Office of
Energy Projects

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Venture Global Calcasieu Pass, LLC

Docket No. CP22-25-000

Calcasieu Pass Uprate Amendment Project

Environmental Assessment

Cooperating Agencies

Washington, DC 20426

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, D.C. 20426

OFFICE OF ENERGY PROJECTS

In Reply Refer To:
OEP/DG2E/Gas 1
Venture Global Calcasieu Pass, LLC
Calcasieu Pass Uprate Amendment Project
Docket No. CP22-25-000

TO THE INTERESTED PARTY:

The staff of the Federal Energy Regulatory Commission (FERC or Commission) has prepared an environmental assessment (EA) for the Calcasieu Pass Uprate Amendment Project, proposed by Venture Global Calcasieu Pass, LLC (Calcasieu Pass) in the above-referenced docket. Calcasieu Pass requests authorization to increase the authorized peak liquefaction capacity of the existing Calcasieu Pass Export Terminal in Cameron Parish, Louisiana.

The EA assesses the potential environmental effects of the Calcasieu Pass Uprate Amendment Project in accordance with the requirements of the National Environmental Policy Act (NEPA). The FERC staff concludes that approval of the proposed project, with appropriate mitigating measures, would not constitute a major federal action significantly affecting the quality of the human environment.

The U.S. Department of Energy, U.S. Department of Transportation's Pipeline and Hazardous Materials Safety Administration, and U.S. Coast Guard participated as cooperating agencies in the preparation of the EA. Cooperating agencies have jurisdiction by law or special expertise with respect to resources potentially affected by the proposal and participate in the NEPA analysis.

Calcasieu Pass proposes to increase the Calcasieu Pass Export Terminal's authorized peak liquefaction capacity achievable under optimal conditions from 12.0 million metric tons per annum to 12.4 million metric tons per annum of liquefied natural gas (LNG) – or from approximately 620 billion cubic feet to approximately 640.7 billion cubic feet per year (gas equivalence). According to Calcasieu Pass, this proposed increase in the peak liquefaction capacity is based on updated engineering and vendor data, reflecting actual equipment performance. The requested increase does ***not*** involve the construction of any new facilities nor any modification of the previously authorized facilities. There would be no land disturbance required for this Project.

The Commission mailed a copy of the Notice of Availability of the EA to federal, state, and local government representatives and agencies; elected officials; environmental and public interest groups; Native American tribes; potentially affected landowners and other interested individuals and groups; and newspapers and libraries in the project area. The EA is only available in electronic format. It may be viewed and downloaded from the FERC's website

(www.ferc.gov), on the natural gas environmental documents page (https://www.ferc.gov/industries-data/natural-gas/environment/environmental-documents). In addition, the EA may be accessed by using the eLibrary link on the FERC's website. Click on the eLibrary link (https://elibrary.ferc.gov/eLibrary/search), select "General Search" and enter the docket number in the "Docket Number" field (i.e. CP22-25-000). Be sure you have selected an appropriate date range. For assistance, please contact FERC Online Support at FercOnlineSupport@ferc.gov or toll free at (866) 208-3676, or for TTY, contact (202) 502-8659.

The EA is not a decision document. It presents Commission staff's independent analysis of the environmental issues for the Commission to consider when addressing the merits of all issues in this proceeding. Any person wishing to comment on the EA may do so. Your comments should focus on the EA's disclosure and discussion of potential environmental effects, reasonable alternatives, and measures to avoid or lessen environmental impacts. The more specific your comments, the more useful they will be. To ensure that the Commission has the opportunity to consider your comments prior to making its decision on this project, it is important that we receive your comments in Washington, DC on or before 5:00pm Eastern Time on **September 4, 2022.**

For your convenience, there are three methods you can use to file your comments to the Commission. The Commission encourages electronic filing of comments and has staff available to assist you at (866) 208-3676 or FercOnlineSupport@ferc.gov. Please carefully follow these instructions so that your comments are properly recorded.

(1) You can file your comments electronically using the eComment feature on the Commission's website (www.ferc.gov) under the link to FERC Online. This is an easy method for submitting brief, text-only comments on a project;

(2) You can also file your comments electronically using the eFiling feature on the Commission's website (www.ferc.gov) under the link to FERC Online. With eFiling, you can provide comments in a variety of formats by attaching them as a file with your submission. New eFiling users must first create an account by clicking on "eRegister." You must select the type of filing you are making. If you are filing a comment on a particular project, please select "Comment on a Filing"; or

(3) You can file a paper copy of your comments by mailing them to the Commission. Be sure to reference the project docket number (CP22-25-000) on your letter. Submissions sent via the U.S. Postal Service must be addressed to: Kimberly D. Bose, Secretary, Federal Energy Regulatory Commission, 888 First Street NE, Room 1A, Washington, DC 20426. Submissions sent via any other carrier must be addressed to: Kimberly D. Bose, Secretary, Federal Energy Regulatory Commission, 12225 Wilkins Avenue, Rockville, Maryland 20852.

Filing environmental comments will not give you intervenor status, but you do not need intervenor status to have your comments considered. Only intervenors have the right to seek rehearing or judicial review of the Commission's decision. At this point in this proceeding, the

timeframe for filing timely intervention requests has expired. Any person seeking to become a party to the proceeding must file a motion to intervene out-of-time pursuant to Rule 214(b)(3) and (d) of the Commission's Rules of Practice and Procedures (18 CFR 385.214(b)(3) and (d)) and show good cause why the time limitation should be waived. Motions to intervene are more fully described at https://www.ferc.gov/ferc-online/ferc-online/how-guides.

Additional information about the project is available from the Commission's Office of External Affairs, at **(866) 208-FERC**, or on the FERC website (www.ferc.gov) using the eLibrary link. The eLibrary link also provides access to the texts of all formal documents issued by the Commission, such as orders, notices, and rulemakings.

In addition, the Commission offers a free service called eSubscription which allows you to keep track of all formal issuances and submittals in specific dockets. This can reduce the amount of time you spend researching proceedings by automatically providing you with notification of these filings, document summaries, and direct links to the documents. Go to https://www.ferc.gov/ferc-online/overview to register for eSubscription.

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TECHNICAL ABBREVIATIONS AND ACRONYMS

2019 Order	Commission's February 21, 2019 Order in Docket No CP15-550-000
Agreement	Paris Climate Agreement
Amendment	Calcasieu Pass Uprate Amendment Project
Bcf	billion cubic feet
Calcasieu Pass	Venture Global Calcasieu Pass, LLC
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
Coast Guard	USCG
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalents
Commission	Federal Energy Regulatory Commission
COPT	Coast Guard Captain of the Port
Deep South	Deep South Center for Environmental Justice
DOE	U.S. Department of Energy
DOE/FE	DOE's Office of Fossil Energy
EA	environmental assessment
Export Terminal	Calcasieu Pass LNG Export Terminal Project
final EIS	Final Environmental Impact Statement
FERC	Federal Energy Regulatory Commission
FTA	free trade agreements
GHG	greenhouse gas
GWP	global warming potential
HAP	hazardous air pollutants
IWG	Interagency Working Group on the Social Cost of Greenhouse Gas'
km	kilometers
LDEQ	Louisiana Department of Environmental Quality
LNG	liquefied natural gas
LOD	Letter of Determination
MOU	memorandum of understanding
MTPA	million metric tons per annum
NAAQS	National Ambient Air Quality Standards
NDC	nationally determined contributions
NEPA	National Environmental Policy Act
NFPA	National Fire Protection Association
NGA	Natural Gas Act
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NOS	*Notice of Scoping Period Requesting Comments on Environmental Issues for the Proposed Calcasieu Pass Uprate Amendment Project*
O_3	ozone
OEP	Office of Energy Projects
OPP	Office of Public Participation

PM_{10}	particulate matter with an aerodynamic diameter less than or equal to 10 microns
$PM_{2.5}$	particulate matter with an aerodynamic diameter less than or equal to 2.5 microns
ppb	parts per billion
PSD	Prevention of Significant Deterioration
RESTORE	**R**estore **E**xplicit **S**ymmetry **T**o **O**ur **R**avaged **E**arth
SIL	Significant Impact Level
SO_2	sulfur dioxide
tpy	tons per year
USC	U.S. Code
USDOT PHMSA	U.S. Department of Transportation's Pipeline and Hazardous Materials Safety Administration
USEPA	U.S. Environmental Protection Agency
USGCRP	U.S. Global Change Research Program
VOC	volatile organic compounds

A. PROPOSED ACTION

1.0 INTRODUCTION

On December 3, 2021, Venture Global Calcasieu Pass, LLC (Calcasieu Pass) filed an application with the Federal Energy Regulatory Commission (FERC or Commission) in Docket No. CP22-25-000 for an amendment (Amendment) to the Commission's February 21, 2019 Order in Docket No CP15-550-000 (2019 Order). The 2019 Order authorized the Calcasieu Pass LNG Export Terminal Project (Export Terminal) under section 3 of the Natural Gas Act (NGA). The facilities authorized in the 2019 Order include liquefaction facilities, consisting of nine refrigerant blocks, with a peak production capacity of 12 million metric tons per annum (MTPA) of liquefied natural gas (LNG) at the Export Terminal in Cameron Parish, Louisiana. Calcasieu Pass commenced construction of the Export Terminal in March 2019. Initial commencement of service was authorized in May 2022.

