169 FERC ¶ 61,132
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

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

Annova LNG Common Infrastructure, LLC
Annova LNG Brownsville A, LLC
Annova LNG Brownsville B, LLC
Annova LNG Brownsville C, LLC

Docket No. CP16-480-000

ORDER GRANTING AUTHORIZATIONS UNDER SECTION 3
OF THE NATURAL GAS ACT

(Issued November 22, 2019)

1. On July 13, 2016, Annova LNG Common Infrastructure, LLC (Annova) and three affiliate entities filed an application for authorization under section 3 of the Natural Gas Act (NGA)[1] and Part 153 of the Commission's regulations[2] 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 south embankment of the Brownsville Ship Channel in Cameron County, Texas (Annova LNG Brownsville Project).

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

I. Background

3. The four applicants—Annova LNG Common Infrastructure, LLC, Annova LNG Brownsville A, LLC, Annova LNG Brownsville B, LLC, and Annova LNG Brownsville C, LLC—are Delaware limited liability companies with their principle place of business in Baltimore, Maryland. Annova LNG Common Infrastructure, LLC, is a wholly owned, direct subsidiary of Annova LNG, LLC, and an indirect subsidiary of Exelon Corporation. Exelon Corporation is a publicly traded utility services holding

[1] 15 U.S.C. § 717b (2018).

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

company formed under the laws of Pennsylvania and headquartered in Chicago, Illinois. Annova LNG Common Infrastructure, LLC, will facilitate financing of the Annova LNG Brownsville Project, will construct and operate the export facilities, will own certain common facilities, and will hold permits, including the Commission's authorization, for the project.[3] The other three applicants—Annova LNG Brownsville A, LLC, Annova LNG Brownsville B, LLC, and Annova LNG Brownsville C, LLC—will each own two of the six proposed liquefaction trains.[4] As its operations will not be in interstate commerce, Annova 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

A. Jurisdictional Facilities

4. Annova seeks authorization to site, construct, and operate an LNG export terminal and associated facilities along the Brownsville Ship Channel in Cameron County, Texas. The Annova LNG Brownsville Project is designed with a nameplate liquefaction and export capacity of 6 million metric tonnes per annum (MTPA), and a peak achievable capacity of 6.95 MTPA.[5] The terminal will receive natural gas via a tie-in to a non-jurisdictional intrastate natural gas pipeline to be constructed from a receipt point on the existing intrastate pipeline of Valley Crossing Pipeline, LLC, approximately nine miles away from the terminal site.[6]

[3] Annova July 13, 2016 Application at 2.

[4] *Id*. at 2.

[5] *Id*. at 3. Annova explains that the peak achievable capacity of 6.95 MTPA represents a scenario of maximum possible output if optimal colder temperatures were to occur every day of the year. Annova August 31, 2016 Answer to Comments and Protests at 10.

[6] Annova November 2, 2018 Supplement to July 17, 2018 Response to June 27, 2018 Data Request at 1; *id*. attachment at 1 (reproducing Annova's application to the U.S. Army Corps of Engineers for the proposed supply lateral).

5. Annova would construct the project on a 731-acre site adjacent to the Brownsville Ship Channel. Annova will lease the site from the Port of Brownsville.[7]

6. The facilities for the Annova LNG Brownsville Project would include the following major components: gas pretreatment facilities;[8] six liquefaction trains, each with a nameplate liquefaction capacity of 1 MTPA; two 160,000-cubic-meter, single-containment LNG storage tanks; one marine vessel loading berth,[9] which will include a 1,500-foot-diameter turning basin; control, administrative, and support buildings; a new 2.9-mile-long main access road for both construction and operation; utilities infrastructure for power, water, and telecommunication systems; and associated infrastructure.[10]

7. Annova proposes to undertake construction over a period of about 48 months. During this time, Annova will seek to begin commercial operation in three stages, bringing on two liquefaction trains at a time.

8. Annova received authorization from the Department of Energy, Office of Fossil Energy (DOE/FE),pursuant to its authority under NGA section 3, to export up to 342 billion cubic feet (Bcf) per year of natural gas (equal to approximately 6.8 MTPA)[11] in the form of LNG to any country which has the capacity to import LNG via ocean-going carrier and with which the United States has a Free Trade Agreement (FTA)

[7] The Port of Brownsville is sometimes referred to interchangeably as the Brownsville Navigation District. Annova entered an option agreement with the Port of Brownsville for a future lease of the site. Annova Application, Resource Report 8 at 8-12.

[8] Pretreatment facilities remove carbon dioxide, hydrogen sulfide, water, and trace amounts of mercury. Heavy hydrocarbon liquids will be captured and diverted into condensate storage tanks during later liquefaction. These liquids will be used to fuel heaters in the gas pretreatment facilities or will be disposed of offsite.

[9] Annova intends to accommodate up to 125 bulk LNG carriers each year. These bulk LNG carriers will have capacities between 138,000 and 177,000 cubic meters.

[10] Detailed descriptions of the project facilities are available in the public docket. *See, e.g.*, Annova July 13, 2016 Application, Resource Report 1 at 1-1 to 1-24; Annova LNG Brownsville Project, Final Environmental Impact Statement, Sections 2.1 and 2.2 (April 19, 2019) (EIS).

[11] This conversion assumes a gas density of 0.7 kilograms per cubic meter of gas.

requiring national treatment for trade in natural gas.[12] In addition, Annova has pending before DOE/FE an application to export LNG to other nations with which the U.S. permits such trade, but which have not entered into an FTA providing for the national treatment of trade in natural gas.[13]

B. Nonjurisdictional Facilities

9. Annova intends that the Annova LNG Brownsville Project will receive natural gas supplies from a third-party-constructed and -operated lateral pipeline designed to transport up to 1.2 billion cubic feet (Bcf) per day of natural gas from the existing intrastate system of Valley Crossing Pipeline, LLC, to the LNG terminal.[14] Annova anticipates that to ensure delivery of Annova's required gas volumes, Valley Crossing Pipeline, LLC, would expand the capacity of its existing intrastate pipeline by expanding its receipt header system and by adding approximately 150,000 hp of new compression.[15]

10. Annova states that it is in confidential commercial negotiations for the supply lateral, but Annova anticipates that a third party will construct and operate a 9-mile-long,

[12] *Annova LNG, LLC*, FE Docket No. 13-140-LNG, Order No. 3394 at 8 (filed Feb. 20, 2014), https://www.energy.gov/sites/prod/files/2014/06/f16/ord3394.pdf; *Annova LNG Common Infrastructure, LLC*, FE Docket No. 14-004-COC, Order No. 3464 (July 17, 2014) (transferring the authorization to Annova LNG Common Infrastructure, LLC), https://www.energy.gov/sites/prod/files/2014/08/f18/ord3464.pdf.

[13] DOE/FE has not yet issued an order addressing the application from Annova LNG Common Infrastructure, LLC filed on February 26, 2019, and supplemented on March 13, 2019, in FE Docket No. 19-34-LNG seeking authorization to export to non-FTA countries. Annova LNG Common Infrastructure, LLC, *Application of Annova LNG Common Infrastructure, LLC for Long-Term, Mult-Contract Authorization to Export Liquefied Natural gas to Non-Free Trade Agreement Nations* (Feb. 2019), https://www.energy.gov/sites/prod/files/2019/03/f60/Annova19_34_LNG_0.pdf.

[14] Annova November 2, 2018 Supplement to July 17, 2018 Response to June 27, 2018 Data Request at 1; *id*. attachment at 1 (reproducing Annova's application to the U.S. Army Corps of Engineers for the proposed supply lateral).

[15] Annova March 25, 2019 Response to Data Request at 64 (numbered internally as 18).

36-inch-diameter intrastate pipeline,[16] as well as interconnection and metering facilities in a yard measuring 200 feet by 300 feet within the proposed LNG terminal site.[17]

III. Procedural Matters

A. Notice, Interventions, Comments, and Protests

11. Notice of Annova's application was issued on July 27, 2016, and published in the *Federal Register* on August 5, 2016, with interventions, comments, and protests due on or before August 17, 2016.[18] Timely, unopposed motions to intervene are granted by operation of Rule 214(c) of the Commission's Rules of Practice and Procedure.[19] Untimely motions to intervene were granted by a Secretary's notice issued on March 26, 2019.

12. In August 2016, the Commission received a joint protest from the Center for Biological Diversity and the Sierra Club (together, Sierra Club),[20] and separate protests from the Friends of the Wildlife Corridor[21] and Vecinos para el Bienestar de la Comunidad Costera (VBCC).[22] On August 31, 2016, Annova filed an answer.[23] Although the Commission's Rules of Practice and Procedure do not permit answers to

[16] Annova November 21, 2018 Supplement to July 17, 2018 Response to June 27, 2018 Data Request, attachment at 1. The contemplated third-party supply lateral would not be a jurisdictional facility. However, Commission staff disclose available information regarding the lateral's construction impacts in the cumulative impacts section of the Environmental Impact Statement (EIS) for the Annova LNG Brownsville Project.

[17] *Id*. attachment at 1, 3; EIS at 1-13, 1-15.

[18] *Notice of Application*, 81 Fed. Reg. 51,879 (Aug. 5, 2009).

[19] 18 C.F.R. § 385.214(c) (2019).

[20] Sierra Club August 17, 2016 Protest.

[21] Friends of the Wildlife Corridor August 16, 2016 Protest.

[22] VBCC August 17, 2016 Protest.

[23] Annova August 31, 2016 Motion for Leave to Answer and Answer to Comments and Protests and to Request for Formal Hearing.

protests,[24] our rules also provide that we may waive this provision for good cause.[25] We will accept Annova's answer here because it provided information that assisted us in our decision making.

13. Many people and organizations filed comments. Some supported the project, others raised various concerns about the potential impacts to the economy, environment, and public safety. All protests and comments are addressed in either the EIS for the project or this order, as appropriate.

B. Request for Hearing

14. Intervenor Defenders of Wildlife requested a formal hearing.[26] The Commission has broad discretion to structure its proceedings so as to resolve a controversy in the best way it sees fit.[27] 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.[28] 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.

IV. Discussion

A. Public Interest Standard

15. 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.[29]

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[24] 18 C.F.R. § 385.213(a)(2) (2019).

[25] *Id*. § 385.101(e).

[26] Defenders of Wildlife August 16, 2016 Motion to Intervene at 2.

[27] *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).

[28] *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).

[29] 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

Although section 3 provides that an application to export or import 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."[30] NGA section 3(a) also provides that, for good cause shown, the Commission may make supplemental orders as it may find "necessary or appropriate."[31]

16. As noted above, DOE/FE has authorized Annova to export up to 342 billion cubic feet (Bcf) per year of domestically produced natural gas (equal to approximately 6.8 MTPA of LNG) from the proposed Annova LNG Brownsville Project to free trade nations.[32] This authorization spans a thirty-year term. DOE/FE's order approving Annova's proposed export volumes states that "[i]n light of DOE's statutory obligation to

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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) (detailing how regulatory oversight for the export of LNG and supporting facilities is divided between the Commission and DOE).

[30] 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. Federal Power Commission*, 495 F.2d 1057, 1063-64 (D.C. Cir. 1974), *certiorari denied,* 419 U.S. 834 (1974), and *Dynegy LNG Production Terminal*, *L.P.*, 97 FERC ¶ 61,231 (2001).

[31] 15 U.S.C. § 717b(a) (2018).

[32] *Annova LNG, LLC*, FE Docket No. 13-140-LNG, Order No. 3394 at 8 (filed Feb. 20, 2014), https://www.energy.gov/sites/prod/files/2014/06/f16/ord3394.pdf; *Annova LNG Common Infrastructure, LLC*, FE Docket No. 14-004-COC,Order No. 3464 (July 17, 2014) (transferring the authorization to Annova LNG Common Infrastructure, LLC), https://www.energy.gov/sites/prod/files/2014/08/f18/ord3464.pdf. DOE has not yet issued an order addressing the application from Annova LNG Common Infrastructure, LLC filed on February 26, 2019, and supplemented on March 13, 2019, in FE Docket No. 19-34-LNG seeking authorization to export to non-FTA countries. Annova LNG Common Infrastructure, LLC, *Application of Annova LNG Common Infrastructure, LLC for Long-Term, Mult-Contract Authorization to Export Liquefied Natural gas to Non-Free Trade Agreement Nations* (Feb. 2019), https://www.energy.gov/sites/prod/files/2019/03/f60/Annova19_34_LNG_0.pdf.

grant this Application without modification or delay, there is no need for DOE to review other arguments asserted by Annova in support of the Application."[33]

17. Both Sierra Club and Friends of the Wildlife Corridor assert in protests that the Annova LNG Brownsville Project is contrary to the public interest because Annova has not provided contracts or other evidence of foreign demand or market support for its project.[34] These groups state that other LNG terminals approved or proposed prior to Annova's application will already be able to satisfy anticipated global demand for LNG over the next ten to twenty years.[35] Sierra Club expresses concern that Annova has not explained its claim that potential importers would favor contracts for LNG from Annova's smaller terminal, given that contracts would be available sooner for fractions of output from larger pre-existing LNG terminals.[36] At bottom, Sierra Club asserts that the Commission must consider the risk that its authorization, unlike that of DOE, could lead to construction-related adverse impacts without providing any public benefit if the terminal in fact will not be used.[37]

18. Sierra Club and Friends of the Wildlife Corridor err by conflating the scope of the Commission's jurisdiction under section 3 of the NGA, which we apply here, with our separate and distinct jurisdiction under section 7 of the NGA. For proposed projects that will operate in interstate commerce subject to section 7 of the NGA, we apply the criteria set forth in our Certificate Policy Statement[38] to determine whether there is a market need for transportation services to be provided by a proposed project. Here, the protestors essentially argue that there will be no need for the liquefaction services that Annova proposes to provide because there will be no market for the incremental LNG which

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[33] DOE Order No. 3394 at 5. Section 3(c) of the NGA 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) (2018).

