact Statement for the Planned Aguirre Offshore GasPort Project, Request for Comments on Environmental Issues, and Notice of Public Scoping Meetings*. The notice was published in the Federal Register on March 5, 2012, and mailed to more than 130 interested parties, including federal, state, and local government representatives and agencies; elected officials; environmental and public interest groups; other interested parties; and local libraries and newspapers. The notice briefly described the Project and the EIS process, provided a preliminary list of environmental issues identified by us, invited written comments on the environmental issues that should be addressed in the draft EIS, listed the date and location of two public scoping meetings to be held in the Project area, and established a closing date for receipt of comments of March 30, 2012. We received approximately 25 comment letters from various stakeholders, including the U.S. Fish and Wildlife Service (FWS); National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NMFS); National Park Service; Governor of the Commonwealth of Puerto Rico; PREPA; Puerto Rico Federal Affairs Administration; Puerto Rico Pilotage Commission; Government Development Bank of Puerto Rico; Comité Diálogo Ambiental; the Center for Biological Diversity; and Captain Jimmy Vazquez-Aran.

We held two public scoping meetings to provide an opportunity for agencies, stakeholders, and the general public to learn more about the Project and participate in the environmental analysis by commenting on the issues to be addressed in the draft EIS. The first meeting was in the Town of Guayama on March 20, 2012; the second meeting was in the Town of Salinas on March 21, 2012. Approximately 30 people attended the meeting in Guayama and 45 people attended the meeting in Salinas. The transcripts of the public scoping meetings, summaries of the interagency scoping meetings, and all written scoping comments are part of the public record for the Project and are available for viewing on the FERC internet website (<http://www.ferc.gov>).<sup>3</sup>

We also coordinated several interagency scoping meetings in the Project area to solicit comments and concerns about the Project from other permitting and resource agencies in March 2012, May 2012, September 2012, May 2013, November 2013, and June 2014. We also conducted a field visit with Aguirre LLC on February 2, 2012, to review the proposed locations and construction methods of the onshore and offshore facilities. On September 5, 2012; February 18, 2013; April 15, 2013; and December 4, 2013, we issued Project Updates, which outlined the status of the environmental review process and included a summary of the issues identified through the scoping process.

<sup>3</sup> Using the "eLibrary" link, select "General Search" from the eLibrary menu, enter the desired date range and Docket Number (i.e., CP13-193 or PF12-4), and follow the instructions.

We issued a Notice of Schedule on May 2, 2014, and it indicated that the final EIS for the Aguirre GasPort Project would be issued December 19, 2014. This draft EIS has been filed with the EPA and mailed to interested parties. This draft EIS has also been translated to Spanish to facilitate public review. The distribution list for the draft EIS is in appendix A. A formal Notice of Availability indicating that the draft EIS will be available for review and comment was published in the Federal Register. The public has 45 days after the date of publication in the Federal Register to review and comment on the draft EIS both in the form of written comments and at public meetings to be held in the Project area. The dates and locations of these public meetings are listed in the To the Party Addressed letter that is included in the front of this draft EIS, as well as in the Notice of Availability. All comments received on the draft EIS related to environmental issues will be addressed in the final EIS.

## **ENVIRONMENTAL IMPACTS AND MITIGATION**

We evaluated the Project impacts on geology; soils and sediments; water resources; wetlands; vegetation; wildlife and aquatic resources; threatened, endangered, and special status species; land use, recreation, and visual resources; socioeconomics (including transportation and traffic); cultural resources; air quality and noise; and reliability and safety. We also considered the cumulative impacts of this Project with past, current, and reasonably foreseeable future actions in the Project area.

Overall, construction of the Project would temporarily disturb approximately 158.2 acres (162.9 cuerdas) of land, surface water, and the seafloor, including 1.5 acres (1.5 cuerdas) of land within the existing Aguirre Plant property. As proposed, the construction of the offshore facilities, including the berthing platform, subsea interconnecting pipe, and lay barge construction areas, would require approximately 156.7 acres (161.3 cuerdas) at the water surface and would directly impact 116.9 acres (120.4 cuerdas) of the seafloor. Operation of the offshore facilities would permanently impact approximately 25.3 acres (26.1 cuerdas) of seafloor.

