

168 FERC ¶ 61,020

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

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

Gulf LNG Liquefaction Company, LLC
Gulf LNG Energy, LLC
Gulf LNG Pipeline, LLC

Docket No. CP15-521-000

ORDER GRANTING AUTHORIZATION UNDER SECTION 3
OF THE NATURAL GAS ACT

(Issued July 16, 2019)

1. On June 19, 2015, Gulf LNG Liquefaction Company, LLC (Gulf Liquefaction) and Gulf LNG Energy, LLC (Gulf Energy) (collectively, Gulf Liquefaction) filed an application for authorization under section 3 of the Natural Gas Act (NGA)¹ to site, construct, and operate new facilities for the export of liquefied natural gas (LNG) at Gulf Energy's existing LNG import terminal in Jackson County, Mississippi, near the city of Pascagoula (Gulf LNG Liquefaction Project). Gulf LNG Pipeline, LLC (Gulf Pipeline) is also proposing related activities under its blanket certificate pursuant to Part 157, Subpart F of the Commission's regulations.² For the reasons discussed in this order, we will authorize Gulf Liquefaction's proposal, subject to conditions discussed herein.

¹ 15 U.S.C. § 717b (2012).

² 18 C.F.R. pt. 157, subpt. F (2018); *see Gulf LNG Energy, LLC*, 118 FERC ¶ 61,128 (2007) (2007 Order) (issuing Gulf Pipeline, in Docket CP06-14-000, a blanket certificate to perform certain routine construction activities and operations); *infra* note 14.

I. Background

2. Gulf Liquefaction and Gulf Energy are limited liability companies organized under the laws of Delaware.³ Southern Gulf LNG Company, LLC, a wholly-owned subsidiary of Kinder Morgan, Inc., operates Gulf Liquefaction and Gulf Energy.

3. In 2007, the Commission, under section 3 of the NGA, authorized Gulf Energy to site, construct, and operate an LNG import terminal in Jackson County, Mississippi.⁴ The import terminal includes a marine berthing facility designed to receive vessels with capacities up to 250,000 cubic meters (m³), and deemed appropriate by the U.S. Coast Guard (USCG) to receive vessels with capacities up to 170,000 m³ and capable of unloading at a rate of 12,000 m³ per hour; two full containment LNG storage tanks, each with a capacity of 160,000 m³; and a storm surge protection wall surrounding the facilities.⁵ Currently, the import terminal has a storage capacity of 6.6 billion cubic feet of natural gas.

4. In the same 2007 order, the Commission, under section 7(c) of the NGA, authorized Gulf Pipeline⁶ to construct and operate a five-mile-long pipeline designed to transport regasified LNG from the import terminal to interconnections with the interstate pipeline systems of Gulfstream Natural Gas System, LLC (Gulfstream) and Destin Pipeline Company, LLC (Destin), and with the BP Gas Processing Facility.⁷ Gulf Energy's and Gulf Pipeline's facilities were placed into service on October 1, 2011.⁸

5. Subsequently, the Commission authorized Florida Gas Transmission Company, LLC (Florida Gas) and Transcontinental Gas Pipe Line Company, LLC (Transco) to construct and operate the Pascagoula Lateral, extending from an interconnection with the

³ Gulf Liquefaction June 19, 2015 Application (Application) at 2.

⁴ 2007 Order, 118 FERC ¶ 61,128.

⁵ Application at 3.

⁶ Gulf Pipeline is a wholly-owned subsidiary of Gulf Energy and is also operated by Southern Gulf LNG. Application at 2.

⁷ 2007 Order, 118 FERC ¶ 61,128 at P 6.

⁸ Application at 4.

Gulf Pipeline facilities to interconnections with Transco and with Florida Gas.⁹ The Pascagoula Lateral was placed into service on September 30, 2011.

II. Proposals

6. The Gulf LNG Liquefaction Project would be constructed and operated by Gulf Liquefaction and integrated with the existing import terminal facilities.¹⁰ Gulf Liquefaction states that the project will enable the receipt, treatment, liquefaction, and export of up to 10.85 million metric tons per year (mtpy) of natural gas as LNG.¹¹

7. Gulf Liquefaction proposes to construct two natural gas liquefaction trains, pretreatment facilities, and ancillary and support facilities, and to extend the storm surge protection system. Gulf Liquefaction further proposes to construct two marine offloading facilities—one permanent and one temporary—to receive equipment and materials during construction. Additional modifications to the existing terminal facilities include replacing in-tank LNG pumps, increasing tank riser piping size, and modifying piping to permit bi-directional LNG flow.¹²

8. Gulf Liquefaction received authorization from the Department of Energy, Office of Fossil Energy (DOE/FE) in June 2012 to export annually for a 25-year term up to 547.5 billion cubic feet (Bcf) of natural gas in the form of LNG to countries with which the United States has a Free Trade Agreement (FTA).¹³ In addition, Gulf Liquefaction has pending before the DOE/FE an application to export LNG to nations with which the

⁹ *Florida Gas Transmission Co., LLC*, 132 FERC ¶ 61,040 (2010).

¹⁰ Application at 7–8.

¹¹ *Id.* at 8.

¹² *Id.* at 10. In addition, in order to provide for bi-directional flow on its system and to provide feed gas to the Gulf LNG Liquefaction facilities, Gulf Pipeline will make various modifications to its facilities, including the existing interconnections with Gulfstream and Destin, pursuant to its Part 157 blanket construction certificate. Gulf Pipeline states that Transco will also make modifications at the existing interconnect with its Pascagoula Lateral to permit bi-directional flow.

¹³ *Gulf LNG Liquefaction, LLC*, FE Docket No. 12-47-LNG, Order No. 3104 at 7 (June 15, 2012); *see also* Application at 13.

United States permits such trade, but which have not entered into an FTA providing for the national treatment of trade in natural gas.¹⁴

III. Notice, Interventions, and Comments

9. Notice of the application was published in the *Federal Register* on July 13, 2015, with interventions, comments, and protests due on July 22, 2015.¹⁵ Florida Gas submitted a timely motion to intervene. Timely, unopposed motions to intervene are automatically granted pursuant to Rule 214 of the Commission's Rules of Practice and Procedure.¹⁶ The Port of Pascagoula submitted a comment in support of the Gulf LNG Liquefaction Project, stating the project is strongly supported by the community and will provide a net benefit to the community.

IV. Discussion

10. Because the proposed LNG terminal facilities will be used to export natural gas to foreign countries, the construction and operation of the proposed facilities and site of their location require approval by the Commission under section 3 of the NGA.¹⁷ Although section 3 provides that an application for the exportation or importation of natural gas shall be approved unless the proposal "will not be consistent with the public interest,"¹⁸ 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

¹⁴ Application at 13.

¹⁵ 80 Fed. Reg. 40,057 (2015).

¹⁶ 18 C.F.R. § 385.214 (2018).

¹⁷ 15 U.S.C. § 717b(a) (2012). The regulatory functions of 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.* (2012). In reference to regulating the imports or exports of natural gas, the Secretary subsequently delegated to the Commission the authority to approve or disapprove the construction and operation of natural gas import and export facilities and the site at which such facilities shall be located. The most recent delegation is in Department of Energy (DOE) Delegation Order No. 00-004.00A, effective May 16, 2006. Applications for authorization to import or export natural gas must be submitted to DOE. The Commission does not authorize importation or exportation of the commodity itself.

¹⁸ 15 U.S.C. § 717b(a) (2012).

find necessary or appropriate.”¹⁹ NGA section 3(a) also provides that for good cause shown, the Commission may make supplemental orders as it may find “necessary or appropriate.”²⁰

11. DOE/FE, pursuant to its authority under NGA section 3(c), has issued Gulf Liquefaction authorization to export up to 547.5 Bcf per year, equivalent to approximately 1.5 Bcf per day, of domestically produced natural gas in the form of LNG to FTA countries from the proposed Gulf LNG Liquefaction Project near Pascagoula in Jackson County, Mississippi.²¹ DOE/FE’s order approving Gulf Liquefaction’s export volumes states that “[i]n light of [DOE/FE’s] statutory obligation to grant the Application without modification or delay, there is no need for [DOE/FE] to review other arguments posed by [Gulf Liquefaction] in support of the Application.”²²

12. We have reviewed Gulf Liquefaction’s application to determine if the siting, construction, and operation of its export facilities as proposed would not be consistent with the public interest. The proposed project is located on and adjacent to the footprint of the previously approved and currently operating import terminal site.²³ Much of the land in the area was previously disturbed during construction of the terminal. Further, the final Environmental Impact Statement (EIS) prepared by Commission staff regarding the proposed project finds that most of the direct environmental impacts from construction of the proposed facilities would be temporary or short term.²⁴ All impacts from construction and operation of the facilities will be reduced to less-than-significant levels if the project is constructed and operated in accordance with applicable laws and regulations and the environmental mitigation measures recommended in the final EIS and adopted by this

¹⁹ *Id.* For a discussion of the Commission’s authority to condition its approvals of LNG facilities under section 3 of the NGA, *see, e.g., DISTRIGAS CORPORATION v. FPC*, 495 F.2d 1057, 1063-64 (D.C. Cir. 1974), *cert. denied*, 419 U.S. 834 (1974), and *Dynegy LNG Production Terminal, L.P.*, 97 FERC ¶ 61,231 (2001).

²⁰ 15 U.S.C. § 717b(a) (2012).

²¹ *See* DOE/FE Order No. 3104 (2012). The non-FTA application is currently under DOE review in DOE/FE Docket No. 12-101-LNG.

²² *Id.* at 6–7.

²³ 2007 Order, 118 FERC ¶ 61,128.

²⁴ Commission April 17, 2019 Final EIS (Final EIS) at 5-1.

order. The final EIS also concludes that reasonably foreseeable indirect or cumulative impacts from operation of the Gulf LNG Liquefaction Project will not be significant.²⁵

13. In accordance with the Memorandum of Understanding signed on August 31, 2018, by the Commission and the Department of Transportation's Pipeline and Hazardous Materials Safety Administration (PHMSA),²⁶ PHMSA undertook a review of the proposed facility's ability to comply with federal safety standards contained in Part 193, Subpart B, of Title 49 of the Code of Federal Regulations.²⁷ On March 15, 2019, PHMSA issued a Letter of Determination (LOD)²⁸ indicating Gulf Liquefaction has demonstrated that the siting of its proposed LNG facilities complies with those federal safety standards. If the proposed Gulf LNG Liquefaction Project is subsequently modified so that it differs from the details provided in the documentation submitted to PHMSA, further review would be conducted by PHMSA.

14. Gulf Liquefaction is proposing to operate its LNG terminal under the terms and conditions mutually agreed to by its customers and will solely bear the responsibility for the recovery of any costs associated with construction and operation of the terminal. Accordingly, Gulf Liquefaction's proposal does not trigger NGA section 3(e)(4).²⁹

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

²⁵ *Id.* at 5-10.

²⁶ *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>.

²⁷ 49 C.F.R. pt. 193, subpt. B (2018).

²⁸ PHMSA March 15, 2019 LOD.

²⁹ 15 U.S.C. § 717b(e)(4) (2012) (governing orders for LNG terminals offering open access service).

V. Environmental Analysis

16. To satisfy the requirements of the National Environmental Policy Act of 1969 (NEPA),³⁰ Commission staff evaluated the potential environmental impacts of the proposed project in an EIS. The U.S. Department of Energy, U.S. Army Corps of Engineers (USACE), U.S. Environmental Protection Agency, USCG, U.S. Fish & Wildlife Service (FWS), National Oceanic and Atmospheric Organization, National Marine Fisheries Service (NMFS), and Mississippi Office of the Secretary of State participated as cooperating agencies in the preparation of the EIS. Cooperating agencies have jurisdiction by law or special expertise with respect to resources potentially affected by the proposals and participate in the NEPA analysis.

