169 FERC ¶ 61,130
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Neil Chatterjee, Chairman;
Richard Glick and Bernard L. McNamee.

Texas LNG Brownsville LLC Docket No. CP16-116-000

ORDER GRANTING AUTHORIZATION UNDER SECTION 3 OF THE NATURAL GAS ACT

(Issued November 22, 2019)

1. On March 30, 2016, Texas LNG Brownsville LLC (Texas LNG) filed an application pursuant to section 3 of the Natural Gas Act (NGA)[1] and Part 153 of the Commission's regulations[2] for authorization to site, construct, and operate facilities for the liquefaction and export of domestically-produced natural gas at a proposed liquefied natural gas (LNG) terminal on the north side of the Brownsville Ship Channel in Cameron County, Texas (Texas LNG Project).

2. For the reasons discussed in this order, we will authorize Texas LNG's proposal, subject to the conditions discussed below.

I. Background

3. Texas LNG, a limited liability company organized under the laws of Delaware with its headquarters in Houston, Texas, is a single purpose subsidiary of Texas LNG LLC. As its operations will not be in interstate commerce, Texas LNG will not be a "natural gas company" as defined in the NGA, although it will be subject to the Commission's jurisdiction under NGA section 3.

II. Proposal

4. Texas LNG seeks authorization to site, construct, and operate an LNG export terminal and associated facilities in order to export approximately 4 million metric tonnes per annum (MTPA) of natural gas as LNG. The terminal will receive natural gas via an

[1] 15 U.S.C. § 717b (2018).

[2] 18 C.F.R. pt. 153 (2019).

approximately 10.2-mile-long non-jurisdictional intrastate natural gas pipeline that would interconnect with the Valley Crossing Pipeline (VCP).[3] VCP is a non-jurisdictional natural gas pipeline that extends southwest from a header system near the Agua Dulce natural gas hub to a jurisdictional border-crossing facility east of Cameron County, Texas.[4]

5. Texas LNG's proposed facilities include two full-containment LNG storage tanks with a capacity of approximately 210,000 cubic meters of LNG each; two liquefaction trains, each with a capacity of 2.0 MTPA of LNG;[5] a single LNG carrier berth; mooring and loading facilities; and other appurtenant facilities. The proposed project will be built in two phases, each phase designed to process approximately 0.309 Bcf/d[6] of natural gas and consisting of one liquefaction train and one full-containment storage tank. Construction of Phase 1 will be initiated upon receipt of all required authorizations, and Phase 2 will be constructed upon receipt of sufficient customer demand.[7] During Phase 1, the single LNG carrier berth, dredged maneuvering basin, and all necessary support facilities will be installed. Phase 2 construction will include the second liquefaction train and storage tank, as well as all appurtenant facilities required to connect the Phase 2 facilities with the operating Phase 1 facilities.

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[3] The record shows that the non-jurisdictional pipeline will be entirely in Texas and, when it begins service, will only transport Texas gas production received from other Texas intrastate pipelines or processing plants within Texas to the proposed LNG export terminal. *See* Texas LNG August 16, 2018 Filing (responding to staff's June 27, 2018 letter requesting further information about the natural gas pipeline(s) that would provide feed gas to the proposed terminal).

[4] *See Valley Crossing Pipeline, LLC*, 161 FERC ¶ 61,084, at P 4 (2017).

[5] While each liquefaction train will have a nameplate capacity of 2.25 MTPA, Texas LNG anticipates that as operated, each train will produce 2.0 MTPA of LNG for export. Application at 4 n.8.

[6] 0.309 Bcf/d is approximately 2.25 MTPA of LNG based on average gas composition, average ambient temperature, and operation 365 days per year. Application at 4 n.9.

[7] Texas LNG states in its application that construction of Phase 2 would commence no sooner than 18 months following the commencement of Phase 1 and is anticipated to commence no later than five years following the Commission's approval of Texas LNG's application. Application at 5.

6. Texas LNG states it has an option agreement for a long-term lease with the Brownsville Navigation District of Cameron County, Texas, for an approximately 625-acre tract of land. All of the approximately 625-acre total project area is zoned for heavy industrial use and the proposed project will be consistent with other industrial facilities along the shoreline. Texas LNG will have control over the project site for at least the minimum expected operational life of the project, which is 25-30 years, and the right to extend the lease term.

7. Texas LNG received authorization from the Department of Energy, Office of Fossil Energy (DOE/FE) in September 2015 to export annually up to 204.4 Bcf (approximately 0.56 Bcf/d) equivalent of natural gas in the form of LNG to countries with which the United States has a Free Trade Agreement.[8] In addition, Texas LNG currently has pending before the DOE/FE an application to export annually up to 204.4 Bcf equivalent of LNG to other nations with which the U.S. permits such trade, but has not entered into a Free Trade Agreement.[9]

III. Procedural Matters

A. Notice, Interventions, Comments, and Protests

8. Notice of Texas LNG's application was issued on April 14, 2016, and published in the *Federal Register* on April 20, 2016, with interventions, comments, and protests due on or before May 5, 2016.[10] Timely, unopposed motions to intervene are granted by operation of Rule 214(c) of the Commission's Rules of Practice and Procedure.[11] Untimely motions to intervene were granted by a Secretary's Notice issued on September 29, 2016.

9. On December 12, 2018, SaveRGVfromLNG (SaveRGV) filed a motion to intervene. Although SaveRGV filed its motion as a motion to intervene out of time, because the motion was filed before the December 17 deadline for filing comments on the draft Environmental Impact Statement (EIS), its motion was deemed timely and granted by the Commission on January 18, 2019.

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[8] *Texas Gulf LNG*, DOE/FE Docket No. 15-62-LNG, Order No. 3716 (September 24, 2015); *see also* Application at 20.

[9] The application, filed on April 15, 2015 and amended on May 22, 2015, is pending before DOE/FE in Docket No. 15-62-LNG.

[10] 81 Fed. Reg. 23,291 (2016).

[11] 18 C.F.R. § 385.214(c) (2019).

10. Sierra Club filed a protest asserting that the construction and operation of Texas LNG's proposed facilities will have adverse local effects on many resources, including air, water, endangered species, and on environmental justice communities. Sierra Club also claims that because the purpose of the project is to enable the export of LNG, the project will induce additional production activities with adverse environmental impacts, could result in increased domestic gas prices, and will negatively affect national and global efforts to reduce greenhouse gas emissions (GHGs).

11. Many people and organizations filed comments: some in support of the project and others raising various economic, environmental, and safety concerns, including concerns about the proximity of the project to their residences and potential of the project to decrease property values, affect the local environment and wildlife, and increase pollution. Finally, they questioned whether the Commission would impose measures to ensure public safety in the event of an accident or incident. In particular, several commenters expressed concern regarding the proximity of SpaceX's South Texas Launch Site to the proposed project site.

12. These comments and protests are addressed in the EIS for the project or in this order, as appropriate.

B. Request for Hearing

13. Intervenor Defenders of Wildlife requested a formal hearing.[12] The Commission has broad discretion to structure its proceedings so as to resolve a controversy in the best way it sees fit.[13] An evidentiary, trial-type hearing is necessary only where there are material issues of fact in dispute that cannot be resolved on the basis of the written record.[14] Defenders of Wildlife raised no material issue of fact that the Commission cannot resolve on the basis of the written record. Accordingly, the Commission denies the request for a formal hearing.

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[12] Defenders of Wildlife May 4, 2016 Motion to Intervene at 1-2.

[13] *See Stowers Oil and Gas Co*., 27 FERC ¶ 61,001 (1984) (Commission has discretion to manage its own proceedings); *PJM Transmission Owners*, 120 FERC ¶ 61,013 (2007).

[14] *See, e.g*., *Dominion Transmission, Inc*., 141 FERC ¶ 61,183, at P 15 (2012); *Southern Union Gas Co. v. FERC*, 840 F.2d 964, 970 (D.C. Cir. 1988).

IV. Discussion

A. Public Interest Standard

14. The construction and operation of the proposed LNG terminal facilities and site of their location require approval by the Commission under section 3 of the NGA.[15] Although section 3 provides that an application for the exportation or importation of natural gas shall be approved unless the proposal "will not be consistent with the public interest," section 3 also provides that an application may be approved "in whole or in part, with such modification and upon such terms and conditions as the Commission may find necessary or appropriate."[16] NGA section 3(a) also provides that for good cause shown, the Commission may make supplemental orders as it may find "necessary or appropriate."[17]

15. Sierra Club asserts we should find that Texas LNG's application to construct an LNG export terminal is contrary to the public interest in part because the exportation of gas will induce natural gas production activities with attendant adverse environmental impacts. Sierra Club also asserts that Texas LNG's proposed LNG export terminal is not in the public interest because it will result in indirect environmental impacts from the combustion of exported gas in importing markets and exports may result in increased

[15] The regulatory functions of NGA section 3 were transferred to the Secretary of Energy in 1977 pursuant to section 301(b) of the Department of Energy Organization Act, Pub. L. No. 95-91, 42 U.S.C. § 7101 *et seq*. In reference to regulating the imports or exports of natural gas, the Secretary subsequently delegated to the Commission the authority to approve or disapprove the construction and operation of natural gas import and export facilities and the site at which such facilities shall be located. The most recent delegation is in DOE Delegation Order No, 00-004.00A, effective May 16, 2006. Applications for authorization to import or export natural gas must be submitted to the Department of Energy (DOE). The Commission does not authorize importation or exportation of the commodity itself. *See EarthReports, Inc. v. FERC*, 828 F.3d 949, 952-53 (D.C. Cir. 2016) (*EarthReports*) (detailing how regulatory oversight for the export of LNG and supporting facilities is divided between the Commission and DOE).

[16] For a discussion of the Commission's authority to condition its approvals of LNG facilities under section 3 of the NGA, *see, e.g.*, *Distrigas Corporation v. FPC*, 495 F.2d 1057, 1063-64 (D.C. Cir. 1974), *cert. denied*, 419 U.S. 834 (1974), and *Dynegy LNG Production Terminal, L.P.*, 97 FERC ¶ 61,231 (2001).

[17] 15 U.S.C. § 717b(a).

domestic gas prices that will result in increased reliance on coal as fuel at electric generation facilities, causing further adverse environmental impacts.

16. We decline to address these claims as they concern impacts associated with the exportation of the commodity natural gas, rather than the proposal before the Commission. Section 3(a) of the NGA provides, in part, that "no person shall export any natural gas from the United States to a foreign country . . . without first having secured an order of the Commission authorizing it to do so."[18] As noted above, in 1977, the Department of Energy Organization Act (DOE Act) transferred the regulatory functions of section 3 of the NGA to the Secretary of Energy.[19] Subsequently, the Secretary delegated to the Commission authority to "[a]pprove or disapprove the construction and operation of particular facilities, the site at which such facilities shall be located, and with respect to natural gas that involves the construction of new domestic facilities, the place of entry for imports or exit for exports … ."[20] The Secretary, however, has not delegated to the Commission any authority to approve or disapprove the import or export of the commodity itself, or to consider the types of issues raised by Sierra Club as part of the Commission's public interest determination under NGA section 3(a).[21]

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[18] *Id.*

[19] DOE Act, Pub. L. No. 95-91, 42 U.S.C. § 7101 *et. seq*. Section 301(b) of the DOE Act transferred regulatory functions under section 3 of the NGA from the Commission's predecessor, the Federal Power Commission (FPC), to the Secretary of Energy. Section 402 of the DOE Act transferred regulatory functions under other sections of the NGA, including sections 1, 4, 5, and 7, from the FPC to the Federal Energy Regulatory Commission. Section 402(f) states:

(f) Limitation

> No function described in this section which regulates the exports or imports of natural gas … shall be within the jurisdiction of the Commission unless the Secretary assigns such a function to the Commission.

[20] DOE Delegation Order No. 00-004.00A (effective May 16, 2006).

[21] *See Freeport LNG Development, L.P.*, 148 FERC ¶ 61,076, *reh'g denied*, 149 FERC ¶ 61,119 (2014), *aff'd sub nom*. *Sierra Club v. FERC*, 827 F.3d 36 (D.C. Cir. 2016) (*Freeport*) (finding that because the Department of Energy, not the Commission, has sole authority to license the export of any natural gas through LNG facilities, the Commission is not required to address the indirect effects of the anticipated export of natural gas in its NEPA analysis). *See also Sabine Pass Liquefaction, LLC*, 146 FERC ¶ 61,117, *reh'g denied*, 148 FERC ¶ 61,200 (2014), *aff'd sub nom*. *Sierra Club v. FERC*, 827 F.3d 59 (D.C. Cir. 2016) (*Sabine Pass*) and *Dominion Cove Point LNG, LP*,

17. DOE/FE, pursuant to its authority under NGA section 3, has authorized Texas LNG to export up to 4 MTPA, or 0.56 Bcf/d, of domestically-produced natural gas to free trade nations from the proposed Texas LNG Brownsville LLC Liquefied Natural Gas Export Project, at the Port of Brownsville, Texas.[22] DOE/FE's order approving Texas LNG's export volumes states that "[i]n light of DOE's statutory obligation to grant this Application without modification or delay, there is no need for DOE/FE to review other arguments asserted by Texas LNG in support of the Application."[23]

18. We have reviewed Texas LNG's application to determine if the siting, construction, and operation of its LNG terminal as proposed would not be consistent with the public interest.[24] The proposed site for the terminal is an area zoned for heavy industrial use on the north shore of the Brownsville Ship Channel in the Port of Brownsville, Texas, and the terminal's operations will be consistent with those of the other industrial facilities along the shoreline in that area. Further, as discussed below, the final EIS prepared for the proposed project finds most of the direct environmental impacts from construction of the proposed Texas LNG Project are expected to be temporary or short term during construction and operation, while some long-term and permanent environmental impacts would also occur.[25] However, all adverse impacts from construction and operation of the facilities—with the exception of impacts on visual resources, which would be significant when viewed from the Laguna Atascosa National

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148 FERC ¶ 61,244 (2014), *reh'g denied*, 151 FERC ¶ 61,095 (2015), *aff'd sub nom*. *EarthReports*, 828 F.3d 949.

[22] DOE/FE Order No. 3716 at 11 (2015) (authorizing export of approximately 4 MTPA to free trade countries). DOE/FE has not yet issued an order addressing Texas LNG's application filed on April 15, 2015 in FE Docket No. 15-62-LNG seeking authorization to export to non-FTA countries.

[23] DOE/FE Order No. 3716 at 8. Section 3(c) provides that the exportation and importation of natural gas to and from countries with which there is in effect a Free Trade Agreement "shall be deemed to be consistent with the public interest and applications for such importation and exportation shall be granted without modification or delay." 15 U.S.C. § 717b(c).

[24] *See National Steel Corp.*, 45 FERC ¶ 61,100, at 61,332-33 (1988) (observing that DOE, "pursuant to its exclusive jurisdiction, has approved the importation with respect to every aspect of it except the point of importation" and that the "Commission's authority in this matter is limited to consideration of the place of importation, which necessarily includes the technical and environmental aspects of any related facilities.").

[25] Final EIS at ES-16.

Wildlife Refuge—will be reduced to less than significant levels if the project is constructed and operated in accordance with applicable laws and regulations and the environmental mitigation measures recommended in the final EIS and adopted by this order.[26] The final EIS supports those findings regarding the potential direct project impacts, as well as a finding that cumulative impacts from operation of the Texas LNG Project—with the exception of cumulative impacts on surface water quality in the Brownsville Ship Channel during operational vessel transits; on the federally-listed ocelot and jaguarundi from habitat loss and increased potential for vehicular strikes during construction; on the federally listed northern aplomado falcon from habitat loss; on visual resources due to the presence of new facilities; and on nearby noise-sensitive areas (NSAs) during nighttime construction—will not be significant.[27]

19. In accordance with the Memorandum of Understanding signed on August 31, 2018, by the Commission and the Pipeline and Hazardous Materials Safety Administration (PHMSA) within the U.S. Department of Transportation (DOT),[28] PHMSA undertook a review of the proposed facility's ability to comply with the federal safety standards contained in Part 193, Subpart B, of Title 49 of the Code of Federal Regulations.[29] On February 13, 2019, PHMSA issued a Letter of Determination indicating Texas LNG has demonstrated that the siting of its proposed LNG facilities complies with those federal safety standards.[30] If the proposed project is subsequently modified so that it differs from the details provided in the documentation submitted to PHMSA, further review would be conducted by PHMSA.

20. Texas LNG is proposing to operate its LNG terminal under the terms and conditions mutually agreed to by its customers and will solely bear the responsibility for

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[26] *Id.*

[27] *Id.* Since issuance of the final EIS for the Texas LNG Project, potential significant cumulative impacts on nearby NSAs from nighttime construction have been identified due to nighttime pile driving at the proposed Annova LNG Project. *See infra* P 70.

[28] *Memorandum of Understanding Between the Department of Transportation and the Federal Energy Regulatory Commission Regarding Liquefied Natural Gas Transportation Facilities* (Aug. 31, 2018), https://www.ferc.gov/legal/mou/2018/FERC-PHMSA-MOU.pdf.

[29] 49 C.F.R. pt. 193, subpart B (2019).

[30] *See* Commission staff's February 14, 2019 Memo filed in Docket No. CP16-116-000 (containing PHMSA's Letter of Determination).

the recovery of any costs associated with construction and operation of the terminal. Accordingly, Texas LNG's proposal does not trigger NGA section 3(e)(4).

21. In view of the above, we find that Texas LNG's proposal is not inconsistent with the public interest. Therefore, we will grant Texas LNG's application for authorization under section 3 of the NGA to site, construct, and operate its proposed LNG terminal facilities.