In the Amendment, Calcasieu Pass requests to increase the the Export Terminal's authorized export capacity achievable under optimal conditions from 12.0 MTPA to 12.4 MTPA of LNG – or from approximately 620 billion cubic feet (Bcf) to approximately 640.7 Bcf per year (gas equivalence). Calcasieu Pass states this proposed increase in the export capacity is based on updated engineering and vendor data, reflecting actual equipment performance. The requested increase does not involve the construction of any new facilities nor any modification of the previously authorized facilities.

We[1] prepared this environmental assessment (EA) in compliance with the requirements of the National Environmental Policy Act of 1969 (NEPA), the Council on Environmental Quality's (CEQ) regulations for implementing NEPA (Title 40 of the Code of Federal Regulations [CFR], Parts 1500-1508 [40 CFR 1500-1508]), and the Commission's regulations for implementing NEPA (18 CFR 380).[2]

FERC is the lead federal agency for authorizing LNG export facilities under the NGA, and the lead federal agency for preparation of this EA, in accordance with NEPA (40 CFR 1501) and the Energy Policy Act of 2005. Consistent with NEPA (40 CFR 1501.6) and their respective responsibilities and regulations, the U.S. Department of Energy (DOE), U.S. Department of Transportation's Pipeline and Hazardous Materials Safety Administration (USDOT PHMSA), and U.S. Coast Guard (USCG) participated as cooperating agencies in the preparation of this EA. Cooperating agencies have jurisdiction by law or special expertise with respect to the environmental impacts associated with Calcasieu Pass' proposal.

[1] "We," "us," and "our" refer to the environmental and engineering staff of the Office of Energy Projects.

[2] The EA was prepared consistent with the CEQ's April 20, 2022 final rule, National Environmental Policy Act Implementing Regulations Revisions (Final Rule, 87 FR 23453), that was effective as of May 20, 2022.

The assessment of environmental impacts is an integral part of the Commission's decision-making process to determine whether to authorize Calcasieu Pass' proposal. Our principal purposes in preparing this EA are to:

- identify and assess potential impacts on the natural and human environment that would result from the implementation of the proposed action;
- identify and recommend reasonable alternatives to avoid or minimize adverse environmental impacts;
- identify and recommend mitigation measures, as necessary, to minimize environmental impacts; and
- facilitate public involvement in the environmental review process.

2.0 PURPOSE AND NEED

Calcasieu Pass states that evaluation of optimal conditions, including the best possible ambient temperatures and years with the least maintenance, determined that the authorized facilities are capable of producing as much as 12.4 MTPA of LNG. Therefore, Calcasieu Pass is requesting authorization to increase the authorized production capacity of the Export Terminal Project by 20.7 Bcf/y (equivalent volume of natural gas), to a facility wide production capacity of 640.7 Bcf/y (equivalent volume of natural gas). Calcasieu Pass states that the proposed increase in the export capacity is based on updated engineering and vendor data, reflecting actual equipment performance.

The Commission is an independent regulatory agency and conducts a complete independent review of project proposals, including an environmental review of proposed facilities. Under Section 3 of the NGA, FERC considers, as part of its decision to authorize natural gas facilities, all circumstances bearing on the public interest. Specifically, regarding whether to authorize natural gas facilities used for importation or exportation, FERC shall authorize the proposal unless it finds that the proposed facilities would not be consistent with the public interest.

The EA is not a decision-making document; rather, it will aid the Commission in its decision-making process. The Commission will consider the findings of the EA as well as non-environmental issues in its review of the Amendment.

3.0 PUBLIC PARTICIPATION AND COMMENT

On March 24, 2022, the Commission issued a *Notice of Scoping Period Requesting Comments on Environmental Issues for the Proposed Calcasieu Pass Uprate Amendment Project* (NOS). The NOS was published in the Federal Register and was mailed to federal, state, and local officials; agency representatives; affected landowners (as defined by the Commission's regulations); environmental and public interest groups; Native American tribes; and local libraries and newspapers. This notice opened the scoping period for 30 days. We received three comments in response to the NOS from the U.S. Environmental Protection Agency (USEPA), **R**estore **E**xplicit **S**ymmetry **T**o **O**ur **R**avaged **E**arth (RESTORE), and the Deep South Center for

Environmental Justice (Deep South). Comments received were in regard to environmental justice, climate change/greenhouse gases, air quality, light pollution, noise pollution, cumulative impacts, and safety. All substantive comments are addressed in the relevant resource sections of the EA.

RESTORE requested that all of its previous filings on Venture Global, CP2/CPExpress, and Commonwealth be brought forward so that FERC staff will have a complete picture of its concerns and suggestions. All comments received are placed on eLibrary (elibrary.ferc.gov) under the project-specific docket number, and addressed in the respective project's environmental document.

In addition to the comments described above, the Choctaw Nation of Oklahoma stated that because the Amendment project has no ground disturbing activities, it deferred to the other consulting parties. As described below, the environmental impacts on cultural resources remain unchanged from that analyzed in the October 2018 Final Environmental Impact Statement (October 2018 final EIS) for the Calcasieu Pass LNG Export Project in Docket No. CP15-550-000, and are therefore not addressed further in this EA.

Deep South also stated that an increase in the LNG that is produced and sold would likely require excavation of waterways for the ships to pass through, disturbing marine areas; and increased operations and export at the terminal could lead to the permanent loss and conversion of wetland areas, altering the present ecosystem and reducing the amount of protection from storms. Calcasieu Pass' proposed Amendment project does not include any excavation of waterways or impacts on wetlands.

Deep South further stated that the Amendment would increase the economic burdens of the facility's operations and consequences thereof; and this uprate would further impact the local fishing and eco-tourism industries, which rely on coastlines free of industrial pollution; the natural beauty of the area will be compromised by the addition of flaring towers hundreds of feet tall, the release of millions of gallons of effluent water, and brown haze that would come with thousands of tons of air pollution, negatively impacting people's livelihoods. The Amendment does not require the construction of new facilities, the modification of previously authorized facilities, or additional flaring towers. As described below in section 4.0, the minor increase in vessel traffic (about 5-6 LNG carriers per year), would have a negligible effect on local fishing, eco-tourism industries, or water withdrawals/discharges, and no other Amdendment components would result in additional impacts on fisheries, socioeconomics, or water resources. These impacts remain unchanged from those analyzed in the October 2018 final EIS for the Calcasieu Pass LNG Export Project in Docket No. CP15-550-000, and are therefore not addressed further in this EA.

RESTORE stated that FERC should prepare a new EIS for the entire Venture Global operation at Calcasieu Pass because (1) the existing operation is not adequately mitigating light pollution through the measures promised and permitted; (2) noise pollution for the Export Terminal pile-driving was not controlled to the degree that had been promised; (3) given the light and noise issues above, every topic should be considered to assure future compliance; (4) scoping should include the combined effects of proposals for the CP2/CPExpress and Commonwealth Projects; and (5) fire safety was not adequately addressed in any of the earlier

Venture Global public filings. These issues as they relate to the existing Export Terminal were addressed in the June 2018 draft EIS and October 2018 final EIS. All comments received on the draft EIS were addressed in the final EIS. We do not believe an additional EIS is necessary for the existing Export Terminal. The uprate Project is a result of system optimization and would not result in any Project-related construction impacts, including noise or pile-driving. Safety and cumulative impacts for the proposed Amendment project are addressed in sections B.3 and B.4, respectively.

In regard to RESTORE's comments on compliance, the Commission issued the 2019 Order authorizing the Calcasieu Pass LNG Project in February 2019 and granted Calcasieu Pass authorization to commence construction of the LNG Export Terminal in March 2019. Since construction commenced, Calcasieu Pass has submitted monthly construction status reports for the Export Terminal in compliance with the 2019 Order. Calcasieu Pass submitted additional abbreviated construction status reports, which provided status reports every two weeks during construction. FERC staff also conducted virtual construction inspections of the Export Terminal from May 2019 through September 2021, and resumed in-person inspections as of November 2021. These reports and inspections were conducted to ensure compliance with Calcasieu Pass' proposed mitigation, and the Commission's *Upland Erosion Control, Revegetation, and Maintenance Plan*.