[34] Sierra Club Protest at 3; Friends of the Wildlife Corridor Protest at 1.

[35] Sierra Club Protest at 4; Friends of the Wildlife Corridor Protest at 1.

[36] Sierra Club Protest at 3-5.

[37] *Id*. at 5-6.

[38] *Certification of New Interstate Natural Gas Pipeline Facilities*, 88 FERC ¶ 61,227 (1999), *clarified*, 90 FERC ¶ 61,128, *further clarified*, 92 FERC ¶ 61,094 (2000) (Certificate Policy Statement).

Annova proposes to produce. However, the question whether there is a market need for the liquefaction services to be provided cannot be divorced from the question whether there is market need for the commodity to be produced by those services.[39] DOE, which has sole jurisdiction over commodity exports,[40] has already answered that question, finding that Annova's exportation of up to 342 Bcf per year of LNG beyond that authorized to be produced and exported from other facilities is not inconsistent with the public interest. Sierra Club cites the Commission's decision in *Jordan Cove Energy Project, L.P.* (*Jordan Cove*) to deny authorizations for the proposed Jordan Cove LNG Terminal and its 234-mile-long interstate Pacific Connector Pipeline.[41] That decision does not apply here. In *Jordan Cove* the Commission denied a section 7 certificate to construct and operate the Pacific Connector Pipeline based on the applicant's failure to demonstrate market need for the pipeline. Having made that decision, the Commission separately denied NGA section 3 authority for the LNG terminal upon finding that the proposed LNG terminal project was not feasible without the associated section 7 pipeline facilities to transport gas to the terminal.[42] That situation is not before the Commission here.

19. Sierra Club also contends that alleged indirect effects from the Annova LNG Brownsville Project on environmental resources demonstrate that the project is contrary to the public interest. Specifically, Sierra Club asserts that indirect effects include: impacts from the pipelines that would carry natural gas from the wellhead to the proposed LNG terminal, impacts from additional natural gas production and additional coal consumption induced by LNG-terminal-stimulated increases in domestic gas prices, and impacts from the end use of exported LNG both as a source of GHGs and as a hindrance to the quick transition away from all fossil fuels.[43]

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[39] That is not to say that the Commission has no jurisdiction to deny authority to construct and operate proposed export facilities on grounds other than need which relate specifically to aspects of the proposed facilities themselves.

[40] *See supra* n.29.

[41] *Jordan Cove Energy Project, L.P.*, 154 FERC ¶ 61,190, *order den. reh'g*, 157 FERC ¶ 61,194 (2016).

[42] *Jordan Cove*, 157 FERC ¶ 61,194 at PP 6, 33.

[43] Sierra Club Protest at 18-23.

20. As the U.S. Court of Appeals for the D.C. Circuit has explained, an LNG proposal shall be authorized unless the proposal "will not be consistent with the public interest."[44] We have reviewed Annova's application to determine whether the siting, construction, and operation of the Annova LNG Brownsville Project as proposed would not be consistent with the public interest.[45] The proposed project is to be located on unzoned, undeveloped land owned entirely by the Port of Brownsville and designated by that agency for heavy industrial development. Further, as discussed below, the EIS prepared for the proposed project finds that most of the direct environmental impacts from construction of the proposed Annova LNG Brownsville Terminal are expected to be temporary or short term during construction and operation[46] while some long-term and permanent environmental impacts would also occur.[47] With the exception of certain cumulative impacts contributed by the Annova LNG Brownsville Terminal (e.g., 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 (NSA) during nighttime construction), implementation of Annova's proposed mitigation measures and additional measures recommended by staff in the EIS and adopted in this order would ensure that impacts in the project area would be avoided or minimized and most impacts would not be significant.[48]

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[44] 15 U.S.C. § 717b(a) (2018). *EarthReports v. FERC*, 828 F.3d 949, 953 (D.C. Cir. 2016) (citing *W. Va. Pub. Servs. Comm'n v. U.S. Dep't of Energy*, 681 F.2d 847, 856 (D.C. Cir. 1982)) ("sets out a general presumption favoring such authorization"); *see also Sierra Club v. U.S. Dep't of Energy*, 867 F.3d 189, 203 (D.C. Cir. 2017).

[45] *See Nat'l 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.") (emphasis added).

[46] EIS at 5-1. References to the EIS in this order are to the final EIS published on April 19, 2019, unless otherwise stated.

[47] *Id.* at 5-1.

[48] *Id.* at 5-1.

21. As discussed below, the Environmental Impact Statement (EIS) prepared by Commission staff for the project finds that many of the impacts from project construction and operation would be short-term or temporary.[49] The EIS anticipates long-term impacts on air quality and permanent impacts on geological conditions, soils, vegetation, wetlands, and visual resources.[50] The EIS concludes that mitigation measures proposed by Annova or recommended by Commission staff will together ensure that project impacts are avoided or minimized and most impacts would not be significant.[51]

22. Moreover, the upstream and downstream activities related to the production and transportation of natural gas and ultimate consumption of the exported LNG are not indirect effects of the siting, construction, and operation of the proposed LNG terminal.[52] Accordingly, we do not find that Sierra Club's arguments support a finding of inconsistency with the public interest.

23. The EIS also concludes that the project can be constructed and operated safely.[53] 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),[54] PHMSA undertook a

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[49] *Id*. at 5-1. References to the EIS in this order are to the final EIS published on April 19, 2019, unless otherwise stated.

[50] *Id.* at 5-1.

[51] *Id.* at 5-1.

[52] *See Sierra Club v. FERC*, 827 F.3d 36, 46-49 (D.C. Cir. 2016) (*Freeport*) (holding that the Commission was not required to address purported upstream and downstream indirect impacts that do not exist apart from the intervening sole authority of the Department of Energy to authorize export of any natural gas through LNG facilities). *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*, 148 FERC ¶ 61,244 (2014), *reh'g denied*, 151 FERC ¶ 61,095 (2015), *aff'd sub nom*. *EarthReports, Inc. v. FERC*, 828 F.3d 949 (D.C. Cir. 2016).

[53] EIS at 4-278.

[54] FERC, *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.

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.[55] On March 20, 2019, PHMSA issued a Letter of Determination indicating that Annova has demonstrated that the siting of its proposed LNG terminal complies with those federal safety standards.[56] If the proposed LNG terminal is subsequently modified so that it differs from the details provided in the documentation submitted to PHMSA, further review would be conducted by PHMSA.

24. Annova is proposing to operate the LNG terminal under the terms and conditions mutually agreed to by its customers and will solely bear the responsibility for the recovery of any costs associated with construction and operation of the terminal. Accordingly, Annova's proposal does not trigger NGA section 3(e)(4).[57]

25. In view of the above, we find that, subject to the conditions imposed in this order, Annova's proposal is not inconsistent with the public interest. Therefore, we will grant Annova's application for authorization under section 3 of the NGA to site, construct, and operate its proposed LNG terminal facilities.

B. Environmental Analysis

26. To satisfy the requirements of the National Environmental Policy Act of 1969 (NEPA),[58] Commission staff evaluated the potential environmental impacts of the proposed Annova LNG Brownsville 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), PHMSA, Federal Aviation Administration (FAA), U.S. Environmental Protection Agency (EPA), 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.

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[55] 49 C.F.R. pt. 193, subpt. B (2019).

[56] PHMSA March 21, 2019 Memorandum, attachment at 2 (reproducing the Letter of Decision and an analysis document).

[57] 15 U.S.C. § 717b(e)(4) (2018) (governing orders for LNG terminal offering open access service).

[58] 42 U.S.C. §§ 4321–4370h (2018). *See also* the Commission's NEPA-implementing regulations at Title 18 of the Code of Federal Regulations, Part 380.

27. Commission staff issued a draft EIS on December 14, 2018, addressing issues raised up to the point of publication. The Commission published notice of the draft EIS in the *Federal Register* on December 21, 2018, establishing a 45-day public comment period that was later extended to March 13, 2019, due to a funding lapse at certain federal agencies.[59] Commission staff held a public comment session on January 10, 2019, to receive comments on the draft EIS. Commission staff received 40 oral comments from individuals and received over 1,200 written comments from federal, state, and local agencies; elected officials; companies; organizations; individuals; and the applicant. The transcripts of the public comment session and all written comments on the draft EIS are part of the public record for the project.[60]

28. Commission staff issued the final EIS for the project on April 19, 2019. The final EIS addresses all substantive environmental comments received on the draft EIS. The Commission published a notice of the availability of the final EIS in the *Federal Register* on April 26, 2019.[61] The final EIS addresses geologic resources; 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; reliability and safety; cumulative impacts; and alternatives.

29. The final EIS concludes that construction of the Annova LNG Brownsville Project will result in adverse environmental impacts, but that these impacts would be avoided or minimized through mitigation measures and would not be significant with the exception of noise impacts from nighttime pile driving during a 6-month construction period. The Annova LNG Brownsville Project, combined with other proposed projects in the geographic scope, including the proposed Rio Grande LNG Project and Texas LNG Project on the Brownsville Ship Channel,[62] would result in significant cumulative impacts on water quality in the 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 aplomado falcon from habitat loss; on visual resources due to

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[59] 83 Fed. Reg. 65,650 (Dec. 21, 2018); 84 Fed. Reg. 3773 (Feb. 13, 2019).

[60] For example, the transcript for the public comment session in Port Isabel, Texas, was filed in the record on February 22, 2019. Also see Appendix L to the EIS reproducing and responding to comments on the draft EIS.

[61] 84 Fed. Reg. 17,824 (Apr. 26, 2019).

[62] Concurrently with this order, the Commission is also issuing orders approving the construction and operation of the Rio Grande LNG and Texas LNG Projects. *See Rio Grande LNG, LLC*, 169 FERC ¶ 61,131 (2019); *Texas LNG Brownsville LLC*, 169 FERC ¶ 61,130 (2019).

the presence of new facilities; and on nearby noise-sensitive areas to the LNG terminals during Annova's nighttime pile-driving operations.

30. No adverse comments concerning the final EIS have been filed. The resource areas addressed in the final EIS are discussed below. References to the EIS in this order are to the final EIS unless otherwise stated.

1. Connected Actions

31. The Sierra Club asserts in its protest that under NEPA the Commission must evaluate the potential environmental impacts arising from the anticipated supply lateral pipeline and from the DOE's authorizations to export LNG from the proposed Annova LNG Brownsville Project. Sierra Club states that the supply lateral pipeline will provide interstate service and thus will be subject to the Commission's jurisdiction under section 7 of the NGA.[63] Sierra Club characterizes the supply lateral pipeline as a "connected action." Sierra Club states that the obligation to evaluate the DOE authorizations arises from the Commission's role as the lead agency for coordinated NEPA review of the LNG terminal and from the status of DOE authorizations as "connected actions."[64]

32. Sierra Club's argument distorts the concept of "connected actions." The requirement that an agency consider connected actions in a single environmental document is to "prevent agencies from dividing one project into multiple individual actions" with less significant environmental effects[65] and "to prevent the government from 'segmenting' its *own* "federal actions into separate projects and thereby failing to address the true scope and impact of the activities that should be under consideration."[66] The connected action regulation requires an agency to review the whole picture resulting

[63] Sierra Club Protest at 14-17.

[64] Sierra Club Protest at 17-18.

[65] *Myersville Citizens for a Rural Community, Inc. v. FERC*, 783 F.3d 1301, 1326 (D.C. Cir. 2015) (approving the Commission's determination that, although a Dominion Transmission, Inc.-owned pipeline project's excess capacity may be used to move gas to the Cove Point LNG terminal for export, the projects are "unrelated" for purposes of NEPA).

[66] *Sierra Club v. U.S. Army Corps of Eng'rs*, 803 F.3d 31, 49-50 (D.C. Cir. 2015) (emphasis added) (quoting *Del. Riverkeeper Network v. FERC*, 753 F.3d 1304, 1313 (D.C. Cir. 2014)).

from a proposal before it, "rather than conduct separate NEPA reviews on pieces of an agency-action jigsaw puzzle."[67]

33. The anticipated supply lateral pipeline is not a connected action. Transporting gas to an LNG facility for export does not confer NGA section 7 jurisdiction on an otherwise intrastate pipeline. Annova states that the supply lateral will not be jurisdictional under the NGA, regardless whether the supply lateral is constructed and operated as a new intrastate pipeline or is constructed and operated through an expansion of an existing intrastate pipeline.[68] In the former scenario, Annova states that the new intrastate pipeline would require all shipments to be exclusively intrastate gas, possibly electing later to transport commingled interstate gas pursuant to section 311 of the Natural Gas Policy Act of 1978.[69] In the latter scenario, the existing intrastate pipeline might already transport commingled interstate gas under section 311 so the commingling of interstate gas would not trigger FERC jurisdiction.[70] Because the supply lateral will not be jurisdictional, we do not evaluate it as a connected action.[71] Commission staff did evaluate, however, the potential cumulative impacts from the supply lateral.[72]

34. In arguing that DOE's export authorizations are connected actions because the Energy Policy Act of 2005 calls for the Commission to serve as "lead agency" for a coordinated NEPA review, Sierra Club erroneously conflates Council on Environmental

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[67] *Id*. at 50.