B. Environmental Analysis

22. To satisfy the requirements of the National Environmental Policy Act of 1969 (NEPA),[31] Commission staff evaluated the potential environmental impacts of the proposed project in an EIS. Several agencies participated as cooperating agencies in the preparation of the EIS: U.S. Army Corps of Engineers (COE), U.S. Coast Guard (Coast Guard), U.S. Environmental Protection Agency (EPA), DOT's PHMSA and Federal Aviation Administration (FAA), U.S. Fish and Wildlife Service (FWS), National Park Service, National Oceanic Atmospheric Administration's National Marine Fisheries Service (NMFS), and DOE. Cooperating agencies have jurisdiction by law or special expertise with respect to resources potentially affected by the proposals and participate in the NEPA analysis.

23. Commission staff issued a draft EIS on October 26, 2018, which addressed the issues raised during the scoping period and up to the point of publication. The Commission published notice of the draft EIS in the *Federal Register* on November 2, 2018, establishing a 45-day public comment period ending on December 17, 2018.[32] Commission staff held a public comment session on November 15, 2018, to receive comments on the draft EIS. We also received over 900 comment submissions from federal and state agencies; Native American tribes; companies/organizations; and individuals in response to the draft EIS. The transcripts of the public comment session and all written comments on the draft EIS are part of the public record for the project.[33]

[31] 42 U.S.C. § 4321 *et seq.* (2012). *See also* the Commission's NEPA-implementing regulations at Title 18 of the Code of Federal Regulations, Part 380.

[32] 83 Fed. Reg. 55,156 (2018).

[33] The transcript for the public comment session in Port Isabel, Texas, was filed in the record on January 2, 2019. *See also* Appendix H to the final EIS reproducing and responding to comments on the draft EIS.

24. On March 15, 2019, Commission staff issued the final EIS for the project, and a public notice of the availability of the final EIS was published in the Federal Register.[34] The final EIS addresses geology; soils; water resources; wetlands; vegetation; wildlife and aquatic resources; threatened, endangered, and other special status species; land use, recreation, and visual resources; socioeconomics; cultural resources; air quality and noise; safety; cumulative impacts; alternatives; and all substantive environmental comments received on the draft EIS.

25. The final EIS concludes that construction and operation of the project will result in some adverse environmental impacts, but with the exception of impacts on visual resources and the cumulative impacts on the above-mentioned resources, these impacts will be reduced to less-than-significant levels with the implementation of applicants' proposed, and Commission staff's recommended, mitigation measures, which are included as conditions in the appendix to this order.

26. The Texas LNG Project, combined with other projects in the geographic scope, including the proposed Rio Grande LNG and Annova LNG Projects on the Brownsville Ship Channel,[35] would result in significant cumulative impacts on surface water quality in the Brownsville Ship Channel during operational vessel transits; on the federally-listed ocelot and jaguarundi from habitat loss and increased potential for vehicular strikes during construction; on the federally listed northern aplomado falcon from habitat loss; on visual resources due to the presence of new facilities; and on nearby NSAs during nighttime construction.

27. The Commission received several comments following the issuance of the final EIS, only one of which was an adverse comment concerning the final EIS itself. This comment and the resource areas addressed in the final EIS are discussed below.

1. Geology

28. The primary impacts on geology would result from site preparation and grading, which would utilize cut and fill techniques as well as the import of fill. Other impacts would occur as a result of the dredging of the maneuvering basin.[36] As a result,

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[34] 84 Fed. Reg. 10,818 (2019).

[35] Concurrently with this order, the Commission is also issuing orders approving the construction and operation of the Rio Grande LNG and Annova LNG Projects. *See Rio Grande LNG, LLC*, 169 FERC ¶ 61,131 (2019); *Annova LNG Common Infrastructure, LLC*, 169 FERC ¶ 61,132 (2019).

[36] Final EIS at 4-3.

construction of the Texas LNG Project would permanently alter the existing topography and geologic conditions at the site. Considering the subsurface conditions for the Texas LNG site, shallow foundations would be suitable for lightly loaded structures; however, as is common for heavier structures in areas with these types of soil conditions, the LNG storage tanks, liquefaction trains, and many associated structures would require deep foundations.[37] Therefore, Texas LNG is proposing to drive precast square concrete piles for deep foundations for heavily loaded structures and settlement sensitive structures.[38] The project would not affect the extraction of mineral resources, and no blasting is anticipated during construction of the project.[39]

29. Texas LNG has proposed structural and mechanical elements to incorporate into the design of the project to mitigate potential geological hazards and other natural hazards, such as high winds, storm surges, severe flooding, and shoreline erosion.[40] Due to the low relief across the Texas LNG site, there is little likelihood that landslides or slope movement at the site would be a realistic hazard.[41] Based on Texas LNG's proposed mitigation and design criteria, and Commission staff's recommended mitigation measures, included in the appendix to this order, the final EIS concludes that the potential impacts on the Texas LNG Project from geologic hazards and other natural hazards will be minimal, and the Texas LNG Project will not significantly impact geologic resources.

2. Soils

30. Construction of the Texas LNG Project could affect soil resources by increasing the potential for erosion, compaction, and mixing of topsoil and subsoil.[42] Further, most soils in the project site have low revegetation potential due to high salinity.[43] Texas LNG plans to import soils and may use dredge material to raise the elevation of the project

[37] *Id.* at 4-236.

[38] *Id.*

[39] *Id.* at 5-358.

[40] *See id.* at 4-3.

[41] *Id.* at 4-244.

[42] *Id.* at 5-358.

[43] *Id.*

site.[44] To minimize soil impacts, Texas LNG would implement the mitigation measures contained in the project-specific Environmental Construction Plan (ECP).[45] Dredging at the LNG terminal site would be conducted in accordance with permits issued by the COE.[46] To minimize shoreline erosion, Rio Grande would stabilize the waterfront along the Brownsville Ship Channel, and would maintain the integrity of the shoreline throughout the operational life of the terminal.[47]

31. Texas LNG has also prepared a *Spill Prevention and Response Plan* for use during construction to minimize the potential for soils to become contaminated from spills of hazardous materials.[48] Commission staff recommends, and we require in Environmental Condition 13, that Texas LNG provide the Commission with a copy of its Spill Prevention, Control, and Countermeasure (SPCC) Plan for review and approval prior to operation. Therefore, the final EIS concludes that impacts on soil resources would be permanent but minor and would be adequately minimized.

3. Water Resources

32. Texas LNG would not directly withdraw groundwater for construction or operation of the project, and any indirect withdrawals of groundwater, as a result of Texas LNG obtaining water from the Brownsville Public Utility Board's municipal water supply, would not significantly impact groundwater quantity.[49] There are no drinking water wells or springs within 150 feet of the Project site.[50] Although shallow

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[44] *Id.*

[45] *Id.* The project-specific ECP is based on the 2013 FERC Upland Erosion Control, Revegetation, and Maintenance Plan (Plan) and Wetland and Waterbody Construction and Mitigation Procedures (Procedures), which are a set of baseline construction and mitigation measures developed to minimize the potential environmental impacts of construction on upland areas, wetlands, and waterbodies. *See* Federal Energy Regulatory Commission, *Environmental Guidelines* (May 2013), https://www.ferc.gov/industries/gas/enviro/guidelines.asp.

[46] Final EIS at 5-359.

[47] *Id.* at 4-24, 4-70, 4-236 – 4-237, 4-303.

[48] *Id.* at 5-359.

[49] *Id.*

[50] *Id.* at 4-13, 5-359.

groundwater areas could be vulnerable to contamination caused by inadvertent surface spills of hazardous materials and placement of the deep piles required for the LNG storage tanks, ship loading, and berthing areas, implementation of Texas LNG's Spill Prevention and Response Plan during construction and SPCC Plan, as referenced above, during operation, would help to ensure that impacts on groundwater as a result of contamination would not be significant.[51]

33. No waterbodies are present within the project site, with the exception of the Brownsville Ship Channel. Although Texas LNG proposes to carry out dredging and dredge material disposal within the project area, the final EIS concludes that Texas LNG's proposed dredge disposal methods would sufficiently minimize project-related turbidity and sedimentation within the Brownsville Ship Channel.[52]

34. Based on the implementation of identified mitigation measures, the final EIS concludes that impacts on water resources will be adequately minimized and are not significant.

4. Wetlands

35. Construction of the Texas LNG Project would affect a total of 45.2 acres of wetlands, of which 42.9 acres would be permanently impacted as a result of dredging for the maneuvering basin and fill for certain permanent structures.[53] Texas LNG prepared a preliminary Compensatory Mitigation Plan to mitigate permanent wetland impacts, but it was not approved by the COE. To date, Texas LNG has not filed a revised Compensatory Mitigation Plan with the COE. Texas LNG's wetland mitigation would include adhering to the measures in the Commission's Procedures, as well as any measures included in a Compensatory Mitigation Plan approved by the COE. Environmental Condition 9 requires Texas LNG to demonstrate that it has received all application federal authorizations, including a COE section 404 permit, prior to commencing construction.[54]

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[51] *Id.*

[52] *Id.* at 5-360.

[53] *Id.* at 5-361.

[54] COE will not issue Texas LNG a section 404 permit until a suitable mitigation plan is developed to mitigate project impacts on wetlands. *Id.*

36. With the implementation of an appropriate project-specific mitigation plan and the proposed mitigation measures discussed in the final EIS, the final EIS concludes that impacts on wetland resources will be adequately minimized and are not significant.

5. Vegetation

37. Construction and operation of the Texas LNG Project would permanently impact 249.3 acres of vegetation.[55] To minimize impacts on vegetation communities, Texas LNG would construct and operate the project in accordance with its project-specific ECP.[56] The Natural Resources Conservation Service and the Plant Materials Center anticipate revegetation of the project area to be difficult. Texas LNG would utilize topsoil stripped from areas with the highest potential for revegetation prior to grading activities, and—pursuant to a recommendation from the Natural Resources Conservation Service—Texas LNG has developed a native seed mix in consultation with the Kika de la Garza Plant Materials Center best suited to the project site conditions.

38. Five rare plant communities are present on the project site, as well as one rare plant species, lily of the loma.[57] The Texas Parks and Wildlife Department (TPWD) expressed interest in preserving populations of lily of the loma documented at the project site.[58] The final EIS recommends, and we require in Environmental Condition 14, that Texas LNG coordinate with the TPWD regarding seed/fruit collection from rare plant species impacted by the project.

39. Recognizing the potential that land disturbance during construction of the project may enable the establishment of exotic or invasive plant communities and noxious weeds, Texas LNG would implement the measures outlined in its *Noxious Weed and Invasive Plant Plan* to minimize the spread of invasive species and treat invasive species if they become established.[59]

40. Based on the implementation of the proposed mitigation measures, the final EIS concludes that construction and operation of the project would not have a significant impact on vegetation communities.

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[55] *Id.*

[56] *Id.*

[57] *Id.*

[58] *Id.*

[59] *Id.* at 5-361 – 5-362.

6. Wildlife and Aquatic Resources

41. The construction and operation of the Texas LNG Project would permanently affect wildlife and wildlife habitats, with impacts including displacement, stress, and direct mortality of some less mobile species, as well as a reduction in suitable cover, nesting, and foraging habitat due to vegetation clearing.[60] Wildlife in the vicinity of the project would also likely be affected by impacts associated with noise and artificial light.[61] However, the greatest noise impacts would be during construction, and therefore short-term in nature, and Texas LNG would implement measures outlined in its Facility Lighting Plan to minimize the effects of lighting on wildlife during operation, including utilizing motion detectors, timers, and shielded, down-facing lights.[62] Impacts on wildlife would be further minimized through the implementation of the project-specific ECP.[63]

42. Due to the proximity of the project site to the Laguna Atascosa National Wildlife Refuge, wildlife within the refuge would likely be impacted by increased noise and light during both construction and operation of the project. However, impacts would be greatest during construction due to increased traffic and noise, both of which would decrease significantly during operation.[64] With the implementation of the measures proposed by Texas LNG, the final EIS concludes that impacts on wildlife from construction and operation of the projects will not be significant.

43. The project is within the migratory bird Central Flyway, which spans the central portion of North America into Central America.[65] Texas LNG observed several migratory birds of conservation concern during surveys.[66] In addition to disturbance of habitat and potential sensory disturbances, elevated structures such as the storage tanks

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[60] *Id.* at 5-362.

[61] *Id.*

[62] *Id.* at 4-49.

[63] *Id.*

[64] *Id.* at 5-362.

[65] *See id.* at 4-50. South Texas acts as a funnel for migratory birds as they try to avoid flying too far east (into open Gulf waters) or west (into desert habitat).

[66] *Id.* at 4-53.

and flares would also affect migratory birds by increasing the potential for collisions.[67] The EIS recommends—and we require in Environmental Condition 15—that prior to construction Texas LNG will consult with the FWS to revise its *Migratory Bird Plan* to address recommendations from the FWS and the TPWD. Thus, the EIS concludes that the Texas LNG Project would not have a significant impact on migratory bird populations.[68]

44. Impacts on aquatic resources from construction and operation of the Texas LNG Project include increased turbidity and sediment suspension, increased in-water noise, increased vessel traffic, and alteration of light regimes and dissolved oxygen concentrations.[69] Texas LNG proposes to minimize turbidity and sediment suspension by utilizing a hydraulic cutterhead dredge, which produces less turbidity and sedimentation than a clamshell dredge.[70] Texas LNG would also implement construction techniques that minimize noise effects on aquatic species, including utilizing bubble curtains and cushion blocks to minimize underwater sound pressures. Environmental Condition 16 in the appendix to this order requires Texas LNG to perform test drives prior to initiating pile-driving activities, file acoustic monitoring results with the Commission and NMFS, and implement additional mitigation measures if noise impacts exceed anticipated levels.

45. Due to the limited frequency of LNG carriers calling on the LNG terminal, the EIS concludes that impacts on aquatic resources from increased ship traffic are not expected to be significant.[71]

46. Construction and operation of the project would also result in temporary and permanent impacts on essential fish habitat (EFH). Dredging of the maneuvering basin would permanently convert 39.4 acres of tidal flats to open water habitat and would impact the existing open water areas associated with the Brownsville Ship Channel, all of which is characterized as EFH.[72] However, the tidal flats within and surrounding the project site have historically been cut off from the influences of natural tidal exchange. As stated in the final EIS, dredging is anticipated to restore tidal flows to the tidal flats

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[67] *See id.* at 4-52.

[68] *Id*. at 4-55.

[69] *Id.* at 5-363.

[70] *Id.*

[71] *Id.*

[72] *Id.*

surrounding the project site, improving the overall aquatic habitat and enhancing EFH in the area.[73]

47. Texas LNG coordinated with the National Marine Fisheries Service (NMFS) on potential impacts on EFH. In a filing dated February 5, 2019, NMFS concurred with Commission staff's conclusion that project impacts would be "temporary and minor."[74] Therefore, the EFH consultation required by the Magnuson-Stevens Fishery Conservation and Management Act is concluded, and no further coordination with the NMFS for EFH is required.[75]

48. With implementation of the proposed mitigation measures, the final EIS concludes that the project would have minor and localized impacts on aquatic resources.

7. Threatened, Endangered, and Other Special Status Species

49. The final EIS identifies 21 species that are federally listed as threatened or endangered (or are identified as proposed, candidates, or under review for federal listing) that may occur within the vicinity of the project.[76] Within the project vicinity, critical habitat has been designated for two species (the piping plover and the loggerhead sea turtle).[77] As required by section 7 of the Endangered Species Act of 1973, we requested that the FWS and NMFS accept the information provided in the draft EIS as the Biological Assessment for the Texas LNG Project. Commission staff determined that the project *is not likely to adversely affect* listed species or critical habitat under FWS's purview, and on February 8, 2019, FWS concurred for all species except the ocelot and northern aplomado falcon.[78] In its February 8 letter, as well as in an earlier letter dated December 17, 2018, the FWS indicated that the cumulative impact of the proposed project—when combined with other projects in the area—would result in significant cumulative impacts on the ocelot due to habitat loss. Based on the likely significant cumulative impact, the FWS asserts that the proposed project is *likely to adversely affect*

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[73] *Id.*

[74] Letter from Virginia M. Fay, NMFS, concurring with staff's EFH assessment as included in the Draft Environmental Impact Statement (filed Feb. 6, 2019).

[75] *Id.*

[76] Final EIS at 4-83 – 4-86 (Table 4.7-1).

[77] *Id.* at 4-82.

[78] *Id.* at 5-364.

the ocelot, and the EIS notes that we have revised the BA to reflect this determination. Similarly, the FWS did not concur with staff's determination of *not likely to adversely affect* for the northern aplomado falcon. However, FWS notes that there is a 99-year Safe Harbor Agreement that authorizes "take" on property owned by the Brownsville Navigation District.[79] Therefore, no additional consultation on this species is necessary. The EIS also notes that the eastern black rail was recently proposed to be listed as threatened, but concludes that the proposed project is not likely to jeopardize the continued existence of the eastern black rail. On March 25, 2019, FERC staff sent a letter to the FWS requesting formal consultation under section 7 of the Endangered Species Act for the ocelot and requesting concurrence for the effect determination of the eastern black rail. In a filing dated May 15, 2019, and filed August 7, 2019, FWS responded requesting additional details, and explained that formal consultation would be initiated upon receipt of this information. Consultation will result in issuance of a Biological Opinion by FWS, which will include a jeopardy determination.[80] Should FWS find that an action may adversely affect a species, but not jeopardize its continued existence, FWS will also issue an incidental take statement for the project, detailing: (1) the potential impact of the project on the listed species; (2) reasonable and prudent measures to minimize that impact; (3) terms and conditions necessary to implement those measures; and (4) procedures to dispose of any individuals of a species actually taken.[81] Formal consultation is considered complete upon issuance of the biological opinion.[82] Environmental Condition 18 requires that Commission staff complete Endangered Species Act consultation with FWS before Texas LNG may commence construction.