4.0 SCOPE OF THIS ENVIRONMENTAL ASSESSMENT

The Amendment does not require the construction of new facilities or the modification of previously authorized facilities. Calcasieu Pass states that the revised estimate of peak LNG production and export capability is based on updated engineering and vendor data, reflecting actual equipment performance. Calcasieu Pass stated that the proposed increase in authorized export capacity would, depending on the size of vessel, result in an up to three percent increase in the number of LNG carriers per year (about five to six additional port calls per year), and only in years when the ultimate peak operations are achieved. This is within the 200 port calls reflected in the Letter of Recommendation and Waterway Suitability Assessment for the Project by the USCG. The October 2018 final EIS for the Calcasieu Pass LNG Export Project in Docket No. CP15-550-000 analyzed impacts of 13-16 LNG carriers per month, a maximum of 192 LNG carriers per year. The additional five to six port calls per year would result in negligible impacts above what was analyzed in the final EIS (e.g., wave action affecting shorelines or ship withdrawals and discharges impacting water quality or ichthyoplankton abundance).

In addition, we evaluated regulatory aspects of a potential change in marine traffic and verified that the hazard and engineering designs would not be affected by the proposed Amendment.

Although no construction or facility/design modifications are proposed, facility emissions have changed from those estimated in the October 2018 final EIS as a result of updated engineering data and process optimization. Additionally, we have updated our environmental justice and climate change analysis to consider the changed emissions and reflect the most current available data. Finally, we assess the regulatory oversight, hazards, and engineering design of the proposed Amendment. Accordingly, the topics addressed in this EA include

environmental justice, air quality, reliability and safety, cumulative impacts, and alternatives. This EA describes the affected environment as it currently exists and the potential environmental consequences of the Amendment.

The environmental impacts for the following resources remain unchanged from that analyzed in the October 2018 final EIS for the Calcasieu Pass LNG Export Project in Docket No. CP15-550-000, and are therefore not addressed further in this EA:

- geology and soils;
- groundwater;
- wetlands;
- water resources;
- fisheries and marine mammals;
- special status species;
- vegetation and terrestrial wildlife;
- land use, recreation, and visual resources;
- socioeconomics;
- cultural resources; and
- noise.

COOPERATING AGENCIES

The DOE, USDOT PHMSA, and USCG participated as cooperating agencies in the preparation of the EA. Cooperating agencies have jurisdiction by law or special expertise with respect to environmental impacts involved with a proposal. The roles of the DOE, USDOT PHMSA, and USCG in the Amendment review process are described below. The EA provides a basis for coordinated federal decision making in a single document, avoiding duplication in the NEPA environmental review process. In addition to the lead and cooperating agencies, other federal, state, and local agencies may use this EA in approving or issuing permits for all or part of the Amendment.

FERC

FERC authorizes the siting and construction of LNG terminals under Section 3 of the NGA and delegated authority from the DOE. As the lead federal agency, FERC prepared this document in compliance with the requirements of NEPA. FERC requires standard information to be submitted to perform environmental and safety and reliability engineering reviews. FERC's filing regulations for engineering and safety information are codified in 18 CFR 380.12 (m) and (o). As part of the safety review required for a FERC order, we use this information from the Applicant to assess whether the proposed facilities would have adequate layers of protection to reduce the risk of public safety impacts and suggest additional mitigation measures to further reduce the risk of public safety impacts for the Commission to consider as conditions in the order. A layers of protection approach ensures a safe operation of the facility by having multiple independent design features protect against hazardous releases. FERC staff reviewed the layers of protection employed at the Calcasieu Pass LNG facility to determine what impact, if any, the uprated liquefaction capacity may have on their effectiveness.

U.S. Department of Energy

Under Section 3 of the NGA, the DOE's Office of Fossil Energy and Carbon Management (DOE/FECM) is responsible for authorizing imports and exports of natural gas, including LNG, from or to a foreign country. By law, under Section 3(c) of the NGA, applications requesting authority to export natural gas to countries with which the United States has free trade agreements (FTA) are deemed to be consistent with the public interest and granted without modification or delay. In the case of applications to export LNG to non-FTA nations, NGA Section 3(a) requires DOE to conduct a public interest review and grant authority to export unless DOE finds that the proposed exports would not be consistent with the public interest. Additionally, NEPA requires DOE to consider the environmental effects of its decisions regarding applications to export natural gas to non-FTA nations.

DOE issued DOE/FE Order Nos. 3345, 3520, and 3662 authorizing Calcasieu Pass to export LNG to FTA countries in a total approved volume up to the equivalent of 620 Bcf/yr of natural gas for a 25-year term. DOE/FE Order Nos. 3345, 3520, and 3662 were issued on September 27, 2013, October 10, 2014, and June 17, 2015 respectively. On October 21, 2020, these orders were amended by DOE/FE Order Nos. 3345-A, 3520-A, and 3662-A, which extended the export terms of the authorizations to December 31, 2050. On March 5, 2019, DOE issued DOE/FE Order No. 4346 authorizing Calcasieu Pass to export LNG to non-FTA countries in a volume up to the equivalent of 620 Bcf/yr of natural gas for a 20-year term. On October 21, 2020, this order was amended by DOE/FE Order No. 4346-A, which extended the export term of the authorization to December 31, 2050. On December 3, 2021, Calcasieu Pass filed an application with DOE to align its export authorization to the peak capacity of the Export Terminal, as proposed in the Amendment. On April 22, 2022, DOE issued DOE/FECM Order No. 3662-B authorizing Calcasieu Pass to export an additional 20.666 Bcf/yr of natural gas, for a total approved export volume of 640.666 Bcf/yr of natural gas to FTA countries.

U.S. Department of Transportation

The USDOT PHMSA is responsible for promulgating and enforcing minimum safety standards for onshore LNG facilities. Those regulations are codified in 49 CFR Part 193 covering LNG facility siting, design, construction, operation, maintenance, personnel qualifications and training, fire protection, and security. On August 31, 2018, USDOT PHMSA and FERC signed a Memorandum of Understanding to improve coordination throughout the LNG permit application process for FERC jurisdictional LNG facilities relating to application compliance with USDOT PHMSA siting standards. To show compliance with the USDOT PHMSA siting standards, Venture Global submitted materials which USDOT PHMSA will review to verify the uprated capacity will comply with the USDOT PHMSA 49 CFR Part 193, Subpart B siting requirements. USDOT PHMSA will provide its analysis and determination to FERC in a Letter of Determination (LOD) that will serve as one of the considerations for the Commission to deliberate in its decision to authorize or deny the uprated capacity application. The issuance of the LOD does not abrogate USDOT PHMSA's continuing authority over the terminal facilities and the operator's obligation to comply with 49 CFR Part 193 during future operation. The terminal facilities would remain subject to USDOT PHMSA's inspection and enforcement programs to ensure compliance with the requirements of 49 CFR Part 193.

U.S. Coast Guard

The USCG is the principal federal agency responsible for the safety of an LNG terminal's marine transfer area codified in 33 CFR 127, as well as over security plans for the waterfront facilities handling LNG codified in 33 CFR 105. In addition, the USCG is the principal federal agency responsible for the safety and security of the LNG carrier traffic in U.S. ports and waterways codified in 46 CFR 154 and 33 CFR 104. The USCG would continue to exercise regulatory oversight of the safety and security of the LNG terminal facilities and LNG marine vessels in compliance with these regulations.

As part of these responsibilities, the USCG issues a Letter of Recommendation (LOR) discussing the suitability of the waterway for LNG marine traffic to FERC. The USCG issued a LOR on January 6, 2016 recommending that the Calcasieu River Ship Channel be considered suitable for accommodating the type and frequency of LNG marine traffic to the Calcasieu Pass Export Project. This LOR was based on 200 carriers per year to and from the facility, and Venture Global stated in their application that if the Export Terminal increases export from 12.0 to 12.4 MTPA, the number of annual vessel calls could increase from 160 to 166 based on 150,000 cubic meters (m^3) LNG carriers. FERC staff also calculated the average carrier size required to export 12.4 MTPA of LNG with 200 carriers and found the average ship size would be less than 150,000 m^3. Furthermore, Venture Global stated that Calcasieu Pass expects the average size of vessels to be greater than 150,000 m^3, which would further decrease their baseline calculated 166 annual vessel calls to remain well under the USCG's maximum of 200 port calls per year. LNG carriers between 120,000 m^3 and 180,000 m^3 comprise 85 percent of the LNG fleet worldwide, while less than 6 percent of the LNG carriers are below 120,000 m^3. Furthermore, as discussed in the October 2018 final EIS for the Calcasieu Pass Liquefaction Project, the Calcasieu Pass LNG facility can receive LNG vessels with capacities up to 216,000 m^3. Based on available carrier sizing, an incremental increase in LNG available for export would not result in any significant deviation in ship traffic.