17. On November 15, 2018, Commission staff issued the draft EIS addressing issues raised up to the point of publication. Notice of the draft EIS was published in the *Federal Register* on November 23, 2018, establishing a 45-day public comment period ending on January 7, 2019.³¹ Commission staff held a public comment session on December 18, 2018, in Moss Point, Mississippi, to receive comments on the draft EIS. Approximately 20 individuals attended the public session, and four individuals provided oral comments. On February 7, 2019, Commission issued notice reopening the comment period through February 25, 2019, due to the funding lapse at certain federal agencies between December 22, 2018, and January 25, 2019. Notice of the reopening of the comment period was published in the *Federal Register* on February 13, 2019.³² The Commission received nine comments from federal and state agencies and individuals. On January 7, 2019, Gulf Liquefaction provided additional data in response to staff's recommendations in the draft EIS, clarifying aspects of its proposal. The transcript of the public comment session and all written comments on the draft EIS are part of the public record for the project.³³

³⁰ 42 U.S.C. §§ 4321–4370h (2012). *See also* the Commission's NEPA-implementing regulations at Title 18 of the Code of Federal Regulations, Part 380.

³¹ 83 Fed. Reg. 59,375 (2018).

³² 84 Fed. Reg. 3,773 (2019).

³³ The transcript for the public comment session in Moss Point, Mississippi, was filed in the record on January 23, 2019. *See also* Appendix L to the final EIS reproducing and responding to comments on the draft EIS.

18. On April 17, 2019, Commission staff issued the final EIS for the project.³⁴ 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 24, 2019.³⁵ The final EIS addresses geology; soils and sediments; water use and quality; wetlands; vegetation; wildlife; 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. The final EIS concludes that construction and operation of the project will result in some adverse environmental impacts, but impacts will be reduced to less-than-significant levels with the implementation of Gulf Liquefaction's proposed, and Commission staff's recommended, mitigation measures, appended to this order and discussed below. Those comments and resource areas addressed in the final EIS are addressed below. No adverse comments concerning the final EIS have been filed.

1. Geology

19. Commission staff examined impacts on geologic resources on and adjacent to the Gulf LNG Liquefaction Project.³⁶ No known mining operations, mineral resources, or mineral extraction activities exist adjacent to the project. Oil and gas exploration and production has occurred approximately eight miles to the north of the existing terminal, but all such wells have been plugged and abandoned. At the terminal expansion site, Gulf Liquefaction would modify the existing topographic contours to accommodate its equipment and facilities and to maintain adequate drainage from the site.³⁷ Gulf Liquefaction has proposed structural and mechanical elements to incorporate into the design of the project to mitigate potential geological hazards such as high winds, storm surges, severe flooding, and shoreline erosion.³⁸ The final EIS concludes that the project will not significantly impact geologic resources.

³⁴ References to the Gulf LNG Liquefaction Project or project throughout the final EIS discussion refer to both the terminal expansion site and pipeline modifications unless otherwise stated.

³⁵ 84 Fed. Reg. 17,154 (2019).

³⁶ Final EIS at 5-1

³⁷ *Id.* at 4-2 – 4-3, 4-212.

³⁸ *Id.* at 4-2 – 4-5.

2. Soils and Sediments

20. Construction of the Gulf LNG Liquefaction Project would temporarily disturb soils, resulting in increased potential for erosion, compaction, and poor revegetation following construction. However, the project area's level topography and cohesive soils reduce the erosion potential.³⁹ Gulf Liquefaction's project-specific *Upland Erosion Control, Revegetation, and Maintenance Plan* (Plan) contains erosion control and revegetation measures that would also minimize erosion potential, and incorporates measures required by the Commission's *Upland Erosion Control, Revegetation, and Maintenance Plan*. The project area contains hydric soils prone to compaction, which could be loosened by a method such as deep tilling if de-compaction is necessary. The project area contains no prime farmland soils, and no new impacts on prime farmland soils are anticipated.⁴⁰

21. Construction of the supply docks would require dredging approximately 200,000 cubic yards (cy) of sediment.⁴¹ Gulf Liquefaction proposes to consult with federal and state agencies to determine a suitable beneficial use for dredge material disposal or, if a suitable beneficial use is not available, use an offshore dredged material disposal site if approved by the USACE under a section 404 permit. Gulf Liquefaction also proposes dredging approximately 200,000 cy of additional material to create a temporary barge access channel during construction from the South Supply Dock. However, all of this dredge material would be replaced in the temporary channel or contained within the marsh creation area, so offsite disposal would not be necessary.

22. The final EIS concludes that impacts on soils would be largely temporary and not significant with implementation of Gulf Liquefaction's proposed mitigation measures.⁴²

3. Water

23. Potential impacts on groundwater resources during construction and operation of the project would be minimized and would not be significant.⁴³ Construction could affect groundwater resources by altering overland water flow and infiltration rates, but resulting

³⁹ *Id.* at 5-1 – 5-2.

⁴⁰ *Id.* at 5-2.

⁴¹ *Id.*

⁴² *Id.* at 5-2.

⁴³ *Id.* at 5-3.

changes are expected to be minor and temporary. Water wells within 150 feet of the construction support areas (CSA/.) could be susceptible to damage from construction activities, including impacts from inadvertent spills.

24. There are four private wells within 150 feet of the CSAs, including one private well at CSA-1 (the only well within the construction workspace).⁴⁴ Gulf Liquefaction has committed to clearly marking the location of the CSA-1 well and restricting the refueling and storage of hazardous materials to a 200-foot buffer around the well's location. Further, Gulf Liquefaction would conduct pre- and post-construction monitoring of water quality and yield for the private wells, subject to the owners granting permission. If construction resulted in temporary impacts on a private well, Gulf Liquefaction would provide an alternative water source or compensate the well owner. If permanent damage to a well were to occur, Gulf Liquefaction would either compensate the owner or drill a new well.

25. Gulf Liquefaction would withdraw 111,723,725 gallons of water during construction, including 3,410,000 gallons for hydrostatic testing, from Pascagoula's Industrial Water Supply.⁴⁵ Hydrostatic test water would be discharged into the Mississippi Sound in accordance with its November 26, 2018, National Pollution Discharge Elimination System discharge permit from the Mississippi Department of Environmental Quality (Mississippi DEQ).

26. Impacts to bodies of water from construction of the project would be minimized to less-than-significant levels.⁴⁶ Gulf Liquefaction would dredge approximately 200,000 cy of sediment for construction of the north and south supply docks if they receive permits from the Mississippi Department of Marine Resource (Mississippi DMR) and the USACE. During operation of the terminal expansion, the North Supply Dock would undergo maintenance dredging in accordance with applicable Mississippi DMR and USACE permits. Following construction, Gulf Liquefaction would remove the South Supply Dock and transfer ownership of the North Supply dock to the Jackson County Port Authority.

27. Dredging impacts would be minimized through adherence to Gulf Liquefaction's proposed *Dredging and Disposal Plan*, which includes the use of turbidity curtains to limit the transport of turbid water beyond the vicinity of the dredging operations.

⁴⁴ *Id.*

⁴⁵ *Id.*

⁴⁶ *Id.*

28. The final EIS concludes that impacts on groundwater and surface water quality during construction and operation of the project will be adequately minimized through Gulf Liquefaction's implementation of its project-specific Plan and *Wetland and Waterbody Construction and Mitigation Procedures* (Procedures), which incorporates measures required by the Commission's *Wetland and Waterbody Construction and Mitigation Procedures*, and would not be significant.

29. While we find Gulf Liquefaction's proposed measures adequate, should the certifying agencies, USACE and the Mississippi DEQ, deem it necessary, they will provide additional mitigation requirements. For example, Gulf Liquefaction would monitor dredging-induced turbidity in accordance with any Mississippi DEQ Clean Water Act Section 401 water quality certification requirements and report any turbidity levels that exceeded any limits provided in the certification.

4. Wetlands

30. Construction and operation of the Gulf LNG Liquefaction Project would affect 31.1 acres of coastal marsh and 7.6 acres of freshwater wetland, all of which would be permanently filled.⁴⁷ If approved, Gulf Liquefaction would offset permanent impacts on the 31.1 acres of USACE-jurisdictional coastal marsh through mitigation measures required in any permits to be issued by USACE and Mississippi DMR. The mitigation measures proposed by Gulf Liquefaction include creation of a 50-acre tidal salt marsh and expansion of the existing USACE-created wetland mitigation site into the Mississippi Sound south of the existing terminal. If the USACE approves the project, Gulf Liquefaction must also comply with all conditions of the USACE section 404 and section 10 permits. Unlike the permanent impacts associated with construction of the LNG Terminal, staff concludes in the EIS that the wetland impact associated with CSA-5 is only needed temporarily during construction, and should be restored following construction in accordance with Gulf Liquefaction's Plan and Procedures. Therefore, Environmental Condition 13 requires Gulf Liquefaction to restore the 7.6 acres of freshwater wetlands at CSA-5 to its pre-construction condition. With the implementation of Gulf Liquefaction's proposed mitigation measures, requirements of the USACE section 404 permit if approved (including any compensatory mitigation), and staff's recommendations, the final EIS concludes that impacts on wetlands during construction and operation of the project would not be significant.

⁴⁷ *Id.* at ES-5, 4-42, 5-3 – 5-4.

5. Vegetation

31. Loss of vegetation from the terminal expansion and CSAs would be minor, but permanent.⁴⁸ Operation of the project would affect 81 acres of vegetation, most of which is indicative of disturbed sites due to years of industrial activity. The project's CSAs are partially or entirely proposed on previously developed industrial/commercial land. CSA-3 and CSA-5 contain upland forest and wetland vegetation. Gulf Liquefaction would avoid impacts on vegetation at CSA-3 during construction and operation of the project.⁴⁹ Gulf Liquefaction would remove all vegetation at CSA-5 to permanently convert it to upland, industrial/commercial land. Gulf Liquefaction proposes to clear this area to provide adequate space for construction support activities, resulting in the permanent removal of 1.3 acres of palustrine emergent wetland, 6.3 acres of palustrine forested wetland, and 8.5 acres of upland forest.⁵⁰ To comply with section 404 of the Clean Water Act, Gulf Liquefaction proposed to offset its impacts on the 7.6 acres of freshwater wetlands at CSA-5 by purchasing credits from a wetland mitigation bank.⁵¹ However, we determined that Gulf Liquefaction has not adequately justified filling the wetlands at CSA-5 for temporary construction purposes. Therefore, as stated in Environmental Condition 13, we require Gulf Liquefaction to restore the wetlands at CSA-5 to pre-construction conditions following construction in accordance with its Plan and Procedures. No permanent impacts on vegetative communities would occur as a result of the pipeline modifications.

32. Twenty exotic, invasive, and/or noxious plant species were identified in the project area.⁵² Gulf Liquefaction would control growth of these species through best management vegetation practices or, if inadequate, Gulf Liquefaction committed to work with local vegetation experts to develop improved measures.⁵³ Monitoring of the restored area is required by Gulf Liquefaction's plan until the density and cover of non-nuisance vegetation is similar to adjacent undisturbed lands.

⁴⁸ *Id.* at 5-4.

⁴⁹ *Id.*

⁵⁰ *Id.* at 4-45.

⁵¹ *Id.* at 5-4.

⁵² *Id.*

⁵³ *Id.*

33. The final EIS concludes that impacts on vegetation generally would be permanent but not significant due to the industrialized nature of the area, Gulf Liquefaction's USACE required section 404 compensatory wetland mitigation measures for the 31.1 acres of USACE-jurisdictional wetlands, if approved, and our requirement that Gulf Liquefaction restore CSA-5 wetlands that would be used during construction in accordance with its Plan and Procedures.⁵⁴

6. Wildlife

34. Construction and operation of the Gulf LNG Liquefaction Project would require removal of all habitats at the site and conversion of the site to industrial land, permanently affecting wildlife and wildlife habitats.⁵⁵ Of the affected acreage, about 81 acres during construction and 77.9 acres during operation are potential terrestrial wildlife habitat. However, as discussed above, much of the site was previously disturbed due to years of industrial activity.