[68] Annova March 25, 2019 Response to Data Request at 65 (numbered internally as 19).

[69] *Id*.

[70] Annova March 25, 2019 Response to Data Request at 65 (numbered internally as 19).

[71] *See Big Bend Conservation Alliance v. FERC*, 896 F.3d 418, 424 (D.C. Cir. 2018) ("The connected-actions doctrine does not require the aggregation of federal and non-federal actions."). *See also Atlantic Coast Pipeline, LLC*, 164 FERC ¶ 61,100, at P 167 (2018) (explaining that a state distribution pipeline subject to a state public utility commission's jurisdiction cannot be a "connected action" under NEPA); *PennEast Pipeline Co., LLC*, 164 FERC ¶ 61,098, at P 139 (2018) (holding intrastate pipeline under the jurisdiction of the New Jersey Board of Public Utilities not a "connected action" to a FERC jurisdictional pipeline project).

[72] *E.g.,* EIS at 4-281 to 4-282, 4-291 to 4-293 tbl.4.13.3-1 (Summary of Cumulative Impacts).

Quality regulations on "connected actions"[73] and "lead agencies."[74] In the Energy Policy Act of 2005, Congress designated the Commission as "the lead agency for the purposes of coordinating all applicable Federal authorizations and for the purposes of complying with the National Environmental Policy Act," including for LNG-related siting authorizations required under section 3 of the NGA,[75] authority to act on which has been delegated to the Commission by the Secretary of Energy.[76] While the lead agency supervises the preparation of the environmental document where more than one federal agency is involved, the "lead agency" designation does not alter the scope of the project before the Commission either for approval or environmental review.[77] Nor does the lead agency role make the Commission responsible for ensuring a cooperating federal agency's compliance with its own NEPA responsibilities.[78] Thus, the Commission did not impermissibly segment its environmental review.

35. In any event, Sierra Club's argument ignores the fact that DOE has authorized Annova to export approximately 6.8 MTPA of LNG to free trade nations.[79] This volume exceeds the Annova LNG Brownsville Project's nameplate capacity of 6 MTPA of LNG and is similar to its peak achievable capacity of 6.95 MTPA of LNG. Accordingly, the criteria for determining whether the Commission's proceeding is a connected action with the DOE's pending proceeding for an additional export authorization to non-free trade countries cannot be met.[80] Specifically, the liquefaction project can proceed without

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[73] 40 C.F.R. § 1508.25(a)(1) (2019).

[74] *Id.* § 1501.5.

[75] *See* 15 U.S.C. § 717n(b)(1) (2018); *see also Columbia Riverkeeper v. U.S. Coast Guard*, 761 F.3d 1084, 1087-88 (9th Cir. 2014) (discussing FERC's role as lead agency under the Energy Policy Act of 2005).

[76] DOE Delegation Order No. 00-004.00A.1.21.A (May 16, 2006).

[77] *See* 40 C.F.R. § 1501.5(a) (2019) (detailing a lead agency's role).

[78] *See id*. § 1503.3 (cooperating agency required to specify what additional information it needs to fulfill its own environmental review); *see also id*. § 1506.3 (allowing a cooperating agency to adopt the lead agency's environmental document to fulfill its own NEPA responsibilities if independently satisfied that the environmental document adheres to the cooperating agency's comments and recommendations).

[79] *Supra* P 16.

[80] *See* 40 C.F.R. § 1508.25(a)(1)(i)-(iii) (2019) (defining "connected actions").

obtaining export authorization to non-free trade countries and so does not depend on obtaining export authorization to non-free trade countries.[81]

2. Geology

36. Construction of the LNG Terminal would permanently modify topographic contours present at the site. The site of the proposed project would be graded to the extent necessary to construct the project facilities, including grading of all but the northeast and southwest portions of the Loma del Potrero Cercado, one of three distinct dune formations at the project site formed from wind-blown clay.[82] Construction of the marine berth and turning basin would require excavation, dredging, and the installation of pilings. The project would not affect the extraction of mineral resources, and no blasting is anticipated during construction of the project.[83] Based on Annova's proposed mitigation and design criteria, the EIS concludes that the project's potential permanent effect on geological conditions would be adequately minimized and would not result in significant geologic impacts.[84]

37. Geologic hazards, such as hurricanes, flooding, long-term sea level rise, land surface deformation, and coastal erosion, could affect the construction and long-term operation of the project.[85] Annova would design and construct the LNG terminal to protect the facilities from these hazards. For example, Annova would design and construct the LNG terminal at an elevation to minimize potential impacts from flooding and sea level rise, in particular through grading and the placement of earthen berms.[86] Annova would design all facilities to withstand hurricane-force winds.[87] Annova would also place rip-rap in the dredged marine berth and maneuvering areas to prevent erosion.[88] Therefore, impacts on the LNG terminal from geological hazards would be minimal.

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[81] *Id*.

[82] EIS at 4-3.

[83] EIS at 4-3.

[84] *Id*. at 4-3, 5-1.

[85] *Id*. at 4-242 to 4-251.

[86] *Id*. 4-241, 4-249 to 4-250.

[87] *Id*. at 4-247 to 4-248.

[88] *Id*. at 4-8, 4-23, 4-242, 4-250.

3. Soils

38. Clearing, grading, adding fill material, excavating, and other construction activities like trenching or creating impermeable surfaces could cause a temporary loss of soil structure and increase the potential for erosion, compaction, and mixing of topsoil.[89] Within the affected construction area, approximately 212 acres have soils with a high potential for erosion, and approximately 216 acres have soils with a severe potential for compaction.[90] All soils have generally poor revegetation potential.[91] Annova would adhere to the best management practices contained in its project-specific *Upland Erosion Control, Revegetation, and Maintenance Plan* (Plan) and *Wetland and Waterbody Construction and Mitigation Procedures* (Procedures)[92], as well as in its preliminary draft *Construction Spill Prevention, Control, and Countermeasures Plan* (Construction SPCC plan), to minimize soil impacts during construction and operation by controlling sediment and restoring workspaces.[93] Annova would also develop and implement a separate Operation SPCC plan.[94] Commission staff recommends and we require in Environmental Condition 13 that Annova file copies of its final Construction and Operation SPCC plans with the Commission prior to construction.

39. Based on Annova's proposed design criteria and mitigation measures, the EIS concludes that the Annova LNG Brownsville Project would have a permanent effect on

[89] *Id*. at 4-4 to 4-9.

[90] *Id*. at 4-4 tbl.4.2.1-1.

[91] *Id*.

[92] Annova's Plan and Procedures are based on the Commission's 2013 documents of the same names, 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* FERC, *Upland Erosion Control, Revegetation, and Management Plan* (May 2013), https://www.ferc.gov/industries/gas/enviro/plan.pdf; and FERC, Wetland and Waterbody Construction and Mitigation Procedures (May 2013, https://www.ferc.gov/industries/gas/enviro/procedures.pdf.

[93] EIS at 4-7 to 4-9.

[94] *Id*.

soils but that potential impacts would be minimized to the extent practical and would not result in significant soil impacts.[95]

4. Water Resources

40. Annova would not withdraw groundwater during construction of operation of the project. Construction activities to excavate, add fill, and install foundations and underground utilities would impose localized and short-term effects on groundwater, which is situated near the surface at the project site.[96] The local water table could be temporarily affected as clearing, grading, and compaction alter the overland water flow and reduce the soil's ability to absorb water and to recharge groundwater.[97] Implementation of Annova's project-specific Plan, Procedures, and SPCC plans would reduce the potential for accidental spills and leaks of hazardous materials to contaminate groundwater.[98] Moreover, no potable water supply wells are located within the project site; the nearest domestic water supply well is located more than four miles north.[99]

41. With the implementation of the mitigation measures, and given the distance to water supply wells, the EIS concludes that the potential for the project to contaminate groundwater would be minimal.[100]

42. The Brownsville Ship Channel is the only surface waterbody within the project site. Construction and operation of the project would decrease water quality in the channel as a result of initial dredging and dredge material placement, later maintenance dredging, vessel traffic, site modification and stormwater runoff, hydrostatic testing, and spills or leaks of hazardous materials.[101] The Brownsville Ship Channel has no known contaminated sediments.[102] Sediment-laden water could be transported through the

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[95] *Id*. 4-9, 5-2.

[96] *Id*. at 4-11.

[97] *Id*. at 4-11.

[98] EIS at 4-11 to 4-12.

[99] *Id*. at 4-10.

[100] *Id*. at 4-11.

[101] *Id*. at 4-18 to 4-29.

[102] *Id*. at 4-17.

channel and also north through a widened pilot channel into the Bahia Grande and the adjacent Bahia Grande Wetland Mitigation Site.[103]

43. To minimize any potential impacts, Annova would implement mitigation measures, such as using a hydraulic cutter suction dredge for in-water excavation, pursuant to its *Dredging Water Quality Monitoring Plan* and *Dredged Material Transport Plan*, would limit vessel speed, would place rock rip-rap on the shoreline, and would prepare and implement a *Stormwater Pollution Prevention Plan*.[104]

44. Based on the implementation of identified mitigation measures, the EIS concludes that project construction and operation would result in primarily temporary and less than significant impacts to surface water resources.[105]

5. Wetlands

45. Project construction and operation would disturb 57.7 acres of wetlands, of which 52.8 acres would be permanently impacted.[106] Annova is consulting with the COE and other relevant agencies to assess impacts on wetlands and to determine total mitigation needs. Annova has prepared a draft *Conceptual Mitigation Plan* that identifies preliminary project mitigation requirements and proposed compensation for the project's impacts on wetlands and waters under the COE's jurisdiction. Annova will refine the plan and will need to obtain COE approval.[107]

46. The EIS concludes that Annova's adherence to measures in its Procedures, for example monitoring successful revegetation, will ensure that temporary impacts on wetlands would be less than significant.[108] Commission staff anticipates that if the COE issues a permit for the project under section 404 of the Clean Water Act and section 10 of the Rivers and Harbors Act, the COE would require that project-related adverse impacts be offset by mitigation similar to that identified in the draft *Conceptual Mitigation Plan*.

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[103] *Id*. at 4-19 to 4-21.

[104] *Id*. at 4-18, 4-21 to 4-23, 4-27.

[105] *Id*. at 4-29.

[106] EIS at 4-31.

[107] *Id*. at 4-33.

[108] *Id*.

Therefore, the EIS concludes that permanent impacts on wetlands would be reduced to less than significant levels.[109]

6. Vegetation

47. Project construction and operation would impact 462 acres of vegetation, 409 of them permanently.[110] The majority of these impacts would be to the following vegetation communities: Gulf Coast Salty Prairie, South Texas Loma Evergreen Shrubland, South Texas Loma Grassland/Shrubland, and Coastal Sea Ox-Eye Daisy Flats.[111] Lomas are dunes formed from wind-blown clay, and they support dense shrub vegetation communities that provide important habitat for protected wildlife species. No state-designated vegetation communities of special concern (including rare, threatened, or endangered plants) and no federally- or state-listed noxious weeds occur in the project area.[112]

48. To minimize impacts on vegetation from construction and operation of the project, Annova would implement measures from its Plan and Procedures, which in part address erosion control, noxious weeds, revegetation, and post-construction monitoring of revegetation. Annova would pair these minimization and mitigation measures with measures in its draft *Compensatory Mitigation Plan*.[113] Because of this mitigation and because the region contains large quantities of similar vegetation communities, the EIS concludes that project construction and operation would not significantly impact vegetation.[114]

7. Wildlife and Aquatic Resources

49. Project construction and operation would affect about 491 acres of upland and wetland habitat and about 80 acres of open water habitat. Of these areas, 412 acres of habitat would be permanently removed or converted.[115] Vegetation clearing and loss of

[109] *Id*. at 4-34.

[110] *Id*. at 4-38.

[111] *Id*. at 4-35 to 4-37.

[112] EIS at 4-39 to 4-40.

[113] *Id*. at 4-39.

[114] *Id*. at 4-40.