Important issues identified as a result of our analyses, scoping comments, and agency consultations include impacts on marine wildlife, essential fish habitat (EFH), and benthic species; impacts on threatened or endangered species; impacts on land use and recreation; and air and noise impacts. Where necessary, we are recommending additional mitigation measures to minimize or avoid these and other impacts. Section 5.2 of the EIS contains our conclusions and a compilation of our recommended mitigation measures.

### **Geologic Resources**

The proposed offshore terminal and pipeline construction and operation would have minimal impacts on the geologic resources of the area. However, some hazards such as seismic ground motion, liquefaction events, wind and wave loadings, and tsunamis could impact the Project during operation. Therefore, we are recommending that Aguirre LLC file updated offshore wave analysis, marine terminal structure and pile foundation design and construction details, seismic specifications used in conjunction with the procuring equipment, quality control procedures, and identification of an inspector employed by Aguirre LLC to observe the construction of the Project and furnish inspection reports.

### **Soils and Sediments**

Construction activities, including the installation of the subsea pipeline, temporary piles, and permanent structures at the offshore berthing platform, would result in the resuspension of seafloor sediment into the water column. When suspended during construction, the fine silt particles would descend through the water column relatively slowly and could travel hundreds of yards (hundreds of meters [m]) under mean current speeds due to the spatial and temporal asymmetry of the tidal currents. To ensure that impacts associated with the resuspension, transport, and redeposition of sediments

disturbed during construction activities are addressed, we are recommending that Aguirre LLC conduct sediment transport modeling, prior to the end of the public comment period on the draft EIS, to support its determination that the redeposition of sediments disturbed during the construction activities would be limited to within 100 feet (30 m) of the pile foundations at the offshore berthing platform footprint and within 10 feet (3 m) of the pipeline centerline. Based on the information that would be provided by Aguirre LLC, we will further evaluate the construction-related impacts associated with the resuspension of seafloor sediment in the final EIS.

### **Water Resources**

Construction activities of the offshore berthing platform and pipeline would cause the displacement of sediments on the seafloor and the resuspension of sediments into the water column. Sediment disturbed during construction would also be resuspended in the water column and transported by currents. The effects of the construction activities on turbidity levels would vary with the length and severity of disturbance, grain size composition, and resettling rates. As discussed above, we are recommending that Aguirre LLC conduct sediment transport modeling to support its determination regarding the redeposition of sediments disturbed during the construction activities.

Spills or leaks of hazardous materials (e.g., fuel, lubricants) from equipment working in the onshore areas could also result in adverse impacts on water resources. Construction contractors and port operations personnel would be required to comply with all laws and regulations. We are recommending that Aguirre LLC file a site-specific spill prevention and control plan for the construction and operation phases of the Project (onshore and offshore) prior to construction.

### **Vegetation Resources**

Based on the sparse vegetation within the proposed onshore temporary workspace area, no significant impacts on terrestrial vegetation resulting from construction or operation of the Project are anticipated.

Submerged aquatic vegetation is the most common benthic cover type in Jobos Bay. Seagrass is the dominant cover in approximately 30 percent of the bay; macroalgae (seaweed) is the dominant cover in an additional 20 percent. Seagrasses provide food and shelter to commercial and recreational fishery species as well as invertebrates and birds. Seagrasses also reduce wave and current action and improve water clarity and quality. Both seagrass and macroalgae are distributed throughout Jobos Bay, providing habitat for commercially and recreationally important fish and invertebrates. To ensure that impacts on seagrass are minimized and/or properly mitigated, we have recommended that Aguirre LLC consult with NMFS, FWS, DNER, and other appropriate agencies in developing the seagrass mitigation and monitoring plan. The mitigation plan should be developed in compliance with the COE's mitigation requirements for the Project. Aguirre LLC should file a draft of this plan along with agency comments on the draft with the Secretary prior to the end of the public comment period on the draft EIS. We will further evaluate the Project's impacts on seagrass based on Aguirre LLC's draft seagrass mitigation and monitoring plan in the final EIS.