35. Gulf Liquefaction would mitigate wetland habitat impacts through the creation of tidal marsh, subject to its USACE section 404 permit.⁵⁶ For the project CSAs containing upland forest and wetland vegetation areas, with the exception of CSA-5, Gulf Liquefaction would avoid affecting wildlife habitat and impacts would be temporary and minor. Removal of vegetation at CSA-5 and conversion to upland industrial/commercial land would result in permanent loss of wildlife habitat at the site. However, based on Gulf Liquefaction's proposal to implement its Plan and Procedures and our requirement to restore CSA-5 wetlands, the final EIS concludes that impacts on wildlife and aquatic resources would be adequately minimized and not significant. In addition, Commission staff anticipates that Gulf Liquefaction would be required to further mitigate impacts on wetland vegetation and associated wildlife habitat by complying with the requirements of section 404 of the Clean Water Act, if approved by the USACE.

36. Because Gulf Liquefaction's consultation with FWS to develop its migratory bird plan is ongoing, we adopt as Environmental Condition 14 Commission staff's recommendation that Gulf Liquefaction file its finalized *Migratory Bird Impact Assessment and Conservation Plan* with the Commission prior to construction.⁵⁷ The plan will identify migratory birds likely to be found in the project area, discuss potential

⁵⁴ *Id.*

⁵⁵ *Id.* at 5-5.

⁵⁶ *Id.*

⁵⁷ *Id.*

impacts on those species, and provide strategies to mitigate those potential impacts. Gulf Liquefaction will avoid impacts on nesting birds by conducting pre-construction surveys for active nests prior to clearing or, if an active nest is identified, by restricting vegetation clearing to times outside of nesting season. With Gulf Liquefaction's commitment to consult with FWS, and implementation of Gulf Liquefaction's migratory bird plan, the final EIS concludes that adverse impacts on migratory birds would not be significant.

7. Aquatic Resources

37. Construction of the north and south supply docks as well as operation at the north supply dock would result in minor, temporary impacts on shallow estuarine habitat, largely from dredging.⁵⁸ Construction of the terminal expansion would result in permanent impacts on coastal marsh. Construction of the compensatory wetland mitigation site would result in permanent impacts on shallow estuarine habitat. However, based on Gulf Liquefaction's proposal, including implementation of its Plan and Procedures, the final EIS concludes impacts on wildlife and aquatic resources would be adequately minimized.

38. NMFS and the Gulf of Mexico Fisheries Management Council identified the Mississippi Sound near Bayou Casotte as essential fish habitat (EFH) for several recreational and commercial marine species.⁵⁹ To minimize construction impacts on EFH and EFH species, Gulf Liquefaction would install and maintain turbidity curtains to limit the transport of turbid waters beyond the vicinity of the dredging operations as well as adhere to the measures contained its Plan and Procedures and to existing and future federal and state permit requirements.⁶⁰

39. Pile driving near and within the Bayou Casotte waters could cause rapid concussive noise and generate underwater sound pressure waves that could adversely affect nearby marine organisms.⁶¹ Gulf Liquefaction would use a vibratory hammer, which causes less underwater concussive noise than impact pile driving, and follow NMFS' recommendations to reduce impacts on marine organisms. In addition, aquatic resources in the project area are likely accustomed to regular fluctuations in noise from nearby industrial activity. The final EIS concludes that adverse impacts on EFH or

⁵⁸ *Id.* at 5-5 – 5-6.

⁵⁹ *Id.* at 5-5.

⁶⁰ *Id.*

⁶¹ *Id.* at 5-6.

EFH species would be localized, temporary, and minor, and, with implementation of Gulf Liquefaction's conservation measures, no substantial adverse impacts would result from construction or operation of the project.

8. Threatened, Endangered, and Other Special Status Species

40. Commission staff, in consultation with the FWS and NMFS, determined that 19 species listed under the Endangered Species Act of 1973 (ESA) and two species under federal review for listing may occur in the Gulf LNG Liquefaction Project area.⁶²

Commission staff anticipates that construction and operation of the project is not likely to adversely affect any of the 19 federally listed species. Commission staff also anticipates that construction and operation of the project would not contribute to a trend toward listing the two species under federal review. As required by section 7 of the ESA, Commission staff prepared a Biological Assessment, which was appended to the final EIS.⁶³ On March 14, 2019, and April 24, 2019, FWS and NMFS respectively provided their concurrence on staff's conclusions regarding the species under those agencies' respective jurisdiction. Therefore, consultation is complete for ESA-listed species.

41. Commission staff, in consultation with the Mississippi Department of Wildlife, Fish, and Parks, determined that three state listed bird species, one plant species of state concern, and one state special status species occur within two miles of the project facilities.⁶⁴ Commission staff anticipates that construction and operation impacts of the project would not be significant for any of the three state listed species or the state special status species. A small population of the plant species of state concern, Carolina grasswort, is located at the proposed project site. Commission staff recommends, and we require in Environmental Condition 16, that Gulf Liquefaction transplant the Carolina grasswort population to a similar habitat using protocols determined in consultation with the Mississippi Museum of Natural Science. With implementation of this recommendation, Commission staff anticipates that project-related impacts on the population of Carolina grasswort would not be significant.

⁶² *Id.* at ES-5 – ES-6.

⁶³ *Id.* at Appendix B.

⁶⁴ *Id.* at 5-5 – 5-7.

42. The final EIS concludes that implementation of Gulf Liquefaction's proposed mitigation measures and Commission staff recommendations would adequately minimize impacts on federally and state listed species along with other species of concern.⁶⁵

9. Land Use, Recreation, and Visual Resources

43. Construction of the Gulf LNG Liquefaction Project would affect 230.8 acres of forested, open land, open water, wetlands, and industrial/commercial land.⁶⁶ Operation of the project would affect 172.1 acres of land by permanently converting it to industrial land, and the 58.7 remaining acres would be returned to pre-construction conditions and uses. With implementation of our recommendations, the applicant's proposed mitigation measures, and agency-required compensatory mitigation (in association with the USACE 404 permit), the final EIS concludes that the land use impacts of the project would be minor. Similarly, although barge traffic in the Bayou Casotte Navigation Channel would increase during construction, the final EIS anticipates only minor impacts on recreational boating and fishing.⁶⁷

44. The terminal expansion site is within the designated coastal zone managed by the Mississippi DMR.⁶⁸ Gulf Liquefaction has not yet obtained a determination from Mississippi DMR that the project is consistent with the Mississippi Coastal Zone Management Program. Therefore, Environmental Condition 17 requires Gulf Liquefaction to file the determination prior to construction.

45. The tallest structure proposed to be constructed would be a 433-foot-tall flare tower that would be operated only during startup and an operational natural gas flaring event.⁶⁹ Because views of the Gulf LNG Liquefaction Project would be similar to those of the adjacent existing terminal and surrounding industrial areas, the final EIS concludes that the impact of the project on viewshed during construction and operation would be minor.

⁶⁵ *Id.* at ES-5 – ES-6, 5-7.

⁶⁶ *Id.* at 4-82, 4-88 – 4-89, 5-7.

⁶⁷ *Id.*

⁶⁸ *Id.* at ES-6, 4-90 – 4-91.

⁶⁹ *Id.* at 4-89.

10. Socioeconomics

46. The final EIS concludes that construction and operation of the Gulf LNG Liquefaction Project would result in minor positive socioeconomic impacts from increased employment and increased local and state tax revenues, and would not result in significant adverse impacts on local housing supply or provision of community services.⁷⁰ Additionally, the project would not result in disproportionately high and adverse human health or environmental effects on minority and low-income populations. With mitigation measures proposed by Gulf Liquefaction, the final EIS concludes that construction of the project would result in minor, temporary impacts on local traffic and minor to moderate, temporary impacts on barge traffic on the waterway.

11. Cultural Resources

47. Gulf Liquefaction completed cultural resource surveys for construction and operation the Gulf LNG Liquefaction Project, and no cultural resources were identified within the project footprint.⁷¹ Commission staff consulted with the Mississippi Department of Archives and History, the State Historic Preservation Office, and federally recognized Indian tribes regarding project impacts on cultural resources. The Mississippi Department of Archives and History and Commission staff reviewed the survey reports and concurred that the project would not affect historic properties. Thus, the review process under Section 106 of the National Historic Preservation Act is complete for the project.

48. On May 22, 2019, the Choctaw Nation of Oklahoma requested to be a consulting party pursuant to the National Historic Preservation Act as the proposed project lies within the tribe's historic interest area. As the tribe is federally recognized, we grant the Choctaw Nation's request to become a consulting party. In addition, the tribe requested copies of the cultural resources surveys and map and GIS shapefiles of the project area, which Gulf Liquefaction shared with it on May 30, 2019, and May 31, 2019.

12. Air Quality and Noise

49. Construction of the Gulf LNG Liquefaction Project would result only in temporary impacts on air quality.⁷² The project would be constructed in Jackson County, which is

⁷⁰ *Id.* at 5-7 – 5-8.

⁷¹ *Id.*

⁷² *Id.* at ES-7.

located in the Southern Mississippi Interstate Air Quality Control Region.⁷³ Jackson County is in attainment or unclassifiable for six criteria pollutants—sulfur dioxide, carbon monoxide, ozone, nitrogen dioxide, lead, and inhalable particulate matter. Air dispersion modeling demonstrates that emissions from the project's operation would not cause or contribute to an exceedance of the National Ambient Air Quality Standard at any location.⁷⁴ Emissions from the project would trigger federal Prevention of Significant Deterioration review, including an assessment of the impacts of the proposed project on the nearby Breton National Wildlife Refuge.⁷⁵ Gulf Liquefaction operates the existing terminal under a Title V permit, but the proposed terminal expansion would require the applicant to submit an application to revise its Title V permit. Gulf Liquefaction continues to work with Mississippi DEQ to obtain an updated Title V permit, and anticipates submitting a revised application in the second quarter of 2019.⁷⁶

50. Gulf Liquefaction proposes to implement dust control measures during construction to minimize temporary, short term air quality impacts from fugitive dust. The final EIS concludes that the impact of construction on air quality would be minor. Operation of the project would result in long-term impacts on air quality, however Gulf Liquefaction is required to adhere to applicable federal and state regulations and install best available control technology to minimize long-term impacts from emissions. The final EIS concludes that the impact of operation on air quality would be minor.⁷⁷

51. Construction of the project would result in temporary noise impacts, largely from construction equipment.⁷⁸ While the sound levels depend on several factors, including the type of equipment and duration of use, noise is not anticipated to exceed the Commission's noise criterion of a day-night sound level (L_{dn}) of 55 decibels on the A-weighted scale dBA, and Gulf Liquefaction proposes construction of sound barriers or installation of residential grade exhaust mufflers on equipment should noise levels cause a nuisance. Environmental Condition 18 requires Gulf Liquefaction monitor and report weekly on the noise impacts of pile driving on the nearest noise sensitive areas (NSA). Should any measured daytime noise impacts at the nearest NSAs exceed 10 dBA over the ambient

⁷³ *Id.* at 4-111.

⁷⁴ *Id.* at 4-123.

⁷⁵ *Id.* at 4-113.

⁷⁶ *Id.* at 1-22.

⁷⁷ *Id.* at 4-126.

⁷⁸ *Id.* at ES-7 – ES-8.

24-hour equivalent sound level (L_{eq}), Gulf Liquefaction must cease pile driving, file evidence of noise mitigation measures with the Commission, and request notification to resume. Further, Environmental Condition 19 requires Gulf Liquefaction to conduct all pile driving activities between 7 a.m. and 7 p.m. only.

52. Operation of the project would generate sound levels throughout the life of the project. However, an assessment of preliminary operational noise levels estimated a maximum day-night sound level of 47.0 dBA L_{dn} at NSA-1 (lower than our 55 dBA L_{dn} noise criterion) and a maximum noise level increase of 1.5 dBA L_{dn} at NSA-2.⁷⁹ To further monitor project noise, Environmental Condition 20 requires Gulf Liquefaction to file a full-load noise survey no later than 60 days after each liquefaction train is placed into service, and requires Gulf Liquefaction to reduce project noise should noise levels attributable to operation of the project exceed 55 dBA L_{dn} . Environmental Condition 21 also requires Gulf Liquefaction to file a full-load noise survey no later than 60 days after placing the entire terminal expansion into service. Noise impacts from intermittent flare operation would occur during startup, shutdown, and commissioning of the liquefaction facility as well as during an operational natural gas flaring event. Planned flare events would be below the 55 dBA L_{dn} . Unplanned flare events would produce an estimated L_{dn} of 56 to 61 dBA, but because of the infrequency of such events, the final EIS concludes that the resulting noise would not result in significant impact.

