

## EXECUTIVE SUMMARY

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The staff of the Federal Energy Regulatory Commission (FERC or Commission) prepared this Environmental Impact Statement (EIS) to assess the environmental issues associated with the construction of facilities proposed by Corpus Christi Liquefaction, LLC and Cheniere Corpus Christi Pipeline, LP, which are collectively referred to as Cheniere. The EIS was prepared in accordance with the requirements of the National Environmental Policy Act of 1969 (NEPA) and its implementing regulations under Title 18 of the Code of Federal Regulations, Part 380 (18 CFR 380). On August 31, 2012, Cheniere filed an application with the FERC in Docket Numbers CP12-507-000 and CP12-508-000 pursuant to Section 3(a) and Section 7 of the Natural Gas Act (NGA) and Parts 153, 157, and 284 of the Commission's regulations. This project is referred to as the Corpus Christi LNG Project (Project) and consists of both a liquefied natural gas (LNG) terminal and natural gas pipeline facilities.

The purpose of this EIS is to inform the FERC decision-makers, the public, and the permitting agencies about the potential adverse and beneficial environmental impacts of the proposed Project and its alternatives, and recommend mitigation measures that would reduce adverse impacts to the extent practicable. We<sup>1</sup> prepared our analysis based on information provided by Cheniere and further developed from data requests, field investigations, scoping, literature research, and contacts with or comments from federal, state, and local agencies, Native American tribes, and individual members of the public.

The FERC is the federal agency responsible for authorizing interstate natural gas transmission facilities under the NGA, and is the lead federal agency for the preparation of this EIS in compliance with the requirements of NEPA. The U.S. Army Corps of Engineers (COE), U.S. Coast Guard (Coast Guard), U.S. Department of Energy (DOE), U.S. Environmental Protection Agency (EPA), and U.S. Department of Transportation (DOT) are cooperating agencies for the development of this EIS consistent with 40 CFR 1501.6(b). A cooperating agency has jurisdiction by law or has special expertise with respect to environmental resource issues associated with the Project.

### PROPOSED ACTION

According to Cheniere, the Project would provide facilities necessary to import, export, store, vaporize, and liquefy natural gas and deliver the resulting product either into existing interstate and intrastate natural gas pipelines in the Corpus Christi area, or export LNG elsewhere.

#### Terminal

Cheniere would construct the LNG import and export terminal (Terminal) on a 991-acre site located along the northern shore of Corpus Christi Bay at the north end of the La Quinta Channel in San Patricio and Nueces Counties, Texas. The Terminal would include the following key facilities:

- liquefaction facilities, including three liquefaction trains, each capable of liquefying approximately 700 million standard cubic feet (MMscf) per day of natural gas;

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

- vaporization facilities, including two trains of ambient air vaporizers (AAV) and send out pumps, each capable of vaporizing sufficient LNG volume to send out approximately 200 MMscf per day of natural gas;
- LNG storage facilities, including three LNG storage tanks each capable of storing 160,000 cubic meters of LNG equivalent to approximately 3.4 billion standard cubic feet (Bscf) of natural gas; and
- marine terminal facilities with two LNG carrier berths.

## Pipeline

Cheniere proposes to construct and operate about 23 miles of 48-inch-diameter natural gas pipeline (Pipeline) and two compressor stations, the Taft Compressor Station (12,260 horsepower) and the Sinton Compressor Station (41,000 horsepower). Additional ancillary facilities include six meter and regulator stations installed at the Terminal as well as interconnects with Texas Eastern Transmission, L.P.; Kinder Morgan Tejas Pipeline, LLC; Natural Gas Pipeline Company, LLC; Transcontinental Gas Pipe Line Company, LLC; and Tennessee Gas Pipeline Company, LLC. Cheniere would install five mainline valves along the pipeline route, including a pig<sup>2</sup> launcher and receiver at the beginning and end of the pipeline, respectively.