50. Commission staff determined that the project is *not likely to adversely affect* listed species or critical habitat under NMFS's purview. In a letter dated August 8, 2019, NMFS concluded the same.[83] Therefore, the consultation required under the Endangered Species Act is completed, and no further coordination with the NMFS is required.[84]

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[79] *Id.*

[80] 50 C.F.R. § 402.14(h) (2019).

[81] 50 C.F.R. § 402.14(i)(1) (2019).

[82] 50 C.F.R. § 402.14(m)(1) (2019).

[83] Letter from David Bernhart, NMFS, in response to the Commission's October 30, 2018 letter requesting consultation pursuant to Section 7 of the Endangered Species Act (filed Aug. 22, 2019).

[84] *Id.*

51. Although the final EIS found that marine mammals, such as bottlenose dolphins, may be affected by in-water pile driving during construction and increased vessel traffic during operation, Texas LNG will minimize this potential through the use of soft starts and bubble curtains and/or cushion blocks during pile-driving activities.[85] During operation, vessels would implement the NMFS Vessel Strike Avoidance Measures and Reporting for Mariners (2008).[86] Environmental Condition 20 requires Texas LNG to consult with NMFS to identify mitigation measures to avoid or minimize take of marine mammals during in-water pile driving.

52. The final EIS identifies 55 state-listed threatened or endangered species with the potential to occur in Cameron County, where the proposed project would be located.[87] However, with the applicants' implementation of measures identified by TPWD, as well as our recommendation, the final EIS concludes that the Texas LNG Project would not significantly impact state-listed species.[88]

53. We have reviewed all the information and analysis contained in the record regarding the potential environmental effects of the project on all threatened, endangered and other special status species, including the ocelot, jaguarundi, and aplomado falcon. With imposition of the conditions required herein, which include any measures which may be required by FWS upon completion of consultation, we find construction and operation of the project as approved will be an environmentally acceptable action and not inconsistent with the public interest.

8. Land Use, Recreation, and Visual Resources

54. Land use in the vicinity of the project is generally classified as wetlands, scrub shrub, open land, and open water.[89] The project site consists of a 625-acre parcel, as well as an additional 26.5-acre area necessary to connect the parcel to the Brownsville Ship

[85] Final EIS at 5-365.

[86] National Marine Fisheries Service, *Vessel Strike Avoidance Measures and Reporting for Mariners NOAA Fisheries Service, Southeast Region* (February 2008), https://www.fisheries.noaa.gov/webdam/download/92937962.

[87] *See* Appendix D to the final EIS detailing all state-listed species with potential to occur within Cameron County along with a description of habitat requirements.

[88] Final EIS at 5-365.

[89] *Id.* at 4-97.

Channel.[90] Construction of the Texas LNG Project would temporarily impact 311.5 acres of the site, of which 282.0 acres would be permanently impacted by operation.[91] The land use types that will be affected by construction at the project site include open land (47 percent), scrub shrub (28 percent), wetland (14 percent), and open water (11 percent).[92] Although the project would result in the conversion of a large portion of currently undeveloped land into industrial land, the project site is owned by the Brownsville Navigation District and is zoned for industrial use. There are no existing or planned residential developments within 0.25 mile of the project site, but Rio Grande LNG, LLC has proposed to build an LNG export terminal immediately west of the project site on the north side of the Brownsville Ship Channel. In addition Annova LNG Common Infrastructure, LLC and three affiliate entities have proposed a similar LNG facility approximately 1.7 miles southwest of the project site, also on the north side of the channel.[93] The final EIS concludes that project impacts on land use in the area from construction and operation of the Texas LNG Project would not be significant.

55. Project construction and operation may impact recreational activities at the Laguna Atascosa National Wildlife Refuge. The nearest designated recreation area within the refuge is over two miles from the proposed project site, but a total of nine recreation areas were identified within five miles of the site.[94] Activities at the nearby South Bay Coastal Preserve and Paddling Trail, Isla Blanca Park, and Loma Ecological Preserve may also be impacted by the recreation sites' proximity to vessel transit routes, as increased ship traffic during construction and operation could adversely affect recreational boaters accessing the areas by delaying or temporarily restricting access across the Brownsville Ship Channel.[95]

56. The presence of the project and associated increased lighting would have a permanent impact on visual resources.[96] Due to the relatively undeveloped nature of the project area, the visual sensitivity of nearby recreation areas, and the lack of feasible

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[90] *Id.* at 4-98.

[91] *Id.*

[92] *Id*. at 4-102.

[93] *Id*. at 4-103 – 4-104.

[94] Final EIS at 4-104 – 4-105.

[95] *Id.* at 5-366.

[96] *Id.*

visual screening measures, the final EIS concludes that the project would result in a significant impact on visual resources when viewed from the Laguna Atascosa National Wildlife Refuge and would have a negligible to moderate permanent impact on the other visual resources evaluated.[97]

57. The Texas LNG Project would be constructed within a designated coastal zone.[98] Environmental Condition 21 requires the applicants, prior to construction, to file a determination that the projects are consistent with the Texas Coastal Zone Management Program. The project would be designed and built in compliance with conditions set forth in various agency authorizations, including any permits required under the Texas Coastal Zone Management Program.[99] Considering the existing industrial zoning at the project site and the proximity of nearby proposed projects and recreation areas, the final EIS concludes that the land use and recreation impacts associated with the project would not be significant.[100] With the exception of impacts on visual resources when viewed from the Laguna Atascosa NWR, impacts on visual resources would also not be significant.[101]

9. Socioeconomics

58. The final EIS concludes that construction of the Texas LNG Project would not have a significant adverse impact on the local population or existing local workforce.[102] Additionally, there would not be any disproportionately high or adverse environmental and human health impacts on low-income and minority populations.[103] However, vehicle traffic is anticipated to temporarily increase substantially during construction of the

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[97] *Id.*

[98] *See id.* at 4-141.

[99] *See id.*

[100] *Id.* at 5-365 – 5-366.

[101] *Id.* at 5-366.

[102] *See id.* at 5-367 – 5-368.

[103] *Id.* at 5-368. The dissent suggests that it is not enough to find that low-income and minority groups "will experience conditions no worse" than the surrounding county. However, the final EIS concludes, and we agree, that no populations in the area, including the low-income and minority groups, will experience significance adverse impacts.

project.[104] To minimize traffic and safety hazards as a result of this increase, Texas LNG would coordinate with the Cameron County Sherriff's office to manually control the traffic during construction as a result of employees leaving the project site.[105]

59. As noted above, operation of the Texas LNG Project could also result in impacts on marine traffic, but due to the infrequency of anticipated barge deliveries during construction and limited frequency of LNG carriers calling on the LNG terminal, the final EIS concludes that impacts from increased ship traffic are not expected to be significant.[106] Therefore, the final EIS concludes that socioeconomic impacts associated with the project would be minor.

10. Cultural Resources

60. Construction and operation of the Texas LNG Project could have the potential to affect one historic property, Site 41CF8 (Garcia Pasture Site).[107] The final EIS notes that staff have not yet completed consultations with the Advisory Council on Historic Preservation (Advisory Council) regarding the adverse impacts on the Garcia Pasture Site and recommends, as stated in Environmental Condition 23, that consultations with the Advisory Council be completed prior to the start of construction. With the implementation of this condition, as well as Texas LNG's treatment plan, we conclude that impacts on cultural resources would not be significant.

11. Air Quality and Noise

61. Air quality would be affected by construction and operation of the Texas LNG Project. Temporary impacts on air quality associated with the emissions generated from fossil-fuel fired construction equipment and fugitive dust would result during the nearly 5-year-long construction period. However, these impacts would be temporary and localized and would not have a long-term effect on regional air quality.[108] Although emissions during the period when commissioning and/or operational activities are occurring concurrent with construction activities could result in intermittent exceedances

[104] *Id.* at 5-367.

[105] *Id.*

[106] *Id.*

[107] *Id.* at 5-368.

[108] *Id.*

of certain National Ambient Air Quality Standards (NAAQS), these exceedances would not be persistent.[109]

62. The project is not subject to federal Prevention of Significant Deterioration review or permitting, and as a result, is subject instead to the New Source Review minor source construction permitting program under Texas regulations.[110] Additionally, because potential operating emissions for the project exceed the Title V major source threshold for at least one criteria air pollutant, the project is subject to the Title V operating permit program. Texas LNG submitted an air quality impact analysis demonstrating that for operational emissions of each criteria air pollutant, the model-predicted impact plus background concentration would not result in an exceedance of the NAAQS.[111]

63. Based on staff's analyses and Texas LNG's proposed mitigation measures, the final EIS concludes that although construction of the project would result in elevated emissions near construction areas that would impact local air quality, there would be no regionally significant impacts.

64. Certain construction activities, such as pile driving, could produce peak sound levels perceptible above the background sound levels at nearby NSAs.[112] However, the predicted sound levels at nearby NSAs during project construction are below the Commission's criterion of a day-night average sound level of 55 A-weighted decibels. To minimize impacts at NSAs, Texas LNG has proposed to conduct pile-driving activities only during daytime hours.[113]

65. Operation of the LNG terminal would also generate noise continually throughout the life of the project. However, the predicted sound levels for operations are below the Commission's criterion at the nearest NSAs, and increases in ambient sound level due to

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[109] Concurrent emissions from phased-in construction and operation of the project would temporarily impact local air quality, and could result in exceedances of the NAAQS in the immediate vicinity of the project during construction years. However, these exceedances would not be persistent at any one time during these years due to the dynamic and fluctuating nature of construction activities within a day, week, or month. *Id.*

[110] *Id.* at 5-368 – 5-369.

[111] *Id.* at 5-369.

[112] *Id.*

[113] *Id.*

operations would be imperceptible to most listeners.[114] To ensure NSAs are not significantly affected by operational noise, Environmental Conditions 25 and 26 require the applicants to conduct post-construction noise surveys after each noise-producing unit (e.g., each liquefaction train) is placed into service and after the entire project is placed into service. Therefore, the final EIS concludes that noise impacts due to operation of the project would not be significant.

12. Greenhouse Gas Emissions

66. With respect to impacts from GHGs, the final EIS discloses the GHG emissions from construction and operation of the project, the climate change impacts in the region, and the regulatory structure for GHGs under the Clean Air Act.[115]

67. The final EIS estimated that operation of the completed Texas LNG Project could result in GHG emissions of up to 613,901.2 metric tons per year of carbon dioxide equivalent (CO_2e).[116] To provide context to the direct and indirect[117] GHG estimate, according to the national net CO_2e emissions estimate in the EPA's *Inventory of U.S. Greenhouse Gas Emissions and Sinks* (EPA 2019), 5.743 billion metric tons of CO_2e were emitted at the national level in 2017 (inclusive of CO_2e sources and sinks).[118] The operational emissions of this project could potentially increase annual CO_2e emissions based on the 2017 levels by approximately 0.011 percent at the national level. Currently, there are no national targets to use as benchmarks for comparison and, similarly, Texas does not have GHG targets or benchmarks.[119]

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[114] *Id.*

[115] *Id.* at 4-164 – 4-187, 4-342 – 4-344.

[116] *Id.* at Table 4.11.1-11.

[117] Indirect GHG emissions are from vessel traffic associated with the project.

[118] EPA, *Inventory of U.S. Greenhouse Gas Emissions and Sinks*, Docket No. 430-R-19-001, at ES-8 (2019), https://www.epa.gov/sites/production/files/2019-04/documents/us-ghg-inventory-2019-main-text.pdf.

[119] The national emissions reduction targets expressed in the EPA's Clean Power Plan were repealed, Greenhouse Gas Emissions From Existing Electric Utility Generating Units; Revisions to Emission Guidelines Implementing Regulations, 84 Fed. Reg. 32,520, 32,522-32, 532 (July 8, 2019), and the targets in the Paris climate accord are pending withdrawal.

68. The final EIS included a qualitative discussion that addressed various effects of climate change.[120] The final EIS acknowledges that the quantified GHG emissions from the construction and operation of the project will contribute incrementally to climate change.[121] Further, the Commission has previously concluded it could not determine a project's incremental physical impacts on the environment caused by GHG emissions.[122] The Commission has also previously concluded it could not determine whether a project's contribution to climate change would be significant.[123]

13. Reliability and Safety

69. As part of the NEPA review, Commission staff assessed potential impacts to the human environment in terms of safety and whether the proposed facilities would operate safely, reliably, and securely. Commission staff conducted a preliminary engineering and technical review of the Texas LNG design, including potential external impacts based on the site location. Based on this review, the final EIS recommends a number of mitigation measures for implementation prior to initial site preparation, prior to construction of final design, prior to commissioning, prior to introduction of hazardous fluids, prior to commencement of service, and throughout the life of the facility, to enhance the reliability and safety of the facility. With these measures, the final EIS concludes that acceptable layers of protection or safeguards would reduce the risk of a potentially hazardous scenario from developing that could impact the offsite public.[124] These recommendations have been adopted as mandatory conditions in the appendix to this order.

70. Texas LNG states that the proposed project would be designed, constructed, operated, and maintained to meet or exceed Coast Guard Safety Standards,[125] the Department of Transportation (DOT) Minimum Federal Safety Standards,[126] and other

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[120] Final EIS at 4-342 – 4-344.

[121] *Id.* at 4-344.

[122] *Dominion Transmission, Inc.*, 163 FERC ¶ 61,128, at PP 67-70 (2018) (LaFleur, Comm'r, *dissenting in part*; Glick, Comm'r, *dissenting in part*).

[123] *Id.*

[124] Final EIS at 5-371.

[125] 33 C.F.R. pts. 105, 127 (2019).

[126] 49 C.F.R. pts. 192 and 193 (2019).

applicable federal and state regulations.[127] On February 14, 2018, the Coast Guard issued a Letter of Recommendation to the Commission indicating the Brownsville Ship Channel would be considered suitable for accommodating the type and frequency of LNG marine traffic associated with the project. If the project is authorized and constructed, the facility would be subject to the Coast Guard's inspection and enforcement program to ensure compliance with the requirements of 33 C.F.R. 105 and 33 C.F.R. 127.[128]

71. Further, as noted above,[129] PHMSA determined that the siting of the proposed LNG facilities complies with the federal safety standards governing the location, design, construction, operation, and maintenance of LNG facilities. The PHMSA Letter of Determination summarizes PHMSA's evaluation of the hazard modeling results and endpoints used to establish exclusion zones, as well as its review of Texas LNG's evaluation of potential incidents and safety measures that could have a bearing on the safety of plant personnel and the surrounding public.

72. In addition, Environmental Conditions 29, 33, 50, 60, 62, 70, 98, and 109 have been modified to be consistent with language in recently issued orders; however, the original intent of each environmental condition is the same. Furthermore, Environmental Condition 97—requiring an assessment of structural passive protection systems—has been added since the issuance of the final EIS. The intent of the modification is to ensure that adequate mitigation is provided to reduce the potential for cascading failures and reduce the risk to the offsite public.

73. Commission staff corresponded with the FAA in evaluating the impacts on and from the SpaceX rocket launch facility in Cameron County. Certain conditions of this order require Texas LNG to address potential impacts from rocket launch failures on the LNG Terminal.[130] However, the extent of potential impacts on SpaceX operations, the National Space Program, and to the federal government would not fully be known until

[127] *See* final EIS at 1-20 – 1-21 (Table 1.5-1) (summarizing the major federal and state permits, approvals, and consultations required for the construction and operation of the Project).

[128] 33 C.F.R. §§ 105 and 127 (2019).

[129] *See supra* P 18.

[130] *See* Environmental Conditions 31 (construction crew positioning procedures during rocket launch activity) and 114 (rocket launch monitoring procedures).

SpaceX submits an application with the FAA requesting to launch, and will depend on whether the LNG Terminal is under construction or in operation at that time.[131]

14. Cumulative Impacts

74. The final EIS considered the cumulative impacts of the proposed Texas LNG Project with other projects or actions within the geographic and temporal scope of the project.[132] The types of other projects evaluated in the final EIS that could potentially contribute to cumulative impacts on a range of environmental resources include non-jurisdictional facilities associated with the Texas LNG Project,[133] including proposed LNG terminals, currently operating and future oil and gas projects, land transportation projects, commercial and industrial developments, and dredging projects.[134]

75. The final EIS concludes that, for the majority of resources where a level of impact could be ascertained, the project's contribution to cumulative impacts on resources affected by the projects would not be significant, and that the potential cumulative impacts of the projects and the other projects considered would be minor or insignificant.[135] However, the Texas LNG Project combined with other projects within the geographic scope, including the Annova LNG and Rio Grande LNG Projects, would contribute to potential significant cumulative impacts on surface water quality in the Brownsville Ship Channel during operational vessel transits; on the federally-listed ocelot and jaguarundi from habitat loss and increased potential for vehicular strikes during construction; on the federally listed northern aplomado falcon from habitat loss, and on visual resources due to the presence of new facilities. Since issuance of the final EIS, potential significant cumulative impacts on nearby NSAs from nighttime construction have been identified due to nighttime pile driving at the proposed Annova LNG Project. The final EIS discusses applicable mitigation measures, laws, and regulations protecting environmental resources, and permitting requirements to minimize effects on these

[131] Final EIS at 4-250.

[132] *Id.* at ES-13 – ES-15, 4-269 – 4-270.

[133] These include the approximately 10.2-mile-long, 30-inch-diameter intrastate natural gas pipeline, an auxiliary lane on State Highway 48 adjacent to the proposed Texas LNG Project site, 11 miles of 240-MW electric transmission line, and a 7.4-mile-long potable water line. Final EIS at 4-282 to 4-283.

[134] *Id.* at 5-371.

[135] *Id.* at 5-371 – 5-374.

resources. Below, we briefly address each potentially significant cumulative impact in turn.