13. Greenhouse Gas Emissions

53. With respect to impacts from greenhouse gases (GHGs), the final EIS discusses the GHG emissions from construction and operation of the project, the climate change impacts in the region, and the regulatory structure for GHGs under the Clean Air Act.⁸⁰

54. The final EIS estimated that operation of the export project may result in an incremental increase in GHG emissions of up to 2,621,009 mtpy of carbon dioxide equivalent (CO₂e), and a total of 3,086,998 CO₂e GHG emissions including existing facility GHG emissions.⁸¹ To provide context to the direct and indirect⁸² GHG estimate,

⁷⁹ *Id.*

⁸⁰ *Id.* at 4-109 – 4-127, 4-228 – 4-230.

⁸¹ *Id.* at 4-112, 4-114, 4-121. CO₂e emissions in the final EIS are expressed in short tons, which have been converted to metric tons in this order so the emissions may be viewed in context with the EPA's *Inventory of U.S. Greenhouse Gas Emissions and Sinks*.

⁸² Indirect GHG emissions are from vessel traffic associated with the project.

according to the national net CO₂e emissions estimate in the EPA's *Inventory of U.S. Greenhouse Gas Emissions and Sinks* (EPA 2019), 5.743 billion metric tons of CO₂e were emitted at the national level in 2017 (inclusive of CO₂e sources and sinks).⁸³ The operational emissions of these facilities could potentially increase annual CO₂e emissions based on the 2017 levels by approximately 0.05 percent at the national level. Currently, there are no national targets to use as benchmarks for comparison and, similarly, Mississippi does not have GHG targets or benchmarks.⁸⁴

55. The final EIS included a qualitative discussion addressing various effects of climate change.⁸⁵ The final EIS acknowledges that the quantified GHG emissions from the construction and operation of the project will contribute incrementally to climate change.⁸⁶ Further, the Commission has previously concluded it could not determine a project's incremental physical impacts on the environment caused by GHG emissions.⁸⁷ The Commission has also previously concluded it could not determine whether a project's contribution to climate change would be significant.⁸⁸

14. Reliability and Safety

56. Commission staff assessed whether the proposed facilities would be able to operate safely, reliably, and securely. To do so, staff reviewed potential external impacts associated with the Gulf LNG Liquefaction Project based on the project location and conducted a technical review of the engineering design.⁸⁹ The final EIS recommends a number of mitigation measures to be implemented prior to site preparation, construction, commissioning, introduction of hazardous fluids, and commencement of service as well

⁸³ EPA, *Inventory of U.S. Greenhouse Gas Emissions and Sinks*, Docket No. 430-R-19-001, at ES-8 (2019), <https://www.epa.gov/sites/production/files/2019-04/documents/us-ghg-inventory-2019-main-text.pdf>.

⁸⁴ The national emissions reduction targets expressed in the EPA's Clean Power Plan and the Paris Climate Accord are pending repeal and withdrawal, respectively.

⁸⁵ Final EIS at 4-228 – 4-230.

⁸⁶ *Id.* at 4-230.

⁸⁷ *Dominion Transmission, Inc.*, 163 FERC ¶ 61,128, at PP 67–70 (2018) (LaFleur, Comm'r, dissenting in part; Glick, Comm'r, dissenting in part).

⁸⁸ *Id.*

⁸⁹ *Id.* at ES-8.

as throughout life of the facility. Based on this analysis, and with the incorporation of the recommended mitigation measures and oversight, staff concluded that the Gulf LNG Liquefaction Project's design would include acceptable layers of protection or safeguards that would reduce the risk of a potentially hazardous scenario from developing into an event that could impact the offsite public. These recommendations have been adopted as mandatory conditions and are included in the appendix to this order.⁹⁰

57. In addition, the USCG reviewed the waterfront portions of the proposed Gulf LNG Liquefaction Project and the associated LNG carrier traffic with regard to navigation safety and maritime security.⁹¹ On May 4, 2016, the USCG issued a Letter of Recommendation to the Commission indicating the Bayou Casotte turning basin, Bayou Casotte Channel, Lower Pascagoula Channel, Horn Island Pass Channel, and Pascagoula Bar Channel would be considered suitable for accommodating the type and frequency of LNG marine traffic associated with the project. If the LNG Facility is authorized and constructed, the facility would be subject to the USCG's inspection and enforcement program⁹² to ensure regulatory compliance.

58. Further, as described above,⁹³ PHMSA determined that the siting of the proposed LNG facilities complies with the federal safety standards contained in Part 193, Subpart B, of Title 49. The PHMSA LOD⁹⁴ summarizes PHMSA's evaluation of the hazard modeling results and endpoints used to establish exclusion zones, as well as its review of Gulf Liquefaction's evaluation of potential incidents and safety measures that could have a bearing on the safety of plant personnel and the surrounding public.

59. In addition, modifications to Environmental Conditions 39 and 52 have been made to be consistent with language in recently issued orders. However, the original intent of each environmental condition is the same. Furthermore, Environmental Condition 105 has been modified to clarify that radiant heat impacts should be mitigated for both pool and jet fires, and to clarify the requirements for active and passive mitigation for pool and jet fires. The intent of the modifications is to ensure that adequate mitigation is provided to reduce the potential for cascading failures and reduce the risk to the offsite public.

⁹⁰ See Environmental Conditions 30–127.

⁹¹ Final EIS at ES-8.

⁹² 33 C.F.R. §§ 105, 127 (2018).

⁹³ See *supra* P 18.

⁹⁴ See PHMSA's March 15, 2019 LOD.

60. Gulf Liquefaction must design, construct, operate, and maintain its proposed pipelines and aboveground facilities in accordance with the DOT Minimum Federal Safety Standards.⁹⁵ These regulations, which are intended to protect the public and to prevent natural gas facility accidents and failures, include specifications for material selection and qualification, minimum design requirements, and protection of pipelines from corrosion. Accordingly, the final EIS concludes that Gulf Liquefaction's compliance with the DOT's safety standards will ensure that Gulf Liquefaction's construction and operation of the facilities would not have a significant impact on public safety.⁹⁶

15. Cumulative Impacts

61. Commission staff considered the cumulative impacts of the Gulf LNG Liquefaction Project with other projects or actions within the geographic and temporal scope of the project.⁹⁷ As a part of that assessment, we identified existing projects, projects under construction, projects that are proposed or planned, and reasonably foreseeable projects, including the existing Terminal, non-jurisdictional facilities, currently operating and future oil and gas projects, land transportation projects, commercial developments, and dredging projects.⁹⁸ The final EIS concludes that the project would not significantly impact resources within cumulative impact geographic areas, but would, when considering nearby concurrent construction, result in increased workers, substantial traffic, and effects on public services in the area.⁹⁹

62.

16. Alternatives

63. The final EIS assessed the No-Action Alternative and alternatives for the Gulf LNG Liquefaction Project that could achieve the project's objectives, including system alternatives, alternative terminal expansion sites, alternative plot plans for the terminal expansion, supply dock alternatives, alternative CSA sites, alternative pipeline modification sites, an alternative power source for the refrigeration compressors, and an

⁹⁵ 49 C.F.R. § 192 (2018).

⁹⁶ Final EIS at 4-231 – 4-232.

⁹⁷ *Id.* at 4-196 – 4-197.

⁹⁸ *Id.* at 5-10.

⁹⁹ *Id.* at ES-9.

alternative power source for the terminal expansion.¹⁰⁰ Alternatives were evaluated and compared to the project to determine whether the alternatives were technically and economically feasible and practical, and to determine whether any alternatives offer a significant environmental advantage over the proposed project. The final EIS concludes that the alternatives proposed did not offer a significant environmental advantage over the proposed action and found that the proposed project, as modified by Commission staff's recommended mitigation measures appended as conditions to this order, was the preferred alternative.

17. Environmental Analysis Conclusion

64. We have reviewed the information and analysis contained in the final EIS regarding potential environmental effects of the Gulf LNG Liquefaction Project, as well as other information in the record. We are adopting the environmental recommendations in the final EIS, as modified herein, and include them as conditions in the appendix to this order. Compliance with the environmental conditions appended to our orders is integral to ensuring that the environmental impacts of approved projects are consistent with those anticipated by our environmental analyses. Thus, Commission staff carefully reviews all information submitted. Commission staff will only issue a notice to proceed with an activity when satisfied that the applicant has complied with all applicable conditions. We also note that the Commission has the authority to take whatever steps are necessary to ensure the protection of environmental resources during construction and operation of the project, including authority to impose any additional measures deemed necessary to ensure continued compliance with the intent of the conditions of the order, as well as the avoidance or mitigation of unforeseen adverse environmental impacts resulting from project construction and operation.¹⁰¹

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

66. 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 jurisdictional companies and local authorities. However, this does not mean that state and local agencies, through

¹⁰⁰ Final EIS at ES-9, 3-1 – 3-15.

¹⁰¹ See Environmental Condition 2.

application of state or local laws, may prohibit or unreasonably delay the construction or operation of facilities approved by this Commission.¹⁰²

VI. Conclusion

67. The Commission on its own motion received and made part of the record in this proceeding all evidence, including the application, as supplemented, and exhibits thereto, and all comments, and upon consideration of the record,

The Commission orders:

(A) Gulf Liquefaction is authorized under section 3 of the NGA to site, construct, and operate the proposed project in Jackson County, Mississippi near Pascagoula, Mississippi, as described and conditioned herein, and as fully described in Gulf Liquefaction's application and subsequent filings, including any commitments made therein, and subject to the environmental conditions contained in the Appendix of this order.

(B) Gulf Liquefaction's proposed project shall be constructed and made available for service within five years of the date of this order.

(C) Gulf Liquefaction shall notify the Commission's environmental staff by telephone and/or e-mail of any environmental noncompliance identified by other federal, state, or local agencies on the same day that such agency notifies Gulf Liquefaction. Gulf

¹⁰² See 15 U.S.C. § 717r(d) (2012) (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).

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Liquefaction shall file written confirmation of such notification with the Secretary of the Commission within 24 hours.

By the Commission. Commissioner LaFleur is concurring with a separate statement attached.

Commissioner Glick is dissenting with a separate statement attached.

(S E A L)

Nathaniel J. Davis, Sr.,
Deputy Secretary.

Environmental Conditions

As recommended in the final Environmental Impact Statement (EIS) and otherwise amended herein, this authorization includes the following conditions:

1. Gulf Liquefaction shall follow the construction procedures and mitigation measures described in its application, supplemental filings (including responses to staff data requests), and as identified in the EIS, unless modified by the Order. Gulf Liquefaction must:
 - a. request any modification to these procedures, measures, or conditions in a filing with the 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 OEP **before using that modification.**
2. The Director of OEP 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 include:
 - 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 assure 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.
3. **Prior to any construction,** Gulf Liquefaction shall file affirmative statements with the Secretary, certified by a senior company official, that all company personnel, EIs, and contractor personnel will be informed of the EIs' 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 alignment sheets. **As soon as they are available, and before the start of construction,** Gulf Liquefaction shall file with the Secretary any revised detailed survey alignment maps/sheets at a scale not smaller than 1:6,000 with station

positions 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 alignment maps/sheets.

5. Gulf Liquefaction shall file with the Secretary detailed alignment maps/sheets and aerial photographs at a scale not smaller than 1:6,000 identifying all facility relocations, and staging areas, construction support areas, new access roads, and other areas that would be used or disturbed and have not been previously identified in filings with the Secretary. Approval for each of these areas must be explicitly 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. All areas 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, & Maintenance Plan* and/or minor field realignments per landowner needs and requirements that do not affect other landowners or sensitive environmental areas such as wetlands.