## PUBLIC INVOLVEMENT

On December 22, 2011, the FERC began its pre-filing review of Cheniere's Project and established the pre-filing Docket Number PF12-3-000 to place information related to the Project into the public record. As part of the pre-filing process, Cheniere sponsored a public open house in Portland, Texas on February 28, 2012. The purpose of the open house was to provide affected landowners, government and agency officials, and 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 house and provided information regarding the Commission's environmental review process to interested stakeholders.

On June 1, 2012, the FERC issued a *Notice of Intent to Prepare an Environmental Impact Statement for the Planned Corpus Christi LNG Terminal and Pipeline Project, Request for Comments on Environmental Issues, and Notice of Public Scoping Meeting*. This notice was sent to about 500 interested parties including federal, state, and local officials; agency representatives; conservation organizations; Native American tribes; local libraries and newspapers in the Project area; and property owners in the vicinity of the proposed Project facilities. On June 26, 2012, we conducted a site visit and held a public scoping meeting in Portland, Texas to provide an opportunity for the public to learn more about the Project and to provide oral comments on environmental issues to be addressed in the EIS.

Additionally, we initiated consultations with federal and state agencies to identify issues that should be addressed in the EIS. We conducted an interagency meeting for the Project on June 27, 2012 in Corpus Christi, Texas.

Through the scoping and agency comment process, we received comments on a variety of environmental issues. We continued to receive and consider public comments during the entire

<sup>2</sup> A pipeline "pig" is an internal device to clean or inspect the pipeline. A pig launcher/receiver is an aboveground facility where pigs are inserted into or retrieved from the pipeline.

pre-filing period and throughout development of this EIS. Substantive environmental issues identified through this public review process are addressed in this EIS. The transcripts of the public scoping meeting and all written comments are part of the FERC's public record for the Project and are available for viewing under the Project docket numbers.<sup>3,4</sup>

In addition, we held a public comment meeting in Portland, Texas on July 15, 2014 to provide an opportunity for stakeholders to comment on the draft EIS issued on June 13, 2014. A transcript of the meeting, comments received during the meeting, and all the comments received on the draft EIS are included in appendix I of the EIS.

## **PROJECT IMPACTS**

We evaluated the potential impacts of construction and operation of the Project on geology; soils; water use and quality; wetlands; vegetation; wildlife, aquatic resources, and essential fish habitat (EFH); threatened, endangered, and special status species; land use, recreation, and visual resources; socioeconomics; cultural resources; air quality and noise; reliability and safety; and cumulative impacts. Where necessary, we are recommending additional mitigation to minimize or avoid these impacts. Section 5.3 of the EIS contains a compilation of our recommendations.

Overall, construction of the Project facilities would temporarily disturb approximately 1,412 acres for construction, including extra temporary workspaces, contractor yards, access roads, and aboveground facilities. About 647 acres would be retained as permanent easements for operation of the facilities. Cheniere would allow the remaining 765 acres to return to preconstruction uses.

Construction of the Terminal would result in permanent impacts on about 469 acres of open land and open water. All affected land areas would be permanently converted to industrial land. The 23-mile pipeline right-of-way would be collocated with existing right-of-way corridors to the extent practicable (about 86 percent of the total length). Construction of the pipeline would impact about 421 acres of agricultural, open, and industrial land, but we have determined that impacts would not be significant as the majority of the area disturbed by the pipeline is within agricultural areas and would return to preconstruction conditions soon after construction is complete.

Regarding federally listed threatened and endangered species, on October 29, 2012, the National Oceanic and Atmospheric Administration National Marine Fisheries Service (NMFS) notified Cheniere that initiation of Section 7 consultation under the Endangered Species Act would not be required; and in letters dated August 8, 2013 and November 5, 2013, the U.S. Fish and Wildlife Service (FWS) concurred with determinations that the Project is not likely to adversely affect species under its jurisdiction.

We have completed the process of compliance with the National Historic Preservation Act (NHPA), as well. We consulted with Indian tribes that may have an interest in the Project area, and with the Texas State Historic Preservation Office (SHPO), and found that no traditional

<sup>3</sup> Transcript of the public scoping meeting for the Project (Docket No. PF12-3-000, Accession No. 20120626-4008) is available on the FERC website at <http://ferc.gov/docs-filing/elibrary.asp>.