### **Wildlife Resources**

The proposed offshore terminal and subsea pipeline are located in marine areas that support habitat for marine wildlife and fisheries. Construction would result in temporary impacts on marine wildlife habitats, including 19.8 acres (20.4 cuerdas) of seagrass, 77.4 acres (79.7 cuerdas) of macroalgae, 5.2 acres (5.4 cuerdas) of coral reef, and 14.5 acres (14.9 cuerdas) of soft bottom habitat. Construction of the Project would create short-term adverse impacts on a rich and diverse assemblage of wildlife species including manatees, sea turtles, reef fish, sharks, corals, and invertebrates found within these habitats.

Hydrostatic testing involves filling pipelines with water, performing pressure tests in accordance with applicable regulations, and discharging the test water following completion of the test. Aguirre LLC would withdraw the water used for testing from Jobos Bay or the Caribbean Sea, depending on the section of pipeline being tested. NMFS raised concerns regarding entrainment of fish during this process. To ensure that the entrainment of fish and other organisms is minimized or avoided, we recommend that Aguirre LLC consult with NMFS regarding the type of screen (e.g., wedge-wire) that would be used for water withdrawals during the construction.

The Offshore GasPort would create a permanent impact on marine wildlife habitat. These permanent impacts would include approximately 3.7 acres (3.8 cuerdas) of seagrass, 20 acres (20.6 cuerdas) of macroalgae, 0.5 acre (0.5 cuerda) of reef, and 1.1 acres (1.1 cuerdas) of soft bottom habitat. The Project would result in direct impacts from mortality of coral colonies within the footprint of the pipeline across the coral reef and unconsolidated hardbottom, as well as indirect impacts resulting from shading of patch reef below the offshore terminal (including the FSRU and LNG carrier) and degradation of seagrass and macroalgae foraging habitats. The FSRU and LNG carriers stationed at the terminal would also locally impact wildlife resources from thermal plume and anti-fouling agent discharge, plankton entrainment, noise, and lighting.

Environmental regulatory agencies, including NMFS, have expressed concern over impacts on protected coral species and habitat along the subsea pipeline route, specifically in the area of the Boca del Infierno pass. Aguirre LLC's proposed direct lay construction method would adversely impact the protected coral species and habitat located in the area. We are recommending that Aguirre LLC consult with NMFS, FWS, DNER, and other appropriate agencies in developing a coral reef mitigation and monitoring plan prior to the end of the draft EIS comment period, allowing us to assess the potential of facilitating a recovery of impacted benthic resources. The mitigation plan should be developed in compliance with the COE's mitigation requirements for the Project. We will further evaluate the Project's impacts on protected coral species based on Aguirre LLC's draft coral reef mitigation and monitoring plan in the final EIS. Further, we are recommending that Aguirre LLC conduct a feasibility analysis of a horizontal directional drill (HDD) crossing under Boca del Infierno pass with the intent to alleviate NMFS' concerns and substantially reduce impacts on coral reef habitat. If Aguirre LLC finds that the HDD construction method is feasible, implementation of this construction technique as a method of avoidance or minimization of impacts would likely expedite formal consultation with NMFS.

We also identified noise impacts, both from the subsea and offshore terminal, to have the potential to disturb marine species. We are recommending additional acoustic modeling be completed, prior to the end of the public comment period on the draft EIS, and consultations with the FWS, NMFS, and DNER to identify acceptable mitigation measures to reduce noise levels from construction. We will analyze the results of the acoustic modeling and further evaluate the construction-related noise impacts on marine species in the final EIS.

Several species of birds may be found in the Project area resting or nesting along the shoreline. Due to concerns raised by the DNER, we are recommending that Aguirre LLC provide an assessment of potential noise impacts on resting and nesting birds during the construction and operation of the Project, and identify mitigation measures that could be implemented to minimize or avoid these impacts.