5.0 PERMITS, APPROVALS, AND REGULATORY CONSULTATIONS

Table 1 provides a list of known federal, state, and local permits for the Amendment. The proposed Amendment would not result in any construction or footprint changes which would affect the previously received environmental clearances and authorizations for the Export Terminal. Additionally, the proposed increase in export capacity would not require any revisions of the air permit, as discussed further in section B.2 of this EA. Calcasieu Pass would be responsible for obtaining all permits and approvals required for the Amendment.

1.

Table 1 Anticipated Permits, Reviews, and Consultations for the Amendment		
Agency	**Permit/Approval/Consultation**	**Status**
FERC	Authorization for Limited Amendment under Section 3 of the NGA	Abbreviated Application for Limited Amendment of Authorization to increase peak export capacity to 12.4 MTPA filed with FERC on December 3, 2021.
DOE	Authorization to Increase Export Quantity to FTA countries from 12.0 MTPA to 12.4 MTPA and to non-FTA countries from 12.0 MTPA to 12.4 MTPA.	Application filed on December 3, 2021 (as corrected on December 10, 2021) for limited amendment of export authorization to FTA and non-FTA countries; Notice of Application published on January 10, 2022 in Federal Register for limited amendment to export to non-FTA countries, with comment close on March 11, 2022; Order 3662-B amending authorization to export to FTA countries issued on April 22, 2022; Order amending authorization to export to non-FTA countries pending.
USDOT PHMSA	49 CFR 193 consultation (standards for LNG facilities)	USDOT PHMSA review of uprate in process.

B. ENVIRONMENTAL ANALYSIS

The following sections discuss the Amendment's potential direct, indirect, and cumulative impacts on environmental resources, regulatory oversight, and engineering design. An impact would be considered significant if it would result in a substantial adverse change in the natural and/or human environment.

The analysis contained in this EA is based upon Calcasieu Pass' application and supplemental filings. As stated previously, Calcasieu Pass does not propose any new facilities associated with its Amendment. However, during our review of the application, we noted that emissions have changed from those estimated in the October 2018 final EIS. Therefore, the analysis below will focus on air emissions and impacts associated with those emissions, including on environmental justice communities and climate change. In addition, we assess reliability and safety of the proposed engineering design. Finally, we address cumulative impacts and alternatives in accordance with CEQ's regulations for implementing the NEPA, including its recent final rule (Final Rule, 87 FR 23453).

1.0 ENVIRONMENTAL JUSTICE

According to the USEPA, "environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies." Fair treatment means that no group of people should bear a disproportionate share of the negative environmental consequences resulting from industrial, governmental, and commercial operations or policies (USEPA 2020b). Meaningful involvement means:

1. people have an appropriate opportunity to participate in decisions about a proposed activity that will affect their environment and/or health;

2. the public's contributions can influence the regulatory agency's decision;

3. community concerns will be considered in the decision-making process; and

4. decision makers will seek out and facilitate the involvement of those potentially affected (USEPA 2020b).

In conducting NEPA reviews of proposed natural gas projects, the Commission follows the instruction of Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations*, which directs federal agencies to identify and address the "disproportionately high and adverse human health or environmental effects" of their actions on minority and low-income populations (i.e., environmental justice communities).[3] Executive Order 14008, *Tackling the Climate Crisis at Home and Abroad,* also directs agencies to develop "programs, policies, and activities to address the disproportionately high and adverse human health, environmental, climate-related, and other cumulative impacts on disadvantaged

[3] Exec. Order No. 12,898, 59 Fed. Reg. 7629, at 7629, 7632 (Feb. 11, 1994).

communities, as well as the accompanying economic challenges of such impacts."[4] The term "environmental justice community" includes disadvantaged communities that have been historically marginalized and overburdened by pollution.[5] Environmental justice communities include, but may not be limited to minority populations, low-income populations, or indigenous peoples.[6]

Commission staff used USEPA's Federal Interagency Working Group on Environmental Justice & NEPA Committee's publication, *Promising Practices for EJ Methodologies in NEPA Reviews* (*Promising Practices*) (USEPA 2016), which provides methodologies for conducting environmental justice analyses throughout the NEPA process for this Amendment. Commission staff's use of these methodologies is described throughout this section.

Commission staff used EJSCREEN as an initial step to gather information regarding minority and/or low-income populations; potential environmental quality issues; environmental and demographic indicators; and other important factors. USEPA recommends that screening tools, such as EJSCREEN, be used for a "screening-level" look and a useful first step in understanding or highlighting locations that may require further review.

Meaningful Engagement and Public Involvement

The CEQ's *Environmental Justice Guidance Under the National Environmental Policy Act* (CEQ 1997) and *Promising Practices* recommend that federal agencies provide opportunities for effective community participation in the NEPA process, including identifying potential effects and mitigation measures in consultation with affected communities and improving the accessibility of public meetings, crucial documents, and notices.[7] They also recommend using adaptive approaches to overcome linguistic, institutional, cultural, economic, historical, or other potential barriers to effective participation in the decision-making processes of federal agencies. In addition, Section 8 of Executive Order 13985, *Advancing Racial Equity and Support for Underserved Communities Through the Federal Government*, strongly encourages independent agencies to "consult with members of communities that have been historically underrepresented in the Federal Government and underserved by, or subject to discrimination in, federal policies and programs."

As discussed in section A.3, there have been opportunities for public involvement during the Commission's environmental review processes. FERC's communication and involvement with the surrounding communities began when the *Notice of Application to Amend and Establishing Intervention and Protest Deadline* was issued in December 2021 and continued with the *Notice of Scoping Period Requesting Comments on Environmental Issues for the Proposed Calcasieu Pass Uprate Amendment Project* (NOS) in March 2022. These notices were mailed to the parties on FERC's environmental mailing list, which included federal and state resource agencies; elected officials; environmental groups and non-governmental organizations;

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[4] Exec. Order No. 14,008, 86 Fed. Reg. 7619, at 7629 (Jan. 27, 2021).

[5] *Id*.

[6] *See* USEPA, *EJ 2020 Glossary* (Aug. 2, 2019), https://www.epa.gov/environmentaljustice/ej-2020-glossary.

[7] 1997 CEQ Guidance at 4.

Native American Tribes; potentially affected landowners (as defined by the Commission's regulations); local libraries and newspapers; and other stakeholders who had indicated an interest in the Amendment. Commission staff also included environmental justice stakeholders on the mailing list, as well as local churches, schools, community centers, retail establishments, public health clinics, and community groups to engage the environmental justice communities near the Project. Issuance of the Notice of Application and the NOS opened separate 20 day and 30 day scoping periods, respectively.

Regarding future engagement and involvement, in 2021, the Commission established the Office of Public Participation (OPP) to support meaningful public engagement and participation in Commission proceedings. OPP provides members of the public, including environmental justice communities, landowners, Tribal citizens, and consumer advocates, with assistance in FERC proceedings—including navigating Commission processes and activities relating to the Amendment. For assistance with interventions, comments, requests for rehearing, or other filings, and for information about any applicable deadlines for such filings, members of the public are encouraged to contact OPP directly at 202-502-6592 or OPP@ferc.gov.

FERC received several comments from the USEPA and the Deep South, concerning the EA's environmental justice analysis. Specifically, the USEPA recommends we: 1) comply with Executive Order 12898 and Executive Order 13175; 2) identify whether low-income and/or minority communities are present in the project area; 3) describe plans to engage community members, informing them of project status and using their input in the project planning process; 4) incorporate maps in the document depicting the locations and alignments of all proposed projects directly, indirectly, and cumulatively impacting the minority or low-income populations; 5) affirm that the proposed project will not adversely impact minority and low-income communities and/or populations residing outside and/or adjacent to the project area; 6) if those populations are directly, indirectly, or cumulatively impacted, a discussion should be incorporated in the Environmental Justice section; 7) identify measures to ensure robust community engagement, minimize adverse community impacts, and avoid disproportionate impacts to communities with environmental justice concerns; and 8) FERC utilize a more user-friendly process for the public to be notified of FERC's federal projects that have potential adverse impacts. As appropriate, we address these comments in this section.

The Deep South comments that 1) FERC must not only quantify the additional tons of emissions that will be generated as a result of this uprate, but also fully account for the impending climate change, environmental, economic, and public health effects of this proposed project; and 2) FERC must look at not only the uprate, but the steps of exploration, hydraulic fracturing, extraction, processing, pipeline construction and transport, shipment, re-gasification, and delivery that will all be increased as a result of Calcasieu Pass' increased liquefaction capacity. Air emissions are addressed in section B.2; climate change and upstream impacts are addressed in section B.4.2. In regard to natural gas development and transportation, the Commission does not have a program to direct the development of the natural gas industry's infrastructure, either on a broad regional basis or in the design of specific projects, and does not engage in regional planning exercises. As the Commission acts on individual applications, we provide a project-specific analysis here.