[115] *Id*. at 4-42.

habitat would reduce suitable cover, nesting, and foraging opportunities available for wildlife. Construction and operation of the project would result in increased noise, artificial light, and human activity that would disturb wildlife in the area, leading to displacement, increased stress, and higher rates of injury and mortality.[116] However, the EIS finds that abundant habitat is available in the vicinity of the project for wildlife temporarily or permanently displaced by the project.[117]

50. Annova would minimize impacts on wildlife by implementing mitigation recommended by the Texas Parks and Wildlife Department, such as using covers or fencing to exclude wildlife from excavated areas and replanting disturbed areas with native grasses as described in that agency's Wildlife Habitat Assessment Program.[118] Annova would maintain a wildlife corridor on the west side of the project set off by a barrier wall to reduce intruding light and noise.[119] Annova also proposes several measures to minimize the effects of artificial lights, for example, shielding bulbs to direct light downward, that Annova will incorporate into to a future *Facility Lighting Plan*. The EIS recommends and we require in Environmental Condition 14 that Annova develop its *Facility Lighting Plan* to address both construction and operation, and that Annova file this plan for the Commission's review and approval prior to construction.[120]

51. The project is within the migratory bird Central Flyway, which spans the central portion of North American into Central America.[121] Project construction and operation could affect migratory bird species by displacement or the birds' own avoidance interfering with migration, foraging, mating, and nesting behaviors.[122] In accordance with FWS recommendations, Annova would attempt to limit clearing on the project site to between September 1 and February 28 of each year. If clearing cannot be avoided during the nesting season, a biologist trained in bird identification would survey the work

[116] *Id*. at 4-42 to 4-44.

[117] *Id*. at 4-43.

[118] *Id*.

[119] EIS at 4-43.

[120] *Id*. at 4-43 to 4-44.

[121] 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).

[122] EIS at 4-45 to 4-47.

area to identify and avoid active nests prior to and during the clearing activity.[123] The EIS recommends and we require in Environmental Condition 15 that prior to construction Annova will consult with the FWS to develop a project-specific *Migratory Bird Plan* with measures to avoid and minimize impacts on migratory birds, including relevant details from the *Facility Lighting Plan*.[124]

52. The site of the Annova LNG Brownsville Project is adjacent to the Lower Rio Grande National Wildlife Refuge and sits in close proximity to the Laguna Atascosa National Wildlife Refuge, about 0.7 mile northwest. Annova's construction and operation activities might impact wildlife within these national wildlife refuges via increased noise, nighttime lighting, and dredging in the Brownsville Ship Channel.[125] The steps which will be taken to minimize and mitigate the impacts of noise, lighting, and dredging are discussed herein.[126] The EIS concludes that project-related impacts on these national wildlife refuges are expected to be minor.[127]

53. Impacts on aquatic resources from construction and operation of the project include increased turbidity and sediment suspension, alteration of light regimes and dissolved oxygen concentrations, increased in-water noise, and potential spills.[128] The Brownsville Ship Channel is part of the designated Essential Fish Habitat for three managed fish species.[129] Another six fish species listed as species of concern may occur in the project vicinity and nearshore Gulf of Mexico, but habitats within the project area do not provide resources to meet critical life needs of any of these fish species of concern.[130] Excavation and dredging would temporarily degrade water quality and cause direct mortality of some immobile individuals. Noise from pile driving would result in temporary and minor impacts on fish and have the potential to cause auditory injury to

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[123] *Id*. at 4-46.

[124] *Id*. at 4-46 to 4-47.

[125] *Id*. at 4-47 to 4-49.

[126] *Supra* PP 37, 43, 50; *infra* PP 53, 70, 71.

[127] EIS at 4-48, 4-49.

[128] *Id*. at 4-56 to 4-63.

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

[130] *Id*. at 4-54.

marine mammals.[131] Annova will minimize noise impacts from pile driving, which is expected to take no more than five days in a small area of disturbance, by adhering to noise thresholds established by the Fisheries Hydroacoustic Working Group and by using best management practices (such as installing noise bubble curtains and monitoring on-site noise) in consultation with NMFS.[132] Commission staff determined that noise impacts on aquatic species from dredge engines and LNG carriers would be intermittent and minor, given the existing industrial and shipping activities within the Brownsville Ship Channel and the mobility of resident species.[133]

54. Overall, the EIS concludes that because project impacts will be localized, short-term, and minor, and given the proposed and recommended mitigation measures, construction and operation impacts on aquatic resources would vary depending on the species but are expected to range from negligible to short-term and minor.[134] The EIS concludes that potential adverse impacts to managed species and essential fish habitat would be short-term and highly localized and would not be significant.[135] NMFS concurred in a letter dated February 5, 2019, and did not propose conservation recommendations.[136] Consultation under the Magnuson-Stevens Fishery Conservation and Management Act is complete.

8. Threatened, Endangered, and Other Special Status Species

55. 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 Cameron County, Texas.[137] Within Cameron County, critical

[131] *Id*. at 4-62, 4-63.

[132] *Id*. at 4-61 to 4-63.

[133] *Id*. at 4-62, 4-63.

[134] EIS at 4-63 to 4-64.

[135] *Id*. at 4-64; *id*. vol. II, appendix F at F-32.

[136] NMFS February 6, 2019 EFH Consultation Response Letter.

[137] EIS at 4-65 to 4-67. tbl.4.7.1-1. These species include thirteen endangered, one proposed endangered, five threatened, one proposed threatened, and one candidate species. *See generally* Final EIS at 4-60 to 4-80.

habitat has been designated for the loggerhead sea turtle in the offshore marine area transited by LNG carriers and for the wintering piping plover in the onshore area.[138]

56. Commission staff determined that project construction and operation *may effect, and is likely to adversely affect* two federally endangered cat species, the ocelot and jaguarundi, which are under the jurisdiction of the FWS.[139] Construction and operation would result in the loss of suitable ocelot and jaguarundi habitat, potentially fragmenting broader habitat areas, leading to avoidance and displacement.[140] Project-related vehicle traffic would increase the potential for collisions with these species. Noise and artificial lighting at the project could discourage their use of the project site.[141] The EIS notes that impacts to jaguarondi are considered minimal to none based on the absence of a known population in south Texas.[142] The EIS anticipates that the project will increase the already cumulatively significant impacts on the federally listed ocelot, jaguarundi, and aplomado falcon from other past and present activities.[143] In coordination with FWS, Annova identified several conservation measures to minimize impacts on these species, such as paying to conserve off-site land, modifying Annova's initial design to accommodate a wildlife corridor with unmodified habitat, working with the Port of Brownsville to extend an existing conservation easement for the life of the Annova LNG Brownsville Project, and consulting with FWS about the design of wildlife crossings along the new access road.[144]

57. As discussed in the EIS, the project *may affect, but is not likely to adversely affect* 14 federally listed species. The project would have *no effect* on two federally listed plant species and *would not significantly destroy or adversely modify* designated critical habitat for the loggerhead sea turtle.[145] Commission staff also determined that the project would

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

[139] *Id*. at 4-73 to 4-74.

[140] *Id*. at 4-71

[141] *Id.* at 4-71.

[142] *Id*. at 4-71 to 4-72.

[143] EIS at 4-306 to 4-313, 5-12 to 5-13.

[144] *Id*. at 4-71 to 4-74.

[145] *See id*. at 4-66 to 4-67 tbl.4.7.1-1, 4-74 to 4-87.

not contribute to a trend toward federal listing for the red-crowned parrot, an identified candidate species.[146]

58. As required by section 7 of the Endangered Species Act of 1973, Commission staff requested that FWS and NMFS accept the information provided in the draft EIS as the Biological Assessment for the projects. By letter dated March 18, 2019, FWS concurred with Commission staff determinations. FWS explained that the northern aplomado falcon is covered for take by a 99-year Safe Harbor Agreement and associated 10(a)(1)(B) permit that allows development to take these birds in the area around the Port of Brownsville.[147] By letter dated August 2, 2019, FWS confirmed that it has received all information required to initiate formal consultation.[148] On October 21, 2019, FWS completed a final Biological Opinion.[149] Accordingly, Endangered Species Act consultation with FWS is complete.

59. NMFS will either concur with Commission staff's determinations or will pursue formal consultation. Formal consultation will result in issuance of a Biological Opinion by NMFS, which will include a jeopardy determination.[150] Should NMFS find that an action may adversely affect a species, but not jeopardize its continued existence, NMFS 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.[151] Formal consultation is considered complete upon issuance of the biological opinion.[152] Environmental Condition 16 requires that Commission staff complete Endangered Species Act consultation with NMFS before Annova may commence construction.

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[146] *Id*. at 4-79 to 4-80.

[147] FWS May 30, 2019 Letter.

[148] FWS August 9, 2019 Letter.

[149] FWS October 22, 2019 Comments (reproducing Biological Opinion).

[150] 50 C.F.R. § 402.14(h) (2019).

[151] *Id*. § 402.14(i)(1).

[152] *Id*. § 402.14(m)(1).

9. Land Use, Recreation, and Visual Resources

60. Under an existing option agreement, Annova can enter a long term lease for the 731-acre project site on land owned by the Port of Brownsville.[153] On the 731-acre site, project construction would impact 491 acres. Of these, operation would impact 412 acres. The land cover types of the 491 acres include: 407 acres of vegetated cover (82.8 percent), 5 acres of barren land (1 percent), 53 acres of emergent wetlands (10.7 percent), 3 acres of tidal flats (0.6 percent), and 23 acres of open water (4.6 percent).[154] Although the project would result in the conversion of a large portion of currently unzoned, undeveloped land into industrial land, the project site is currently designated for heavy industrial development by the Port of Brownsville.[155] 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 within 0.25 mile of the project site on the north side of the Brownsville Ship Channel. In addition, Texas LNG Brownsville, LLC, proposes a similar LNG facility approximately 2 miles northeast, also on the north side of the channel.[156] The EIS concludes that construction and operation of the Annova LNG Brownsville Project is not expected to affect existing or planned land uses by the Port of Brownsville, Cameron County, or any residences or businesses.[157]

61. The lands surrounding the project site are largely undeveloped and provide a variety of dispersed outdoor recreational activities, including fishing and bird- or wildlife-watching. The project could impact areas of the nearby Laguna Atascosa National Wildlife Refuge, Lower Rio Grande Valley National Wildlife Refuge, South Bar Coastal Preserve, and Jaime J. Zapata Memorial Boat Ramp Fishing Pier and Kayak Launch Area.[158] For example, increases in dust, noise, and traffic during construction would likely affect some recreationists, but the duration would be temporary.[159] Project construction and operation would not permanently affect access to the majority of

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[153] EIS at 4-97.

[154] *Id*. at 4-96 to 4-97 tbl.4.8.1-1.

[155] *Id*. at 4-96.

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

[157] *Id*. at 4-99.

[158] *Id*. at 4-99 to 4-109.

[159] *Id*. at 4-101.

regional fishing locations in the waters near the project site.[160] The increase in the number of large vessels transiting the Brownsville Ship Channel during project construction and operation could delay other traffic within the Brownsville Ship Channel but is not expected to substantially affect recreational fishing in the ship channel or visitation to recreation areas.[161]

62. The presence of the project and associated increased lighting would have an influence on visual resources. Annova undertook a Visual Impact Assessment for 10 Key Observation Points at representative visually sensitive areas, including areas used for recreation and wildlife viewing, key travel routes, and other public gathering areas.[162] Potential visual impacts occurred at all Key Observation Points and ranged from low to moderate at most locations.[163] However, the visual impacts at Key Observation Point 8 at the State Highway 48 pull-off near Bahia Grande Channel would be moderately high.[164]

63. The Annova LNG Brownsville Project would be constructed within the Texas coastal zone boundary.[165] Annova filed a request with the Texas Railroad Commission on July 21, 2016, and supplemented it on August 30, 2017, seeking a determination whether the project is consistent with the state's Coastal Zone Management Plan Because Annova has not yet obtained this determination under the Coastal Zone Management Act, the EIS recommends and we require in Environmental Condition 17 that Annova, prior to construction, file documentation of concurrence from the Texas Coastal Advisory Committee that the project is consistent with the Texas Coastal Zone Management Plan.[166]

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[160] EIS at 4-108 to 4-109.

[161] *Id*.

[162] *Id*. at 4-111 to 4-126.

[163] EIS at 4-111 to 4-126

[164] *Id*. at 4-122 to 4-124.

[165] *Id*. at 4-126 to 4-127.

[166] *Id*. at 4-127.

64. Taking all information together, Commission staff concluded that project construction and operation would not result in significant impacts on land use, recreation, or visual resources.[167]

10. Socioeconomics

65. The EIS concludes that project construction would result in a short-term, moderate increase to the local population and that project operation would result in a negligible long-term increase to the local population.[168] The EIS concluded that the project's cumulative impacts on available housing and public services would be temporary and minor.[169] The project is not anticipated to result in significant impacts on tourism or commercial fisheries.[170] Construction and operation of the project would not be expected to have high and adverse human health or environmental effects on any nearby communities. There is no evidence that the project would disproportionately affect low-income or minority populations near the project site or that the project impacts on these populations would appreciably exceed impacts on the general population.[171]

66. To mitigate potential land transportation impacts from project-related vehicles during construction and operation, Annova would stagger two construction shifts by one hour, would transport construction workers by passenger bus from a centralized location to the construction site and back, and would implement mitigation measures at three affected intersections.[172] The EIS analyzed three potential centralized locations for off-site parking.[173] The EIS recommends and we require in Environmental Condition 18 that Annova file the specific locations of off-site centralized parking sites with information about the existing environment and land use, potential impacts, and how the use of the specific locations would mitigate identified traffic volume impacts.[174]

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[167] EIS at 4-127, 5-7.