The Project would necessitate the installation of temporary lighting to facilitate construction activities during evening hours as well as for safety requirements. During operations, the FSRU and offshore berthing platform would be lit 24 hours per day by security lighting, navigation lights, and Federal Aviation Administration warning lights. We are recommending that Aguirre LLC develop and file a lighting plan that identifies specific measures that would be implemented to minimize or avoid impacts associated with the Project's operational nighttime lighting on avian species, fish species, marine mammals, and individuals on the shoreline.

## Threatened and Endangered Species

We have identified 23 federally listed threatened or endangered species and 10 species proposed for Endangered Species Act (ESA) listing occurring or potentially occurring in the Project area. Due to the distance of their primary habitat from the Project area, it was determined that the Project would have no effect on 9 of the listed or proposed species and may affect, and is not likely to adversely affect an additional 14 species based on behavioral characteristics; habitat requirements; and the construction, operation, and mitigative measures proposed by Aguirre LLC. The remaining 10 species we have determined would be adversely impacted by the Project. The construction and/or operation of the Project would impact the Antillean manatee and nine species of listed or proposed corals. Our ESA consultation with the FWS and NMFS concerning federally listed species and critical habitats is ongoing.

With mitigation techniques such as the use of trained marine mammal observers and a 0.3-mile (0.5 km) zone of exclusion around vibratory pile driving activities, the temporary impact on manatees including the risk of strikes and stress caused by excessive noise would be greatly reduced. As previously stated, environmental regulatory agencies, including NMFS, have expressed concern over impacts on protected coral species along the subsea pipeline route, specifically in the area of the Boca del Infierno pass. Therefore, we are recommending that Aguirre LLC conduct a feasibility analysis of an HDD crossing under the Boca del Infierno pass. Aguirre LLC should file this analysis prior to the end of the public comment period on the draft EIS. The final EIS will present our analysis of impacts on protected coral species along the subsea pipeline route considering Aguirre LLC's HDD feasibility analysis.

Operation of the Project would also result in impacts on coral larvae due to loss of individuals entrained in sea water intakes for the FSRU and the LNG carriers while at berth at the Offshore GasPort. During spawning periods, there is potential for entrainment of coral larvae with the highest risk occurring near the depth of the intake of the FSRU. Section 4.5.4.3 provides an entrainment analysis associated with seawater intakes during Project operations. Entrainment of coral larvae would likely result in a permanent, moderate impact on coral populations in the region. We reviewed the information submitted by Aguirre, performed our own research, and consulted directly with the agencies regarding federally listed species in the Project area. Our analysis of the potential for Project-related impacts on these species and their designated critical habitats is discussed below and in appendix D to this EIS.

As required by Section 7 of the ESA, we are requesting that the FWS and NMFS consider appendix D, along with information in this EIS and survey reports prepared by Aguirre LLC (submitted separately), as our Biological Assessment for the Project and are requesting formal consultation. To ensure that impacts on ESA-listed species are addressed, we are recommending that Aguirre LLC not begin construction activities until we have completed formal consultation with the FWS and NMFS.

## Land Use and Recreational Resources

Construction of the Project would alter the land use, recreation, and visual resources of the area by temporarily increasing vessel traffic, therefore impacting recreational boating and fishing. Operation of the Project would permanently alter the existing visual resources as well as impact boating, fishing, and other marine uses near the offshore facility.

Construction activities would require the use of a variety of vessels including lay barges, dive support vessels, support tugs, crew boats, pipe transport barges, and pipe haul barge tugs, increasing the current levels of large vessel traffic in Jobos Bay, which is typically limited to small recreation and commercial fishing vessels. Operation of the Project would have minimal impact on marine use within the bay. National Oceanic and Atmospheric Administration navigational charts of the area would need to include the subsea pipeline for recreational or commercial users of the bay. The subsea pipeline may prevent deep draft vessels from entering Jobos Bay through the Boca Del Infierno pass. The USCG's

proposed safety zone located around the FSRU and LNG carriers would have direct impacts on boating, fishing, and other marine uses in the area, as it would prohibit their transiting or using an area within 500 yards (457 m) from the facility. Conversely, the Project would result in a decrease of oil barge traffic within Jobos Bay and along the barge channel to the Aguirre Plant due to the plant's conversion to natural gas as a fuel source.