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

- a. implementation of cultural resources mitigation measures;
 - b. implementation of endangered, threatened, or special concern species mitigation measures;
 - c. recommendations by state regulatory authorities; and
 - d. agreements with individual landowners that affect other landowners or could affect sensitive environmental areas.
6. **At least 60 days before construction begins**, Gulf Liquefaction shall file its Implementation Plan with the Secretary, for review and written approval by the Director of OEP. Gulf Liquefaction must file revisions to its plans as schedules change. The plans shall identify:
 - a. how Gulf Liquefaction 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 Gulf Liquefaction 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 on-site construction and inspection personnel;
- c. the number of Environmental Inspectors (EIs) assigned per spread and/or facility, and how Gulf Liquefaction 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 materials;
 - e. the location and dates of the environmental compliance training and instructions Gulf Liquefaction 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 Gulf Liquefaction's organization having responsibility for compliance;
 - g. the procedures (including use of contract penalties) Gulf Liquefaction will follow if noncompliance occurs; and
 - h. for each discrete facility, a Gantt or PERT chart (or similar Project scheduling diagram), and dates for:
 - 1) the completion of all required surveys and reports;
 - 2) the environmental compliance training of on-site personnel;
 - 3) the start of construction; and
 - 4) the start and completion of restoration.
7. Gulf Liquefaction shall employ at least one EI for the Terminal Expansion. The EI shall be:
- a. responsible for monitoring and ensuring compliance with all mitigation measures required by the Order and other grants, permits, certificates, or authorizing 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, Gulf Liquefaction shall file updated status reports with the Secretary on a **monthly** basis for the Terminal Expansion 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 Gulf Liquefaction's efforts to obtain the necessary federal authorizations;
 - b. Project schedule including the current construction status at the Terminal Expansion site and at the Pipeline Modification sites, work planned for the following reporting period, and any schedule changes for 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 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 Gulf Liquefaction from other federal, state, or local permitting agencies concerning instances of noncompliance, and Gulf Liquefaction's response.
9. Gulf Liquefaction must receive written authorization from the Director of OEP **before commencing construction of any Project facilities**. To obtain such authorization, Gulf Liquefaction must file with the Secretary documentation that it has received all applicable authorizations required under federal law (or evidence of waiver thereof).
10. Gulf Liquefaction must receive written authorization from the Director of OEP **prior to introducing hazardous fluids into the Terminal Expansion 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. Gulf Liquefaction must receive written authorization from the Director of OEP **before placing the Terminal Expansion into service**. Such authorization will only be granted following a determination that the facilities have been constructed in accordance with FERC approval, can be expected to operate safely as designed, and the rehabilitation and restoration of the areas affected by the Terminal Expansion are proceeding satisfactorily.
12. **Within 30 days of placing the authorized facilities in service**, Gulf Liquefaction 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 of the conditions of the Order Gulf Liquefaction 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**, Gulf Liquefaction shall file with the Secretary a commitment to restore the wetlands at construction support area 5 to pre-construction conditions following construction in accordance with Sections VI.C.2 and VI.C.5 of the Commission's *Wetland and Waterbody Construction and Mitigation Procedures*. (section 4.4.2.2)
14. **Prior to construction**, Gulf Liquefaction shall file with the Secretary its final *Migratory Bird Impact Assessment and Conservation Plan* developed in consultation with the FWS. (section 4.6.1.4)
15. Gulf Liquefaction shall **not begin construction activities until**:
 - a. FERC staff receives comments from the NMFS regarding the proposed action;
 - b. FERC staff completes ESA Section 7 consultation with the NMFS; and
 - c. Gulf Liquefaction has received written notification from the Director of OEP that construction or use of mitigation may begin. (section 4.7.1)
16. **Prior to construction**, Gulf Liquefaction shall transplant the Carolina grasswort population along the northern edge of the existing North Marsh Mitigation Area to a similar habitat using protocols determined in consultation with the Mississippi Museum of Natural Science. (section 4.7.2.5)

17. **Prior to construction**, Gulf Liquefaction shall file documentation of concurrence from the Mississippi Department of Marine Resources that the Project is consistent with the Mississippi Coastal Zone Management Program. (*section 4.8.7*)
18. **Following the start of pile-driving activities**, Gulf Liquefaction shall monitor daytime pile-driving and file **weekly** data reports with the Secretary that identify the noise impact on the nearest noise-sensitive area (NSAs). If any measured daytime noise impacts in maximum sound level (L_{max}) at the nearest NSAs are greater than 10 A-weighted sound level (dBA) over the ambient 24-hour equivalent sound level (L_{eq}), Gulf Liquefaction 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 4.11.2.4*)
19. Gulf Liquefaction shall conduct all pile-driving activities only between the hours of 7 a.m. and 7 p.m. **throughout the duration of construction**. (*section 4.11.2.4*)
20. Gulf Liquefaction shall file a full power load noise survey with the Secretary for the Terminal Expansion **no later than 60 days** after each liquefaction train is placed into service. If the noise attributable to operation of the equipment at the Terminal Expansion exceeds a day-night sound level (L_{dn}) of 55 dBA at the nearest NSA, **within 60 days** Gulf Liquefaction 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. Gulf Liquefaction 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 4.11.2.5*)
21. Gulf Liquefaction shall file a noise survey with the Secretary **no later than 60 days** after placing the entire Terminal Expansion into service. If a full load condition noise survey is not possible, Gulf Liquefaction shall provide an interim survey at the maximum possible horsepower load **within 60 days** of placing the Terminal Expansion into service and provide the full load survey **within 6 months**. If the noise attributable to operation of the equipment at the Terminal Expansion exceeds an L_{dn} of 55 dBA at the nearest NSA under interim or full horsepower load conditions, Gulf Liquefaction 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. Gulf Liquefaction 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 4.11.2.5*)

22. **Prior to initial site preparation**, Gulf Liquefaction shall file with the Secretary, for review and written approval by the Director of OEP, supplemental geotechnical investigation for the remaining area of the flare stack, refrigerant storage area, utility area, Trains 1 and 2, main substation, plant open storage area, new access road, maintenance building, and control/admin building areas. The supplemental shall also include a report with a geotechnical investigation location plan with spacing of no more than 300 feet and field sampling methods and laboratory tests that are at least as comprehensive as the existing geotechnical investigations for the existing Terminal. In addition, the geotechnical investigations and report must demonstrate soil modifications and foundation designs will be similar to areas already investigated. (*section 4.12.1.5*)
23. **Prior to initial site preparation**, Gulf Liquefaction shall file with the Secretary the information of the upper limit for total settlement for large flexible foundations and the maximum total edge settlement at the proposed Project area. (*section 4.12.1.5*)
24. **Prior to initial site preparation**, Gulf Liquefaction shall file with the Secretary a comprehensive list of equipment and structures that would be supported by deep foundations and a complete list of insensitive structures that would be supported by shallow foundations. (*section 4.12.1.5*)
25. **Prior to initial site preparation**, Gulf Liquefaction shall file with the Secretary documentation demonstrating liquefied natural gas (LNG) marine vessels will be no higher than existing ship traffic or documentation demonstrating it has received a determination of no hazard (with or without conditions) by U.S. Department of Transportation (DOT) Federal Aviation Administration (FAA) for LNG marine vessels that may exceed the height requirements in 14 CFR 77.9. (*section 4.12.1.5*)
26. **Prior to initial site preparation**, Gulf Liquefaction shall file with the Secretary documentation demonstrating it has received a determination of no hazard (with or without conditions) by DOT FAA for all temporary construction equipment that exceed the height requirements in 14 CFR 77.9. (*section 4.12.1.5*)
27. **Prior to construction of final design**, Gulf Liquefaction shall file with the Secretary consultation from DOT Pipeline and Hazardous Materials Safety Administration (PHMSA) staff as to whether the current provisions for detection and shutdown will meet the requirements of 49 CFR 193 to prevent the discharge of LNG through the water removal systems in the impoundments. (*section 4.12.1.5*)
28. **Prior to construction of final design**, Gulf Liquefaction shall file with the Secretary the following information, stamped and sealed by the professional engineer-of-record, registered in Mississippi:
 - a. site preparation drawings and specifications;

- b. LNG Terminal structures and foundation design drawings and calculations (including prefabricated and field constructed structures);
- c. seismic specifications for procured Seismic Category I equipment prior to issuing of requests for quotations; and
- d. quality control procedures to be used for civil/structural design and construction.

In addition, Gulf Liquefaction shall file, in its *Implementation Plan*, the schedule for producing this information. (*section 4.12.1.5*)

29. **Prior to commencement of service**, Gulf Liquefaction shall file with the Secretary a monitoring and maintenance plan, stamped and sealed by the professional engineer-of-record registered in Mississippi, for the perimeter berm which ensures the crest elevation relative to mean sea level will be maintained for the life of the facility considering berm settlement, subsidence, and sea level rise. (*section 4.12.1.5*)

Conditions 30 through 127 shall apply to the liquefaction facilities at the Gulf Liquefaction Terminal. Information pertaining to the following 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 recommendation. 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 CFR 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 off-site emergency response, procedures for public notification and evacuation, and construction and operating reporting requirements would be subject to public disclosure. All information shall be filed **a minimum of 30 days** before approval to proceed is requested.

30. **Prior to initial site preparation**, Gulf Liquefaction shall file an overall Project schedule, which includes the proposed stages of the commissioning plan. (*section 4.12.1.5*)
31. **Prior to initial site preparation**, Gulf Liquefaction shall file quality assurance and quality control procedures for construction activities. (*section 4.12.1.5*)
32. **Prior to initial site preparation**, Gulf Liquefaction shall file procedures for controlling access during construction. (*section 4.12.1.5*)
33. **Prior to initial site preparation**, Gulf Liquefaction shall file an updated *Emergency Response Plan* to include the Project facilities. (*section 4.12.1.5*)

34. **Prior to initial site preparation**, Gulf Liquefaction shall file an updated 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. *(section 4.12.1.5)*
35. **Prior to construction of final design**, Gulf Liquefaction shall file change logs that list and explain any changes made from the front-end-engineering-design (FEED) provided in Gulf Liquefaction'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. *(section 4.12.1.5)*
36. **Prior to construction of final design**, Gulf Liquefaction shall file information/revisions pertaining to Gulf Liquefaction's response numbers 15, 16, 17, 19, 43 from its March 1, 2016 filing, response numbers 20, 23, 41 from its April 5, 2016 filing, response 61 from its May 10, 2016 filing, response numbers 18, 24, 26, 35, 36, 37, 42, 48, 52, 56, 66, 67, 70, 71, 72, 74, 80, 91 from its October 7, 2016 filing which indicated features to be included or considered in the final design. *(section 4.12.1.5)*
37. **Prior to construction of final design**, Gulf Liquefaction shall file a plot plan of the final design showing all major equipment, structures, buildings, and impoundment systems. *(section 4.12.1.5)*
38. **Prior to construction of final design**, Gulf Liquefaction shall file three-dimensional plant drawings to confirm plant layout for maintenance, access, egress, and congestion. *(section 4.12.1.5)*
39. **Prior to construction of final design**, Gulf Liquefaction 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 4.12.1.5)*

40. **Prior to construction of final design**, Gulf Liquefaction shall file a list of all codes and standards and the final specification document number where they are referenced. *(section 4.12.1.5)*
41. **Prior to construction of final design**, Gulf Liquefaction shall file up-to-date process flow diagrams (PFDs) and piping and instrumentation diagram (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 4.12.1.5)*
42. **Prior to construction of final design**, Gulf Liquefaction shall file a car seal philosophy document and a list of all car-sealed and locked valves consistent with the P&IDs. *(section 4.12.1.5)*
43. **Prior to construction of final design**, the engineering, procurement, and construction contractor shall verify that the recommendations from the FEED Hazard Identification are complete and consistent with the requirements of the final design as determined by the engineering, procurement, and construction contractor. *(section 4.12.1.5)*
44. **Prior to construction of final design**, Gulf Liquefaction shall file a hazard and operability review 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 4.12.1.5)*
45. **Prior to construction of final design**, Gulf Liquefaction shall provide P&IDs, specifications, and procedures that clearly show and specify the tie-in details required to safely connect the Terminal Expansion to the existing facility. *(section 4.12.1.5)*