[168] *Id*. at 4-128 to 4-129, 4-317.

[169] *Id*. at 4-138 to 4-143, 4-318.

[170] *Id*. at 4-132 to 4-135, 4-321.

[171] *Id*. at 4-143 to 4-147.

[172] *Id*. at 4-147 to 4-155, 4-319 to 4-320.

[173] *Id*. at 4-153 to 4-154, 5-8.

[174] EIS at 4-154.

67. Project construction and operation would result in a moderate cumulative impact on marine vessel traffic in the Brownsville Ship Channel.[175] Project-related marine traffic is not expected to create adverse impacts on transits of other large vessels, but will delay the transit of small vessels travelling in the opposite direction to an LNG carrier.[176] Therefore, the EIS concludes that socioeconomic impacts associated with the projects would be minor.

11. Cultural Resources

68. Construction and operation of the project could have the potential to affect historic properties. Consultation under section 106 of the National Historic Preservation Act is incomplete in some areas of sensitive vegetation and geology, for one archaeological site, and for three architectural sites.[177] In its comments on the draft EIS, the National Park Service indicated that the agency disagrees with the definition of the indirect Area of Potential Effect used in our staff's analysis and believes that the visual and auditory effects of the project on the Palmito Ranch Battlefield National Historic Landmark and Palo Alto Battlefield National Historical Park and National Historic Landmark would be adverse. The Palmito Ranch Battlefield is about 3 miles from the project site and views of the site are obscured by vegetation; the Palo Alto Battlefield is about 12 miles from the project site and the proposed facilities would be faintly visible from this battlefield. Annova completed viewshed and noise impacts assessments for these two historic battlefields, and Commission staff used these assessments to evaluate potential visual and audible effects from these battlefields. The EIS concludes that the project would result in some moderate visual impacts (Palmito Ranch) and minor visual impacts (Palo Alto), noticeable noise impacts during construction, and no audible noise impacts during operation. [178] As stated in the final EIS, Commission staff disagrees with the National Park Service's adverse effects determination and concludes that while the project may be visible from specific locations within these areas, construction and operation would not affect the essential features of the battlefields for their periods of significance and their overall integrity would remain intact.[179]

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[175] *Id*. at 4-156 to 4-159, 4-320 to 4-321.

[176] *Id*. at 4-158 to 4-159.

[177] *Id*. at 4-160 to 4-167.

[178] *Id*. at 4-114 to 4-116, 4-125 to 4-126, 4-160 to 4-167, and 4-196 to 4-201.

[179] EIS at 4-162 to 4-164.

69. The EIS recommends and we require in Environmental Condition 19 that before Annova may commence construction it must file the remaining cultural resources surveys, reports, and plans for Commission review and approval.[180] To ensure that the Commission has fulfilled its responsibilities under section 106 of the National Historic Preservation Act,[181] Annova must also provide to the Commission additional documentation of consultation with the SHPO and the National Park Service, as applicable. If it is determined that the project may adversely affect historic properties, the Advisory Council on Historic Preservation will be afforded an opportunity to comment.

12. Air Quality and Noise

70. Air quality impacts associated with construction of the Annova LNG Brownsville Project would include emissions from fossil-fuel-fired construction equipment and fugitive dust over 48 months stretched over five calendar years.[182] The resulting impacts on air quality would be short-term and localized.[183]

71. Annova would comply with all air quality permit requirements for operation of the project. Stationary sources at the project would not emit air pollutants in sufficient quantities to trigger federal Prevention of Significant Deterioration review or permitting.[184] Instead, Annova will seek a minor source construction permit under Texas regulations.[185] 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.[186]

72. The Air Quality Control Region in Cameron County is currently designated as attainment/unclassified for the National Ambient Air Quality Standards (NAAQS) for six criteria pollutants—sulfur dioxide, carbon monoxide, ozone, nitrogen dioxide, lead, and

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[180] *Id*. at 4-167.

[181] 54 U.S.C. § 306108 (2018).

[182] EIS at 4-178 to 4-181.

[183] *Id*. at 4-181.

[184] *Id*. at 4-171 to 4-173.

[185] *Id*. at 4-183, 4-187.

[186] EIS at 4-173.

inhalable particulate matter.[187] Air dispersion modeling demonstrates that emissions both from the project's stationary sources, like the six liquefaction trains, and from mobile sources, like marine vessels, would not cause or contribute to an exceedance at any location of the NAAQS.[188] During construction years four and five, possible overlapping emissions from simultaneous construction, commissioning, and operation may potentially result in exceedances of the NAAQS. But the EIS concludes that these variable and rare occurrences would not result in a significant air quality impact on the local residents or the regional air quality.[189] Although barges carrying construction materials may pass through the nearby Houston-Galveston-Brazoria air quality control region, which is in marginal nonattainment of the ozone NAAQS, the low potential emissions from these barges do not trigger the need for a General Conformity Determination.[190]

73. The maximum direct and cumulative noise levels from project construction at nearby noise sensitive areas (NSAs), excluding noise from pile driving, would not exceed the Commission's criterion of a day-night average sound level (L_{dn}) of 55 A-weighted decibels (dBA) and would not raise the equivalent continuous sound level (L_{eq}) by more than 10 dBA .[191] The greatest predicted sound level increase will be 10 dBA at the Palmito Ranch Battlefield National Historic Landmark, 3.3 miles southwest of the project site. Annova has requested comments from the National Park Service and the Texas Historical Commission.[192] Land-based pile driving will be the most prevalent noise-generating activity during construction. Commission staff conservatively assumed that pile driving will occur in two ten-hour shifts each day, five days a week, for a six-month period.[193] To ensure that the noise resulting from pile driving is not significant, the EIS recommends and we require in Environmental Condition 20 that Annova file weekly reports of monitored noise impacts on the nearest NSAs. If observed noise levels exceed a 10-dBA increase over the L_{eq} ambient levels, then Annova must cease pile driving and

[187] Texas Commission on Environmental Quality May 8, 2019 Letter.

[188] EIS at 4-188 tbl.4.11.1-7.

[189] *Id*. at 4-189.

[190] *Id*. at 4-171, 4-177.

[191] *Id*. at 4-195 to 4-197.

[192] *Id*. at 4-196 to 4-197.

[193] EIS at 2-14 tbl.2.6.1-1, 4-194. Table 2.6.1-1 estimates that pile driving for the LNG storage tanks will proceed for 132 days and for the liquefaction process facilities will proceed for 176 days.

implement noise mitigation measures that ensures that noise levels are less than 10 dB above the existing ambient. With this mitigation, the EIS concludes that pile driving would result in moderate noise impacts at the NSAs during daytime construction. However, the EIS concludes that nighttime pile driving would result in significant direct and cumulative noise impacts at nearby NSAs during a six-month period.[194] Noise impacts from in-water pile driving are discussed above at paragraph 53.[195]

74. Project operation would generate noise continually throughout the life of the project. Noise from project operation and maintenance at all NSAs would be below the Commission's 55-dBA L_{dn} criterion or would be equal to existing noise levels.[196] To ensure that noise from project operation is not significant, Commission staff recommend and we require in Environmental Conditions 21 and 22 that Annova file noise surveys shortly after placing each liquefaction unit as well as the entire project into service. Annova must mitigate higher noise levels to below an L_{dn} of 55 dBA.[197] The increased noise from LNG carriers and from biennial maintenance dredging would be imperceptible to most listeners.[198] With the inclusion of Commission staff's recommended noise mitigation measures, the EIS concludes that project operational noise would not result in a significant impact on any nearby NSAs.[199]

13. Greenhouse Gas Emissions

75. With respect to impacts from greenhouse gases (GHGs), the EIS discusses the GHG impacts from construction and operation of the Annova LNG Brownsville

[194] *Id*. at 4-197 to 4-198, 5-14.

[195] *See id*. at 4-198 to 4-199.

[196] *Id*. at 4-200 to 4-201.

[197] *See id*. at 4-201.

[198] *Id*. at 4-202 to 4-204.

[199] *Id*. at 4-204.

Project,[200] the climate change impacts in the region,[201] and the regulatory structure for GHGs under the Clean Air Act.[202]

76. The EIS estimates that operation of the Annova LNG Brownsville Project could result in GHG emissions of up to 367,295 metric tonnes per year of carbon dioxide equivalent (CO_2e).[203] To provide context to the direct and indirect[204] GHG estimate, according to the national net CO_2e emissions in the EPA's *Inventory of U.S. Greenhouse Gas Emissions and Sinks* (2019), 5.743 billion metric tons of CO_2e were emitted at the national level in 2017 (inclusive of CO_2e sources and sinks).[205] The operational emissions of this project could potentially increase annual CO_2e emissions based on the 2017 levels by approximately 0.0064 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.[206]

[200] *See, e.g.*, EIS at 4-169, 4-180 tbl.4.11.1-3 (construction emissions), 4-185 tbl.4.11.1-4 (operating emissions for onshore stationary sources), 4-186 tbl.4.11.1-5 (operating emissions for mobile sources), 4-187 tbl.4.11.1-6 (maintenance, startup, and shutdown emissions), 4-190 tbl.4.11.1-9 (combined construction, commissioning, and operational emissions).

[201] *Id*. at 4-329 to 4-332.

[202] *Id*. at 4-169 to 4-177.

[203] *Id*. at 4-185 tbl.4.11.1-4, 4-186 tbl.4.11.1-5.

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

[205] EPA, *Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2017*, EPA 430-R-19-001, at ES-6 to ES-8 tbl.ES-2 (Apr. 11, 2019), https://www.epa.gov/sites/production/files/2019-04/documents/us-ghg-inventory-2019-main-text.pdf.

[206] 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 Emissions 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.

77. The final EIS included a qualitative discussion that addressed various effects of climate change.[207] The final EIS acknowledges that the quantified greenhouse gas emissions from the construction and operation of the project will contribute incrementally to climate change.[208] Further, as the Commission has previously concluded, it cannot determine a project's incremental physical impacts on the environment caused by GHG emissions.[209] The Commission has also previously concluded it could not determine whether a project's contribution to climate change would be significant.[210]

14. Reliability and Safety

78. 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 Annova LNG Brownsville Project, 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 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.[211] These recommendations have been adopted as mandatory conditions in the appendix to this order. In addition, Environmental Conditions 26, 29, 36, 54, 102, 103, 104, and 111 have been modified since the issuance of the final EIS to be consistent with language in recently issued orders; however, the original intent of each environmental condition is the same.

79. Annova states that the proposed project would be designed, constructed, operated, and maintained to meet or exceed Coast Guard Safety Standards,[212] the Department of

[207] EIS at 4-329 to 4-332.

[208] *Id*. at 4-331.

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

[210] *Id.*

[211] *Id*. at 4-278.

[212] 33 C.F.R. pts. 105, 127 (2019).

Transportation (DOT) Minimum Federal Safety Standards,[213] and other applicable federal and state regulations.[214] On February 13, 2018, the Coast Guard issued a Letter of Recommendation recommending that the "Brownsville Ship Channel be considered suitable for LNG marine traffic."[215] Although the EIS analysis addresses up to 125 vessels per year visiting the Project, as proposed by Annova, we note that the Coast Guard's Letter of Recommendation evaluates 80 vessels sized at 178,000 cubic meters. To resolve this discrepancy, Annova is currently coordinating with the Coast Guard to determine if a larger number of smaller vessels, or a mix of vessel sizes, would require any modification to the Letter of Recommendation. 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. Part 105 and 33 C.F.R. Part 127.[216]

80. Further, as described above, PHMSA determined that the siting of the proposed Annova LNG Brownsville Project complies with the applicable federal safety standards governing the location, design, construction, operation, and maintenance of LNG facilities.[217] 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

[213] 49 C.F.R. pts. 192 and 193 (2019).

[214] *See* EIS at 4-205 to 4-214 (summarizing regulatory oversight of LNG facility reliability, safety, and security).

[215] Coast Guard March 7, 2018, Memorandum, attachments 1 and 2 (reproducing USCG's Letter of Recommendation and analysis document). In addition to providing the letter of recommendation, the Coast Guard is also a cooperating agency for the preparation of the draft and final EIS for the project, serving as a subject matter expert on maritime safety and security issues. Ultimately, the Coast Guard is responsible for assessing the safety and security of LNG carrier operations while at berth and during transit to and from the LNG facility while in U.S. territorial waters and has the authority, exercised by the Captain of the Port, to prohibit LNG transfer operations or LNG vessel movements if necessary to protect the waterway, port, or marine environment. Navigation and Vessel Inspection Circular No. 01-2011, *Guidance Related to Waterfront LNG Facilities*, at 4 (Jan. 24, 2011).

[216] 33 C.F.R. pts. 105, 127.