As stated in section A.4, the requested increase in the Export Terminal's authorized peak liquefaction capacity does not involve the construction of any new facilities nor any modification of the previously authorized facilities. Section B.2 states that Amendment operation (i.e., uprate) would not result in changes to the existing, permitted emissions of the facility and would not require modifications to the existing air permits. However, emissions have changed from those estimated in the October 2018 final EIS to the emissions authorized under the Title V and Prevention of Significant Deterioration Permits issued in July 2021 for the facility. Therefore, as appropriate, we address these emission impacts on environmental justice communities and comments received below.

Identification of Environmental Justice Communities

According to the CEQ's *Environmental Justice Guidance* and *Promising Practices*, minority populations are those groups that include: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic. Following the recommendations set forth in *Promising Practices*, FERC uses the **50 percent** and the **meaningfully greater analysis** methods to identify minority populations. Using these methodologies, minority populations exist when either: (a) the aggregate minority population of a block group in the affected area exceeds 50 percent; or (b) the aggregate minority population of a block group in the affected area is 10 percent higher than the aggregate minority population percentage in the county. The aforementioned guidance also directs low-income populations to be identified based on the annual statistical poverty thresholds from the U.S. Census Bureau. Using *Promising Practices'* **low-income threshold criteria** method, low-income populations exist when the percentage of low-income population in the identified block group is equal to or greater than that of the county.

According to the current U.S. Census Bureau information, minority and low-income populations exist within the Amendment area, as discussed further below. Table 2 identifies the minority populations by race and ethnicity and low-income populations within Louisiana, for the parish affected, and census block groups[8] within 25 kilometers of the Export Terminal. We have determined that a 25-kilometer radius around the Export Terminal is the appropriate distance for assessing impacts on the environmental justice communities.[9] To ensure we are using the most recent available data, we use U.S. Census American Community Survey File# B03002 for the race and ethnicity data and Survey File# B17017 for poverty data at the census block group level. Figures 1 and 2 provide a geographic representation of potential environmental justice communities relative to the location of the Amendment.

The Export Terminal is within Census Tract 9702.02, Block Group 2, which is an environmental justice community. An additional 7 block groups are within the 25-kilometer

[8] Census block groups are statistical divisions of census tracts that generally contain between 600 and 3,000 people.

[9] The 25-kilometer radius represents a conservative distance based on the radius of impact (ROI) for air quality, which is the distance from the center of the facility to the further receptor (in this case 9.25 kilometers for 1-hour NO_2) that is equal or greater than the Significant Impact Level (SIL). See section B.2 Air Quality for further discussion.

radius of the Export Terminal site (table 2). There are 6 block groups within this radius that are identified as environmental justice communities (table 2 and figures 1 and 2). Two of the block groups are identified as environmental justice populations based on the minority threshold (Census Tract 9701.01, Block Group 1 and Census Tract 9701.02, Block Group 1), and three based on the low-income threshold (Census Tract 9701.01, Block Group 2; Census Tract 9702.02, Block Group 2; and Census Tract 9702.03, Block Group 2); and one is identified as an environmental justice population based on both the minority and low income thresholds (Census Tract 9702.03, Block Group 1). Potential impacts on these communities from the Amendment are further discussed below.

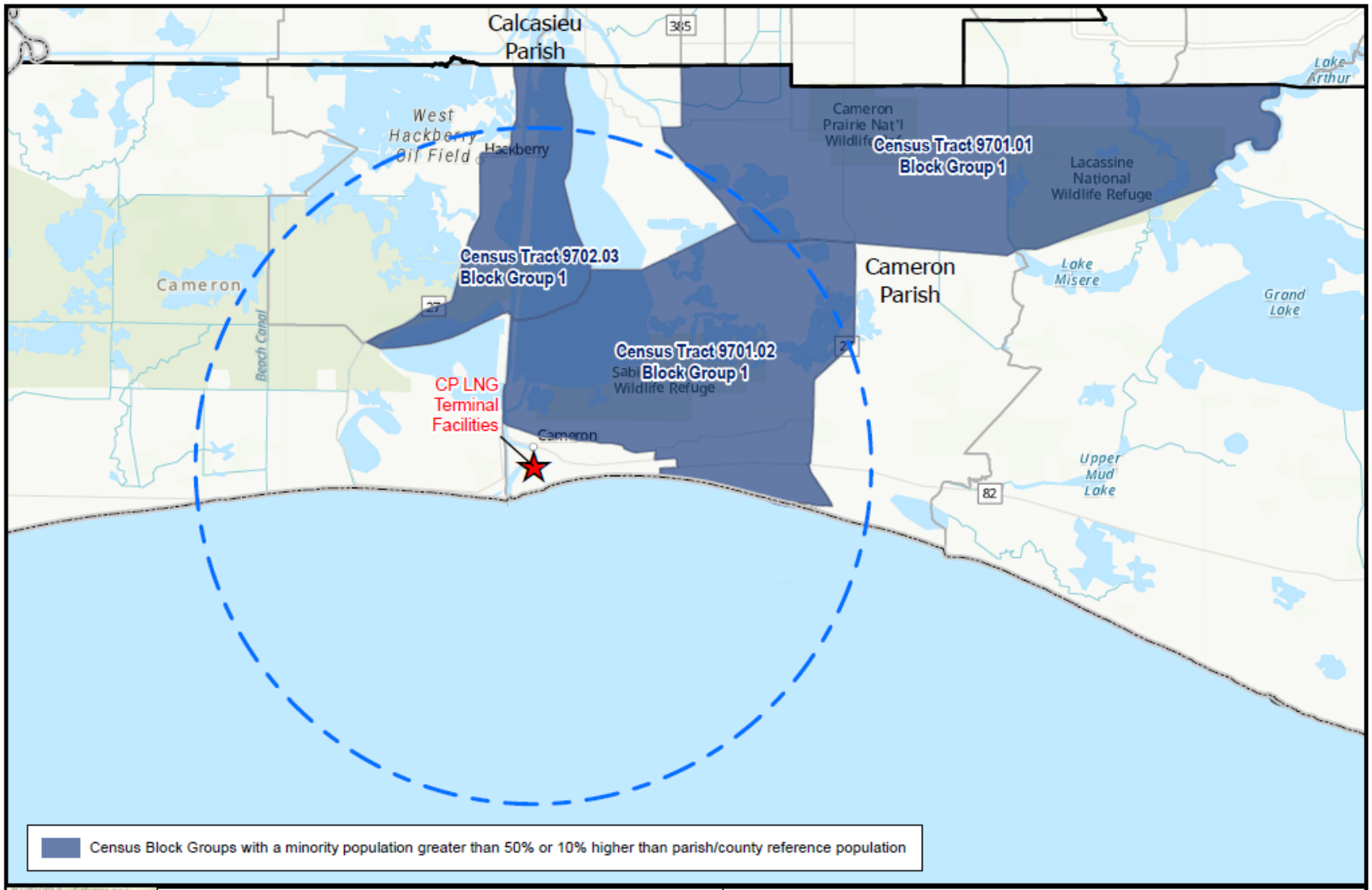
Table 2
Minority Populations by Race and Ethnicity and Low-Income Populations in the Project Area

State/ County/ Census Tract and Block Group	Total Population		White Alone Not Hispanic (%)	Black or African American (%)	Asian (%)	American Indian and Alaskan Native (%)	Native Hawaiian and Other Pacific Islander (%)	Some Other Race Alone (%)	Two or more races (%)	Hispanic or Latino (%)	Total Minority (%)[b]		Low Income Below Poverty Level (%)
State of Louisiana	**4,664,616**		**58.3**	**31.9**	**1.7**	**0.5**	**0.03**	**0.3**	**2.0**	**5.2**	**41.7**		**18.1**
Calcasieu Pass LNG Export Terminal Site													
Cameron Parish	6,963		90.2	1.5	0.4	0.6	0.0	0.0	2.7	4.6	9.8		6.9
Census Tract 9701.01/ Block Group 1	2,498		81.4	0.0	1.0	1.6	0.0	0.0	6.4	9.5	**18.6**		3.0
Census Tract 9701.01/ Block Group 2	1,820		99.9	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1		**11.7**
Census Tract 9701.02/ Block Group 1	194		48.5	51.5	0.0	0.0	0.0	0.0	0.0	0.0	**51.5**		0.0
Census Tract 9701.02/ Block Group 2	442		93.9	0.0	0.0	0.0	0.0	0.0	6.1	0.0	6.1		0.0
Census Tract 9702.02/ Block Group 1	238		97.9	0.0	1.7	0.0	0.0	0.0	0.4	0.0	2.1		0.0

Table 2
Minority Populations by Race and Ethnicity and Low-Income Populations in the Project Area

State/ County/ Census Tract and Block Group	Total Population		White Alone Not Hispanic (%)	Black or African American (%)	Asian (%)	American Indian and Alaskan Native (%)	Native Hawaiian and Other Pacific Islander (%)	Some Other Race Alone (%)	Two or more races (%)	Hispanic or Latino (%)	Total Minority (%)[b]		Low Income Below Poverty Level (%)
*Census Tract 9702.02/ Block Group 2**	219		98.6	0.9	0.0	0.0	0.0	0.0	0.0	0.5	1.4		**24.4**
Census Tract 9702.03/ Block Group1	672		87.6	0.0	0.0	0.0	0.0	0.0	0.0	12.4	**12.4**		**8.3**
Census Tract 9702.03/ Block Group 2	643		100.0	0.0	0.	0.0	0.0	0.0	0.0	0.0	0.0		**16.0**

Source: U.S. Census Bureau. 2020 a,c,d. American Community Survey, 2016-2020, File # B17017, and File # B03002.
*The Export Terminal is within this block group.
[b] "Minority" refers to people who reported their ethnicity and race as something other than non-Hispanic White.
Due to rounding differences in the dataset, the totals may not reflect the sum of the addends.