76. Concurrent operation of the Texas LNG, Annova LNG, and Rio Grande LNG Projects would increase the number of large, ocean-going vessels transiting the Brownsville Ship Channel by 48 percent.[136] Increased marine vessel traffic would result in a significant cumulative impact on surface water resources during operations from increased turbidity and shoreline erosion.[137] The Texas LNG, Annova LNG, and Rio Grande LNG Projects would incorporate design features to minimize shoreline erosion and would be responsible for maintaining the shoreline to prevent future erosion.[138] Moreover, use of the channel by LNG carriers, barges, and support vessels would be consistent with the planned purpose and use of the Brownsville Ship Channel.[139] However, given the substantial increase in large vessel traffic within the channel related to the three Brownsville LNG projects, and other projects, the final EIS anticipates that cumulative impacts on surface water resources associated with shoreline erosion and turbidity from increased vessel traffic would be moderate to significant and persistent throughout the life of the projects.[140]

77. Due to the extent of habitat modification associated with the Texas LNG Project, and other projects in the geographic scope that would be built at the same time as the proposed Texas LNG Project, moderate to significant cumulative impacts would likely occur for certain federally listed threatened and endangered species. Specifically, the final EIS anticipates that significant cumulative impacts would likely occur for the ocelot and jaguarundi, given the loss and/or decrease in suitability of habitat within and adjacent to the projects and the increased potential for vehicular strikes during construction.[141] The final EIS also anticipates significant cumulative impacts for the northern aplomado falcon due to loss of foraging and nesting habitat and potential disruption of nesting in

[136] *Id*. at 4-303.

[137] *Id.*

[138] *Id.*

[139] *Id.* at 4-24.

[140] *Id.* at 4-303.

[141] *Id.* at 4-317.

the vicinity of the projects.[142] Moderate cumulative impacts are anticipated for sea turtles due to dredging, vessel traffic, and pile driving.[143]

78. The potential for cumulative visual impacts would be greatest if, in addition to the proposed Texas LNG Project, the Annova LNG and Rio Grande LNG Projects are permitted and built concurrently along the Brownsville Ship Channel. Because motorists on State Highway 48 and other local roadways and visitors to local recreation areas would experience a permanent change in the existing viewshed during construction and operation of the projects, the final EIS concludes that the cumulative impacts of the three LNG projects on visual resources would be significant.[144]

79. With regards to nighttime construction noise, the only 24-hour construction proposed at the Texas LNG Project would be dredging.[145] The estimated overall sound levels from construction associated with the Texas LNG Project are expected to be lower than 55 dBA L_{dn}, the Commission's criterion for day-night average sound level, at all NSAs.[146] However, significantly higher noise levels are estimated for the duration of the Annova LNG Project's nighttime pile driving, resulting in significant cumulative noise impacts, even though the Texas LNG Project's contribution to cumulative nighttime construction noise would be negligible.[147] The predicted sound level impacts for simultaneous operation of all three LNG projects are much lower than the construction impacts, with potential sound level increases between 0.3 and 1.5 dBA L_{dn} at NSAs, resulting in a negligible to minor cumulative impact.[148]

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[142] *Id.* at 4-318.

[143] *Id.* at 4-321.

[144] *Id.* at 5-372 – 5-373.

[145] *Id.* at 4-192.

[146] *Id*. at 4-196.

[147] *See* Rio Grande LNG Project Final EIS at 4-494 (identifying impacts from construction noise during nighttime pile driving as a potential significant cumulative impact when combined with other projects within the geographic scope). *See also* Annova LNG Project Final EIS at 4-341.

[148] Final EIS at 4-357.

15. Alternatives

80. The final EIS evaluated several alternatives to the Texas LNG Project, including the No-Action Alternative, system alternatives for the proposed LNG facility, alternative siting and design options, flaring system alternatives, and alternative means of power generation.[149] The final EIS concluded that the alternatives proposed did not offer a significant environmental advantage and found that the proposed project, as modified by Commission staff's recommended mitigation measures, was the preferred alternative.[150]

16. Comments Received After issuance of the Final EIS

81. We received comments from Kenneth G. Teague, who contends that staff ignored two comments that were provided on the draft EIS: (1) that the natural gas pipeline would have greater wetland and other aquatic impacts than the liquefaction facility and that the Commission refuses to disclose the environmental impacts of the pipeline; and (2) that assumptions regarding the proposed revegetation measures are unrealistic. Contrary to the commenter's assertions, Commission staff addresses both comments in the final EIS.[151] In response to Mr. Teague's first comment, the final EIS states that the non-jurisdictional natural gas pipeline is anticipated to impact 56.3 acres of wetlands while the project itself would impact 45.2 acres; however, the impacts associated with the pipeline would likely be temporary.[152] The final EIS then reiterates that the Commission does not have jurisdiction over the siting or construction of the intrastate natural gas pipeline that would be owned, operated, and maintained by other entities; however, staff estimated the impacts associated with these non-jurisdictional facilities based on available information provided by Texas LNG.[153] The final EIS addresses Mr. Teague's second comment by explaining that the FERC Plan and Procedures require that applicants conduct post-construction monitoring of all areas disturbed by construction of a project, in addition to outlining success criteria for revegetation and restoration of temporary

[149] *Id.* at 5-374 – 5-375.

[150] *Id.*

[151] Mr. Teague's first comment was addressed in appendix H-2 of the final EIS under the responses to comment codes "WET-04" and "GEN-20." The second comment was addressed under the responses to comment codes "VEG-02" and "WILD-03."

[152] Final EIS, app. H-2, at H-95.

[153] *Id.* at H-58.

workspaces and requiring that additional action be taken until the areas that are temporarily disturbed are properly restored.[154]

82. Mr. Teague also contends that the final EIS fails to acknowledge that the nearest seagrass beds are at the "Mexique" Flats, nearly 2 miles from the project site. While the final EIS did not reference the Mexiquita Flats by name, they are described on page 4-59 as the nearest seagrass beds to the project site and are depicted on figure 4.6.2-1 in the final EIS. The commenter also contends that the final EIS, "intentionally and incorrectly asserts that all nearby seagrasses are hydrologically isolated from the Brownsville Ship Channel." On the contrary, page 4-59 in section 4.6.2.1 of the final EIS states that there are seagrass beds along the northern portion of the Brownsville Ship Channel, and that the nearest point of hydrologic connectivity for seagrass beds in the South Bay is 2.2 miles to the east.

83. Mr. Teague acknowledges that Texas LNG's hydrodynamic modeling concludes that seagrasses would not be impacted by dredging, but asserts that the Commission should require Texas LNG to monitor total suspended solid levels and seagrass health during dredging. The Brownsville Ship Channel is an actively maintained shipping channel. As identified in section 4.13.1 of the final EIS, the Brownsville Ship Channel is routinely dredged for maintenance, including areas immediately adjacent to the seagrass beds discussed by the commenter and in the final EIS. Based on Texas LNG's use of a cutterhead suction dredge to minimize turbidity, the results of the hydrodynamic modeling, the siting of the project along a routinely dredged ship channel, and the distance of the dredging activities from the nearest seagrass beds, the EIS concludes that the seagrass beds would not be impacted by construction or maintenance dredging.[155] We agree and are not recommending monitoring of total suspended solids during dredging.

84. In addition, Mr. Teague contends that the final EIS does not include a compensatory mitigation plan for impacts on wetlands—as required under section 404 of the Clean Water Act—and that Texas LNG has not proposed an alternative to the previously proposed mitigation that was based on "preservation only." The commenter implies that the Commission should not have issued the final EIS until the final compensatory mitigation plan was available. As discussed in the response to comment code "WET-02" in appendix H-2 of the final EIS, wetland mitigation is under the jurisdiction of the COE and Texas LNG would not be permitted to begin construction

[154] *Id.* at H-91. *See also supra* P 36 (discussing measures to minimize impacts on vegetation communities).

[155] Final EIS at 4-63.

until all federal approvals and authorizations, including the mitigation plan as part of the section 404 permit, are complete.

17. Environmental Analysis Conclusion

85. We have reviewed the information and analysis contained in the final EIS regarding potential environmental effects of the project, as well as other information in the record. We are adopting the environmental recommendations in the final EIS, as modified herein, and include them as conditions in the appendix to this order. Compliance with the environmental conditions appended to our orders is integral to ensuring that the environmental impacts of an approved project are consistent with those anticipated by our environmental analyses. Thus, Commission staff carefully reviews all information submitted. Commission staff will not issue a notice to proceed with an activity until the applicant has complied with all applicable conditions. We also note that the Commission has the authority to take whatever steps are necessary to ensure the protection of environmental resources during construction and operation of the project, including authority to impose any additional measures deemed necessary to ensure continued compliance with the intent of the conditions of the order, as well as the avoidance or mitigation of unforeseen adverse environmental impacts resulting from project construction and operation.[156]

86. We agree with the conclusions presented in the final EIS and find that the project, if constructed and operated as described in the final EIS, is an environmentally acceptable action. Further, for the reasons discussed throughout the order, as stated above, we find that the Texas LNG Project is not inconsistent with the public interest.

87. Any state or local permits issued with respect to the jurisdictional facilities authorized herein must be consistent with the conditions of this authorization. The Commission encourages cooperation between Texas LNG and local authorities. However, this does not mean that state and local agencies, through application of state or local laws, may prohibit or unreasonably delay the construction or operation of facilities approved by this Commission.[157]

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[156] *See* Environmental Condition 2.

[157] *See* 15 U.S.C. § 717r(d) (state or federal agency's failure to act on a permit considered to be inconsistent with Federal law); *see also Schneidewind v. ANR Pipeline Co.*, 485 U.S. 293, 310 (1988) (state regulation that interferes with FERC's regulatory authority over the transportation of natural gas is preempted) and *Dominion Transmission, Inc. v. Summers*, 723 F.3d 238, 245 (D.C. Cir. 2013) (noting that state and local regulation is preempted by the NGA to the extent it conflicts with federal

V. Conclusion

88. At a hearing held on November 21, 2019, the Commission on its own motion received and made a part of the record in this proceeding all evidence, including the application, and exhibits thereto, and all comments, and upon consideration of the record,

The Commission orders:

(A) Texas LNG is authorized under section 3 of the NGA to site, construct, and operate the Texas LNG Project located in Cameron County, Texas, as described and conditioned herein, and as more fully described in Texas LNG's application and subsequent filings, including any commitments made therein, subject to the environmental conditions contained in the Appendix of this order.

(B) Texas LNG's proposed liquefaction facilities shall be constructed and made available for service within five years of the date of this order.

(C) Texas LNG shall notify the Commission's environmental staff by telephone or e-mail of any environmental noncompliance identified by other federal, state, or local agencies on the same day that such agency notifies Texas LNG. Texas LNG shall file written confirmation of such notification with the Secretary of the Commission within 24 hours.

(D) Defenders of Wildlife's request for a formal hearing is denied.

By the Commission. Commissioner Glick is dissenting with a separate statement attached.

(S E A L)

Nathaniel J. Davis, Sr.,
Deputy Secretary.

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regulation, or would delay the construction and operation of facilities approved by the Commission).

APPENDIX

Environmental Conditions

As recommended in the final environmental impact statement (EIS), this authorization includes the following conditions:

1. Texas LNG Brownsville, LLC (Texas LNG) shall follow the construction procedures and mitigation measures described in its application and supplements (including responses to staff data requests) and as identified in the EIS, unless modified by the Order. Texas LNG must:

    a. request any modification to these procedures, measures, or conditions in a filing with the Secretary of the Commission (Secretary);

    b. justify each modification relative to site-specific conditions;

    c. explain how that modification provides an equal or greater level of environmental protection than the original measure; and

    d. receive approval in writing from the Director of the Office of Energy Projects (OEP) **before using that modification**.

2. The Director of the OEP, or the Director's designee, has delegated authority to address any requests for approvals or authorizations necessary to carry out the conditions of the Order, and take whatever steps are necessary to ensure the protection of life, health, property, and the environment during construction and operation of the project. This authority shall allow:

    a. the modification of conditions of the Order;

    b. stop-work authority and authority to cease operation; and

    c. the imposition of any additional measures deemed necessary to ensure continued compliance with the intent of the conditions of the Order as well as the avoidance or mitigation of unforeseen adverse environmental impact resulting from project construction and operation.

3. **Prior to any construction**, Texas LNG shall file an affirmative statement with the Secretary certified by a senior company official, that all company personnel, environmental inspectors (EI), and contractor personnel will be informed of the

EI's authority and have been or will be trained on the implementation of the environmental mitigation measures appropriate to their jobs before becoming involved with the construction and restoration activities.

4. The authorized facility locations shall be as shown in the EIS, as supplemented by filed site plans and maps. **As soon as they are available, and before the start of construction**, Texas LNG shall file with the Secretary any revised detailed site plan drawings for all facilities approved by the Order. All requests for modifications of environmental conditions of the Order or site-specific clearances must be written and must reference locations designated on these site plan drawings.

5. Texas LNG shall file with the Secretary detailed site plan drawings and aerial photographs identifying all facility relocations, and staging areas, storage yards, access roads, and other areas that would be used or disturbed and have not been previously identified in filings with the Secretary. Approval for each of these areas must be explicitly required in writing. For each area, the request must include a description of the existing land use/cover type, documentation of landowner approval, whether any cultural resources or federally listed threatened and endangered species would be affected, and whether any other environmentally sensitive areas are within or abutting the area. All areas shall be clearly identified on the maps/sheets/aerial photographs. Each area must be approved in writing by the Director of OEP **before construction in or near that area**.

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

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

   a. implementation of cultural resources mitigation measures;

   b. implementation of endangered, threatened, or special concern species mitigation measures;

   c. recommendations by state regulatory authorities; and

   d. agreements with individual landowners that affect other landowners or could affect environmentally sensitive areas.

6. **Within 60 days of the Order and before construction begins**, Texas LNG shall file an Implementation Plan with the Secretary, for review and written approval by the Director of OEP. Texas LNG must file revisions to the plans as schedules change. The plans shall identify the following:

    a. how Texas LNG will implement the construction procedures and mitigation measures described in its application and supplements (including responses to staff data requests), identified in the EIS, and required by the Order;

    b. how Texas LNG will incorporate these requirements into the contract bid documents, construction contracts (especially penalty clauses and specifications), and construction drawings so that the mitigation required at each site is clear to onsite construction and inspection personnel;

    c. the number of EIs assigned to the project and how the company will ensure that sufficient personnel are available to implement the environmental mitigation;

    d. company personnel, including EIs and contractors, who will receive copies of the appropriate material;

    e. the location and dates of the environmental compliance training and instructions Texas LNG will give to all personnel involved with construction and restoration (initial and refresher training as the project progresses and personnel change), with the opportunity for OEP staff to participate in the training session(s);

    f. the company personnel (if known) and specific portion of Texas LNG's organization having responsibility for compliance;

    g. the procedures (including use of contract penalties) Texas LNG will follow if noncompliance occurs; and

    h. for each discrete facility, a Gantt or PERT chart (or similar project scheduling diagram), and dates for:

        i. the completion of all required surveys and reports;

        ii. the environmental compliance training of onsite personnel;

        iii. the start of construction; and

        iv. the start and completion of restoration.

7. Texas LNG shall employ at least one EI for the project. Each EI shall be:

   a. responsible for monitoring and ensuring compliance with all mitigation measures required by the Order and other grants, permits, certificates, or other authorization documents;

   b. responsible for evaluating the construction contractor's implementation of the environmental mitigation measures required in the contract (see condition 6 above) and any other authorizing document;

   c. empowered to order correction of acts that violate the environmental conditions of the Order, and any other authorizing document;

   d. a full-time position, separate from all other activity inspectors;

   e. responsible for documenting compliance with the environmental conditions of the Order, as well as any environmental conditions/permit requirements imposed by other federal, state, or local agencies; and

   f. responsible for maintaining status reports.

8. Beginning with the filing of its Implementation Plan, Texas LNG shall file updated status reports with the Secretary on a **monthly** basis until all construction and restoration activities are complete. Problems of a significant magnitude shall be reported to the FERC **within 24 hours**. On request, these status reports will also be provided to other federal and state agencies with permitting responsibilities. Status reports shall include the following:

   a. an update on Texas LNG's efforts to obtain the necessary federal authorizations;

   b. project schedule including the current construction status, work planned for the following reporting period, and any schedule changes for stream crossings or work in other environmentally-sensitive areas;

   c. a listing of all problems encountered, contractor nonconformance/deficiency logs, and each instance of noncompliance observed by the EIs during the reporting period (both for the conditions imposed by the Commission and any environmental conditions/permit requirements imposed by other federal, state, or local agencies);

   d. a description of the corrective and remedial actions implemented in response to all instances of noncompliance, nonconformance, or deficiency;

e. the effectiveness of all corrective and remedial actions implemented;

f. a description of any landowner/resident complaints which may relate to compliance with the requirements of the Order, and measures taken to satisfy their concerns; and

g. copies of any correspondence received by Texas LNG from other federal, state, or local permitting agencies concerning instances of noncompliance, and Texas LNG's response.

9. Texas LNG must receive written authorization from the Director of OEP **before commencing construction of any project facilities**. To obtain such authorization, Texas LNG must file with the Secretary documentation that it has received all applicable authorizations required under federal law (or evidence of waiver thereof).

10. Texas LNG must receive written authorization from the Director of OEP **prior to introducing hazardous fluids into the LNG terminal**. Instrumentation and controls, hazard detection, hazard control, and security components/systems necessary for the safe introduction of such fluids shall be installed and functional.

11. Texas LNG must receive written authorization from the Director of OEP **before placing the LNG terminal into service**. Such authorization will only be granted following a determination that the facilities have been constructed in accordance with the FERC approval, can be expected to operate safely as designed, and the rehabilitation and restoration of the areas affected by the LNG terminal are proceeding satisfactorily.