<sup>4</sup> Comments submitted after the Project application was filed with the FERC are part of the public record for the Project (Docket No. CP12-507-000 and CP12-508-000) and are available on the FERC website at <http://ferc.gov/docs-filing/elibrary.asp>.

cultural properties or sites of religious significance to Indian tribes were identified in the area of potential effect (APE), and no historic properties would be affected by the Project.

Based on our analysis, public scoping, and agency consultations, the major issues associated with the Project are impacts on aquatic resources, including EFH and wetlands; air quality and noise; safety and reliability; and cumulative impacts.

#### Wetlands and Aquatic Resources

Based on consultations with NMFS, and COE we determined that the proposed Terminal would impact EFH and wetlands. Although construction of the marine berths at the Terminal would result in the loss and permanent conversion of estuarine submerged aquatic seagrass beds, cordgrass salt marsh, emergent marsh, vegetated sand flats, unvegetated sand flats, and unvegetated shallow water EFH, the deep water habitat would recolonize with soft-bottom benthic organisms after completion of dredging and would continue to provide a prey base for EFH species. To minimize impacts on wetlands, EFH, and EFH species, Cheniere has reduced its work space requirements and would use a hydraulic cutterhead dredge that would reduce sedimentation and turbidity. Cheniere would further mitigate impacts on EFH and 25.7 acres of impacted wetlands by implementing its Aquatic Resources Mitigation Plan.

#### Air Quality and Noise

Most Project-related air emissions would be produced by operation of the Terminal and the Sinton and Taft Compressor Stations. Cheniere would comply with all applicable air permit requirements for those facilities. Multiple air dispersion modeling analyses, which included LNG carriers and other nearby emission sources, demonstrated that operation of these facilities would not result in an exceedance of the National Ambient Air Quality Standards at any location, with the exception of nitrogen dioxide for the Terminal. An expanded analysis determined that operation of the Terminal would not contribute significantly to exceedances of the 1-hour nitrogen dioxide National Ambient Air Quality Standard. As a result, we conclude that the Project would not result in a significant adverse impact on either the regional or local air quality.

Cheniere performed detailed noise assessments for each of the proposed horizontal directional drilling locations. To mitigate significant noise impacts at several noise sensitive areas, Cheniere has committed to performing all horizontal directional drilling activities, except the pipe pullback, during daylight hours. During operation of the Project, potential noise impacts would be limited to the vicinity of the Terminal and Sinton and Taft Compressor Stations. These facilities would include design measures to minimize sound generation. The proposed facilities with noise mitigation measures implemented are projected to comply with the FERC day-night sound level criterion of 55 decibels on the A-weighted scale at the nearest noise sensitive areas. We are also recommending that Cheniere conduct noise surveys during operation of each facility to ensure that noise levels meet our criterion.

#### Safety and Reliability

We evaluated the safety of the proposed Terminal facility, the related LNG carrier transit, and the bi-directional pipeline. As part of our evaluation of the Terminal, 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 DOT reviewed the initial data and methodology Cheniere used to determine the design spills from various leakage sources, including piping, containers,

and equipment containing hazardous liquids, and stated it had no objection to Cheniere's methodology for determining the candidate design spills used to establish the required siting for its proposed Terminal. The Coast Guard reviewed the suitability of the Corpus Christi Ship Channel from the entrance approach at Port Aransas to the La Quinta Junction and the entire length of La Quinta Channel, and issued a letter of recommendation (LOR) indicating the waterway would be suitable for the type and frequency of the marine traffic associated with the proposed Project. In addition, Cheniere would be required to comply with all regulations in 49 CFR 192 for its pipeline and 33 CFR 105, 33 CFR 127, and 49 CFR 193 for its Terminal facilities. Based on our engineering design analysis and our recommendations presented in section 4.12 of the EIS for the Terminal, we conclude that the Project would not result in significant increased public safety risks.