46. **Prior to construction of final design**, Gulf Liquefaction shall file process design information for the thermal oxidizer system to include drawings, process simulation results, and calculations to ensure the thermal oxidizer is sized to remove up to 2 percent carbon dioxide from the feed gas streams. *(section 4.12.1.5)*
47. **Prior to construction of final design**, Gulf Liquefaction shall include a low temperature alarm and shutdown system on the piping connecting the overhead and bottoms of the deethanizer to isolate and protect the piping from potential cryogenic conditions. *(section 4.12.1.5)*
48. **Prior to construction of final design**, Gulf Liquefaction shall file equipment datasheets and vendor drawings for the MR/PR compressor gas turbine emission control system. *(section 4.12.1.5)*
49. **Prior to construction of final design**, Gulf Liquefaction 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 4.12.1.5)*
50. **Prior to construction of final design**, Gulf Liquefaction shall file cause-and-effect matrices for the process instrumentation, fire and gas detection system, and Emergency Shut-down (ESD) system for review and approval. The cause-and-effect matrices shall include alarms and shutdown functions, details of the voting and shutdown logic, and set points. *(section 4.12.1.5)*
51. **Prior to construction of final design**, Gulf Liquefaction shall file an evaluation of ESD valve closure times. The evaluation shall account for the time to detect an upset or hazardous condition, notify plant personnel, and close the ESD valve. *(section 4.12.1.5)*
52. **Prior to construction of final design**, Gulf Liquefaction 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 4.12.1.5)*
53. **Prior to construction of final design**, Gulf Liquefaction 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 4.12.1.5)*
54. **Prior to construction of final design**, Gulf Liquefaction shall specify that all drains from high pressure hazardous fluid systems are to be equipped with double isolation and bleed valves. *(section 4.12.1.5)*

55. **Prior to construction of final design**, Gulf Liquefaction shall file electrical area classification drawings. The drawings shall demonstrate compliance with National Fire Protection Association (NFPA) 59A, NFPA 70, NFPA 497, American Petroleum Institute (API) 500, or equivalent, including but not limited to, illustrating or denoting Class 1 Division 1 and Division 2, as applicable, at the refrigerant truck transfer connection, diesel truck transfer connection, vents and reliefs. In addition, LNG and other fluids that would behave as dense gases shall be designated as heavier than air, LNG and other fluids that have a vapor pressure exceeding 40 psia at 100°F shall be designated as highly volatile liquids, and heat transfer fluids that would be processed above their flash point (e.g., near the hot oil heater) shall be designated as hazardous classification areas. *(section 4.12.1.5)*
56. **Prior to construction of final design**, Gulf Liquefaction 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 NFPA 59A (2001). *(section 4.12.1.5)*
57. **Prior to construction of final design**, Gulf Liquefaction 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 4.12.1.5)*
58. **Prior to construction of final design**, Gulf Liquefaction shall include layout and design specifications of the pig trap, inlet separation and liquid disposal, inlet/send-out meter station, and pressure control. *(section 4.12.1.5)*
59. **Prior to construction of final design**, Gulf Liquefaction shall specify that piping and equipment that may be cooled with liquid nitrogen is to be designed for liquid nitrogen temperatures, with regard to allowable movement and stresses. *(section 4.12.1.5)*
60. **Prior to construction of final design**, Gulf Liquefaction shall provide a stress and structural analysis of the existing LNG storage tank piping and supports/platform to ensure they are adequately designed for the higher rated in-tank pump discharge flow rates and modifications. *(section 4.12.1.5)*
61. **Prior to construction of final design**, Gulf Liquefaction shall file procedures for replacing, inspecting and testing the proposed in-tank pump column flanges and discharge piping. *(section 4.12.1.5)*

62. **Prior to construction of final design**, Gulf Liquefaction shall file detailed drawing(s) and sizing calculations to verify the existing steel collection pan under the in-tank pump platform would be adequately sized to contain the maximum LNG flowrate from the higher rated in-tank pumps. *(section 4.12.1.5)*
63. **Prior to construction of final design**, Gulf Liquefaction shall file a process narrative with accompanying detailed drawings for direct loading of LNG to a marine vessel from the rundown pumps. *(section 4.12.1.5)*
64. **Prior to construction of final design**, Gulf Liquefaction shall file a process narrative with accompanying detailed drawings for the boil-off gas (BOG) system, including valving and piping to allow the BOG compressors to be pre-cooled during a standby condition. *(section 4.12.1.5)*
65. **Prior to construction of final design**, Gulf Liquefaction shall file results of BOG compressor dynamic simulation to ensure the anti-surge valve speed and capacity is designed to prevent surge or reverse flow through the compressor during start-up and shutdown conditions. *(section 4.12.1.5)*
66. **Prior to construction of final design**, Gulf Liquefaction 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 4.12.1.5)*
67. **Prior to construction of final design**, Gulf Liquefaction shall provide sizing calculations for pressure relief valve (16-PRV-1274) based on a full flow valve failure to provide adequate protection for the propane transfer drum in the event of back pressure in the purge gas line. *(section 4.12.1.5)*
68. **Prior to construction of final design**, Gulf Liquefaction shall include a relief valve study to evaluate the existing LNG storage tank vacuum relief valves to ensure they provide adequate protection based on the higher capacity in-tank pumps operating at full capacity. *(section 4.12.1.5)*
69. **Prior to construction of final design**, Gulf Liquefaction shall specify fixed toxic gas detection to detect hydrogen sulfide (H₂S) releases from loss of containment from the acid gas piping system and potential release points (i.e., vents, relief valves, vent stacks, and thermal oxidizer stack). *(section 4.12.1.5)*
70. **Prior to construction of final design**, Gulf Liquefaction shall file three-dimensional model and hazard modeling results of acid gas vents and thermal oxidizer to demonstrate they are located safely away from work areas. *(section 4.12.1.5)*

71. **Prior to construction of final design**, Gulf Liquefaction shall provide the procedures for pressure/leak tests which address the requirements of American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (BPVC) Section VIII and ASME B31.3. *(section 4.12.1.5)*
72. **Prior to construction of final design**, Gulf Liquefaction 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 4.12.1.5)*
73. **Prior to construction of final design**, Gulf Liquefaction shall file design and specifications for the hot oil distribution and discharge piping that safeguard them from temperature above their maximum design temperature. *(section 4.12.1.5)*
74. **Prior to construction of final design**, Gulf Liquefaction shall evaluate the high pressure alarm set point of (18-PAH 1001A) for the hot oil system and verify that it annunciates when the output from the pressure controller (18-PIC 1001A) signals valve (18-PV 1001A) to open. *(section 4.12.1.5)*
75. **Prior to construction of final design**, Gulf Liquefaction shall specify that all ESD valves are to be equipped with open and closed position switches connected to the Distributed Control System (DCS)/ safety instrument system (SIS). *(section 4.12.1.5)*
76. **Prior to construction of final design**, Gulf Liquefaction shall file a drawing showing the location of the ESD buttons. ESD buttons shall be easily accessible, conspicuously labeled, and located in an area which would be accessible during an emergency. *(section 4.12.1.5)*
77. **Prior to construction of final design**, Gulf Liquefaction shall file fencing drawings. The fencing drawings shall provide details of fencing that demonstrates it would restrict and deter access around the entire facility and has a clearance from exterior features (e.g., power lines, trees, etc.) and from interior features (e.g., piping, equipment, buildings, etc.) that does not allow for the fence to be overcome. *(section 4.12.1.5)*
78. **Prior to construction of final design**, Gulf Liquefaction shall file drawings and specifications for protecting transfer piping, firewater equipment (e.g. hydrants, monitors, manifolds, etc.) pumps, and compressors, etc. to ensure that they are located away from roadway or protected from inadvertent damage from vehicles. *(section 4.12.1.5)*

79. **Prior to construction of final design**, Gulf Liquefaction shall file drawings and specifications for crash rated vehicle barriers at each facility entrance for access control. (*section 4.12.1.5*)
80. **Prior to construction of final design**, Gulf Liquefaction shall file security camera and intrusion detection drawings. The security camera drawings shall show the location, areas covered, and features of the camera (fixed, tilt/pan/zoom, motion detection alerts, low light, mounting height, etc.) to verify camera coverage of the entire perimeter with redundancies and cameras interior to the facility that would enable rapid monitoring of the LNG plant, including coverage within pretreatment areas, within liquefaction areas, within truck transfer areas, within marine transfer areas, and buildings. The drawings shall show or note the location of the intrusion detection to verify it covers the entire perimeter of the LNG plant. (*section 4.12.1.5*)
81. **Prior to construction of final design**, Gulf Liquefaction shall file lighting drawings. The lighting drawings shall show the location, elevation, type of light fixture, and lux levels of the lighting system and shall be in accordance with the electrical system specification and referenced API 540 and provide illumination along the perimeter of the facility and along paths/roads of access and egress to facilitate security monitoring and emergency response operations. (*section 4.12.1.5*)
82. **Prior to construction of final design**, Gulf Liquefaction 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 84.00.07 or equivalent methodologies that would demonstrate 90 percent or more of releases (unignited and ignited) that could result in an off-site or cascading impact that could extend off-site would be detected by two or more detectors and result in isolation and de-inventory within 10 minutes. The 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 4.12.1.5*)
83. **Prior to construction of final design**, Gulf Liquefaction shall file spill containment system drawings with dimensions and slopes of curbing, trenches, impoundments, and capacity calculations considering any foundations and equipment within impoundments. 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 from the largest vessel, or otherwise demonstrate that providing spill containment would not significantly reduce the flammable vapor dispersion or radiant heat consequences of a spill. *(section 4.12.1.5)*
84. **Prior to construction of final design**, Gulf Liquefaction shall file a building siting assessment to ensure plant buildings that are occupied or critical to the safety of the LNG plant are adequately protected from potential hazards involving fires and vapor cloud explosions. *(section 4.12.1.5)*
85. **Prior to construction of final design**, Gulf Liquefaction shall specify the material of construction for the curbed areas, trenches, and impoundments as insulated concrete or otherwise demonstrate insulated concrete would not significantly reduce the flammable vapor dispersion or radiant heat consequences of a spill. *(section 4.12.1.5)*
86. **Prior to construction of final design**, Gulf Liquefaction shall file the details of the wastewater removal systems for all hazardous liquid impoundments. *(section 4.12.1.5)*
87. **Prior to construction of final design**, Gulf Liquefaction 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 4.12.1.5)*
88. **Prior to construction of final design**, Gulf Liquefaction 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 and demonstrate potential releases resulting in an off-site impact could be detected by at least two detectors to allow for shutdown in less than 10 minutes. The list shall include the instrument tag number, type and location, alarm indication locations, and shutdown functions of the hazard detection equipment. *(section 4.12.1.5)*
89. **Prior to construction of final design**, Gulf Liquefaction shall file an analysis of the localized hazards to operators from a potential liquid nitrogen release and shall also provide low oxygen detectors or other mitigation that may be prudent. *(section 4.12.1.5)*
90. **Prior to construction of final design**, Gulf Liquefaction shall file an analysis of the localized hazards from a potential hydrogen sulfide release and shall also provide toxic detectors for hydrogen sulfide releases from the acid gas piping system and potential release points (i.e., vents, relief valves, vent stacks, and thermal oxidizer stack). *(section 4.12.1.5)*

91. **Prior to construction of final design**, Gulf Liquefaction shall file an analysis of the off gassing of hydrogen in battery rooms and ventilation calculations that limit concentrations below the lower flammability limits (e.g., 25 percent 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 4.12.1.5*)
92. **Prior to construction of final design**, Gulf Liquefaction shall file the details of a plant-wide ESD button, including details of the sequencing and reliability of the shutdown. (*section 4.12.1.5*)
93. **Prior to construction of final design**, Gulf Liquefaction shall evaluate the terminal alarm system and external notification system design to ensure the location of the terminal alarms and other fire and evacuation alarm notification devices (e.g., audible/visual beacons and strobes) will provide adequate warning at the terminal and external off-site areas in the event of an emergency. (*section 4.12.1.5*)
94. **Prior to construction of final design**, Gulf Liquefaction 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 shut down any combustion or heating ventilation and air conditioning equipment whose continued operation could add to or sustain an emergency. (*section 4.12.1.5*)
95. **Prior to construction of final design**, Gulf Liquefaction shall file an evaluation of the voting logic and voting degradation for hazard detectors. (*section 4.12.1.5*)
96. **Prior to construction of final design**, Gulf Liquefaction 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, butane, ethane, and condensate. (*section 4.12.1.5*)
97. **Prior to construction of final design**, Gulf Liquefaction 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 H₂S. (*section 4.12.1.5*)
98. **Prior to construction of final design**, Gulf Liquefaction shall file a drawing that includes smoke detection in occupied buildings. (*section 4.12.1.5*)
99. **Prior to construction of final design**, Gulf Liquefaction shall file a drawing that includes hazard detection equipment suitable to detect high temperatures and

smoldering combustion products in electrical buildings and control room buildings.
(*section 4.12.1.5*)