12. **Within 30 days of placing the authorized facilities in service**, Texas LNG shall file an affirmative statement with the Secretary, certified by a senior company official:

a. that the facilities have been constructed in compliance with all applicable conditions, and that continuing activities will be consistent with all applicable conditions; or

b. identifying which conditions of the Order Texas LNG has complied with or will comply with. This statement shall also identify any areas affected by the project where compliance measures were not properly implemented, if not previously identified in filed status reports, and the reason for noncompliance.

13. **Prior to placing the LNG terminal into service**, Texas LNG shall file with the Secretary, for review and written approval by the Director of the OEP, its Spill Prevention, Containment, and Countermeasure Plan for operation of the project. (*section 4.2.4*)

14. **Prior to construction**, Texas LNG shall file with the Secretary, for review and written approval by the Director of OEP, a plan for the collection of seed/fruit from rare plant species within the proposed project site developed in consultation with the Texas Parks and Wildlife Department (TPWD). (*section 4.5.4*)

15. **Prior to construction**, Texas LNG shall consult with the U.S. Fish and Wildlife Service (FWS) to develop a revised Migratory Bird Plan that addresses the TPWD and FWS recommendations. Texas LNG shall file with the Secretary the final Migratory Bird Plan and evidence of consultation with the FWS. (*section 4.6.1.3*)

16. **Prior to initiating pile-driving activities**, Texas LNG shall perform initial test drives to measure the actual underwater noise generated during in-water pile driving. Following the completion of the initial test drives, Texas LNG shall file with the Secretary and the National Marine Fisheries Service (NMFS) the acoustic monitoring methods and results, including any additional mitigation measures that it will implement to reduce noise to anticipated levels. Texas LNG shall not initiate in-water pile driving for the project until approved by the Director of OEP. (*section 4.6.2.2*)

17. **During in-water construction activities**, Texas LNG shall utilize biological monitors to ensure that federally listed or other special status species are not present within the project area. In the event that federally listed or other special status species are observed, Texas LNG shall stop all in-water construction activities until the individual(s) leave the area on their own and Texas LNG shall notify the FWS or NMFS. **Prior to construction**, Texas LNG shall file documentation, for review and written approval by the Director of OEP, demonstrating that these provisions have been incorporated into its environmental training program. (*section 4.7.1*)

18. Texas LNG shall **not begin** construction activities **until**:

    a. the FERC staff receives comments from the FWS regarding the proposed action;

    b. the FERC staff completes Section 7 of the Endangered Species Act consultation with the FWS; and

c. Texas LNG has received written notification from the Director of OEP that construction or use of mitigation may begin. (*section 4.7.1*)

19. **Prior to construction**, Texas LNG shall file with the Secretary, for review and written approval by the Director of OEP, a plan for the capture and relocation of Texas tortoises developed in consultation with the TPWD. (*section 4.7.2.1*)

20. **Prior to construction**, Texas LNG shall file with the Secretary, for review and written approval by the Director of OEP, mitigation measures to avoid or further minimize take of marine mammals during in-water pile driving, developed in consultation with NMFS, and, if applicable, a copy of its Marine Mammal Protection Act Incidental Take Authorization. (*section 4.7.2.2*)

21. **Prior to construction**, Texas LNG shall file with the Secretary a determination from the Coastal Coordination Advisory Committee that the project is consistent with the laws and regulations of the state's Coastal Zone Management Program. (*section 4.8.6*)

22. **Prior to construction**, Texas LNG shall file with the Secretary a Traffic Management Plan for review and written approval by the Director of OEP that includes additional measures to minimize impacts on roadway traffic, including transporting workers from offsite locations via buses. The Traffic Management Plan shall address impacts on State Highway (SH) 48 as well as impacts on other area roadways including SH 100, SH 511, and SH 500. (*section 4.9.6.1*)

23. Texas LNG shall **not begin construction** of facilities and/or use of staging, storage, or temporary work areas and new or to-be-improved access roads **until**:

a. Texas LNG files with the Secretary comments on the final cultural resources reports and plans from the State Historic Preservation Office, U.S. Army Corps of Engineers, National Park Service, and appropriate federally-recognized Indian tribes;

b. FERC staff has executed a memorandum of agreement regarding the resolution of adverse effects on historic properties;

c. the Director of OEP notifies Texas LNG in writing that treatment measures (including archaeological data recovery) may be implemented; and

d. Texas LNG documents the completion of treatment, and the Director of OEP issues a written notice to proceed with construction.

All materials filed with the Commission containing **location, character, and ownership** information about cultural resources must have the cover and any relevant pages therein clearly labeled in bold lettering: **CUI/PRIV "CONTAINS PRIVILEGED INFORMATION - DO NOT RELEASE."** (*section 4.10.3*)

24. Texas LNG shall monitor sound levels during pile-driving activities, and file **weekly** noise data with the Secretary **following the start of pile-driving activities** that identify the noise impact on the nearest noise sensitive areas (NSA). If the maximum measured sound level due to pile driving at the nearest NSAs is greater than 10 decibels on the A-weighted scale (dBA) over the equivalent-continuous ambient sound levels, Texas LNG shall:

    a. cease pile-driving activities and implement noise mitigation measures; and

    b. file with the Secretary evidence of noise mitigation installation and request written notification from the Director of OEP that pile driving may resume.

25. Texas LNG shall file a full power load noise survey with the Secretary for the LNG terminal **no later than 60 days** after each liquefaction train is placed into service. If the noise attributable to operation of the equipment at the LNG terminal exceeds a day-night sound level (L_{dn}) of 55 dBA at the nearest NSA, **within 60 days** Texas LNG shall modify operation of the liquefaction facilities or install additional noise controls until a noise level below an L_{dn} of 55 dBA at the NSA is achieved. Texas LNG shall confirm compliance with the above requirement by filing a second noise survey with the Secretary **no later than 60 days** after it installs the additional noise controls. (*section 4.11.2.4*)

26. Texas LNG shall file a noise survey with the Secretary **no later than 60 days** after placing the entire LNG terminal into service. If a full load condition noise survey is not possible, Texas LNG shall provide an interim survey at the maximum possible horsepower load **within 60 days** of placing the LNG terminal into service and provide the full load survey **within 6 months**. If the noise attributable to operation of the equipment at the LNG terminal exceeds an L_{dn} of 55 dBA at the nearest NSA under interim or full horsepower load conditions, Texas LNG shall file a report on what changes are needed and shall install the additional noise controls to meet the level **within 1 year** of the in-service date. Texas LNG shall confirm compliance with the above requirement by filing an additional noise survey with the Secretary **no later than 60 days** after it installs the additional noise controls. (*section 4.11.2.4*)

27. **Prior to initial site preparation**, Texas LNG shall file with the Secretary documentation demonstrating LNG marine vessels would be no higher than existing ship traffic or it has received a determination of no hazard (with or

without conditions) by the U.S. Department of Transportation's Federal Aviation Administration (FAA) for mobile objects that might exceed the height requirements in 14 C.F.R. 77.9. (*section 4.12.6*)

28. **Prior to construction of final design**, Texas LNG shall file with the Secretary consultation from the U.S. Department of Transportation's Pipeline and Hazardous Materials Safety Administration staff as to whether the current provisions for detection and shutdown would meet the requirements of 49 C.F.R. 193 to prevent the discharge of LNG through the water removal systems in the impoundments. (*section 4.12.6*)

29. **Prior to construction of the final design**, Texas LNG shall file with the Secretary the following information, stamped and sealed by the professional engineer-of-record, registered in Texas:

    a. site preparation drawings and specifications;

    b. LNG storage tank and foundation design drawings and calculations;

    c. LNG terminal structures and foundation design drawings and calculations;

    d. seismic specifications for procured Seismic Category I equipment prior to the issuing of requests for quotations; and

    e. quality control procedures to be used for civil/structural design and construction.

    In addition, Texas LNG shall file, in its Implementation Plan, the schedule for producing this information. (*section 4.12.6*)

30. **Prior to commencement of service**, Texas LNG shall file with the Secretary a monitoring and maintenance plan, stamped and sealed by the professional engineer-of-record registered in Texas, for the site grade and LNG earthen impoundment berms which ensures the minimum elevation relative to mean sea level will be maintained for the life of the facility considering settlement, subsidence, and sea level rise. (*section 4.12.6*)

Conditions 31 through 125 shall apply to the Texas LNG Terminal facilities. Information pertaining to these specific conditions shall be filed with the Secretary for review and written approval by the Director of OEP, or the Director's designee, within the timeframe indicated by each condition. Specific engineering, vulnerability, or detailed design information meeting the criteria specified in Order No. 833 (Docket No. RM16-15-000), including security information, shall be submitted as critical energy

infrastructure information pursuant to 18 C.F.R. 388.113. *See Regulations Implementing FAST Act Section 61003 -- Critical Electric Infrastructure Security and Amending Critical Energy Infrastructure Information*, Order No. 833, 157 FERC ¶ 61,123 (2016). Information pertaining to items such as offsite emergency response, procedures for public notification and evacuation, and construction and operating reporting requirements will be subject to public disclosure. All information shall be filed **a minimum of 30 days** before approval to proceed is requested.

31. **Prior to initial site preparation**, Texas LNG shall develop and implement procedures to monitor rocket launch activity and to position onsite construction crews and plant personnel in areas that are unlikely to be impacted by rocket debris of a failed launch during initial moments of rocket launch activity from the Brownsville SpaceX facility. Texas LNG's procedures for positioning of onsite construction crews and plant personnel shall include reference to any guidance from the FAA to the public regarding anticipated SpaceX launches. (*section 4.12.6*)

32. **Prior to initial site preparation**, Texas LNG shall file an overall project schedule, which includes the proposed stages of the commissioning plan. (*section 4.12.6*)

33. **Prior to initial site preparation**, Texas LNG shall file quality assurance and quality control procedures for construction activities. (*section 4.12.6*)

34. **Prior to initial site preparation**, Texas LNG shall file procedures for controlling access during construction. (*section 4.12.6*)

35. **Prior to initial site preparation**, Texas LNG shall evaluate the relocation of the main control building such that it does not present an ignition source to a release of combustible vapors and that it is not impacted by a pool or jet fire or otherwise demonstrate how it would be protected from such hazards. The evaluation shall compare against minimum spacing requirements for buildings relative to impounding systems and equipment containing hazardous fluids, distances used in electrical area classification for ignition sources as well as radiant heat distances from pool and jet fires. (*section 4.12.6*)

36. **Prior to initial site preparation**, Texas LNG shall develop an Emergency Response Plan (including evacuation) and coordinate procedures with the U.S. Coast Guard (Coast Guard); state, county, and local emergency planning groups; fire departments; state and local law enforcement; and appropriate federal agencies. This plan shall include at a minimum:

    a. designated contacts with state and local emergency response agencies;

b. scalable procedures for the prompt notification of appropriate local officials and emergency response agencies based on the level and severity of potential incidents;

c. procedures for notifying residents and recreational users within areas of potential hazard;

d. evacuation routes/methods for residents and public use areas that are within any transient hazard areas along the route of the LNG marine transit;

e. locations of permanent sirens and other warning devices; and

f. an "emergency coordinator" on each LNG carrier to activate sirens and other warning devices.

Texas LNG shall notify the FERC staff of all planning meetings in advance and shall report progress on the development of its Emergency Response Plan at **3-month intervals**. (*section 4.12.6*)

37. **Prior to initial site preparation**, Texas LNG shall file a Cost-Sharing Plan identifying the mechanisms for funding all project-specific security/emergency management costs that would be imposed on state and local agencies. This comprehensive plan shall include funding mechanisms for the capital costs associated with any necessary security/emergency management equipment and personnel base. Texas LNG shall notify FERC staff of all planning meetings in advance and shall report progress on the development of its Cost Sharing Plan at **3-month intervals**. (*section 4.12.6*)

38. **Prior to construction of final design**, Texas LNG shall file change logs that list and explain any changes made from the front end engineering design provided in Texas LNG's application and filings. A list of all changes with an explanation for the design alteration shall be provided and all changes shall be clearly indicated on all diagrams and drawings. Records of changes shall be kept so FERC staff can verify during construction inspections. (*section 4.12.6*)

39. **Prior to construction of final design**, Texas LNG shall file information/revisions pertaining to Texas LNG's response numbers 5, 11, 12, 15, 19, 20, 21, 22, 23, and 25 of its July 29, 2016 filing, which indicated features it would include or consider in the final design. (*section 4.12.6*)

40. **Prior to construction of final design**, Texas LNG shall file a plot plan of the final design showing all major equipment, structures, buildings, and impoundment systems. (*section 4.12.6*)

41. **Prior to construction of final design**, Texas LNG shall file three-dimensional plant drawings to confirm plant layout for maintenance, access, egress, and congestion. (*section 4.12.6*)

42. **Prior to construction of final design**, Texas LNG shall file drawings of the storage tank piping support structure and support of horizontal piping at grade including pump columns, relief valves, pipe penetrations, instrumentation, and appurtenances. (*section 4.12.6*)

43. **Prior to construction of final design**, Texas LNG shall file a complete specification and drawings of the proposed LNG tank design and installation. (*section 4.12.6*)

44. **Prior to construction of final design**, Texas LNG shall file the evaluation and conclusions by the tank manufacturer regarding the potential for the layering effect and the steps to avoid rollover for various LNG rundown scenarios, especially bottom fill, during the production of excessively warm LNG. This evaluation shall consider the suppression of flashing in the bottom fill downpipe caused by static pressure in the column resulting in failure of the LNG to completely reach equilibrium temperature at tank operating pressure. (*section 4.12.6*)

45. **Prior to construction of final design**, Texas LNG shall file engineering information that protects the LNG rundown system from the high pressure liquefaction system, including consideration for specifying the LNG rundown system from the main cryogenic heat exchanger (MCHE) to the LNG storage tanks at the same pressure as the LNG side of the MCHE with the specification break downstream of the motor operated valve (MOV) valves (i.e., MOV-51001 and 51002) located on the LNG storage tank fill lines. The evaluation shall consider removal of the end flash gas separator 1410-V-101 from the LNG product rundown system or a high-high liquid shutdown capability to ensure LNG will not overfill the drum and release LNG into the vapor handling system. In addition, Texas LNG shall provide the control loop simulation summary for the LNG rundown system. (*section 4.12.6*)

46. **Prior to construction of the final design**, Texas LNG shall file engineering information that demonstrates unobstructed flow of the LNG tank recycle line, including consideration for the 16-inch-diameter pump recirculation piping

connection to the LNG storage tank top fill line being downstream of the motor control valves (i.e., MOV-51001). (*section 4.12.6*)

47. **Prior to construction of the final design**, Texas LNG shall file engineering information that demonstrates detection and protection as a result of cryogenic temperature conditions in the Demethanizer, including consideration for the addition of low temperature shutdown capabilities on temperature transmitters TI-21056 and TIC-21015 on the Demethanizer 1210-T-101 that would close the bottom outlet valve XZV-21006 in the event of depressurization that results in cryogenic temperatures at the bottom of the Demethanizer with the bottom outlet valve XZV-21006 remaining closed until the cryogenic temperature condition has been removed. (*section 4.12.6*)

48. **Prior to construction of the final design**, Texas LNG shall file engineering information that demonstrates protection of the Demethanizer Reboiler from cryogenic temperatures, including consideration for specifying the hot oil tubing and tube sheet within the Demethanizer Reboiler 1210-E-102 for cryogenic service. (*section 4.12.6*)

49. **Prior to construction of the final design**, Texas LNG shall file engineering information that demonstrates protection of the carbon steel condensate line from cryogenic fluid on the Spare Flare KO Drum 1840-V-103, including consideration of an automatic shutoff valve on the 4-inch-diameter condensate line (1840-PC-84002-4") downstream of the ¾-inch bleed valve controlled by low-low temperature, as well as designing the piping segment between the Spare Flare KO Drum and this low-low temperature shutoff valve for cryogenic temperatures. (*section 4.12.6*)

50. **Prior to construction of final design**, Texas LNG shall file an up-to-date equipment list, process and mechanical data sheets, and specifications. The specifications shall include:

    a. Building Specifications (e.g., control buildings, electrical buildings, compressor buildings, storage buildings, pressurized buildings, ventilated buildings, blast resistant buildings);

    b. Mechanical Specifications (e.g., piping, valve, insulation, rotating equipment, heat exchanger, storage tank and vessel, other specialized equipment);

    c. Electrical and Instrumentation Specifications (e.g., power system, control system, safety instrument system (SIS), cable, other electrical and instrumentation); and

d. Security and Fire Safety Specifications (e.g., security, passive protection, hazard detection, hazard control, firewater). (*section 4.12.6*)

51. **Prior to construction of final design**, Texas LNG shall file a list of all codes and standards and the final specification document number where they are referenced. (*section 4.12.6*)

52. **Prior to construction of final design**, Texas LNG shall file up-to-date process flow diagrams and piping and instrument diagrams (P&IDs) including vendor P&IDs. The process flow diagrams shall include heat and material balances. The P&IDs shall include the following information:

a. equipment tag number, name, size, duty, capacity, and design conditions;

b. equipment insulation type and thickness;

c. storage tank pipe penetration size and nozzle schedule;

d. valve high pressure side and internal and external vent locations;

e. piping with line number, piping class specification, size, and insulation type and thickness;

f. piping specification breaks and insulation limits;

g. all control and manual valves numbered;

h. relief valves with size and set points; and

i. drawing revision number and date. (*section 4.12.6*)

53. **Prior to construction of final design**, Texas LNG shall file P&IDs, specifications, and procedures that clearly show and specify the tie-in details required to safely connect subsequently constructed facilities with the operational facilities. (*section 4.12.6*)

54. **Prior to construction of final design**, Texas LNG shall file a car seal philosophy and a list of all car-sealed and locked valves consistent with the P&IDs. (*section 4.12.6*)