[217] FERC March 21, 2019 Memorandum, attachments 1 and 2 (reproducing PHMSA's Letter of Decision and analysis document); *see also* 49 C.F.R. pt. 193, subpt. B (Siting Requirements).

review of Annova's evaluation of potential incidents and safety measures that could have a bearing on the safety of plant personnel and the surrounding public.[218]

81. Commission staff corresponded with the FAA in evaluating the impacts on and from the Space Exploration Technologies Corporation (SpaceX) rocket launch facility in Cameron County. Certain conditions of this order require Annova to address potential impacts from rocket launch failures on the LNG Terminal.[219] However, the extent of potential impacts on SpaceX operations, the National Space Program, and to the federal government would not fully be known until 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.[220]

15. Cumulative Impacts

82. The EIS considers the cumulative impacts of the proposed Annova LNG Brownsville Project with other projects in the same geographic and temporal scope.[221] The types of other projects evaluated in the EIS that could potentially contribute to cumulative impacts on a range of environmental resources include nonjurisdictional facilities associated with the Annova LNG Brownsville Project,[222] future LNG liquefaction and export projects, currently operating and future oil and gas projects, electric transmission and generation projects, transportation projects, projects at the Port of Brownsville, waterway improvement projects in or near the Brownsville Shipping Channel, and other miscellaneous activities.[223]

83. The final EIS concludes that for the majority of resources where a level of impact could be ascertained, the Annova LNG Brownsville Project's contribution to cumulative

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[218] *Id*.

[219] *See* Environmental Conditions 31 (construction crew positioning procedures during rocket launch activity) and 119 (rocket launch monitoring procedures).

[220] EIS at 4-257.

[221] *Id*. at 4-279 to 4-290.

[222] These include the 9-mile-long, 36-inch-diameter natural gas supply lateral pipeline, interconnection and metering facilities at the project site, 15 miles of 138-kV transmission line and a new switchyard at the project site, and a 5.9-mile-long potable water pipeline. EIS at 4-281 to 4-284.

[223] EIS at to 4-284 to 4-290.

impacts on affected resources would not be significant, and its potential cumulative impacts when considered with other, overlapping projects would be temporary, minor, moderate or insignificant.[224] However, the Annova LNG Brownsville Project combined with other projects within the geographic scope, including the Texas LNG Project 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 aplomado falcon from habitat loss; on visual resources from the presence of aboveground structures; and on nearby NSAs to the LNG terminals during nighttime construction. The final EIS discusses applicable mitigation measures, laws and regulations protecting environmental resources, and permitting requirements to minimize effects on these resources. Below, we briefly address each potentially significant cumulative impact in turn.

84. Concurrent operation of the Annova LNG Brownsville Project, Rio Grande LNG Project, and Texas LNG Project would increase the number of large, ocean-going vessels transiting the Brownsville Ship Channel by 48 percent.[225] Increased marine vessel traffic would result in a persistent and moderate to significant cumulative impact on surface water resources through increased turbidity and shoreline erosion during operations.[226] The three LNG terminals would incorporate design features to minimize shoreline erosion and would be responsible for maintaining the shoreline to prevent future erosion.[227] 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.[228] 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.[229]

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[224] *Id.* at 4-290 to 4-342, 5-12 to 5-15.

[225] *Id*. at 4-298.

[226] *Id.*

[227] *Id.*

[228] *Id.*

[229] EIS at 4-298.

85. Due to the extent of habitat modification associated with the Annova LNG Brownsville Project, and other projects in the geographic scope that would be built at the same time, 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 or decrease in suitability of habitat within and adjacent to the projects and the increased potential for vehicular strikes during construction.[230] The final EIS also anticipates significant cumulative impacts for the northern aplomado falcon due to past cumulative habitat loss and construction of aboveground structures within and adjacent to remaining habitat.[231] Moderate cumulative impacts are anticipated for sea turtles due to dredging, vessel traffic, and pile driving.[232]

86. The potential for cumulative visual impacts would be greatest if, in addition to the proposed Annova LNG Brownsville Project, the Texas LNG and Rio Grande LNG Projects are permitted and built concurrently along the Brownsville Ship Channel. Because motorists traveling from the north on State Highway 48 and from the south along State Highway 4, or travelling on local roads to local recreation areas, would experience a permanent change in the existing viewshed during construction and operation of the three LNG projects, we conclude that the cumulative impact of the three LNG projects on visual resources would be significant.[233]

87. During a six month construction period, nighttime pile driving at the Annova LNG Brownsville Project would result in significant direct noise impacts at nearby NSAs.[234] The EIS estimated cumulative noise impacts by conservatively assuming that pile driving, dredging, and site preparation would occur at full intensity at the same time at all three Brownsville LNG terminals.[235] Although each project's individual sound level from construction would be lower than 55 dBA L_{dn} at all NSAs, the cumulative sound level would exceed 55 dBA L_{dn} at several NSAs and at locations in the Laguna Atosca

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[230] *Id*. at 4-307 to 4-308.

[231] *Id.* at 4-309.

[232] *Id.* at 4-309 to 4-311.

[233] *See* EIS at 4-315 to 4-316; *accord* Final EIS for the Texas LNG Project, Docket No. CP16-116-000, at 5-372 to 5-373 (Mar. 15, 2019); Final EIS for the Rio Grande LNG Project, Docket Nos. CP16-454-000, CP16-455-000, at 5-21 (Apr. 26, 2019).

[234] *Id*. at 4-197 to 4-198, 5-14.

[235] EIS at 4-333, 4-337.

National Wildlife Refuge within about 0.75 mile of State Highway 48 (the Texas LNG Project is the dominant contributor).[236] The predicted sound level increase over the existing ambient level varies from a 2.2- to a 9.8-dBA L_{dn} increase at various NSAs, which range from less than noticeable (i.e., an increase of less than 3 dBA) to almost doubling in loudness (i.e., an increase of 10 dBA).[237] 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.[238]

16. Alternatives

88. The EIS evaluated several alternatives to the proposed project. These included a No-Action alternative, nine system alternatives (i.e., currently authorized, proposed, or planned LNG export facilities in the Texas Gulf Coast region), five alternative sites, two access road alternatives; process and design alternatives, including a comparison between an on-site power plant and grid-supplied power; and three dredged material placement area alternatives.[239] The EIS concluded that the alternatives proposed did not offer a significant environmental advantage and that the proposed project, as modified by Commission staff's recommended mitigation measures, was the preferred alternative.[240]

17. Environmental Analysis Conclusion

89. We have reviewed the information and analysis contained in the EIS regarding potential environmental effects of the project, as well as other information in the record. We are adopting the environmental recommendations in the EIS, as modified herein, and include them as Environmental Conditions in the appendix to this order. Compliance with these conditions is integral to ensuring that the environmental impacts of the 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

[236] *Id*. at 4-337.

[237] *Id*. at 4-337, 4-341.

[238] *Id*. at 4-342, 5-14.

[239] *Id*. at 3-1 to 3-24, 5-15 to 5-16.

[240] *Id*. at 3-24, 5-15 to 5-16.

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.[241]

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

91. 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 Annova 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.[242]

V. Conclusion

92. 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) In Docket No. CP16-480-000, Annova is authorized under section 3 of the NGA to site, construct, and operate the proposed project located in Cameron County, Texas, as described and conditioned herein, and as more fully described in Annova's application and subsequent filings, including any commitments made therein, and subject to the environmental conditions contained in the Appendix to this order.

[241] *See* Environmental Condition 2.

[242] *See* 15 U.S.C. § 717r(d) (2018) (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 regulation, or would delay the construction and operation of facilities approved by the Commission).

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

(C) Annova must 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 Annova. Annova must 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.

(S E A L)

Nathaniel J. Davis, Sr.,
Deputy Secretary.

Appendix

Environmental Conditions

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

1. Annova LNG Common Infrastructure, LLC (Annova) 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. Annova shall:
   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,** Annova must file an affirmative statement with the Secretary, certified by a senior company official, that all company personnel, environmental inspectors (EIs), and contractor personnel will be informed of the EI's authority and have been or will be trained on the implementation of the environmental mitigation measures appropriate to their jobs **before** becoming involved with construction and restoration activities.

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

   This requirement does not apply to extra workspace allowed by the Commission's *Upland Erosion Control, Revegetation, and Maintenance Plan* or to 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**, Annova shall file an Implementation Plan with the Secretary for review and written approval by the Director of OEP. Annova must file revisions to the plan as schedules change. The plan shall identify:

   a. how Annova 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 Annova 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 Annova 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 Annova's organization having responsibility for compliance;

g. the procedures (including use of contract penalties) Annova 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. Annova must employ at least one EI for the project. Each EI will 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, Annova 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 Annova's efforts to obtain the necessary federal authorizations;

b. project schedule including current construction status of the project and 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 EI 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 the measures taken to satisfy their concerns; and

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

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

10. Annova must receive written authorization from the Director of OEP **prior to introducing hazardous fluids into the project facilities**. 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. Annova must receive written authorization from the Director of OEP **before placing the project 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 project are proceeding satisfactorily.

12. **Within 30 days of placing the authorized facilities in service**, Annova 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 Annova 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 construction,** Annova shall file with the Secretary, for review and written approval by the Director of the OEP, its final *Spill Prevention and Response Procedures* and *Construction Spill Prevention, Control, and Countermeasures Plan (SPCC Plan).* **Prior to placing the LNG terminal into service**, Annova shall file with the Secretary, for review and written approval by the Director of OEP, Annova's *Operation SPCC Plan*. *(section 4.2.3)*

14. **Prior to construction,** Annova shall file with the Secretary, for review and written approval by the Director of OEP, its *Facility Lighting Plan* for operation of the LNG terminal. In addition, Annova shall include in its *Facility Lighting Plan* measures to reduce the effects of light during construction and commissioning of the project. *(section 4.6.1)*

15. **Prior to construction**, Annova shall consult with the U.S. Fish and Wildlife Service (FWS) to develop a project-specific *Migratory Bird Plan* that includes measures to avoid and minimize impacts on migratory birds, including details from the *Facility Lighting Plan* that are intended to reduce impacts on wildlife and birds. Annova shall file with the Secretary the *Migratory Bird Plan* and evidence of consultation with the FWS. *(section 4.6.1)*

16. Annova **shall not begin construction activities until**:

    a. Commission staff receives comments from the National Oceanic and Atmospheric Administration National Marine Fisheries Service (NMFS) regarding the proposed action;

    b. Commission staff completes consultation under Section 7 of the Endangered Species Act with the NMFS; and

    c. Annova has received written notification from the Director of OEP that construction or use of mitigation may begin. *(section 4.7.3)*

17. **Prior to construction**, Annova shall file with the Secretary a determination from the Texas 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)*

18. **Prior to construction**, Annova shall file the specific location(s) of the off-site centralized parking sites that will be used to reduce impacts from the commuter construction work force. For each location, Annova shall identify: the existing environment and land use at those locations; an evaluation of potential impacts that would result from use as an off-site parking facility; and a description of how the

use of the specific site(s) would mitigate the impacts at Intersections 1 through 4 as identified in the Traffic Impact Group 2015 report. (*section 4.9.10.1*)

19. Annova 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. Annova files with the Secretary:

        i. remaining cultural resources survey report(s);

        ii. site evaluation report(s) and avoidance/treatment plan(s), as required; and

        iii. comments on all cultural resources reports and plans from the Texas State Historic Preservation Office, and the National Park Service for reports and plans that affect National Park Service properties.

    b. the Advisory Council on Historic Preservation is afforded an opportunity to comment if historic properties would be adversely affected; and

    c. Commission staff reviews and the Director of OEP approves the cultural resources reports and plans, and notifies Annova in writing that treatment plans/mitigation measures (including archaeological data recovery) may be implemented and/or construction may proceed.

    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 4.10.4*)

20. Annova 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 (NSAs). If any measured noise impacts (L_{max}) at the nearest NSAs are greater than 10 decibels on the A-weighted scale (dBA) over the equivalent continuous ambient sound levels (L_{eq}), Annova 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. (*section 4.11.2)*

21. Annova 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** Annova 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. Annova 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)*

22. Annova 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, Annova 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, Annova 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. Annova 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)*

23. **Prior to initial site preparation,** Annova shall file with the Secretary documentation demonstrating that 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 Transporation'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)*

24. **Prior to initial site preparation,** Annova shall file with the Secretary for review and written approval by the Director of OEP, a detailed report that indicates the elevation of a 500-year storm surge wave run-up and that the wave run-up would not impact project facilities that are essential for the safety and operability of the terminal. If the wave run-up is found to reach essential equipment/structures, Annova shall provide mitigation measures to protect these facilities. (*section 4.12.6)*

25. **Prior to construction of final design,** Annova shall file with the Secretary consultation with the U.S. Department of Transportation on the use of normally closed valves to remove stormwater from curbed areas. (*section 4.12.6)*

26. **Prior to construction of final design,** Annova 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, Annova shall file, in its Implementation Plan, the schedule for producing this information. (*section 4.12.6)*

27. **Prior to construction of final design,** Annova shall file with the Secretary a monitoring and maintenance plan, stamped and sealed by the professional engineer-of-record registered in Texas, to ensure the site is maintained at a minimum elevation of 16.5 feet North American Vertical Datum of 1988 (NAVD 88) and the crest elevation of the earthen berm around each LNG storage tank is maintained at a minimum crest of 36 feet above sea level **for the life of the facility** considering settlement, subsidence, and sea level rise. (*section 4.12.6)*

Conditions 28 through 127 shall apply to the Annova 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 Critical Electric Infrastructure Security and Amending Critical Energy Infrastructure Information*, Order No. 833, 81 Fed. Reg. 93,732 (December 21, 2016), FERC Stats. & Regs. 31,389 (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.