100. **Prior to construction of final design**, Gulf Liquefaction 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 by tag number and elevation of all fixed dry-chemical system in accordance with NFPA 17, and wheeled and hand-held extinguishers demonstrate travel distances are along normal paths of access and egress and in compliance with NFPA 10. The list shall include the equipment tag number, manufacturer and model, elevations, agent type, agent capacity, discharge rate, automatic and manual remote signals initiating discharge of the units and equipment covered. (*section 4.12.1.5*)
101. **Prior to construction of final design**, Gulf Liquefaction shall file a drawing that includes clean agent systems in the instrumentation buildings. (*section 4.12.1.5*)
102. **Prior to construction of final design**, Gulf Liquefaction shall file drawings and specifications for the structural passive protection systems to protect equipment and supports from cryogenic releases. (*section 4.12.1.5*)
103. **Prior to construction of final design**, Gulf Liquefaction shall file calculations or test results for the structural passive protection systems to protect equipment and supports from cryogenic releases. (*section 4.12.1.5*)
104. **Prior to construction of final design**, Gulf Liquefaction shall file drawings and specifications for the structural passive protection systems to protect equipment and supports from pool and jet fires. (*section 4.12.1.5*)
105. **Prior to construction of final design**, Gulf Liquefaction shall file a detailed quantitative analysis to demonstrate that adequate mitigation will be provided for each significant component within the 4,000 British thermal units per square foot per hour (BTU/ft²-hr) zone from pool and jet fires that could cause failure of the component. Trucks at the truck transfer station shall be included in the analysis. A combination of passive and active protection for pool fires and passive and/or active protection for jet fires shall be provided and demonstrate the effectiveness and reliability. Effectiveness of passive mitigation shall be supported by calculations 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 to mitigate the heat absorbed by the vessel. (*section 4.12.1.5*)
106. **Prior to construction of final design**, Gulf Liquefaction shall file an evaluation and associated specifications and drawings of how it will prevent cascading damage

of transformers (e.g., fire walls or spacing) in accordance with NFPA 850 or equivalent. (*section 4.12.1.5*)

107. **Prior to construction of final design**, Gulf Liquefaction shall file facility plan drawings showing the proposed location of the firewater and any foam systems. Plan drawings shall clearly show the location of firewater and foam piping, post indicator valves, and the location and area covered by, each monitor, hydrant, hose, water curtain, deluge system, foam system, water-mist system, and sprinkler. The drawings shall demonstrate that each process area, fire zone, or other sections of piping with several users can be isolated with post indicator valves and that hydrants and monitors provide enough firewater flow to reach and cool exposed surfaces subjected to a fire based on the throw distance, design density, and surface areas that are needed to be cooled taking into account obstructions. Drawings shall also include P&IDs of the firewater and foam systems. (*section 4.12.1.5*)
108. **Prior to construction of final design**, Gulf Liquefaction shall file documentation demonstrating the firewater storage volume for its facilities has minimum reserved capacity for its most demanding firewater scenario plus 1,000 gpm for no less than 2 hours, including the fire water required for foam generation. The firewater storage shall also demonstrate compliance with NFPA 22, or demonstrate how API 650 provides an equivalent, or better level of safety. (*section 4.12.1.5*)
109. **Prior to construction of final design**, Gulf Liquefaction shall file firewater hydraulic calculations to demonstrate that the firewater system is capable of delivering 100 percent of the design rate for at least 2 hours. (*section 4.12.1.5*)
110. **Prior to construction of final design**, Gulf Liquefaction shall specify that the firewater flow test meter is equipped with a transmitter and that a pressure transmitter is installed upstream of the flow transmitter. The flow transmitter and pressure transmitter shall be connected to the DCS and recorded. (*section 4.12.1.5*)
111. **Prior to commissioning**, Gulf Liquefaction shall file a detailed schedule for commissioning through equipment start-up. The schedule shall include milestones for all procedures and tests to be completed: prior to introduction of hazardous fluids and during commissioning and start-up. Gulf Liquefaction shall file documentation certifying that each of these milestones has been completed before authorization to commence the next phase of commissioning and start-up will be issued. (*section 4.12.1.5*)
112. **Prior to commissioning**, Gulf Liquefaction shall file detailed plans and procedures for: testing the integrity of on-site mechanical installation; functional tests; introduction of hazardous fluids; operational tests; and placing the equipment into service. (*section 4.12.1.5*)

113. **Prior to commissioning**, Gulf Liquefaction 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 4.12.1.5)*
114. **Prior to commissioning**, Gulf Liquefaction shall file the procedures for pressure/leak tests which address the requirements of ASME BPVC Section VIII and ASME B31.3. In addition, Gulf Liquefaction shall file a line list of pneumatic and hydrostatic test pressures. *(section 4.12.1.5)*
115. **Prior to commissioning**, Gulf Liquefaction shall file updated 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 4.12.1.5)*
116. **Prior to commissioning**, Gulf Liquefaction shall tag all equipment, instrumentation, and valves in the field, including drain valves, vent valves, main valves, and car-sealed or locked valves. *(section 4.12.1.5)*
117. **Prior to commissioning**, Gulf Liquefaction 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 4.12.1.5)*
118. **Prior to introduction of hazardous fluids**, Gulf Liquefaction shall complete and document all pertinent tests (Factory Acceptance Tests, Site Acceptance Tests, Site Integration Tests) associated with the DCS and SIS that demonstrates full functionality and operability of the system. *(section 4.12.1.5)*
119. **Prior to introduction of hazardous fluids**, Gulf Liquefaction shall file an updated alarm management program to ensure effectiveness of operator response to alarms. *(section 4.12.1.5)*
120. **Prior to introduction of hazardous fluids**, Gulf Liquefaction 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 4.12.1.5)*
121. **Prior to introduction of hazardous fluids**, Gulf Liquefaction shall complete and document a pre-start-up safety review to ensure that installed equipment meets the design and operating intent of the facility. The pre-start-up 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 4.12.1.5*)

122. Gulf Liquefaction 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 the first LNG, Gulf Liquefaction 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 4.12.1.5*)
123. **Prior to commencement of service**, Gulf Liquefaction shall file a request for written authorization from the Director of OEP. Such authorization would only be granted following a determination by the U.S. 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 Gulf Liquefaction or other appropriate parties. (*section 4.12.1.5*)
124. **Prior to commencement of service**, Gulf Liquefaction shall notify the FERC staff of any proposed revisions to the security plan and physical security of the plant. (*section 4.12.1.5*)
125. **Prior to commencement of service**, Gulf Liquefaction 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 4.12.1.5*)
126. **Prior to commencement of service**, Gulf Liquefaction shall file plans for any preventative and predictive maintenance program that performs periodic or continuous equipment condition monitoring. (*section 4.12.1.5*)
127. **Prior to commencement of service**, Gulf Liquefaction shall file updated procedures for off-site contractors' responsibilities, restrictions, and limitations and for supervision of these contractors by Gulf Liquefaction staff. (*section 4.12.1.5*)

In addition, conditions 128 through 131 shall apply throughout the life of the facility.

128. The facilities 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, Gulf Liquefaction 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 4.12.1.5*)
129. **Semi-annual** operational reports shall be filed with the Secretary to identify changes in design and operating conditions; abnormal operating experiences; activities (e.g., marine vessel 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 off-site 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 facilities. (*section 4.12.1.5*)
130. In the event the temperature of any region of the LNG storage container, including any secondary containment, and imbedded pipe supports, becomes less than the minimum specified operating temperature for the material, the Commission shall be notified **within 24 hours** and procedures for corrective action shall be specified. (*section 4.12.1.5*)
131. Significant non-scheduled events, including safety-related incidents (e.g., LNG, heavier hydrocarbons, 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 emergency response 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 facilities that contains, controls, or processes hazardous fluids;
- g. any crack or other material defect that impairs the structural integrity or reliability of facilities that contain, control, or process hazardous fluids;
- h. any malfunction or operating error that causes the pressure of a pipeline or LNG facility that contains or processes hazardous fluids to rise above its maximum allowable operating pressure (or working pressure for facilities) plus the build-up allowed for operation of pressure-limiting or control devices;
- i. a leak in a 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 a facility that contains or processes hazardous fluids;
- l. safety-related incidents from hazardous fluids transportation occurring at or en route to and from the facilities; 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 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 facilities 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 4.12.1.5*)

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Gulf LNG Liquefaction Company, LLC; Gulf LNG Energy, LLC; Gulf LNG Pipeline, LLC Docket No. CP15-521-000

(Issued July 16, 2019)

LaFLEUR, Commissioner, *concurring*:

1. Today's order grants authorization to Gulf LNG Liquefaction Company, LLC, and Gulf LNG Energy, LLC (collectively Gulf LNG) pursuant to section 3 of the Natural Gas Act (NGA),¹ to site, construct and operate new facilities for the export of liquefied natural gas (LNG) at the existing import terminal in Jackson County, Mississippi (Gulf LNG Liquefaction Project).² The Commission also authorizes Gulf LNG Pipeline, LLC, pursuant to section 7 of the NGA,³ to modify the existing pipeline to service to the export terminal. For the reasons discussed below, I concur.

2. As in prior LNG orders, I appreciate that the Commission has disclosed the direct GHG emissions of the Gulf LNG Liquefaction Project and has provided important context by comparing them to the national GHG emissions inventory.⁴ In prior concurrences, I noted my concerns about the Commission's failure to assess the

¹ 15 U.S.C. § 717b (2012).

² *Gulf LNG Liquefaction Company, LLC*. 168 FERC ¶ 61,020 (2019) (Certificate Order). In 2007, the Commission, under section 3 of the NGA, authorized Gulf LNG Energy, LLC to site, construct, and operate an LNG important terminal. *Gulf LNG Energy, LLC*, 118 FERC ¶ 61,128 (2007).

³ 15 U.S.C. § 717f(c) (2012).

⁴ Certificate Order, 168 FERC ¶ 61,020 at P 54; Environmental Impact Statement (EIS) at Tables 4.11 1-3 (existing terminal), 4.11 1-4 (terminal expansion), and 4.11 1-9 (LNH carrier and support vessel). The EIS also discloses the direct GHG emissions from the construction of the project. EIS at Tables 4.11 1-5, 4.11 1-6, and 4.11 1-7. *See Sierra Club v. FERC*, 867 F.3d 1357, 1374 (D.C. Cir. 2017) (*Sabal Trail*) ("Quantification would permit the agency to compare the emissions from this project to emissions from other projects, to total emissions from the state or the region, or to regional or national emissions-control goals.").

significance of the GHG emissions.⁵ I continue to have the same concerns in this case and believe that the Commission could develop a framework for assessing significance, if it chose to do so. I expect that the court will continue to require the Commission to expand its climate analysis.⁶

3. Given my review of the record, I find the proposed modification of the Gulf LNG Liquefaction Project from import to export is not inconsistent with the public interest.⁷

For these reasons, I respectfully concur.

Cheryl A. LaFleur
Commissioner

⁵ See, e.g., *Driftwood LNG LLC*, 167 FERC ¶ 61,054 (2019) (LaFleur, Comm'r, concurring).

⁶ E.g., *Sabal Trail*, 867 F.3d 1357. See also *Birckhead v. FERC*, 925 F.3d 510 (D.C. Cir. 2019).

⁷ With regard to the NEPA cumulative impacts analysis, there are no FERC jurisdictional projects within the cumulative impacts air region.