### Cumulative Impacts

We also conclude that the potential impact of the Project, when combined with the impacts from the other projects considered, would not result in a significant impact on resources within the cumulative impact areas. Although we recognize concurrent construction of the proposed Project and other projects in the vicinity of the Terminal site would result in increased workers in the area, periods of increased traffic, and impacts on public services, we are not recommending additional mitigation at this time. Therefore, we have determined that with the implementation of Cheniere's mitigation measures, the impacts of the Project when added with other projects' impacts would not result in significant cumulative impacts.

More detailed discussions of impacts on all resources affected by the Project, Cheniere's proposed mitigation, and our recommendations to avoid or further reduce impacts, are presented in sections 4.0 and 5.0 of this EIS.

## **ALTERNATIVES CONSIDERED**

We assessed alternatives that could achieve the Project objectives. The range of alternatives analyzed included the No-Action Alternative, system alternatives, alternative Terminal sites, alternative Pipeline routes, and alternative compressor station sites. Alternatives were evaluated and compared to the Project to determine if these alternatives were environmentally preferable to the proposed Project.

While the No-Action Alternative would avoid the environmental impacts identified in this EIS, adoption of this alternative would also preclude meeting the Project objectives. If the Project is not approved and built, the need could potentially be met by other LNG export and import projects developed elsewhere in the Gulf Coast region or in other areas of the U.S. Implementation of other LNG export/import projects would likely result in impacts similar to or greater than those of the proposed Project.

We evaluated 12 system alternatives for the Terminal, including 6 operating LNG import terminals in the Gulf of Mexico area, and 6 proposed or planned export projects along the Gulf Coast. All of the systems were eliminated from further consideration for reasons that include the need for substantial construction beyond that currently proposed, production volume limitations, in-service dates scheduled significantly beyond Cheniere's schedule, and environmental impacts that were considered comparable to or greater than those of the proposed Project.

We also evaluated three alternative Terminal sites, two in proximity to the proposed site and one near Brownsville, Texas. Construction of the Terminal at each of the alternative sites

would have comparable or greater impacts when compared to the proposed Terminal site; therefore, none of the three sites evaluated were determined to be environmentally preferable.

Approximately 86 percent of the pipeline would be collocated, overlap, or parallel existing rights-of-way. As a result, many types of environmental impacts have been lessened. Two route alternatives were evaluated; however, we did not identify any site-specific environmental concerns along the proposed route that would drive the need to recommend the alternative pipeline routes.

We evaluated a total of five alternative sites for the proposed compressor stations, but determined that none of these sites were environmentally preferable to the proposed sites.

## CONCLUSIONS

We conclude that if the Project is constructed and operated in accordance with applicable laws and regulations, Cheniere's proposed mitigation, and our recommendations presented in section 5.3 of this EIS, it would result in some adverse environmental impacts; however, those impacts would not be significant. The principal reasons for our decision include:

- the Terminal facilities are sited in an existing industrialized area;
- dredge material would be disposed of beneficially to cap bauxite disposal beds;
- impacts on wetlands and aquatic habitat, including EFH, would be mitigated per Cheniere's Aquatic Resources Mitigation Plan;
- adequate safety features would be incorporated into the design and operation of the Terminal facilities;
- the proposed pipeline route would be collocated, overlap, or parallel existing rights-of-way;
- Cheniere would implement the FERC *Upland Erosion Control, Revegetation, and Maintenance Plan* and *Wetland and Waterbody Construction and Mitigation Procedures* to minimize construction impacts on soils, wetlands, and waterbodies;
- the use of the horizontal directional drilling method for crossing waterbodies would avoid disturbances to the beds and banks of these waterbodies;
- the Project would have no effect or would be not likely to adversely affect any federal or state listed threatened or endangered species;
- the Project would have no effect on cultural resources;
- all appropriate consultations with the U.S. Fish and Wildlife Service, Texas Department of Wildlife and Fisheries, and NMFS would be completed before construction is allowed to start; and
- the FERC's environmental and engineering inspection and mitigation monitoring program for this Project would ensure compliance with all mitigation measures and conditions of any FERC Authorization.

In addition, we developed site-specific mitigation measures that Cheniere should implement to further reduce the environmental impacts that would otherwise result from construction of the Project. We are recommending these mitigation measures, presented in