Construction of the offshore berthing platform and subsea pipeline requires a coastal zone consistency be completed with the Puerto Rico Planning Board to ensure that the Project is consistent with Coastal Zone Management Program policies. We are recommending that: Aguirre LLC not begin construction of the Project until it files with the Secretary of the Commission (Secretary) a copy of the determination of consistency with the Coastal Zone Management Program issued by the Puerto Rico Planning Board.

The presence of the FSRU and offshore berthing platform would visually affect wildlife viewing from the Cayos Caribes lookout tower and other places within the Jobos Bay National Estuarine Research Reserve that have views of the ocean. The FSRU and offshore berthing platform would be lit 24 hours per day by security lighting, navigation lights, and Federal Aviation Administration warning lights. To minimize impacts associated with nighttime lighting, as previously stated, we are recommending that Aguirre LLC develop a lighting plan to minimize the impacts on individuals on the shore and on wildlife.

### **Cultural Resources**

The area of potential effect for the onshore portion of the Project is within the existing fenced Aguirre Plant property. The Project proposes to disturb approximately 1.5 acres (1.5 cuerdas) of the industrial site during the construction for use as a temporary construction staging and support area. The offshore construction would include the construction right-of-way and temporary workspace for the 4.1-mile-long (6.7 km) subsea pipeline and the construction area for the offshore berthing platform. Aguirre LLC conducted archival research and marine surveys of these areas to identify cultural resources including locations for potential prehistoric and historic archaeological sites.

No sites were identified through archival research within the Project area. Aguirre LLC did not conduct an archeological survey within the previously disturbed, terrestrial portion of the Project because of the low potential for intact cultural deposits. In a letter dated August 15, 2012, the SHPO concurred that no archaeological survey is necessary. We concur as well.

The marine area of potential effect includes about 155 acres (160 cuerdas) of submerged land that could be affected by the construction and operation of the subsea pipeline and the offshore berthing platform. Aguirre LLC completed evaluative testing in March 2013, prepared a report of findings in April 2013, and submitted a copy to the State Historic Preservation Office (SHPO) for review in June 2013. We are currently waiting on SHPO comments on the evaluation report. To ensure that the FERC's responsibilities under the National Historic Preservation Act and its implementing regulations are met, we are recommending that Aguirre LLC not begin construction until the SHPO's comments are filed, the Advisory Council on Historic Places is provided an opportunity to comment, we review the reports and plans, and the Director of the Office of Energy Projects has notified Aguirre LLC that construction may proceed.

### **Air Quality and Noise**

Construction of the Project would create emissions from fossil-fueled construction equipment. Such air quality impacts would generally be temporary and localized, and are not expected to cause or contribute to a violation of applicable air quality standards.

Operating the Project, which would include equipment on the FSRU, the terminal platform, and LNG carriers, support vessels, and tugs would create long-term air emissions. Potential impacts of air emissions from Project operations would be reduced by incorporation of operating restrictions and use of emission reduction technologies on the FSRU to limit pollutant emissions. Overall, the Project would reduce emissions at the Aguirre Plant, including almost 800 tons per year of nitrogen oxides and 5,816 tons per year of sulfur dioxide. In meeting the Project objective of compliance with the EPA Mercury and Air Toxics Standard rule, the local and regional air quality would improve.