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Gulf LNG Liquefaction Company, LLC
Gulf LNG Energy, LLC
Gulf LNG Pipeline, LLC

Docket No. CP15-521-000

(Issued July 16, 2019)

GLICK, Commissioner, *dissenting*:

1. I dissent from today's order because it violates both the Natural Gas Act¹ (NGA) and the National Environmental Policy Act² (NEPA). The Commission is again refusing to consider the consequences its actions have for climate change. Neither the NGA nor NEPA permit the Commission to assume away the climate change implications of constructing and operating this liquefied natural gas (LNG) facility. Yet that is the unmistakable result of today's order.

2. In authorizing Gulf LNG Liquefaction Company, LLC and Gulf LNG Energy, LLC (collectively, Gulf Liquefaction) to build and operate the proposed LNG export terminal (the Project) pursuant to NGA section 3, the Commission treats greenhouse gas (GHG) emissions differently than all other environmental impacts. By refusing to assess whether the impact of the Project's GHG emissions would be significant, the Commission neglects its obligation to actually assess the Project's environmental impacts. This systematic failure to consider the Project's impact on climate change is what allows the Commission to misleadingly state that "[a]ll impacts [including environmental impacts] from construction and operation of the facilities will be reduced to less-than-significant levels"³ and conclude that the Project satisfies the NGA's public interest standards.⁴

¹ 15 U.S.C. §§ 717b, 717f (2012).

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

³ *Gulf LNG Liquefaction Company, LLC*, 168 FERC ¶ 61,020, at PP 12, 18 (2019) (Certificate Order); *see also* Final Environmental Impact Statement at ES-10 (Final EIS).

⁴ Certificate Order, 168 FERC ¶ 61,020 at P 15.

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

3. 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.⁵ 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."⁶ Section 3 of the NGA, which governs LNG imports and exports, 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."⁷ The Commission evaluates whether "an application for the siting, construction, expansion, or operation of an LNG terminal" is consistent with the public interest.⁸ Pursuant to that authority, the Commission must

⁵ *Sierra Club v. FERC*, 827 F.3d 36, 40 (D.C. Cir. 2016) (*Freeport*).

⁶ 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).

⁷ 15 U.S.C. § 717b(c). The courts have explained that, because the authority to authorize 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*). NEPA still requires, however, that the Commission consider the direct GHG emissions associated with a proposed LNG export facility. See *Freeport*, 827 F.3d at 41, 46.

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

approve a proposed LNG facility unless the record shows that the facility would be inconsistent with the public interest.⁹

4. As part of that determination, the Commission must examine a proposed LNG facility's impact on the environment and public safety. A facility's impact on climate change must be part of a public interest determination under the NGA.¹⁰ The Commission contends that it need not consider whether the Project's contribution to climate change is significant because it lacks a means to do so—or at least so it claims.¹¹ But the shocking 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 will have not have a significant environmental impact, including on climate change.¹² 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 while, out of the other side of its mouth, assuring us that all environmental impacts are insignificant. That is ludicrous, unreasoned, and an abdication of our responsibility to give climate change the "hard look" that the law demands.

5. The Commission's failure to consider the impact of the Project's GHG emissions is all-the-more glaring given the volume of emissions at issue in this proceeding. The Commission points out that the operation of the Project will directly emit roughly three million tons of GHGs every year.¹³ Given the Final EIS's acknowledgment of that

EarthReports, Inc., 828 F.3d at 952-53.

⁹ See *Freeport*, 827 F.3d at 40-41.

¹⁰ See *Sabal Trail*, 867 F.3d at 1373 (explaining that 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").

¹¹ Certificate Order, 168 FERC ¶ 61,020 at P 55; see also Final EIS at 4-230 (explaining that "there is no universally accepted methodology to attribute discrete, quantifiable, physical effects on the environment to the Project's incremental contribution to GHGs"). As discussed below, that simply is not the case. See *infra* PP 10-12.

¹² Certificate Order, 168 FERC ¶ 61,020 at PP 12, 18; Final EIS at 5-1 ("If the Project is constructed and operated in accordance with the mitigating measures discussed in this EIS, and our recommendations, adverse environmental impacts would be reduced to less than significant levels.").

¹³ Certificate Order, 168 FERC ¶ 61,020 at P 54; Final EIS at Table 4.11.1-4

anthropogenic GHG emissions contribute to climate change,¹⁴ the decision to exclude GHG emissions from playing any role in the Commission's public interest analysis is indefensible.

6. The implications of the Commission's approach to evaluating the impacts of GHG emissions extend beyond any single proceeding under NGA section 3. Taking that approach to its logical conclusion, the Commission would approve any project regardless of the amount of GHGs emitted without ever determining the significance of their environmental impact. If the Commission's assessment of that impact will not change no matter the volume of GHG emissions at issue, those emissions and their consequences cannot meaningfully factor into the public interest determination. Approving a project that may significantly contribute to the harms caused by climate change without meaningfully evaluating the significance of that impact or considering it as part of the public interest determination is contrary to law, arbitrary and capricious, and not the product of reasoned decisionmaking.¹⁵

II. The Commission Fails to Satisfy Its Obligations under NEPA

7. In order to evaluate the environmental consequences of the Project under NEPA, the Commission must consider the harm caused by the Project's GHG emissions and "evaluate the 'incremental impact' that these emissions will have on climate change or the environment more generally."¹⁶ As noted, the Final EIS states that the Project will directly emit roughly three million tons of GHGs annually.¹⁷ Although that

(carbon dioxide emissions in the Final EIS are expressed in short tons). That is an incremental increase of roughly 2.5 million tons over the Project as previously authorized. Certificate Order, 168 FERC ¶ 61,020 at P 54.

¹⁴ Final EIS at 4-109, 4-228 – 4-230.

¹⁵ As noted, the NGA "requires the Commission to evaluate all factors bearing on the public interest," *Atl. Ref. Co.*, 360 U.S. at 391, which *Sabal Trail* held includes a facility's contribution to the harms caused by climate change, 867 F.3d at 1373.

¹⁶ *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").

¹⁷ *Supra* note 13.

quantification of the Project's GHG emissions is a necessary step toward meeting the Commission's NEPA obligations, listing the volume of emissions alone is insufficient.¹⁸

8. 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."¹⁹ It is hard to see how hiding the ball on a project's climate impacts is consistent with either of those purposes.

9. In refusing to assess the significance of the Project's GHG emissions during the environmental review process, the Commission relegates climate change to playing a negligible role, at best, in its NEPA analysis. Nothing in today's order justifies this result. The Commission argues that it cannot determine whether the Project's contribution to climate change is significant, relying on the premise that there is no "universally accepted methodology" to estimate a project's impact on climate change, either locally or nationally.²⁰ As a logical matter, the argument that there is no unanimously agreed upon methodology for evaluating the significance of GHG emissions does not excuse the Commission from assessing the Project's environmental impacts under NEPA.

10. Moreover, the argument that there is no single standard methodology for evaluating the significance of GHG emissions is a red herring. The lack of any single methodology does not prevent the Commission from adopting *a* methodology, even if others are available. The Commission has several tools to assess the harm from the

¹⁸ See *Ctr. for Biological Diversity*, 538 F.3d at 1216 ("While the [environmental document] quantifies the expected amount of CO₂ 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.").

¹⁹ *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)).

²⁰ Final EIS at 4-230.

Project's contribution to climate change. 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 the actual environmental effects of 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 project's climate change impacts into concrete and comprehensible terms plays a useful role in the NEPA process by putting the harm in terms that are readily accessible for both agency decisionmakers and the public at large. Yet, the Commission continues to ignore the Social Cost of Carbon, relying instead on deeply flawed reasoning that I have previously critiqued at length.²¹

11. Regardless of tools or methodologies available, the Commission can use its judgement and discretion to consider all factors and determine, quantitatively or qualitatively, whether the Project's GHG emissions have a significant impact on climate change. After all, that is precisely what the Commission does in other aspects of its environmental review. For example, consider how the Commission evaluated the land impacts of a similarly sized LNG facility earlier this year. The Final EIS for the Port Arthur facility determined that a total of 992 acres of vegetation and upland forest will be permanently affected by the Project,²² but nevertheless concluded that the Project "will not have a significant impact on vegetation."²³ That Final EIS provided no "standard methodology" available to the Commission to evaluate this impact²⁴ and the Commission instead used its judgment to determine that that project's impact would not be significant based on the "minor nature of the impacts."²⁵ The Commission's refusal to exercise similar discretion and judgment when it comes to evaluating the impacts of GHG emissions is arbitrary and capricious and willfully ignorant.

12. The Commission's failure to seriously consider the significance of the impact of the Project's GHG emissions is even more mystifying because NEPA "does not dictate

²¹ See, e.g., *Fla. Se. Connection, LLC*, 164 FERC ¶ 61,099 (2018) (Glick, Comm'r, dissenting at 9-12).

²² *Port Arthur LNG, LLC*, 167 FERC ¶ 61,052, PP 110-111 (2019).

²³ *Id.* P 112.

²⁴ As compared to the Commission's requirement for a "standard methodology" to determine the significance of the Project's GHG emissions, as discussed in that order. *Id.* at P 138 (citing *Dominion Transmission, Inc.*, 163 FERC ¶ 61,128, at PP 67-70 (2018) (LaFleur, Comm'r, dissenting in part; Glick, Comm'r, dissenting in part)).

²⁵ *Id.* P 112.

particular decisional outcomes.”²⁶ NEPA “‘merely prohibits uninformed—rather than unwise—agency action.’”²⁷ 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 meets the public interest standard, even if its consequences for climate change are significant. Indeed, a thorough investigation of a project’s contribution to climate change would also help infrastructure developers by reducing their legal risk in the appeals that will inevitably follow. At the end of the day, no one benefits from the Commission’s refusal to consider a project’s impact on climate change.

13. Finally, even if the Commission were to determine that the Project’s GHG emissions are significant, that would not be the end of the inquiry nor would it mean that the project was necessarily inconsistent with the public interest. Instead, we could require mitigation—as the Commission often does with regard to other environmental impacts. The Supreme Court has held that an EIS must “contain a detailed discussion of possible mitigation measures” to address adverse environmental impacts.²⁸ The Court explained that, “[w]ithout such a discussion, neither the agency nor other interested groups and individuals can properly evaluate the severity of the adverse effects” of a project, making an examination of possible mitigation measures necessary to ensure that the agency has taken a “hard look” at the environmental consequences of the action at issue.²⁹

14. Consistent with this obligation, the Final EIS discusses mitigation measures to ensure that the Project’s adverse environmental impacts, excluding GHG emissions, are reduced to less than significant levels.³⁰ For example, in finding that the Project’s impacts on wetlands are not anticipated to be significant, the Commission relies on

²⁶ *Sierra Club v. U.S. Army Corps of Engineers*, 803 F.3d 31, 37 (D.C. Cir. 2015).

²⁷ *Id.* (quoting *Robertson*, 490 U.S. at 351).

²⁸ *Robertson*, 490 U.S. at 351.

²⁹ *Id.* at 352; *see also* 40 C.F.R. §§ 1508.20 (defining mitigation), 1508.25 (including in the scope of an environmental impact statement mitigation measures).

³⁰ Certificate Order, 168 FERC ¶ 61,020 at PP 19, 22, 28, 30, 33, 36 (finding that the adverse environmental effects on geology, soil, water, wetlands, vegetation, wildlife, and air quality, among other things, will not be significant either on their own or following the required mitigation measures).

compensatory mitigation including the purchase of mitigation credits.³¹ The Commission not only has the obligation to discuss mitigation of adverse environmental impacts under NEPA, but also the authority to condition certificates under section 3 of the NGA.³² By refusing to assess significance, however, the Commission short circuits any discussion of mitigation measures for the Project's GHG emissions, eliminating a potential pathway for us to achieve consensus on whether the Project is consistent with the public interest.

For these reasons, I respectfully dissent.

Richard Glick
Commissioner

³¹ Certificate Order, 168 FERC ¶ 61,020 at P 30.

³² 15 U.S.C. § 717b(e)(3)(A); 15 U.S.C. § 717f(e); Certificate Order, 168 FERC ¶ 61,020 at P 63 (“[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.”).

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