CP LNG Terminal Facilities
State Boundary
25 km Buffer
Parish Boundary
Census Block Group

0 2.5 5 Miles

N

Figure 1
Identified Minority Populations by Census Block Groups
Calcasieu Pass Project
Cameron Parish, Louisiana

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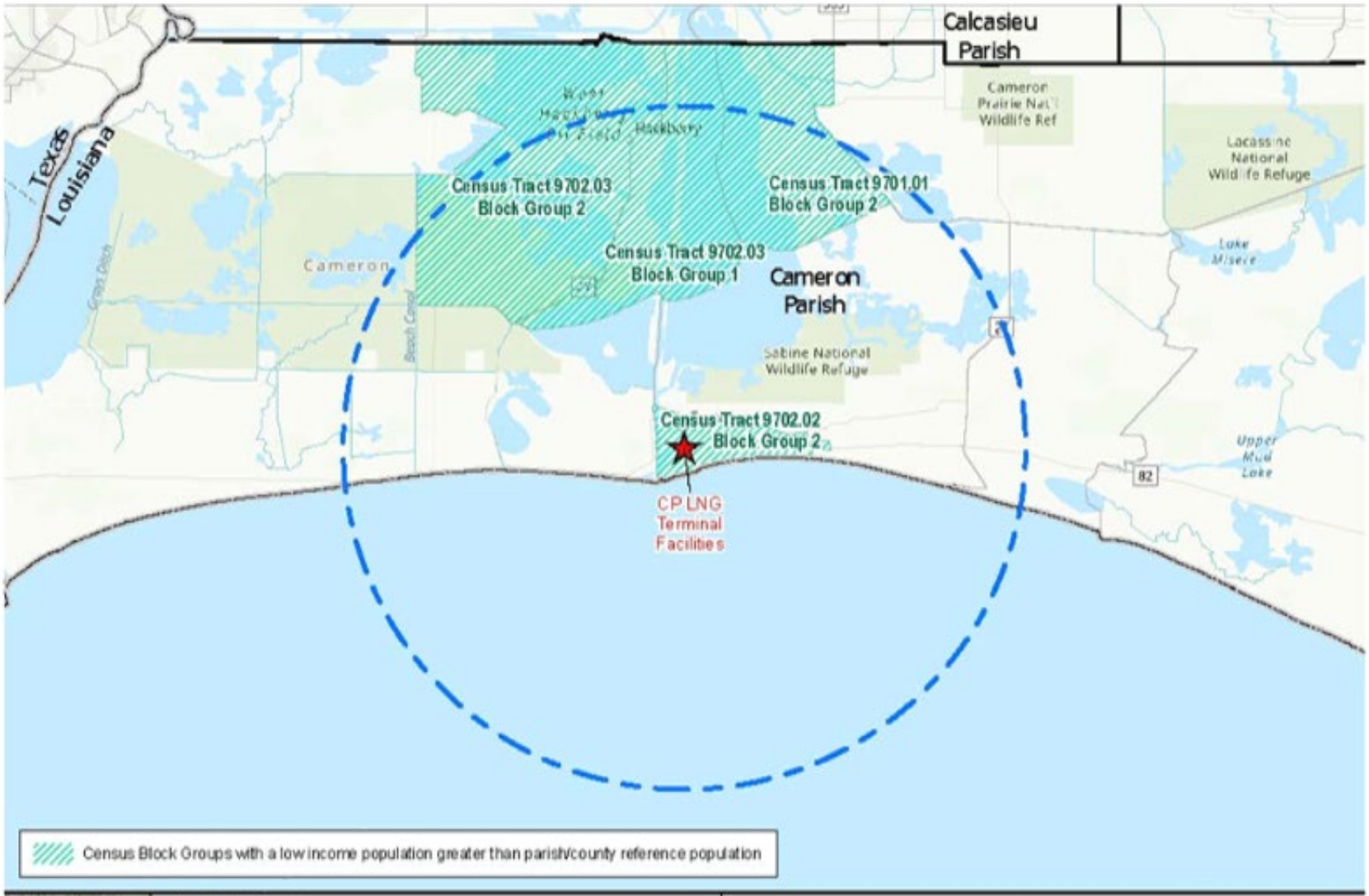

Figure 2
Identified Low-Income Populations by Census Block Groups
Calcasieu Pass Project
Cameron Parish, Louisiana

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Impacts on Environmental Justice Communities

As previously described, *Promising Practices* provides methodologies for conducting environmental justice analyses. Issues considered in the evaluation of environmental justice include human health or environmental hazards; the natural physical environment; and associated social, economic, and cultural factors. Consistent with *Promising Practices* and Executive Order 12898, we reviewed the Amendment to determine if its resulting impacts would be disproportionately high and adverse on minority and low-income populations and also whether impacts would be significant.[10]

Project work within the identified environmental justice community (Census Tract 9702.02, Block Group 2) includes a revised estimate of peak LNG production and export capability based on updated engineering and vendor data, reflecting actual equipment performance. The Amendment does not require the construction of new facilities or the modification of previously authorized facilities.

Impacts from the Amendment are identified and discussed throughout this document. Factors that could affect environmental justice communities include operational air impacts and greenhouse gases (which is discussed under cumulative impacts). In general, the magnitude and intensity of the aforementioned impacts would be greater for individuals and residences closest to the Export Terminal and would diminish with distance. These impacts are addressed in greater detail in the air quality and cumulative sectons of this EA. Environmental justice concerns are not present for other resource areas such as geology, groundwater, surface water, wetlands, wildlife, threatened and endangered species, noise, visual, transportation, or cultural resources due to the minimal overall impact the Amendment would have on these resources and the fact that the Amendment does not require the construction of new facilities or the modification of previously authorized facilities.

Air Quality

As discussed in section B.2, emissions from the Export Terminal would result in permanent impacts on air quality (i.e., lasting the duration of the Export Terminal). Section B.2 states that Amendment operation (i.e., uprate) would not result in changes to the existing, permitted emissions of the facility and would not require modifications to the existing air permits. However, emissions have changed from those estimated in the October 2018 final EIS to the emissions authorized under the Title V and Prevention of Significant Deterioration Permits issued in July 2021 for the facility. As indicated in table 3, emissions of respirable and fine particulate matter (inhalable particulate matter with an aerodynamic diameter less than or equal to 10 microns [PM_{10}] and less than or equal to 2.5 microns [$PM_{2.5}$]), oxides of nitrogen (NO_x), and carbon monoxide (CO) decreased from final EIS issuance to final air permit issuance by the Lousiana Department of Environmental Quality (LDEQ). Sulfur dioxide (SO_2) increased by 1.5 percent since final EIS issuance; however, the Project would not cause or significantly contribute to an exceedance of the National Ambient Air Quality Standards (NAAQS) and would not result in a significant increase in air quality impacts in the region. Although the Amendment would be

[10] *See Promising Practices* at 33 (stating that "an agency may determine that impacts are disproportionately high and adverse, but not significant within the meaning of NEPA").

in compliance with the NAAQS and the NAAQS are designated to protect sensitive populations, we acknowledge that NAAQS attainment alone may not assure there is no localized harm to such populations due to project emissions of volatile organic compounds (VOCs) (VOCs increased 17.6 percent since final EIS issuance), hazardous air pollutants, as well as the presence of non-Project related pollution sources, local health risk factors, disease prevalence, and access (or lack thereof) to adequate health care. Air quality impacts are more fully addressed in section B.2.