55. **Prior to construction of final design**, the engineering, procurement, and construction contractor shall verify that the recommendations from the Front End Engineering Design Hazard Identification are complete and consistent with the

requirements of the final design as determined by the engineering, procurement, and construction contractor. (*section 4.12.6*)

56. **Prior to construction of final design**, Texas LNG shall file a hazard and operability review prior to issuing the P&IDs for construction. A copy of the review, a list of the recommendations, and actions taken on the recommendations shall be filed. (*section 4.12.6*)

57. **Prior to construction of final design**, Texas LNG shall file the safe operating limits (upper and lower), alarm and shutdown set points for all instrumentation (i.e., temperature, pressures, flows, and compositions). (*section 4.12.6*)

58. **Prior to construction of final design**, Texas LNG shall file cause-and-effect matrices for the process instrumentation, fire and gas detection system, and emergency shutdown system for review and approval. The cause-and-effect matrices shall include alarms and shutdown functions, details of the voting and shutdown logic, and set points. (*section 4.12.6*)

59. **Prior to construction of final design**, Texas LNG shall file an evaluation of emergency shutdown valve closure times. The evaluation shall account for the time to detect an upset or hazardous condition, notify plant personnel, and close the emergency shutdown valve(s). (*section 4.12.6*)

60. **Prior to construction of final design**, Texas LNG shall file an evaluation of dynamic pressure surge effects from valve opening and closures times and pump operations that demonstrate that the surge effects do not exceed the design pressures. (*section 4.12.6*)

61. **Prior to construction of final design**, Texas LNG shall demonstrate that, for hazardous fluids, piping and piping nipples 2 inches or less in diameter are designed to withstand external loads, including vibrational loads in the vicinity of rotating equipment and operator live loads in areas accessible by operators. (*section 4.12.6*)

62. **Prior to construction of final design**, Texas LNG shall file the electrical area classification drawings that reflect additional hazardous classification areas (e.g., Division 2) where highly volatile liquids are present (e.g., LNG, refrigerants, etc.) and additional hazardous classification areas where the heat transfer fluid would be processed above its flash point (e.g., near the heat transfer fluid heater) and at areas of fuel gas (e.g., fuel gas drums and surrounding equipment), including areas where they could be exposed to flammable gas during a purge cycle of a fired heater. (*section 4.12.6*)

63. **Prior to construction of final design**, Texas LNG shall file drawings and details of how process seals or isolations installed at the interface between a flammable fluid system and an electrical conduit or wiring system meet the requirements of National Fire Protection Association Standard 59A (NFPA 59A) (2001). (*section 4.12.6*)

64. **Prior to construction of final design**, Texas LNG shall file details of an air gap or vent installed downstream of process seals or isolations installed at the interface between a flammable fluid system and an electrical conduit or wiring system. Each air gap shall vent to a safe location and be equipped with a leak detection device that shall continuously monitor for the presence of a flammable fluid, alarm the hazardous condition, and shut down the appropriate systems. (*section 4.12.6*)

65. **Prior to construction of final design**, Texas LNG shall file the design specifications for the feed gas inlet facilities (e.g., metering, pigging system, pressure protection system, compression, etc.). (*section 4.12.6*)

66. **Prior to construction of final design**, Texas LNG shall specify that piping and equipment that may be cooled with liquid nitrogen will be designed for liquid nitrogen temperatures, with regard to allowable movement and stresses. (*section 4.12.6*)

67. **Prior to construction of final design**, Texas LNG shall include LNG tank fill flow measurement with high flow alarm. (*section 4.12.6*)

68. **Prior to construction of final design**, Texas LNG shall include boil-off gas flow, tank density profile and temperature profile measurement for each tank. (*section 4.12.6*)

69. **Prior to construction of final design**, Texas LNG shall file the structural analysis of the LNG storage tank and outer containment demonstrating they are designed to withstand all loads and combinations. (*section 4.12.6*)

70. **Prior to construction of final design**, Texas LNG shall file an analysis of the structural integrity of the outer containment of the full containment LNG storage tanks demonstrating it can withstand the heat from a roof tank top fire or adjacent tank top fire. (*section 4.12.6*)

71. **Prior to construction of final design**, Texas LNG shall file a projectile analysis to demonstrate that the outer concrete impoundment wall of a full-containment LNG tank could withstand projectiles from explosions and high winds. The analysis shall detail the projectile speeds and characteristics and method used to determine penetration or perforation depths. (*section 4.12.6*)

72. **Prior to construction of final design**, Texas LNG shall file the sizing basis and capacity for the final design of the flares and/or vent stacks as well as the pressure and vacuum relief valves for major process equipment, vessels, and storage tanks. (*section 4.12.6*)

73. **Prior to construction of final design**, Texas LNG shall specify that all Emergency Shutdown valves will be equipped with open and closed position switches connected to the Distributed Control System (DCS)/SIS. (*section 4.12.6*)

74. **Prior to construction of final design**, Texas LNG shall file a drawing showing the location of the emergency shutdown buttons. Emergency shutdown buttons shall be easily accessible, conspicuously labeled, and located in an area which will be accessible during an emergency. (*section 4.12.6*)

75. **Prior to construction of final design**, Texas LNG shall file drawings and specifications for vehicle barriers at each facility entrance and control point for access control. (*section 4.12.6*)

76. **Prior to construction of final design**, Texas LNG shall file drawings and specifications for protecting transfer piping, firewater equipment (e.g., hydrants, monitors, manifolds, etc.), pumps, and compressors, etc. to ensure that they are located away from roadway or protected from inadvertent damage from vehicles. (*section 4.12.6*)

77. **Prior to construction of final design**, Texas LNG shall file lighting drawings. The lighting drawings shall show the location, elevation, type of light fixture, and lux levels of the lighting system and shall be in accordance with the electrical design basis and referenced American Petroleum Institute Standard 540 (API 540) and provide illumination along the perimeter of the facility and along paths/roads of access and egress to facilitate security monitoring and emergency response operations. (*section 4.12.6*)

78. **Prior to construction of final design**, Texas LNG shall file fencing drawings. The fencing drawings shall provide details of fencing that demonstrates it would restrict and deter access around the entire facility and has a clearance from exterior features (e.g., power lines, trees, etc.) and from interior features (e.g., piping, equipment, buildings, etc.) that does not allow for the fence to be overcome. (*section 4.12.6*)

79. **Prior to construction of final design**, Texas LNG shall file security camera and intrusion detection drawings. The security camera drawings shall show the location, areas covered, and features of the camera (fixed, tilt/pan/zoom, motion detection alerts, low light, mounting height, etc.) to verify camera coverage of the

entire perimeter with redundancies, and cameras interior to the facility that will enable rapid monitoring of the LNG plant including a camera be provided at the top of each LNG storage tank, and coverage within pretreatment areas, within liquefaction areas, within truck transfer areas, within marine transfer areas, and buildings. The drawings shall show or note the location of the intrusion detection to verify it covers the entire perimeter of the LNG plant. (*section 4.12.6*)

80. **Prior to construction of final design**, Texas LNG shall file the details of a plant-wide Emergency Shutdown button, including details of the sequencing and reliability of the shutdown. (*section 4.12.6*)

81. **Prior to construction of final design**, Texas LNG shall evaluate the terminal alarm system and external notification system design to ensure the location of the terminal alarms and other fire and evacuation alarm notification devices (e.g. audible/visual beacons and strobes) will provide adequate warning at the terminal and external off-site areas in the event of an emergency. (*section 4.12.6*)

82. **Prior to construction of final design**, Texas LNG shall file an updated fire protection evaluation of the proposed facilities. A copy of the evaluation, a list of recommendations and supporting justifications, and actions taken on the recommendations shall be filed. The evaluation shall justify the type, quantity, and location of hazard detection and hazard control, passive fire protection, emergency shutdown and depressurizing systems, firewater, and emergency response equipment, training, and qualifications in accordance with NFPA 59A (2001). The justification for the flammable and combustible gas detection and flame and heat detection shall be in accordance with International Society of Automation (ISA) 84.00.07 or equivalent methodologies that would demonstrate 90 percent or more of releases (unignited and ignited) that could result in an off-site or cascading impact that could extend off site would be detected by two or more detectors and result in isolation and de-inventory within 10 minutes. The evaluation shall also demonstrate whether the use of only photoelectric smoke type detectors instead of cross zoning with ionization smoke type detectors and the dependence on linear heat type detectors instead of multi spectrum optical flame type detectors provides a more reliable and rapid means of detection. The analysis shall take into account the set points, voting logic, and different wind speeds and directions. The justification for firewater shall provide calculations for all firewater demands based on design densities, surface area, and throw distance and specifications for the corresponding hydrant and monitors needed to reach and cool equipment. (*section 4.12.6*)

83. **Prior to construction of final design**, Texas LNG shall file detailed calculations to confirm that the final fire water volumes will be accounted for when evaluating

the capacity of the impoundment system during a spill and fire scenario. (*section 4.12.6*)

84. **Prior to construction of final design**, Texas LNG shall file spill containment system drawings with dimensions and slopes of curbing, trenches, impoundments, and capacity calculations considering any foundations and equipment within impoundments, as well as the sizing and design of a down-comer that would transfer spills from the tank top to the ground-level impoundment system. The spill containment drawings shall show containment for all hazardous fluids, including all liquids handled above their flashpoint, from the largest flow from a single line for 10 minutes, including de-inventory, or the maximum liquid from the largest vessel (or total of impounded vessels) or otherwise demonstrate that providing spill containment would not significantly reduce the flammable vapor dispersion or radiant heat consequences of a spill. (*section 4.12.6*)

85. **Prior to construction of the final design**, Texas LNG shall file a building siting assessment to ensure plant buildings that are occupied or critical to the safety of the LNG plant are adequately protected from potential hazards involving fires and vapor cloud explosions. (*section 4.12.6*)

86. **Prior to construction of the final design**, Texas LNG shall file an analysis that demonstrates the flammable vapor dispersion from design spills will be prevented from dispersing underneath the elevated LNG storage tanks, or the LNG storage tanks will be able to withstand an overpressure due to ignition of the flammable vapor dispersion cloud that disperses underneath the elevated LNG storage tanks. (*section 4.12.6*)

87. **Prior to construction of final design**, Texas LNG shall file an analysis of the localized hazards to operators from a potential liquid nitrogen release and shall also provide low oxygen detectors and other identified mitigation based on the analysis. (*section 4.12.6*)

88. **Prior to construction of final design**, Texas LNG shall file an analysis of the localized hazards from a potential hydrogen sulfide release and shall also provide toxic detectors for hydrogen sulfide releases from the acid gas piping system and potential release points (i.e. vents, relief valves, vent stacks, and thermal oxidizer stack). (*section 4.12.6*)

89. **Prior to construction of final design**, Texas LNG shall file an analysis of the off gassing of hydrogen in battery rooms and ventilation calculations that limit concentrations below the lower flammability limits (e.g., 25 percent of the lower flammability limit [LFL]) and shall also provide hydrogen detectors that alarm

(e.g., 20 to 25 percent of the LFL) and initiate mitigative actions (e.g., 40 to 50 percent of the LFL). (*section 4.12.6*)

90. **Prior to construction of final design**, Texas LNG shall file complete drawings and a list of the hazard detection equipment. The drawings shall clearly show the location and elevation of all detection equipment. The list shall include the instrument tag number, type and location, alarm indication locations, and shutdown functions of the hazard detection equipment. (*section 4.12.6*)

91. **Prior to construction of final design**, Texas LNG shall file a list of alarm and shutdown set points for all hazard detectors that account for the calibration gas of the hazard detectors when determining the lower flammable limit set points for methane, ethylene, propane, and condensate. (*section 4.12.6*)

92. **Prior to construction of final design**, Texas LNG shall file a list of alarm and shutdown set points for all hazard detectors that account for the calibration gas of hazard detectors when determining the set points for toxic components such as natural gas liquids and hydrogen sulfide. (*section 4.12.6*)

93. **Prior to construction of final design**, Texas LNG shall file a technical review of facility design that:

    a. identifies all combustion/ventilation air intake equipment and the distances to any possible flammable gas or toxic release; and

    b. demonstrates that these areas are adequately covered by hazard detection devices and indicates how these devices would isolate or shutdown any combustion or heating ventilation and air conditioning equipment whose continued operation could add to or sustain an emergency. (*section 4.12.6*)

94. **Prior to construction of final design**, Texas LNG shall file an evaluation of the voting logic and voting degradation for hazard detectors. (*section 4.12.6*)

95. **Prior to construction of final design**, Texas LNG shall file facility plan drawings and a list of the fixed and wheeled dry-chemical, hand-held fire extinguishers, and other hazard control equipment. Plan drawings shall clearly show the location and elevation by tag number of all fixed dry chemical systems in accordance with NFPA 17, and wheeled and hand-held extinguishers location travel distances are along normal paths of access and egress and in compliance with NFPA 10. The list shall include the equipment tag number, manufacturer and model, elevations, agent type, agent capacity, discharge rate, automatic and manual remote signals initiating discharge of the units, and equipment covered. (*section 4.12.6*)

96. **Prior to construction of final design**, Texas LNG shall file drawings and specifications for the structural passive protection systems to protect equipment and supports from cryogenic releases. (*section 4.12.6*)

97. **Prior to construction of final design**, Texas LNG shall file calculations or test results for the structural passive protection systems to demonstrate that equipment and supports are protected from cryogenic releases. (*section 4.12.6*)

98. **Prior to construction of final design**, Texas LNG shall file drawings and specifications for the structural passive protection systems demonstrating that equipment and supports are protected from pool and jet fires. (*section 4.12.6*)

99. **Prior to construction of final design**, Texas LNG shall file an evaluation and associated specifications and drawings of how they would prevent cascading damage of transformers (e.g., fire walls or spacing) in accordance with NFPA 850 or equivalent. (*section 4.12.6*)

100. **Prior to construction of final design**, Texas LNG shall file a detailed quantitative analysis to demonstrate that adequate mitigation would be provided for each significant component within the 4,000 British thermal units per square foot per hour zone from pool or jet fires that could cause failure of the component. Trucks at the truck transfer station shall be included in the analysis. A combination of passive and active protection for pool fires and passive and/or active protection for jet fires shall be provided and demonstrate the effectiveness and reliability. Effectiveness of passive mitigation shall be supported by calculations for the thickness limiting temperature rise and effectiveness of active mitigation shall be justified with calculations demonstrating flow rates and durations of any cooling water will mitigate the heat absorbed by the vessel. (*section 4.12.6*)

101. **Prior to construction of final design**, Texas LNG shall file facility plan drawings showing the proposed location of the firewater and any foam systems. Plan drawings shall clearly show the location of firewater and foam piping, post indicator valves, and the location and area covered by, each monitor, hydrant, hose, water curtain, deluge system, foam system, water-mist system, and sprinkler. The drawings shall demonstrate that each process area, fire zone, or other sections of piping with several users can be isolated with post indicator valves and that hydrants and monitors provide enough firewater flow to reach and cool exposed surfaces subjected to a fire based on the throw distance, design density, and surface areas that are needed to be cooled taking into account obstructions. Drawings shall also include piping and instrumentation diagrams of the firewater and foam systems. (*section 4.12.6*)

102. **Prior to construction of final design**, Texas LNG shall demonstrate roads are wide enough (e.g., 20 feet per NFPA 307) to accommodate fire apparatus to reach and turn around in all areas of the plant where hydrants are proposed or otherwise provide alternative means that do not rely on fire apparatus (e.g., firewater monitors) in those areas. (*section 4.12.6*)

103. **Prior to construction of final design**, Texas LNG shall file documentation demonstrating the firewater storage volume for its facilities has minimum reserved capacity for its most demanding firewater scenario plus 1,000 gallons per minute for no less than 2 hours, including the fire water required for foam generation. The firewater storage shall also demonstrate compliance with NFPA 22, equivalent, or better level of safety. (*section 4.12.6*)

104. **Prior to construction of final design**, Texas LNG shall specify that the firewater flow test meter is equipped with a transmitter and that a pressure transmitter is installed upstream of the flow transmitter. The flow transmitter and pressure transmitter shall be connected to the DCS and recorded. (*section 4.12.6*)

105. **Prior to construction of final design**, Texas LNG shall specify that the firewater pump shelter is designed to remove the largest firewater pump or other component for maintenance with an overhead or external crane. (*section 4.12.6*)

106. **Prior to commissioning**, Texas LNG shall file a detailed schedule for commissioning through equipment startup. The schedule shall include milestones for all procedures and tests to be completed: prior to introduction of hazardous fluids and during commissioning and startup. Texas LNG shall file documentation certifying that each of these milestones has been completed before authorization to commence the next phase of commissioning and startup will be issued. (*section 4.12.6*)

107. **Prior to commissioning**, Texas LNG shall file detailed plans and procedures for: testing the integrity of onsite mechanical installation; functional tests; introduction of hazardous fluids; operational tests; and placing the equipment into service. (section 4.12.6)

108. **Prior to commissioning**, Texas LNG shall file a plan for clean-out, dry-out, purging, and tightness testing. This plan shall address the requirements of the American Gas Association's Purging Principles and Practice, and shall provide justification if not using an inert or non-flammable gas for clean-out, dry-out, purging, and tightness testing. (*section 4.12.6*)

109. **Prior to commissioning**, Texas LNG shall file the procedures for pressure/leak tests which address the requirements of American Society of Mechanical

Engineers (ASME) Boiler and Pressure Vessel Code Section VIII and ASME B31.3. In addition, Texas LNG shall file a line list of pneumatic and hydrostatic test procedures. (*section 4.12.6*)

110. **Prior to commissioning**, Texas LNG shall file the operation and maintenance procedures and manuals, as well as safety procedures, hot work procedures and permits, abnormal operating conditions reporting procedures, simultaneous operations procedures, and management of change procedures and forms. (*section 4.12.6*)