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

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

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

31. **Prior to initial site preparation,** Annova 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. Annova'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,** Annova shall conduct and provide results of a minimum of five equally distributed borings, cone penetration tests, and/or seismic cone penetration tests to a depth of at least 100 feet or refusal underneath the revised

locations of each LNG storage tank to affirm or better characterize underlying conditions. (*section 4.12.6)*

33. **Prior to initial site preparation,** Annova 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 marine vessel to activate sirens and other warning devices.

    Annova 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)*

34. **Prior to initial site preparation,** Annova 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. Annova 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)*

35. **Prior to construction of final design,** Annova shall file design information that would minimize the impacts of growth fault impact zones in the vicinity of the LNG Terminal, stamped and sealed by the professional engineer-of-record registered in Texas. (*section 4.12.6)*

36. **Prior to construction of final design,** Annova shall file change logs that list and explain any changes made from the front end engineering design provided in Annova'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 must be kept so Commission staff can verify during construction inspections. (*section 4.12.6)*

37. **Prior to construction of final design,** Annova shall file information/revisions pertaining to its response to numbers 4, 5, 6, 10 11, 14, 17, 18, 19, 20, 21, 22, 24, 25, 26, 27, 28, 29, 31, 33, 34, 35, 36, 38, 43, and 49 of the February 14, 2017 data request; numbers 11, 12, 13, 17, 18a, 18e, 19, and 21f of the October 19, 2018 data request, and its response to number 25 filed on February 4, 2019, which indicated features to be included or considered in the final design. (*section 4.12.6)*

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

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

40. **Prior to construction of final design,** Annova 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)*

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

42. **Prior to construction of final design,** Annova shall file a complete specification and drawings of the proposed LNG tank design and installation. The specification shall define the battery limits (i.e., engineering design, structural design, supports, piping components, piping connections, electrical power, control, and utilities) of the LNG storage tank. (*section 4.12.6)*

43. **Prior to construction of final design,** the LNG storage tank specification shall clearly define the roof top load requirements for the LNG pump platform as well as other laydown areas required for maintenance activities. (*section 4.12.6)*

44. **Prior to construction of final design,** Annova 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)*

45. **Prior to construction of final design,** Annova shall file process data sheets that specify the start-up, operating, and shutdown conditions for the boil off gas (BOG) Compressors. (*section 4.12.6)*

46. **Prior to construction of final design,** Annova shall file up-to-date process flow diagrams (PFDs) that demonstrate the peak liquefaction rate of 6.95 mtpa is achievable and piping and instrument diagrams (P&IDs) including vendor P&IDs. The PFDs 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)*

47. **Prior to construction of final design,** Annova 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)*

48. **Prior to construction of final design,** Annova 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)*

49. **Prior to construction of final design,** Annova 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)*

50. **Prior to construction of final design,** Annova shall file specifications and piping and instrumentation diagrams of the Refrigerant Compressor motor cooling system. (*section 4.12.6)*

51. **Prior to construction of final design,** Annova 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)*

52. **Prior to construction of final design,** Annova shall file cause-and-effect matrices for the process instrumentation, fire and gas detection system, and emergency shutdown system. 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)*

53. **Prior to construction of final design,** Annova 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)*

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

55. **Prior to construction of final design,** Annova 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)*

56. **Prior to construction of final design,** Annova shall file electrical area classification drawings. (*section 4.12.6)*

57. **Prior to construction of final design,** Annova 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 the National Fire Protection Association (NFPA) Standard 59A, *Standards for the Production, Storage, and Handling of LNG* (NFPA 59A) (2001). (*section 4.12.6)*

58. **Prior to construction of final design,** Annova 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)*

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

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

61. **Prior to construction of final design,** Annova shall include BOG flow measurement from each LNG storage tank. (*section 4.12.6)*

62. **Prior to construction of final design,** Annova shall specify how each LNG storage tank dome's vent valve HV-0014/HV-0054 will be isolated with administrative

controls in the event that the vent valve cannot be closed or requires maintenance work. (*section 4.12.6)*

63. **Prior to construction of final design,** Annova 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)*

64. **Prior to construction of final design,** Annova shall provide the Refrigerant Surge Drum, Ethylene Make-up Drum, Propane Make-up Drum, and Iso-pentane Make-up Drum with dual full capacity relief valves that allow the isolation with administrative controls of individual pressure relief valves while providing full relief capacity during pressure relief valve maintenance or testing. (*section 4.12.6)*

65. **Prior to construction of final design,** Annova 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 would be accessible during an emergency. (*section 4.12.6)*

66. **Prior to construction of final design,** Annova shall specify that all emergency shutdown valves are to be equipped with open and closed position switches connected to the Distributed Control System/Safety Instrumented System. (*section 4.12.6)*

67. **Prior to construction of final design,** Annova shall specify how the BOG system will prevent pipeline gas from back flowing into the BOG Metering Skid. (*section 4.12.6)*

68. **Prior to construction of final design,** Annova shall specify how the Heat Medium Expansion Drum pressure indicator, 1090-PI-0241, will notify operators of excessive venting through pressure regulator, 1090-PCV-0240. (*section 4.12.6)*

69. **Prior to construction of final design,** Annova shall file drawings and specifications for crash rated vehicle barriers at each facility entrance for access control. (*section 4.12.6)*

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

71. **Prior to construction of final design,** Annova shall file drawings of internal road vehicle protections, such as guard rails, barriers, and bollards to protect transfer piping, pumps, compressors, hydrants, monitors, etc. to ensure that they are located away from roadway or protected from inadvertent damage from vehicles. (*section 4.12.6)*

72. **Prior to construction of final design,** Annova shall file security camera and intrusion detection drawings. The security camera drawings shall show the locations, areas covered, and features of each camera (e.g., 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 would enable rapid monitoring of the facility including a camera 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 facility. (*section 4.12.6)*

73. **Prior to construction of final design,** Annova 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 American Petroleum Institute (API) Standard 540 and provide illumination along the perimeter of the facility, process equipment, mooring points, and along paths/roads of access and egress to facilitate security monitoring and emergency response operations. (*section 4.12.6)*

74. **Prior to construction of final design,** Annova 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) would provide adequate warning at the terminal and external off-site areas in the event of an emergency. (*section 4.12.6)*

75. **Prior to construction of final design,** Annova 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 for Automation Standard 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 would be detected by two or more detectors and result in isolation and de-inventory within 10 minutes. The analysis shall take into account the set points, voting logic, wind speeds, and wind 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)*

76. **Prior to construction of final design,** Annova 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 the 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. In addition, Annova shall demonstrate that the stainless steel piping spill trays at each LNG storage tank would withstand the force and shock of a sudden cryogenic release. (*section 4.12.6)*

77. **Prior to construction of final design,** Annova shall specify how residual water within each spill basin will be removed after the stormwater removal pumps shut down on low water level. (*section 4.12.6)*

78. **Prior to construction of final design,** Annova shall review each Process Area Impoundment Basin stormwater removal system. If applicable, each stormwater removal pump shall be equipped with an interlock to prevent inadvertent discharge of warm refrigerant, heavy hydrocarbon, or hot oil releases. (*section 4.12.6)*

79. **Prior to construction of final design,** Annova shall file an analysis demonstrating that the side on overpressures would be less than 1 pound per square inch (psi) at the buildings or that the buildings would be able to withstand overpressures from explosions within the terminal. (*section 4.12.6)*

80. **Prior to construction of final design,** Annova shall file an analysis demonstrating the side on overpressures would be less than 1 psi at the LNG storage tanks, or demonstrating the LNG storage tanks would be able to withstand overpressures within the terminal. (*section 4.12.6)*

81. **Prior to construction of final design,** Annova shall file an analysis demonstrating the flammable vapor dispersion from design spills would be prevented from dispersing underneath the elevated LNG storage tanks, or demonstrating the LNG storage tanks would be able to withstand the overpressure due to ignition of the flammable vapors that disperses underneath the elevated LNG storage tanks. (*section 4.12.6)*

82. **Prior to construction of final design,** Annova shall file an analysis demonstrating that a LNG storage tank dike fire or a pool fire within the Marine Area Impoundment Basin would not fail the seawater firewater equipment within the time it would take for each pool fire scenario to burn out. Alternatively, Annova shall reposition the seawater firewater equipment to prevent high radiant heat zones. (*section 4.12.6)*

83. **Prior to construction of final design,** Annova shall specify how cascading damage to the condensate storage tank would be mitigated from a pool fire in the Heat Medium Impoundment Basin. Alternatively, Annova shall reposition the

condensate storage tank or the Heat Medium Impoundment Basin to prevent high radiant heat zones over the condensate storage tank. (*section 4.12.6)*

84. **Prior to construction of final design,** Annova 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)*

85. **Prior to construction of final design,** Annova 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, propane, ethylene, pentane, and condensate. (*section 4.12.6)*

86. **Prior to construction of final design,** Annova 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 aqueous ammonia, natural gas liquids, and hydrogen sulfide. (*section 4.12.6)*

87. **Prior to construction of final design,** Annova 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)*

88. **Prior to construction of final design,** Annova shall file a design that includes hazard detection suitable to detect high temperatures and smoldering combustion products in electrical buildings and control room buildings. (*section 4.12.6)*

89. **Prior to construction of final design,** Annova shall provide low oxygen detectors to notify operators of liquid nitrogen releases. (*section 4.12.6)*

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

91. **Prior to construction of final design,** Annova shall file an analysis of the off gassing of hydrogen in battery rooms and ventilation calculations that limit concentrations below the lower flammability limits (LFL) (e.g., 25 percent LFL) and shall also provide hydrogen detectors that alarm (e.g., 20 to 25 percent LFL) and initiate mitigative actions (e.g., 40 to 50 percent LFL). (*section 4.12.6)*

92. **Prior to construction of final design,** Annova 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

Standard 17, and wheeled and hand-held extinguishers location travel distances are along normal paths of access and egress in accordance with NFPA Standard 10. The list shall include the equipment tag number, type, capacity, equipment covered, discharge rate, and automatic and manual remote signals initiating discharge of the units. (*section 4.12.6)*

93. **Prior to construction of final design,** Annova shall file a design that includes clean agent systems in the instrumentation buildings. (*section 4.12.6)*

94. **Prior to construction of final design,** Annova 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 also include piping and instrumentation diagrams of the firewater and foam systems. (*section 4.12.6)*

95. **Prior to construction of final design,** Annova shall specify two firewater jockey pumps and appurtenances that can operate simultaneously in the event that the primary jockey pump cannot maintain system pressure. The flow rate capacity from the jockey pumps shall be supported with calculations. (*section 4.12.6)*

96. **Prior to construction of final design,** Annova shall include or demonstrate the firewater storage volume for its facilities has minimum reserved capacity for its most demanding firewater scenario plus 1,000 gallons per minute (gpm) for no less than 2 hours. The firewater storage shall also demonstrate compliance with NFPA Standard 22 or demonstrate how API Standard 650 provides an equivalent or better level of safety. (*section 4.12.6)*

97. **Prior to construction of final design,** Annova 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 distributed control system (DCS) and shall be recorded. (*section 4.12.6)*

98. **Prior to construction of final design,** Annova shall file detailed calculations to confirm that the final fire water volumes would be accounted for when evaluating the capacity of the impoundment system during a spill and fire scenario. (*section 4.12.6)*

99. **Prior to construction of final design,** Annova shall specify that both freshwater pump shelter and the firewater intake and pumps shelter are designed to remove the largest firewater pump or other component for maintenance with an overhead or external crane. (*section 4.12.6)*

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

101. **Prior to construction of final design,** Annova shall file calculations or test results for the structural passive protection systems to protect equipment and supports from cryogenic releases. (*section 4.12.6)*

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

103. **Prior to construction of final design,** Annova shall file an evaluation and associated specifications and drawings of how it will prevent cascading damage of transformers (e.g., firewalls or spacing) in accordance with NFPA Standard 850 or equivalent. (*section 4.12.6)*

104. **Prior to construction of final design,** Annova 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 (Btu/ft^2-hr) zone from pool or jet fires that could cause failure of the component (including fires in the amine sump pit and condensate storage tank berm). Trucks at the truck loading/unloading areas 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 or test results for the thickness limiting temperature rise and effectiveness of active mitigation shall be justified with calculations or test results demonstrating flow rates and durations of any cooling water would mitigate the heat absorbed by the vessel. (*section 4.12.6)*

105. **Prior to construction of final design,** Annova shall file a projectile analysis that demonstrates whether each LNG storage tank would withstand projectiles from explosions and high winds, or demonstrate whether protective measures are in place to ensure the structural integrity of each LNG storage tank. If the analysis demonstrates the tank would be penetrated, Annova shall file an analysis indicating the containment dikes would sufficiently contain an LNG spill. (*section 4.12.6)*

106. **Prior to construction of final design,** Annova shall file an analysis demonstrating that each LNG storage tank's water deluge system would provide adequate thermal mitigation to withstand the radiant heat from an adjacent LNG storage tank dike fire. (*section 4.12.6)*