Noise would be generated during construction and operation of the Project. Construction of the Offshore GasPort would occur in three phases: the marine infrastructure including berth facilities; topside mechanical and electrical facilities; and the subsea interconnecting pipeline. If an HDD under the Boca del Infierno pass is found to be feasible, additional construction noise would be generated by the HDD equipment. Construction noise would exceed the EQB's nighttime noise limits at two noise-sensitive areas (NSA). Aguirre LLC proposes to consult with EQB to develop the appropriate mitigation measures should actual sound levels measured during construction activities exceed the nighttime EQB noise limits. These mitigation measures could include establishing appropriate work hours and development of a Construction Noise Abatement Plan where Aguirre LLC would monitor onshore sound levels in the vicinity of active pipeline construction. If sound levels at residential areas onshore do not meet EQB criteria for an extended time, noise mitigation measures would be adjusted appropriately. In addition to consulting with the EQB for noise impacts on NSAs, we are recommending that Aguirre conduct noise modeling to determine the impacts of subsea and ambient noise on wildlife in the area. Further, we recommend that Aguirre LLC consult with the FWS, NMFS, and DNER regarding appropriate mitigation measures to reduce noise levels.

The estimated operational noise of the FSRU would be below existing ambient sound levels at each of the NSAs. We are recommending, however, that Aguirre LLC file a noise survey no later than 60 days after placing the facilities into service to ensure that the noise levels are at or below our criteria of a day-night noise level of 55 decibels on the A-weighted scale at the nearest NSAs.

### **Safety and Reliability**

We evaluated the safety of the proposed Offshore GasPort, the related FSRU operation, LNG carrier transits, and the subsea pipeline. As part of our evaluation of the Offshore GasPort, we performed a technical review of the preliminary engineering design to ensure sufficient layers of protection would be included in the facility designs to mitigate the potential for an incident that could impact the safety of the public. The USCG reviewed the suitability of the waterway along the proposed LNG carrier transit route and determined that the waterway would be suitable for the type and frequency of LNG marine traffic associated with this proposed Project. In addition, Aguirre LLC would be required to comply with all regulations in Title 33 Code of Federal Regulations (CFR) Part 105 (33 CFR 105) and 33 CFR 127 for its proposed LNG facilities and 49 CFR 192 for the proposed subsea pipeline. Based on our engineering design analysis and recommendations presented in section 4.11 for the Offshore GasPort, the Letter of Recommendation issued by the USCG for the LNG carrier transit, and the regulatory requirements for the pipeline and the Offshore GasPort, we conclude that the Project would not result in significantly increased public safety risks.

### **ALTERNATIVES CONSIDERED**

As an alternative to the proposed action, we evaluated the No Action Alternative, system alternatives, facility siting alternatives, offshore terminal site alternatives, major pipeline route alternatives, and pipeline route variations. While the No Action Alternative would eliminate the short- and long-term environmental impacts identified in the EIS, the stated objectives of the proposed action would not be met. We also evaluated the use of alternative energy sources and the potential effects of



energy conservation, but determined that these sources and measures would not be a practicable alternative to the proposed Project.

One system alternative would be the expansion of the existing EcoEléctrica LNG (EcoEléctrica) facility, which is approximately 35 miles (56 km) east of the Aguirre Plant. For the EcoEléctrica facility to be a viable system alternative to the proposed Project, the facility would have to construct new LNG storage capacity, regasification facilities, and a new pipeline to connect the EcoEléctrica facility to the Aguirre Plant. As the proposed Project does not require construction of onshore LNG storage facilities and additional gasification facilities, the expansion at the EcoEléctrica facility with associated pipeline would result in greater environmental impacts than the proposed Project. We conclude that the expansion of the existing EcoEléctrica facility is not considered to be environmentally preferable to the proposed Project, and it was removed from further consideration.

Our evaluation of alternative sites also considered construction and operations of two land-based sites and two dockside sites. Two industrial facilities are located on the north shore of Las Mareas Bay: the Chevron-Philips (CP) chemical facility and the AES Puerto Rico, L.P. 454-megawatt coal-fired power generation facility. Las Mareas Bay is approximately 6 miles (9.7 km) east of the Aguirre Plant with access to the area off Puerto Rico Highway 3. This industrial area has sufficient land to allow for the development of an onshore LNG facility; however, it would require the construction of a new onshore or dockside terminal at either the CP chemical facility or AES Puerto Rico, L.P. facility, a large dredging and bay development project to accommodate large LNG carriers, and a 6-mile (9.7 km) pipeline to the Aguirre Plant. Impacted areas would mainly consist of previously developed upland but would also include areas of palustrine emergent wetland located along the coastal area. We found that the associated environmental impacts with either a land-based or dockside terminal alternative would be greater than the proposed Project. For these reasons, we conclude that a new land-based or dockside LNG facility within Las Mareas Bay would not present any significant environmental advantage compared to the proposed Project.