111. **Prior to commissioning**, Texas LNG shall tag all equipment, instrumentation, and valves in the field, including drain valves, vent valves, main valves, and car-sealed or locked valves. (*section 4.12.6*)

112. **Prior to commissioning**, Texas LNG shall file a plan to maintain a detailed training log to demonstrate that operating, maintenance, and emergency response staff have completed the required training. (*section 4.12.6*)

113. **Prior to commissioning**, Texas LNG shall file the settlement results from hydrostatic testing the LNG storage containers as well as a routine monitoring program to ensure settlements are as expected and do not exceed applicable criteria in API 620, API 625, API 653, and American Concrete Institute (ACI) 376. The program shall specify what actions would be taken after various levels of seismic events. (*section 4.12.6*)

114. **Prior to commissioning**, Texas LNG shall equip the LNG storage tank and adjacent piping and supports with permanent settlement monitors to allow personnel to observe and record the relative settlement between the LNG storage tank and adjacent piping. The settlement record shall be reported in the semi-annual operational reports. (*section 4.12.6*)

115. **Prior to introduction of hazardous fluids**, Texas LNG shall develop and implement procedures for plant personnel to monitor the rocket launches from the Brownsville SpaceX facility and take mitigative actions before and after a rocket launch failure to minimize the potential of a release reaching offsite, or resulting in cascading effects that could extend offsite or impact safe operations. (*section 4.12.6*)

116. **Prior to introduction of hazardous fluids**, Texas LNG shall develop and implement an alarm management program to ensure effectiveness of process alarms. (*section 4.12.6*)

117. **Prior to introduction of hazardous fluids**, Texas LNG shall complete and document all pertinent tests (Factory Acceptance Tests, Site Acceptance Tests, Site Integration Tests) associated with the DCS and SIS that demonstrates full functionality and operability of the system. (*section 4.12.6*)

118. **Prior to introduction of hazardous fluids**, Texas LNG shall complete and document a firewater pump acceptance test and firewater monitor and hydrant coverage test. The actual coverage area from each monitor and hydrant shall be shown on facility plot plan(s). (*section 4.12.6*)

119. **Prior to introduction of hazardous fluids**, Texas LNG shall complete and document a pre-startup safety review to ensure that installed equipment meets the design and operating intent of the facility. The pre-startup safety review shall include any changes since the last hazard review, operating procedures, and operator training. A copy of the review with a list of recommendations, and actions taken on each recommendation, shall be filed. (*section 4.12.6*)

120. Texas LNG shall file a request for written authorization from the Director of OEP **prior to unloading or loading the first LNG commissioning cargo**. After production of first LNG, Texas LNG shall file **weekly** reports on the commissioning of the proposed systems that detail the progress toward demonstrating the facilities can safely and reliably operate at or near the design production rate. The reports shall include a summary of activities, problems encountered, and remedial actions taken. The weekly reports shall also include the latest commissioning schedule, including projected and actual LNG production by each liquefaction train, LNG storage inventories in each storage tank, and the number of anticipated and actual LNG commissioning cargoes, along with the associated volumes loaded or unloaded. Further, the weekly reports shall include a status and list of all planned and completed safety and reliability tests, work authorizations, and punch list items. Problems of significant magnitude shall be reported to the FERC **within 24 hours**. (*section 4.12.6*)

121. **Prior to commencement of service**, Texas LNG shall label piping with fluid service and direction of flow in the field, in addition to the pipe labeling requirements of NFPA 59A (2001). (*section 4.12.6*)

122. **Prior to commencement of service**, Texas LNG shall file plans for any preventative and predictive maintenance program that performs periodic or continuous equipment condition monitoring. (*section 4.12.6*)

123. **Prior to commencement of service**, Texas LNG shall develop procedures for offsite contractors' responsibilities, restrictions, and limitations and for supervision of these contractors by Texas LNG staff. (*section 4.12.6*)

124. **Prior to commencement of service**, Texas LNG shall notify the FERC staff of any proposed revisions to the security plan and physical security of the plant. (*section 4.12.6*)

125. **Prior to commencement of service**, Texas LNG shall file a request for written authorization from the Director of OEP. Such authorization will only be granted following a determination by the Coast Guard, under its authorities under the Ports and Waterways Safety Act, the Magnuson Act, the Maritime Transportation Security Act of 2002, and the Security and Accountability For Every Port Act, that appropriate measures to ensure the safety and security of the facility and the waterway have been put into place by Texas LNG or other appropriate parties. (*section 4.12.6*)

In addition, conditions 126 through 129 shall apply **throughout the life of the Texas LNG Project**.

126. The facility shall be subject to regular FERC staff technical reviews and site inspections on at least an **annual basis** or more frequently as circumstances indicate. Prior to each FERC staff technical review and site inspection, Texas LNG shall respond to a specific data request including information relating to possible design and operating conditions that may have been imposed by other agencies or organizations. Up-to-date detailed P&IDs reflecting facility modifications and provision of other pertinent information not included in the semi-annual reports described below, including facility events that have taken place since the previously submitted semi-annual report, shall be submitted. (*section 4.12.6*)

127. **Semi-annual** operational reports shall be filed with the Secretary to identify changes in facility design and operating conditions; abnormal operating experiences; activities (e.g., ship arrivals, quantity and composition of imported and exported LNG, liquefied and vaporized quantities, boil off/flash gas); and plant modifications, including future plans and progress thereof. Abnormalities shall include, but not be limited to, unloading/loading/shipping problems, potential hazardous conditions from offsite vessels, storage tank stratification or rollover, geysering, storage tank pressure excursions, cold spots on the storage tanks, storage tank vibrations and/or vibrations in associated cryogenic piping, storage tank settlement, significant equipment or instrumentation malfunctions or failures, non-scheduled maintenance or repair (and reasons therefore), relative movement of storage tank inner vessels, hazardous fluids releases, fires involving hazardous fluids and/or from other sources, negative pressure (vacuum) within a storage tank, and higher than predicted boil off rates. Adverse weather conditions and the effect on the facility also shall be reported. Reports shall be submitted **within 45 days after each period ending June 30 and December 31**. In addition to the

above items, a section entitled "Significant Plant Modifications Proposed for the Next 12 Months (dates)" shall be included in the semi-annual operational reports. Such information would provide the FERC staff with early notice of anticipated future construction/maintenance at the LNG facilities. (*section 4.12.6*)

128. In the event the temperature of any region of the LNG storage container, including any secondary containment, including imbedded pipe supports, becomes less than the minimum specified operating temperature for the material, the Commission shall be notified **within 24 hours** and procedures for corrective action shall be specified. (*section 4.12.6*)

129. Significant non-scheduled events, including safety-related incidents (e.g., LNG, condensate, refrigerant, or natural gas releases; fires; explosions; mechanical failures; unusual over pressurization; and major injuries) and security-related incidents (e.g., attempts to enter site, suspicious activities) shall be reported to the FERC staff. In the event that an abnormality is of significant magnitude to threaten public or employee safety, cause significant property damage, or interrupt service, notification shall be made **immediately**, without unduly interfering with any necessary or appropriate emergency repair, alarm, or other emergency procedure. In all instances, notification shall be made to the FERC staff **within 24 hours**. This notification practice shall be incorporated into the LNG facility's emergency plan. Examples of reportable hazardous fluids-related incidents include:

    a. fire;

    b. explosion;

    c. estimated property damage of $50,000 or more;

    d. death or personal injury necessitating in-patient hospitalization;

    e. release of hazardous fluids for 5 minutes or more;

    f. unintended movement or abnormal loading by environmental causes, such as an earthquake, landslide, or flood, that impairs the serviceability, structural integrity, or reliability of an LNG facility that contains, controls, or processes hazardous fluids;

    g. any crack or other material defect that impairs the structural integrity or reliability of an LNG facility that contains, controls, or processes hazardous fluids;

h. any malfunction or operating error that causes the pressure of a pipeline or LNG facility that contains or processes hazardous fluids to rise above its maximum allowable operating pressure (or working pressure for LNG facilities) plus the build-up allowed for operation of pressure-limiting or control devices;

i. a leak in an LNG facility that contains or processes hazardous fluids that constitutes an emergency;

j. inner tank leakage, ineffective insulation, or frost heave that impairs the structural integrity of an LNG storage tank;

k. any safety-related condition that could lead to an imminent hazard and cause (either directly or indirectly by remedial action of the operator), for purposes other than abandonment, a 20 percent reduction in operating pressure or shutdown of operation of a pipeline or an LNG facility that contains or processes hazardous fluids;

l. safety-related incidents from hazardous fluids transportation occurring at or en route to and from the LNG facility; or

m. an event that is significant in the judgment of the operator and/or management even though it did not meet the above criteria or the guidelines set forth in an LNG facility's incident management plan. (*section 4.12.6*)

In the event of an incident, the Director of OEP has delegated authority to take whatever steps are necessary to ensure operational reliability and to protect human life, health, property, or the environment, including authority to direct the LNG facility to cease operations. Following the initial company notification, the FERC staff would determine the need for a separate follow-up report or follow up in the upcoming semi-annual operational report. All company follow-up reports shall include investigation results and recommendations to minimize a reoccurrence of the incident.

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Texas LNG Brownsville LLC Docket No. CP16-116-000

(Issued November 22, 2019)

GLICK, Commissioner, *dissenting*:

1. I dissent from today's order because it violates both the Natural Gas Act[1] (NGA) and the National Environmental Policy Act[2] (NEPA). The Commission once again refuses to consider the consequences its actions have for climate change. Although neither the NGA nor NEPA permit the Commission to assume away the impact that constructing and operating this liquefied natural gas (LNG) facility and associated natural gas pipeline will have on climate change, that is precisely what the Commission is doing here.

2. In today's order authorizing Texas LNG Brownsville LLC's (Texas LNG) LNG export facility (Project) pursuant to section 3 of the NGA, the Commission continues to treat climate change differently than all other environmental impacts. The Commission steadfastly refuses to assess whether the impact of the Project's greenhouse gas (GHG) emissions on climate change is significant, even though it quantifies the GHG emissions caused by the Project.[3] That refusal to assess the significance of the Project's contribution to the harm caused by climate change is what allows the Commission to misleadingly state that its approval of the Project will result in environmental impacts that are generally "less-than-significant"[4] and, as a result, conclude that the Project

[1] 15 U.S.C. §§ 717b, 717f (2018).

[2] National Environmental Policy Act of 1969, 42 U.S.C. §§ 4321 *et seq.*

[3] *Texas LNG Brownsville LLC*, 169 FERC ¶ 61,130, at P 65 (2019) (Certificate Order); Environmental Impact Statement at Tables 4.11.1-4 – 4.11.1-6, 4.11.1-8 – 4.11.1-9, 4.11.1-11 (EIS).

[4] Certificate Order, 169 FERC ¶ 61,130 at P 24; EIS at ES-16. *But see* Certificate Order, 169 FERC ¶ 61,130 at P 25 (noting that the Project, in conjunction with the two other LNG facilities in the region approved today, will have significant cumulative impacts on, among other things, federally listed endangered species, including the ocelot and jaguarundi).

satisfies the NGA's public interest standards.[5] Claiming that a project's environmental impacts are generally less-than-significant while at the same time refusing to assess the significance of the project's impact on the most important environmental issue of our time is not reasoned decisionmaking.

3. In addition, the Commission's public interest analysis also does not adequately weigh or wrestle with the Project's adverse impacts.[6] Collectively, the three LNG export projects[7] approved for the Brownsville Ship Channel will have a significant adverse impact on a number of endangered species, including the ocelot. Moreover, all three projects are located in Cameron County, Texas—a region of the country where roughly a third of the population is below the poverty line and a substantial portion is made up of minority groups.[8] I fully appreciate that the jobs and economic stimulus that a facility like the Project can provide may be especially important in a community facing economic challenges. But we cannot lose sight of the cumulative environmental toll on regions, like Cameron County, from the development of new industrial facilities. Although today's order recites these impacts, I believe that reasoned decisionmaking requires the Commission to affirmatively consider those impacts and explain how it nevertheless reached its public interest determination. After all, surely considering the public interest requires us to do more than merely recite the significant adverse impacts and proceed to approve the Project.

I. The Commission's Public Interest Determinations Are Not the Product of Reasoned Decisionmaking

4. The NGA's regulation of LNG import and export facilities "implicate[s] a tangled web of regulatory processes" split between the U.S. Department of Energy (DOE) and the Commission.[9] The NGA establishes a general presumption favoring the import and

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[5] Certificate Order, 169 FERC ¶ 61,130 at PP 20, 84.

[6] *See* EIS at 4-104.

[7] In addition to Texas LNG, the Commission today is also approving the Rio Grande LNG facility, *Rio Grande LNG, LLC*, 169 FERC ¶ 61,131 (2019), and the Annova LNG facility, *Annova LNG Common Infrastructure, LLC*, 169 FERC ¶ 61,132 (2019).

[8] EIS at 4-157 (noting that the poverty rate in Cameron County is 34.8 percent); *id.* 4-156 (noting that four out of the five tracts of land studied were made up of more than 50 percent minority populations).

[9] *Sierra Club v. FERC*, 827 F.3d 36, 40 (D.C. Cir. 2016) (*Freeport*).

export of LNG unless there is an affirmative finding that the import or export "will not be consistent with the public interest."[10] Section 3 of the NGA provides for two independent public interest determinations: One regarding the import or export of LNG itself and one regarding the facilities used for that import or export. DOE determines whether the import or export of LNG is consistent with the public interest, with transactions among free trade countries legislatively deemed to be "consistent with the public interest."[11] The Commission evaluates whether "an application for the siting, construction, expansion, or operation of an LNG terminal" is itself consistent with the public interest.[12] Pursuant to that authority, the Commission must approve a proposed LNG facility unless the record shows that the facility would be inconsistent with the public interest.[13]

5. As part of that determination, the Commission examines a proposed facility's impact on the environment and public safety. A facility's impact on climate change is

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[10] 15 U.S.C. § 717b(a); *see EarthReports, Inc. v. FERC*, 828 F.3d 949, 953 (D.C. Cir. 2016) (citing *W. Va. Pub. Servs. Comm'n v. Dep't of Energy*, 681 F.2d 847, 856 (D.C. Cir. 1982) ("NGA [section] 3, unlike [section] 7, 'sets out a general presumption favoring such authorization.'")). Under section 7 of the NGA, the Commission approves a proposed pipeline if it is shown to be consistent with the public interest, while under section 3, the Commission approves a proposed LNG import or export facility unless it is shown to be inconsistent with the public interest. *Compare* 15 U.S.C. §717b(a) *with* 15 U.S.C. §717f(a), (e).

[11] 15 U.S.C. § 717b(c). The courts have explained that, because the authority to authorize the LNG exports rests with DOE, NEPA does not require the Commission to consider the upstream or downstream GHG emissions that may be indirect effects of the export itself when determining whether the related LNG export facility satisfies section 3 of the NGA. *See Freeport*, 827 F.3d at 46-47; *see also Sierra Club v. FERC*, 867 F.3d 1357, 1373 (D.C. Cir. 2017) (*Sabal Trail*) (discussing *Freeport*). Nevertheless, NEPA requires that the Commission consider the direct GHG emissions associated with a proposed LNG export facility. *See Freeport*, 827 F.3d at 41, 46.

[12] 15 U.S.C. § 717b(e). In 1977, Congress transferred the regulatory functions of NGA section 3 to DOE. DOE, however, subsequently delegated to the Commission authority to approve or deny an application for the siting, construction, expansion, or operation of an LNG terminal, while retaining the authority to determine whether the import or export of LNG to non-free trade countries is in the public interest. *See EarthReports*, 828 F.3d at 952-53.

[13] *See Freeport*, 827 F.3d at 40-41.

one of the environmental impacts that must be part of a public interest determination under the NGA.[14] Nevertheless, the Commission maintains that it need not consider whether the Project's contribution to climate change is significant in this order because it lacks a means to do so—or at least so it claims.[15] However, the most troubling part of the Commission's rationale is what comes next. Based on this alleged inability to assess the significance of the Project's impact on climate change, the Commission concludes that the Project's environmental impacts would generally be reduced to "less-than-significant" levels.[16] Think about that. The Commission is saying out of one side of its mouth that it cannot assess the significance of the Project's impact on climate change[17] while, out of the other side of its mouth, assuring us that its environmental impacts are generally not significant.[18] That is ludicrous, unreasoned, and an abdication of our responsibility to give climate change the "hard look" that the law demands.[19]

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[14] *See Sabal Trail*, 867 F.3d at 1373 (explaining that the Commission must consider a pipeline's direct and indirect GHG emissions because the Commission may "deny a pipeline certificate on the ground that the pipeline would be too harmful to the environment"); *see also Atl. Ref. Co. v. Pub. Serv. Comm'n of N.Y.*, 360 U.S. 378, 391 (1959) (holding that the NGA requires the Commission to consider "all factors bearing on the public interest").

[15] Certificate Order, 169 FERC ¶ 61,130 at P 66; EIS at 4-344.

[16] Certificate Order, 169 FERC ¶ 61,130 at P 24.

[17] *Id.* P 66; EIS at 4-344 ("[W]e are unable to determine the significance of the Project's contribution to climate change.")."

[18] Certificate Order, 169 FERC ¶ 61,130 at P 24 (stating that, with few exceptions and not considering cumulative impacts, the Project's impacts would be "reduced to less-than-significant levels").

[19] *See, e.g.*, *Myersville Citizens for a Rural Cmty., Inc. v. FERC*, 783 F.3d 1301, 1322 (D.C. Cir. 2015) (explaining that agencies cannot overlook a single environmental consequence if it is even "arguably significant"); *see also Michigan v. EPA*, 135 S. Ct. 2699, 2706 (2015) ("Not only must an agency's decreed result be within the scope of its lawful authority, but the process by which it reaches that result must be logical and rational." (internal quotation marks omitted)); *Motor Vehicle Mfrs. Ass'n, Inc. v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983) (explaining that agency action is "arbitrary and capricious if the agency has . . . entirely failed to consider an important aspect of the problem, [or] offered an explanation for its decision that runs counter to the evidence before the agency").