107. **Prior to construction of final design,** Annova shall provide an evaluation of impacts from any size jetting releases from each LNG storage tank platform, marine dock and trestle, and the ethylene make-up drum area. As applicable, the evaluation shall demonstrate that adequate mitigation would be provided to prevent cascading damage. (*section 4.12.6)*

108. **Prior to commissioning,** Annova 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. Annova 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)*

109. **Prior to commissioning,** Annova 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)*

110. **Prior to commissioning,** Annova 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)ASME*

111. **Prior to commissioning,** Annova shall file the procedures for pressure/leak tests which address the requirements of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (BPVC) Section VIII and ASME Standard B31.3. In addition, Annova shall file a line list of pneumatic and hydrostatic test pressures. (*section 4.12.6)*

112. **Prior to commissioning,** Annova shall file the settlement results from hydrostatic testing of 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 Standards 620, 625, and 653. The program shall specify what actions would be taken after various levels of seismic events. (*section 4.12.6)*

113. **Prior to commissioning,** Annova 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)*

114. **Prior to commissioning,** Annova 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)*

115. **Prior to commissioning,** Annova 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)*

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

117. **Prior to introduction of hazardous fluids,** Annova shall complete and document all pertinent tests (Factory Acceptance Tests, Site Acceptance Tests, Site Integration Tests) associated with the distributed control system and the safety instrument system that demonstrates full functionality and operability of the system. (*section 4.12.6)*

118. **Prior to introduction of hazardous fluids,** Annova shall develop and implement an alarm management program to reduce alarm complacency and maximize the effectiveness of operator response to alarms. (*section 4.12.6)*

119. **Prior to introduction of hazardous fluids,** Annova 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 release reaching offsite areas or resulting in cascading effects that could extend offsite or impact safe operations. (*section 4.12.6)*

120. **Prior to introduction of hazardous fluids,** Annova 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)*

121. **Prior to introduction of hazardous fluids,** Annova 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)*

122. Annova 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, Annova 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)*

123. **Prior to commencement of service,** Annova 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)*

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

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

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

127. **Prior to commencement of service,** Annova shall file a request for written authorization from the Director of OEP. Such authorization would 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 Annova or other appropriate parties. (*section 4.12.6)*

In addition, conditions 128 through 131 shall apply **throughout the life of the Annova LNG terminal**.

128. 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, Annova 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)*

129. **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)*

130. In the event the temperature of any region of the LNG storage container 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)*

131. 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 terminal'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 facility that contains, controls, or processes hazardous fluids;

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

    h. any malfunction or operating error that causes the pressure of a pipeline or 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 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 facility that contains or processes hazardous fluids;

l. safety-related incidents from hazardous fluids transportation occurring at or en route to and from the 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 terminal's incident management plan.

In the event of an incident, the Director of OEP has delegated authority to take whatever steps are necessary to ensure operational reliability and to protect human life, health, property, or the environment, including authority to direct the LNG terminal 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. (*section 4.12.6)*

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Annova LNG Common Infrastructure, LLC
Annova LNG Brownsville A, LLC
Annova LNG Brownsville B, LLC
Annova LNG Brownsville C, LLC

Docket No. CP16-480-000

(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 will have on climate change, that is precisely what the Commission is doing here.

2. In today's order authorizing Annova LNG Common Infrastructure, LLC's (Annova 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 the Project is an "environmental acceptable

[1] 15 U.S.C. §§ 717b, 717f (2018).

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

[3] *Annova LNG Common Infrastructure, LLC*, 169 FERC ¶ 61,132, at P 75 (2019) (Certificate Order); Environmental Impact Statement at Tables 4.11.1-3 – 4.11.1-6, 4.11.1-9 (EIS).

action"[4] where "most impacts would not be significant"[5] and, as a result, conclude that the Project satisfies the NGA's public interest standards.[6] Claiming that a project generally has no significant environmental impacts 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.[7] Collectively, the three LNG export projects approved for the Brownsville Ship Channel[8] will have a significant cumulative adverse impact on water quality, visual resources, and noise-sensitive areas as well as federally listed endangered species, including the ocelot, jaguarundi, and aplomado falcon. 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.[9] 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

[4] Certificate Order, 169 FERC ¶ 61,132 at P 89. *But see id.* P 84 (noting that the Project, in conjunction with the two other LNG facilities in the region approved today, will have significant cumulative impacts on significant cumulative adverse impact on water quality in the Brownsville Ship Channel, visual resources, noise-sensitive areas as well as federally listed endangered species including the ocelot, jaguarundi and aplomado falcon.).

[5] *Id.* P 21.

[6] *Id.* PP 25, 89.

[7] *See* EIS at ES-10 – ES-12 (discussing the neighboring Rio Grande LNG and Texas Brownsville LNG projects).

[8] In addition to the Annova LNG facility, the Commission today is also approving the Rio Grande LNG facility, *Rio Grande LNG, LLC*, 169 FERC ¶ 61,131 (2019), and the Texas LNG Brownsville facility, *Texas LNG Brownsville LLC*, 169 FERC ¶ 61,130 (2019).

[9] EIS at Table 4.9.9-1 (noting the poverty rate in Cameron County of 31 percent); *id.* at 4-144 (noting that two tracts of census blocks located within one mile of the Project site exceed 50 percent minority populations and have more than 20 percent of households below the poverty line).

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 Determination 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.[10] The NGA establishes a general presumption favoring the import and export of LNG unless there is an affirmative finding that the import or export "will not be consistent with the public interest."[11] 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."[12] The Commission evaluates whether "an application for the siting, construction, expansion, or operation of an LNG terminal" is itself consistent with the public interest.[13] Pursuant to that authority, the Commission must approve a proposed

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

[11] 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).

[12] 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.

[13] 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

LNG facility unless the record shows that the facility would be inconsistent with the public interest.[14]

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 one of the environmental impacts that must be part of a public interest determination under the NGA.[15] 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.[16] 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."[17] 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[18] while, out of the other side of its mouth, assuring us that its environmental impacts are generally not

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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.

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

[15] *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").

[16] Certificate Order, 169 FERC ¶ 61,132 at P 76; EIS at 4-331 – 4-332.

[17] EIS at ES-14; Certificate Order, 169 FERC ¶ 61,132 at P 21.

[18] Certificate Order, 169 FERC ¶ 61,132 at P 76; EIS 4-32 ("[W]e are unable to determine the significance of the Project's contribution to climate change.")."

significant.[19] That is ludicrous, unreasoned, and an abdication of our responsibility to give climate change the "hard look" that the law demands.[20]

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 be able to 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. As noted, the Project will directly release over 367,000 metric tons of GHG emissions per year, plus an additional 2 million metric tons of GHG resulting from the electricity used to power its on-site compressors.[21] The Commission has previously stated that "GHGs emissions due to human activity are the primary cause of increased levels of all GHG

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[19] *Id.* P 21 (stating that, with few exceptions and not considering cumulative impacts, the Project's impacts "would not be significant").

[20] *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").

[21] *See infra* PP 10-13. In particular, the Commission refuses to consider the GHG emissions caused by the Project's electricity consumption even though it possesses models for calculating and quantifying those emissions, uses those models elsewhere in the EIS for *this* project, *see infra* P 12, and there is no dispute that those emissions represent the Project's principal contribution to climate change.

since the industrial age,"[22] (although notably no longer in today's order or accompanying environmental analysis) and acknowledges in today's order that such GHGs "may endanger public health and welfare through climate change."[23] 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 Texas Brownsville LNG facilities will have a significant adverse effect on the environment, notably on endangered species, including the ocelot, the jaguarundi, and the aplomado falcon.[24] Although the Commission reports those impacts in its EIS[25] and mentions them briefly in today's order,[26] 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[27]—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. 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 made up of minority groups.[28] I fully appreciate that the jobs and economic stimulus that

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[22] Environmental Impact Statement, Docket No. CP16-116-000, at 4-164 (Mar. 15, 2019).

[23] EIS at 4-172.

[24] *Id.* at 4-306 –3-308 (ocelot and jaguarundi); *id.* at 4-309 (aplomado falcon).

[25] *Id.*

[26] Certificate Order, 169 FERC ¶ 61,132 at P 84.

[27] For example, the EIS notes that "loss, degradation, and fragmentation of habitat have been cited by the [Fish and Wildlife Service] in its 2010 Recovery Plan, as the primary threat to U.S. ocelot and jaguarundi populations." EIS at 4-308.

[28] *Id.* at Table 4.9.9-1 (noting that the poverty rate in Cameron county is 31 percent); *id.* (identifying two tracts of census blocks located within one mile of the Project site that exceed 90 percent minority populations and have more than 37 percent of households below the poverty line).

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 as a matter of public interest 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

10. 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 directly emit more than 367,000 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 rather than onsite natural gas turbines.[32] Apparently on that basis, the Commission omits the resulting GHG emissions from its environmental analysis.

11. 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

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[29] *Id.* at 4-143 – 4-144 (discussing the guidelines provided by 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 ¶ 61,132 at P 76; EIS at 4-190 Table 4.11.1-9.

[32] EIS at 2-2.

a new transmission line built and owned by South Texas Electric Cooperative.[33] The new transmission line would tie into South Texas Electric Cooperative's existing system. That known tie-in makes it possible 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]

12. Indeed, the EIS uses these very models to quantify GHG emissions from the Project when evaluating alternative designs, concluding that the Project's electricity consumption would result in an additional 1.77 to 2.42 million tons of GHG emissions.[35] And the Commission relies on that modeling to conclude that on-site generation would not provide a significant environmental advantage over using electricity from the grid.[36] Nonetheless, the Commission fails to include or consider those GHG emissions when quantifying the GHG emissions caused by the Project as part of its actual environmental analysis of the Project. Nothing in the EIS or today's order explains why that modeling is good enough to rely on when justifying Annova LNG's preferred project design, but not good enough to rely upon for the purpose of identifying and quantifying the Project's adverse impacts.[37]

13. The Commission's failure to consider these reasonably foreseeable GHG emissions is especially unreasonable given the other sources of GHG emissions that it did

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[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] EIS at Table 3.6.1-1.

[36] *Id.* at 3-21.

[37] To the extent that the Commission believes those 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 can take the resulting estimates with the appropriate amount of salt." (internal citations and quotation marks omitted)).

consider in the EIS. For example, the EIS reports the direct GHG emissions resulting from mobile sources associated with the Project.[38] Indeed, it goes so far as to estimate the GHG emissions that will result from different forms of mobile sources used to serve the facility (e.g., boats and commuter traffic).[39] 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 quantify and consider the GHG emissions from electricity consumption, but then confidently ascribe and consider estimated GHG emissions levels for different types of mobile sources.

14. 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.[40] 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."[41] It is hard to see how hiding the ball by refusing to assess the significance of the Project's climate impacts is consistent with either of those purposes.

15. In addition, under NEPA, a finding of significance informs the Commission's inquiry into potential ways of mitigating environmental impacts.[42] An environmental

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[38] EIS at 4-183–4.184.

[39] *Id.* at Table 4.11.1-5.

[40] *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.").

[41] *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)).

[42] 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

review document must "contain a detailed discussion of possible mitigation measures" to address adverse environmental impacts.[43] "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.[44]

16. 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.[45] 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.

17. 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

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its action in its environmental review, which "shall include discussions of . . . [d]irect effects and their significance.").

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

[44] *Id.* at 352.

[45] EIS at 4-331 – 4-332 (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 ¶ 61,132 at P 76 ("The Commission has also previously concluded it could not determine whether a project's contribution to climate change would be significant.").

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.[46]

18. 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 explicit tools it claims it needs to assess the significance of the Project's impact on climate change.[47] The Commission's refusal to similarly analyze the Project's impact on climate change is arbitrary and capricious.

19. 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.[48] As noted above, "[w]ithout such a discussion, neither the agency nor other interested groups and individuals can properly evaluate the severity of the adverse effects."[49] 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.[50] And

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

[47] *See, e.g.*, EIS at 4-298, 4-315 – 4-317 (concluding that there will be a significant cumulative impact on surface water resources associated with shoreline erosion and turbidity from increased vessel traffic, and significant cumulative impact on visual resources noting that the aesthetic impacts looking in certain directions would be moderate to high).

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

[49] *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).

[50] *See, e.g.*, Certificate Order, 169 FERC ¶ 61,132 at PP 38-39 (discussing mitigation measures to address soil impacts); *id.* P 48 (discussing mitigation plans to

throughout today's order, the Commissions uses its conditioning authority under section 3 and section 7 of the NGA[51] to implement these mitigation measures, which support its public interest finding.[52] 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.

20. 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."[53] NEPA "'merely prohibits uninformed—rather than unwise—agency action.'"[54] 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.

For these reasons, I respectfully dissent.

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Richard Glick
Commissioner

address impacts on vegetation); *id.* P 58 (discussing mitigation measures to address traffic impacts).

[51] 15 U.S.C. § 717b(e)(3)(A); *id.* § 717f(e); Certificate Order, 169 FERC ¶ 61,132 at P 88 ("[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.").

[52] *See* Certificate Order, 169 FERC ¶ 61,132 at P 88 (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).

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

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