Disproportionately High and Adverse Impact Determination

As described throughout this EA, the proposed Amendment itself would not increase air emissions, but certain emission estimates have increased or decreased from those previously analyzed by Commission staff as a result of updated engineering data, and would have permanent air quality impacts on individuals living in the vicinity of the Export Terminal facilities, including environmental justice populations. The impacts experienced by these environmental justice communities in the Export Terminal area would be predominately borne by an environmental justice community. Therefore, impacts would be disproportionately high and adverse. However, because the Amendment would not cause or significantly contribute to an exceedance of the NAAQS and the Amendment would not result in a significant increase in air quality impacts in the region, we conclude Amendment impacts on environmental justice communities would be less than significant as defined by NEPA.

2.0 AIR QUALITY

Local and regional air quality in the Export Terminal area would potentially be affected by a difference in emissions between the final EIS issuance and permitted emissions disclosed in the Amendment application. This section characterizes the existing air quality and describes potential impacts on air quality regionally and locally.

The term air quality refers to relative concentrations of pollutants in the ambient air. Pollutants of concern are primarily ground-level ozone (ozone), CO, NO_x, SO_2, and PM_{10} and $PM_{2.5}$). Ozone is not directly emitted into the atmosphere from an emissions source. Ozone develops as a result of a chemical reaction between NO_x and VOCs in the presence of sunlight.

As well as being the reactant to form ozone, VOCs are a subset of organic compounds that are emitted during fossil-fuel combustion and can cause a variety of health effects, from irritation to more serious health impacts.

The term "greenhouse gases" (GHG) refers to the gases and aerosols that occur in the atmosphere both naturally and as a result of human activities, such as the burning of fossil fuels. GHGs produced by fossil-fuel combustion are primarily carbon dioxide (CO_2), methane, and nitrous oxide. GHGs' status as a pollutant is not related to toxicity, as they are non-hazardous to health at normal ambient concentrations. GHGs absorb infrared radiation in the atmosphere, and an increase in emissions of these gases is the primary cause of warming of the climatic system.[11]

[11] Further information regarding GHGs and increasing levels of CO_2 can be found at https://www.epa.gov/climate-indicators

GHGs occur in the atmosphere both naturally and as a result of fossil-fuel combustion and land use change. The primary GHGs that would be emitted by the Project are CO_2, methane, and nitrous oxide. Emissions of GHGs are typically quantified and regulated in units of CO_2 equivalents (CO_2e). The CO_2e takes into account the global warming potential (GWP) of each GHG. The GWP is the measure of a particular GHG's ability to absorb solar radiation as well as its residence time within the atmosphere. The GWP allows comparison of global warming impacts between different gases; the higher the GWP, the more that gas contributes to climate change in comparison to CO_2. Thus, CO_2 has a GWP of 1, methane has a GWP of 25, and nitrous oxide has a GWP of 298.[12] There are no applicable ambient standards or emission limits for GHG under the CAA.

Existing Air Quality

The Amendment is proposed in Cameron Parish, Louisiana, where the climate is humid and subtropical with long, hot summers and short, mild winters (USEPA, 2014). Proximity to the Gulf of Mexico and the Calcasieu River Ship Channel means that humidity in the Amendment area is relatively high. Wind direction in the Amendment area is dependent on the time of year. Spring and summer months experience winds coming from the south, whereas during the fall and winter months, wind direction is typically from the north or northeast. Over the course of the year, typical wind speeds vary from 1 mile per hour (mph) to 27 mph, with winds rarely exceeding 32 mph. The highest average wind speed of 17 mph (moderate breeze) occurs around mid-February each year. The lowest average wind speed of 8 mph (gentle breeze) occurs around early August, at which time the average daily maximum wind speed is 15 mph (moderate breeze).

The Amendment area receives an annual average of 57.2 inches of rain. February is typically the driest month of the year with a monthly mean of 3.3 inches, whereas June tends to be the wettest month with a monthly mean of 6.1 inches. Snow events are rare, with an annual mean of 0.3 inch of snow, which is likely to occur in January or February. Temperatures range from a daytime average of 60.6 °F in February to 91.3 °F in August (NOAA, 2004).

Ambient air quality is protected by the Clean Air Act of 1970, as amended in 1977 and 1990. The USEPA oversees the implementation of the Clean Air Act and establishes the NAAQS to protect human health and welfare (USEPA 2020).[13] NAAQS have been developed for seven "criteria air pollutants," including nitrogen dioxide (NO_2), CO, ozone, SO_2, $PM_{2.5}$, PM_{10}, and lead, and include levels for short-term (acute) and long-term (chronic) exposures. The NAAQS include two standards, which are primary and secondary. Primary standards establish limits that are considered to be protective of human health and welfare, including sensitive populations such as children, the elderly, and those with compromised respiratory function, i.e. asthmatics. Secondary standards set limits to protect public welfare, including protection against

[12] These GWPs are based on a 100-year time period. We have selected their use over other published GWPs for other timeframes because these are the GWPs the USEPA has established for reporting of GHG emissions and air permitting requirements. This allows for a consistent comparison with these regulatory requirements.

[13] The current NAAQS are listed on the USEPA's website at https://www.epa.gov/criteria-air-pollutants/naaqs-table.

reduced visibility and damage to crops, vegetation, animals, and buildings (USEPA 2020). States have the authority to adopt ambient air quality standards if they are at least as stringent as the NAAQS. While states can promulgate more stringent standards than the NAAQS, the LDEQ has adopted all the NAAQS established by the USEPA.

The USEPA, state, and local agencies have established a network of ambient air quality monitoring stations to measure concentrations of criteria pollutants across the United States. The data are then averaged over a specific time period and used by regulatory agencies to determine compliance with the NAAQS and to determine if an area is in attainment (criteria pollutant concentrations are below the NAAQS), nonattainment (criteria pollutant concentrations exceed the NAAQS), or maintenance (area was formerly nonattainment and is currently in attainment). Calcasieu Parish is currently in attainment with the NAAQS.

Project Emissions

The proposed Amendment (i.e., increase in liquefaction) is a result of updated engineering and vendor data, reflecting actual equipment performance, and would not require construction or the installation of any new equipment. Therefore, there are no construction emissions as a result of the Amendment. Amendment operation would not result in changes to the existing, permitted emissions of the facility and would not require modifications to the existing air permits.[14] However, as a result of updated engineering and vendor data, process optimization, and changes to equipment as part of the final design process (including the backup warm/cold flare, acid gas thermal oxidizer, two firewater pumps, and two emergency generators), emissions have changed from those estimated in the October 2018 final EIS to the emissions authorized under the Title V and Prevention of Significant Deterioration Permits issued by LDEQ in July 2021 for the facility. Therefore, this section (and reference to the Amendment in the context of air quality and cumulative air quality) analyzes the change in emissions from the final EIS issuance to the current operating conditions, while noting that the uprate itself would not result in a change in the permitted emissions.

Deep South comments that FERC must quantify the additional Amendment emissions. Deep South also states that the Amendment would result in increased PM, NO_x, and VOC pollution, which can cause respiratory diseases and cause smog. The change in emissions are summarized below in table 3 in tons per year (tpy). Contrary to Deep South's comments, we note that the Amendment would result in a reduction in PM and NO_x emissions.

[14] Title V Permit No 0560-00987-V4 is available at https://edms.deq.louisiana.gov/app/doc/view?doc=12782236; PSD Permit No. PSD-LA-805(M-4) is available at https://edms.deq.louisiana.gov/app/doc/view?doc=12782238.

Table 3 Currently Permitted Facility-wide Emissions and Final EIS Emissions			
Pollutant	**2018 final EIS - Operational Emissions[1], tpy**	**Current Permitted Facility-wide Emissions[2], tpy**	**Change in Emissions from those estimated in final EIS, tpy**
$PM_{10}/PM_{2.5}$	241.85	236.00	-5.85
SO_2	94.77	96.25	1.48
NO_x	476.54	459.51	-17.03
CO	763.15	705.63	-57.52
VOC	74.10	87.17	13.07
CO_2e	3,906,336	3,970,643	64,307
[1] Based on table 4.11.1.5-1, Operational Emissions (Export Terminal Site), of final EIS for Venture Global Calcasieu Pass, LLC and TransCameron Pipeline, LLC, Calcasieu Pass Project (Docket Nos. CP15-550-000, CP15-551-000, and CP15-551-001).			
[2] Based on the current Title V Permit No. 0560-00987-V4, issued on July 1, 2021 (Turbine Final Operating Mode).			

As indicated in table 3, half of the pollutants decreased from final EIS issuance to final air permit issuance by the LDEQ. SO_2, VOCs, and carbon dioxide equivalents (CO_2e) increased by 1.5 percent, 17.6 percent, and 1.6 percent, respectively, since final EIS issuance. Based on these minor increases in emissions from those analyzed in the final EIS, we conclude the Project would not result in significant impacts on regional air quality or result in a violation of the NAAQS.