6. It also means that the Project's impact on climate change does not play a meaningful role in the Commission's public interest determination, no matter how often the Commission assures us that it does. Using the approach in today's order, the Commission will always conclude that a project will not have a significant environmental impact irrespective of that project's actual GHG emissions or those emissions' impact on climate change. If the Commission's conclusion will not change no matter how many GHG emissions a project causes, those emissions cannot, as a logical matter, play a meaningful role in the Commission's public interest determination. A public interest determination that systematically excludes the most important environmental consideration of our time is contrary to law, arbitrary and capricious, and not the product of reasoned decisionmaking.

7. The failure to meaningfully consider the Project's GHG emissions is all-the-more indefensible given the volume of GHG emissions at issue in this proceeding. The Project will directly release over 600,000 tons of GHG emissions per year, plus an untold several million more that go undocumented in the Commission's environmental analysis.[20] The Commission acknowledges that "GHGs emissions due to human activity are the primary cause of increased levels of atmospheric GHG since the industrial age,"[21] a result that the Commission has previously (although notably not in the environmental analysis accompanying today's order) acknowledged will "threaten the public health and welfare of current and future generations through climate change."[22] In light of this undisputed relationship between anthropogenic GHG emissions and climate change, the Commission must carefully consider the Project's contribution to climate change when determining whether the Project is consistent with the public interest—a task that it entirely fails to accomplish in today's order.

8. In addition, the cumulative effects of the Project along with the Rio Grande LNG and Annova LNG facilities will have a significant adverse effect on the environment, notably endangered species, including the ocelot, the jaguarundi, and the aplomado

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[20] *See infra* PP 11-14. In particular, the Commission refuses to consider the GHG emissions caused by the Project's electricity consumption even though it poses—and uses—models for calculating and quantifying those emissions and those emissions represent the Project's principal contribution to climate change.

[21] EIS at 4-164.

[22] Environmental Assessment, Docket No. CP18-512-000 (Mar. 29, 2019); *see also id.* at 235 ("Construction and operation of the Project would increase the atmospheric concentration of GHGs in combination with past and future emissions from all other sources and contribute incrementally to future climate change impacts.").

falcon.[23] Although the Commission reports those impacts in its EIS[24] and mentions them briefly in today's order,[25] it is far from clear whether and how they factor into the Commission's public interest analysis. Given the extent of those adverse impacts on endangered species—which appear to be more extensive than those caused by other energy infrastructure projects that the Commission has approved under NGA section 3 and section 7 in recent years[26]—reasoned decisionmaking requires the Commission to do more than simply recite the potential harm to endangered species and then proceed to make a public interest determination without any further discussion.

9. The Project's impact on these species is particularly concerning since the Fish and Wildlife Service (FWS) rejected the conclusion in Commission Staff's original biological assessment that the endangered ocelot and aplomado falcon would not be adversely affected by the project.[27] Although Commission staff has resubmitted its biological assessment, FWS has yet to weigh in on the resubmitted assessment. Given that FWS has already once disagreed with the agency on the Project's implications for those species, I am concerned that we are putting the cart before the horse in making a public interest determination without the benefit of hearing from the experts about the Project's impact on endangered species.

10. Finally, the Project will be located in Cameron County, Texas—a county in which roughly a third of the population is below the poverty line and a substantial portion is

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[23] EIS at 4-317 (ocelot and jaguarundi); *id.* at 4-318 (aplomado falcon).

[24] EIS at 4-315 – 4-317, 4-317 – 4-318, 5-364 – 5-365.

[25] Certificate Order, 169 FERC ¶ 61,130 at PP 48, 73, 75.

[26] For example, the Commission's EIS notes that "even incremental habitat loss could be significant" for the ocelot, of which there are only a few dozen remaining in the United States. EIS at App. C-131. There is no question that the cumulative effect of the three LNG projects will be to significantly contribute to the loss of ocelot habitat, which is the primary threat to ocelot survival, EIS 4-315.

[27] EIS 4-81. The Commission appears to suggest that FWS improperly considered the cumulative impact of the three proximately located LNG facilities (Texas LNG, Annova LNG, and Rio Grande LNG). *Id.* For my part, I hardly see a problem in taking a holistic approach that considers how three large LNG export facilities in a single county will effect these endangered species. Indeed, the bigger problem would seem to be if the Commission ignored the collective that those projects would have on endangered species.

made up of minority groups.[28] I fully appreciate that the jobs and economic stimulus that a facility like the Project can provide may be especially important in a community facing economic challenges. But, by the same token, we cannot turn a blind eye to the incremental impact that increased pollution will have on economically disadvantaged communities, which frequently experience a disproportionate toll from the development of new industrial facilities. Especially in light of the potential cumulative impact of building three large LNG export facilities in a few-mile radius, I do not agree that we can dispose of the environmental justice concerns simply on the basis that those groups will experience conditions no worse than the surrounding county—particularly when the surrounding county presents many of the same concerns that underlie the Council on Environmental Quality's (CEQ) and U.S. Environmental Protection Agency's (EPA) environmental justice guidance.[29]

II. The Commission Fails to Satisfy Its Obligations under NEPA

11. The Commission's NEPA analysis of the Project's GHG emissions is similarly flawed. In order to evaluate the environmental consequences of the Project under NEPA, the Commission must consider the harm caused by its GHG emissions and "evaluate the 'incremental impact' that those emissions will have on climate change or the environment more generally."[30] As noted, the operation of the Project will emit more than 600,000 metric tons of GHGs annually.[31] But that drastically understates the actual GHG emissions attributable to the Project. Unlike many of the LNG facilities that the Commission has approved this year, the Project is powered with electricity from the grid

[28] EIS at 4-157 (noting that the poverty rate in Cameron county is 34.8 percent); *id.* 4-156 (noting that four out of the five tracts of land studied were made up of more than 50 percent minority populations).

[29] EIS at 4-155 – 4-157 (discussing the guidelines provided by the CEQ and EPA to identify environmental justice communities).

[30] *Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin.*, 538 F.3d 1172, 1216 (9th Cir. 2008); *WildEarth Guardians v. Zinke*, 368 F. Supp. 3d 41, 51 (D.D.C. 2019) (explaining that the agency was required to "provide the information necessary for the public and agency decisionmakers to understand the degree to which [its] decisions at issue would contribute" to the "impacts of climate change in the state, the region, and across the country").

[31] Certificate Order, 169 FERC ¶ 61,130 at P 65; *see also* EIS at Tables 4.11.1-6.

rather than onsite natural gas turbines.[32] Apparently on that basis, the Commission omits the resulting GHG emissions from its environmental analysis.

12. The GHG emissions caused by the Project's substantial electricity consumption are reasonably foreseeable effects of the Project. The Project will connect to the grid via a new transmission line that will extend from the Project to American Electric Power's Union Carbide substation.[33] That known point of interconnection makes it easy for the Commission to estimate the incremental generation likely to be dispatched to serve the Project—as well as the resulting GHG emissions—using one of many well-accepted models, such as the Environmental Protection Agency's eGrid database or Avoided Emissions and Generation Tool (AVERT). Deploying one or both of those models would have been precisely the sort of "'reasonable forecasting'" aided by "'educated assumptions'" that NEPA requires.[34]

13. But don't just take my word for it. Consider the fact that the Commission uses and relies on both of those models in similar contexts, including to calculate the air emissions in a separate order issued *today* that approves another LNG export facility that is less than 2 miles away from the Project.[35] In that order, the Commission relied on both eGrid and AVERT to calculate the "indirect emissions," including GHG emissions, caused by the Annova LNG facility's electricity consumption when assessing the reasonable alternatives to that proposed project. I see no reason why the Commission cannot use the same models to develop a reasonable estimate—which, again, is exactly what NEPA requires[36]—of the GHG emissions caused by the Project.

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[32] EIS at 1-17 – 1-18.

[33] *Id.* at 1-17.

[34] *Sabal Trail*, 867 F.3d at 1374 (quoting *Del. Riverkeeper Network v. FERC*, 753 F.3d 1304, 1310 (D.C. Cir. 2014)).

[35] Annova LNG Environmental Impact Statement, Docket No. CP16-480-000, at 3-20; *id.* at 4-104 (stating that the Annova LNG facility is 1.7 miles away from the Project site).

[36] Moreover, to the extent that the Commission believes these models, and their underlying assumptions, may not be perfect solutions, it can still use the models, but disclose its concerns so that readers can take the results "with the appropriate grain of salt." *Sabal Trail*, 867 F.3d at 1374 ("We understand that emission estimates would be largely influenced by assumptions rather than direct parameters about the project, but some educated assumptions are inevitable in the NEPA process. And the effects of assumptions on estimates can be checked by disclosing those assumptions so that readers

14. The Commission's failure to quantify the GHG emissions associated with the Project's considerable electricity consumption is especially unreasonable given the other sources of GHG emissions that it did quantify in the EIS. For example, the EIS reports the indirect GHG emissions resulting from boat traffic caused by the Project.[37] Indeed, it goes so far as to estimate the GHG emissions that will result from different types of boats used to serve the facility (e.g., LNG carrier v. tugboat v. pilot boat).[38] I fail to see how the Commission can reasonably refuse to use well-established models—ones that it is perfectly comfortable relying on in a similar context—to estimate the GHG emissions from electricity consumption, but then confidently ascribe likely GHG emissions levels for different types of boats.

15. In any case, although quantifying the Project's GHG emissions is a necessary step toward meeting the Commission's NEPA obligations, listing the volume of emissions alone is insufficient.[39] As an initial matter, identifying the consequences that those emissions will have for climate change is essential if NEPA is to play the disclosure and good government roles for which it was designed. The Supreme Court has explained that NEPA's purpose is to "ensure[] that the agency, in reaching its decision, will have available, and will carefully consider, detailed information concerning significant environmental impacts" and to "guarantee[] that the relevant information will be made available to the larger audience that may also play a role in both the decisionmaking process and the implementation of that decision."[40] It is hard to see how hiding the ball

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can take the resulting estimates with the appropriate amount of salt." (internal citations and quotation marks omitted)).

[37] Certificate Order, 169 FERC ¶ 61,130 at n.111; *see also* EIS at Tables 4.11.1-8 – 4.11.1-9.

[38] EIS at Table 4.11.1-9.

[39] *See Ctr. for Biological Diversity*, 538 F.3d at 1216 ("While the [environmental document] quantifies the expected amount of CO_2 emitted . . . , it does not evaluate the 'incremental impact' that these emissions will have on climate change or on the environment more generally . . . ."); *Klamath-Siskiyou Wildlands Ctr. v. Bureau of Land Mgmt.*, 387 F.3d 989, 995 (9th Cir. 2004) ("A calculation of the total number of acres to be harvested in the watershed is a necessary component . . . , but it is not a sufficient description of the actual environmental effects that can be expected from logging those acres.").

[40] *Dep't of Transp. v. Pub. Citizen*, 541 U.S. 752, 768 (2004) (citing *Robertson v. Methow Valley Citizens Coun.*, 490 U.S. 332, 349 (1989)).

by refusing to assess the significance of the Project's climate impacts is consistent with either of those purposes.

16. In addition, under NEPA, a finding of significance informs the Commission's inquiry into potential ways of mitigating environmental impacts.[41] An environmental review document must "contain a detailed discussion of possible mitigation measures" to address adverse environmental impacts.[42] "Without such a discussion, neither the agency nor other interested groups and individuals can properly evaluate the severity of the adverse effects" of a project, meaning that an examination of possible mitigation measures is necessary to ensure that the agency has taken a "hard look" at the environmental consequences of the action at issue.[43]

17. The Commission responds that it need not determine whether the Project's contribution to climate change is significant because "[t]here is no universally accepted methodology" for assessing the harms caused by the Project's contribution to climate change.[44] But the lack of a single consensus methodology does not prevent the Commission from adopting *a* methodology, even if it is not universally accepted. The Commission could, for example, select one methodology to inform its reasoning while also disclosing its potential limitations or the Commission could employ multiple methodologies to identify a range of potential impacts on climate change. In refusing to assess a project's climate impacts without a perfect model for doing so, the Commission sets a standard for its climate analysis that is higher than it requires for any other environmental impact.

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[41] 40 C.F.R. § 1502.16 (2018) (NEPA requires an implementing agency to form a "scientific and analytic basis for the comparisons" of the environmental consequences of its action in its environmental review, which "shall include discussions of . . . [d]irect effects and their significance.").

[42] *Robertson*, 490 U.S. at 351.

[43] *Id.* at 352.

[44] EIS at 4-344 (stating "there is no universally accepted methodology to attribute discrete, quantifiable, physical effects on the environment to Project's incremental contribution to GHGs" and "[w]ithout either the ability to determine discrete resource impacts or an established target to compare GHG emissions against, we are unable to determine the significance of the Project's contribution to climate change"); *see also* Certificate Order, 169 FERC ¶ 61,130 at P 57 ("The Commission has also previously concluded it could not determine whether a project's contribution to climate change would be significant.").

18. In any case, the Commission has several tools to assess the harm from the Project's contribution to climate change. For example, by measuring the long-term damage done by a ton of carbon dioxide, the Social Cost of Carbon links GHG emissions to the harm caused by climate change, thereby facilitating the necessary "hard look" at the Project's environmental impacts that NEPA requires. Especially when it comes to a global problem like climate change, a measure for translating a single project's climate change impacts into concrete and comprehensible terms plays a useful role in the NEPA process by putting the harm in terms that are readily accessible for both agency decisionmakers and the public at large. Yet, the Commission continues to ignore the Social Cost of Carbon, relying instead on deeply flawed reasoning that I have previously critiqued at length.[45]

19. Furthermore, even without a formal tool or methodology, the Commission can consider all factors and determine, quantitatively or qualitatively, whether the Project's GHG emissions will have a significant impact on climate change. After all, that is precisely what the Commission does in other aspects of its environmental review, where the Commission makes several significance determinations without the tools it claims it needs to assess the significance of the Project's impact on climate change.[46] The Commission's refusal to similarly analyze the Project's impact on climate change is arbitrary and capricious.

20. And even if the Commission were to determine that the Project's GHG emissions are significant, that is not the end of the analysis. Instead, as noted above, the Commission could blunt those impacts through mitigation—as the Commission often does with regard to other environmental impacts. The Supreme Court has held that an environmental review must "contain a detailed discussion of possible mitigation measures" to address adverse environmental impacts.[47] As noted above, "[w]ithout such a discussion, neither the agency nor other interested groups and individuals can properly

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[45] *See, e.g.*, *Fla. Se. Connection, LLC*, 164 FERC ¶ 61,099 (2018) (Glick, Comm'r, dissenting).

[46] *See, e.g.*, EIS at 4-14, 4-22, 4-23, 4-36 – 4-37, 4-44, 4-50, 4-55, 45-8, 4-72 (concluding there will be no significant impact on groundwater recharge, turbidity, surface water quality due to hydrostatic testing, wetlands, vegetation, wildlife, migratory bird populations, pollinator habitat, and aquatic resources due to cooling water intake, among other things).

[47] *Robertson*, 490 U.S. at 351.

evaluate the severity of the adverse effects."[48] Consistent with this obligation, the EIS discusses mitigation measures to ensure that the Project's adverse environmental impacts (other than its GHG emissions) are reduced to less-than-significant levels.[49] And throughout today's order, the Commissions uses its conditioning authority under section 3 and section 7 of the NGA[50] to implement these mitigation measures, which support its public interest finding.[51] Once again, however, the Project's climate impacts are treated differently, as the Commission refuses to identify any potential climate mitigation measures or discuss how such measures might affect the magnitude of the Project's impact on climate change.

21. Finally, the Commission's refusal to seriously consider the significance of the impact of the Project's GHG emissions is even more mystifying because NEPA "does not dictate particular decisional outcomes."[52] NEPA "'merely prohibits uninformed—rather than unwise—agency action.'"[53] The Commission could find that a project contributes significantly to climate change, but that it is nevertheless in the public interest because its benefits outweigh its adverse impacts, including on climate change. In other words, taking the matter seriously—and rigorously examining a project's impacts on climate change—does not necessarily prevent any of my colleagues from ultimately concluding that a project satisfies the relevant public interest standard.

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[48] *Id.* at 351-52; *see also* 40 C.F.R. §§ 1508.20 (defining mitigation), 1508.25 (including in the scope of an environmental impact statement mitigation measures).

[49] *See, e.g.*, Certificate Order, 169 FERC ¶ 61,130 at P 67 (discussing mitigation required by the Commission to address reliability and safety impacts from the Project); *id.* P 59 (discussing mitigation measures required to address air quality and noise); *id.* P 39 (discussing mitigation measures required to address impacts on vegetation).

[50] 15 U.S.C. § 717b(e)(3)(A); *id.* § 717f(e); Certificate Order, 169 FERC ¶ 61,130 at P 83 ("[T]he Commission has the authority to take whatever steps are necessary to ensure the protection of environmental resources . . . , including authority to impose any additional measures deemed necessary.").

[51] *See* Certificate Order, 169 FERC ¶ 61,130 at P 83 (explaining that the environmental conditions ensure that the Project's environmental impacts are consistent with those anticipated by the environmental analyses, which found that the Project would not significantly affect the quality of the human environment).

[52] *Sierra Club v. U.S. Army Corps of Engineers*, 803 F.3d 31, 37 (D.C. Cir. 2015).

[53] *Id.* (quoting *Robertson*, 490 U.S. at 351).

For these reasons, I respectfully dissent.

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Richard Glick
Commissioner