The Aguirre Plant was also considered as an alternative for either a land-based or dockside terminal location. About 30 acres (31 cuerdas) would be required to construct storage tanks, regasification equipment, and other infrastructure to support the facility. In reviewing the area around the Aguirre Plant, 30 contiguous acres (31 cuerdas) are not available that would avoid population centers. In addition, the land-based terminal would require a deepwater access and a turning basin. The lack of available land, the need to create a deepwater access and turning basin, and the proximity to a population center makes a land-based terminal less environmentally preferable than the proposed action. A dockside terminal facility would also require deepwater access and a turning basin large enough for both the FSRU and the LNG carrier as well as modification at the Aguirre Plant to build a pier for the FSRU. The existing jetty at the facility cannot accommodate an FSRU as well as the LNG carrier. Considering its proximity to the Aguirre community, and the extensive amount of in-water work (dredging and pier construction) that would be required, we consider that the environmental impacts of a dockside terminal would be equal or greater than the proposed Project.

We evaluated four alternative offshore terminal sites with pipelines to the terminal and Aguirre LLC conducted field review of each site and corresponding pipeline. All four terminals had similar water depths and seafloor conditions; however, the length of pipeline required and distance to the closest population centers varied. We also analyzed five major terminal/pipeline alternatives in response to concerns from the public and NMFS, EPA, FWS, and DNER concerning impacts from the proposed pipeline route through the Boca del Inferno pass on federally threatened and endangered coral species, coral reef habitat, seagrass within Jobos Bay, and the Antillean manatee. The construction techniques included direct lay and trenching for burial of the pipeline in the Jobos Bay barge channel. We determined that each of the terminal locations and pipeline routes avoiding the Boca del Inferno pass

would have environmental impacts greater than or similar to the proposed terminal location and, therefore, were not environmentally preferable to the proposed site and pipeline route.

A pipeline route variation review was completed on four pipeline route variations from the proposed terminal site to the Aguirre Plant, each passing through Boca del Infierno pass. For each pipeline route variation, the pipeline length, number of bends in the pipeline, and disturbance of submerged aquatic vegetation and coral reef habitat was compared to the corresponding segment of the proposed route. None of the route variations were determined to provide significant environmental advantages over the proposed route and were not evaluated further.

## CONCLUSIONS

We determined that construction and operation of the Project would result in limited adverse environmental impacts that would mostly occur during construction. This determination is based on our review of the information provided by Aguirre LLC and further developed from data requests; field investigations; scoping; literature research; alternatives analyses; and contacts with federal, state, and local agencies, and individual members of the public. We conclude that approval of the Project would have moderate adverse environmental impacts, but these impacts would be reduced to less-than-significant levels if mitigation measures are implemented. Although many factors were considered in this determination, the principal reasons are:

- Aguirre LLC would be required to obtain all necessary federal authorizations prior to beginning construction.
- Aguirre LLC would implement Project-specific construction, restoration, and mitigation plans that would avoid, minimize, or mitigate impacts on natural resources.
- The FERC would complete the process of complying with Section 7 of the ESA prior to construction.
- The FERC would complete the process of complying with Section 106 of the National Historic Preservation Act prior to construction.
- An environmental inspection program would be implemented to ensure compliance with the mitigation measures that become conditions of the FERC authorization.

In addition, we developed 65 mitigation measures that Aguirre LLC should implement to further reduce the environmental impacts that would otherwise result from construction and operation of the Project. We are recommending that these mitigation measures be attached as conditions to any authorization issued by the Commission. These recommended mitigation measures are presented in section 5.2 of the draft EIS.