Impacts on Ambient Pollutant Concentrations – Ozone

The Export Terminal is in Cameron Parish, which is currently designated as an attainment area for the 2008 and 2015 ozone (O_3) NAAQS. However, in the final EIS, because there are three areas of potential air quality concern in the larger region beyond Cameron Parish, an ozone analysis was completed. The three areas of potential air quality concern are:

- parishes in the Baton Rouge Metropolitan Statistical Area that were only recently designated as attainment for the 2008 O_3 NAAQS (about 110 miles northeast of the Export Terminal);
- the Houston/Galveston/Brazoria 2015 O_3 NAAQS nonattainment area (about 60 miles west of the Export Terminal); and
- the Beaumont/Port Arthur 2008 O_3 NAAQS attainment area, a former nonattainment area in which O_3 remains a concern and which is relatively nearby (about 30 miles northwest of the Export Terminal).

In the final EIS, due to the quantity of O_3 precursor emissions (VOC and NO_x) from the Export Terminal and the proximity of the Export Terminal to these three areas, Calcasieu Pass performed a modeling analysis to quantify the potential impact of the Export Terminal on O_3 concentrations in the surrounding area. The analysis was performed in accordance with USEPA and LDEQ air quality modeling guidelines, including the *Revisions to the Guideline on Air Quality Models: Enhancements to the AERMOD Dispersion Modeling System and Incorporation*

of Approaches to Address Ozone and Fine Particulate Matter. Based on this guidance, Calcasieu Pass utilized the highest daily 8-hour maximum O_3 contribution from the project source on high modeled days at each receptor should be added to the monitored design value at that receptor. For the final EIS analysis, the maximum monitored design value in the Lake Charles area for 2013–2015 was used to conservatively represent the monitored design value at all receptors. The design values were 68 parts per billion (ppb) at the LDEQ Carlyss air quality monitoring station (EPA AIRS ID: 22019002) and 66 ppb at the LDEQ Vinton air quality monitoring station (EPA AIRS ID: 22019009).

As concluded in the final EIS, the addition of the modeled Export Terminal impact (1.31 ppb) to these monitored design concentration levels would not exceed either the 75 ppb 2008 O_3 NAAQS or the 70 ppb 2015 O_3 NAAQS. Therefore, the final EIS concluded that the Export Terminal would not cause or contribute to a violation of the O_3 NAAQS.

In order to evaluate the impacts of the increased VOC emissions on the O_3 NAAQS in the Amendment area, the O_3 analysis that was conducted for the final EIS was re-evaluated given the current permitted VOC emissions. The final EIS Export Terminal modeled impact (1.31 ppb) was extrapolated to include the increase permitted VOC emissions (1.54 ppb); the addition of the predicted maximum impact to the 2020 Ozone Design Value in the Amendment area, 64 ppb at the LDEQ Carlyss air quality monitoring station (EPA AIRS ID: 22019002), would not exceed the 70 ppb 2015 Ozone NAAQS. Therefore, the permitted VOC emissions would not cause or contribute to a violation of the O_3 NAAQS and would not result in significant impacts on ozone levels in the Amendment area.

3.0 RELIABILITY AND SAFETY

The regulatory oversight, hazards, and engineering designs remain unchanged from that analyzed in the October 2018 final EIS for the Calcasieu Pass LNG Export Project in Docket No. CP15-550-000. Calcasieu Pass states the increased peak liquefaction capacity achievable during optimal conditions does not involve construction of new facilities, or modification to facilities approved under CP15-550-000. Rather, the increase in peak liquefaction is due to updated engineering and vendor data, reflecting actual equipment performance, instead of estimated equipment performance which formed the basis of the October 2018 final EIS.

Process Design

Calcasieu Pass requests under this application to increase their export rate to 12.4 MTPA. LNG facilities experience some losses from liquefaction rundown due to flashing of LNG into natural gas as it depressurizes upon entering the LNG storage tank and due to boil-off of LNG into natural gas from heat gain through the LNG storage tank and piping. The Calcasieu Pass LNG facility collects and compresses the LNG that flashes, vaporizes, and boils off and uses it as fuel gas. Since the facility does experience some LNG flashing, vaporization, and boil off, not all of the LNG rundown from the liquefaction process is available for export. Therefore, the gross liquefaction rate will slightly exceed the net liquefaction rate that forms the export rate. FERC staff reviewed the Heat and Material Balances (HMB) filed under this application and confirmed the gross liquefaction rate exceeds the export rate by an amount equal to the flashing, vaporization, and boil off. Those HMBs support a net liquefaction rate and export rate of 12.4

MTPA with a gross liquefaction rate of 12.8 MTPA under Average Feed Gas composition and Average Ambient temperature conditions.

FERC staff reviewed the available HMBs to assess the nature of the increased gross liquefaction capacity. FERC staff confirmed the uprate application does not propose new equipment, nor changes to operating parameters which bound the sizing of any safety systems. FERC staff confirmed the differences between the CP15-550-000 application HMBs and the CP22-25-000 uprate HMBs are explained by actual equipment performance versus estimated performance used in the CP15-550-000 application HMBs. As a result of the finalized equipment performance, a few process streams would see a higher operational flow rate; however, operational pressure and temperatures would not differ significantly from those proposed in the CP15-550-000 liquefaction project. Additionally, the volume of hazardous fluids contained within the liquefaction equipment and piping is not changing because of the uprated liquefaction capacity, only the rate at which those volumes of hazardous fluids circulating through the liquefaction system is changing.

However, we recognize that liquefaction rates vary with gas composition and ambient temperature. Therefore, FERC staff recommends in section C that Calcasieu Pass provide HMBs for the Rich Gas Cold Ambient, and Lean Gas Hot Ambient which commonly form the bounding process conditions and reflect and complement the same finalized performance at the Average Gas Average Ambient case provided to support the 12.4 MTPA export rate.

Mechanical Design

FERC staff reviews applications of LNG export terminals for the adoption and implementation of industry codes and standards. Process piping and vessels are designed to ASME B31.3 and ASME Section VIII, respectively. During the CP15-550-000 liquefaction export final design and construction phase, FERC staff verified piping and vessel material selection was appropriately selected for the expected process conditions and verified in Calcasieu Pass' and their EPC's quality assurance and control program upon material receipt. Since the operating process pressures and temperatures are not significantly changing from the uprated liquefaction rate, there is no impact to the piping and vessel material selection. If authorized, FERC staff would confirm this to be the case for the Rich Gas, Cold Ambient and Lean Gas, Hot Ambient cases prior to construction of final design.

FERC staff also reviewed the piping velocities in streams which would have a higher flowrate because of the uprated liquefaction capacity. FERC staff found the velocities of these streams remained well below recommended limits from industry recommendations, and the velocities did not present any erosional concerns which would increase the risk of leaks or piping failures. Process streams in the liquid phase with higher flowrates may also impact the mechanical design through dynamic surge effects following valve closures and pump startup. Several liquid streams will experience elevated flowrates with the uprated performance, including, but not limited to, LNG rundown from the liquefaction trains, Hot Oil, and Amine. FERC staff recommends in section C that Calcasieu Pass provide a dynamic pressure surge analysis which demonstrates the pressure surge following valve closures and pump startups remains within acceptable limits for the piping material.

Another feature of the mechanical design associated with safety is pressure relief valves, which protect equipment and piping from overpressure events caused by either process upsets, or external events such as a fire. FERC staff identified one relief valve in the liquefaction system whose sizing was based on a full process flow. FERC staff confirmed the existing relief valve was sized with enough margin to accommodate the elevated flowrates resulting from the finalized equipment performance. We also note that the withdrawal rate from the LNG tank remains unchanged, such that vacuum scenarios are not expected to change. However, if authorized, any changes, including those to pressure or vacuum relief design, would need to be filed to demonstrate equivalency and receive written authorized prior to implementation. Therefore, FERC staff recommends in section C (recommendation 1) that Calcasieu Pass provide any changes for review and approval to ensure capacities and margins of safety systems are maintained.

Hazard Mitigation Design

The hazard mitigation layers of protection installed at the Calcasieu Pass LNG facility are numerous and varied. These mitigation measures work to contain and direct hazardous fluid spills to safe and remote areas, prevent ignition of flammable releases, and detect hazardous fluid releases and ignitions.

Spill Containment

The Calcasieu Pass LNG facility has several spill containment areas which collect fluids accidently released. Spills from the liquefaction blocks are contained by curbed areas around the liquefaction blocks, and then drained to a single impoundment basin by a series of trenches. The impoundment basin which serves the liquefaction blocks also serves the marine loading area.

As discussed in the October 2018 final EIS, the spill impoundment basin that serves the liquefaction and marine loading areas is sized for a 10-minute spill from the LNG loading line. The October 2018 final EIS also explains the capacity of the LNG loading pumps is 12,000 m^3/hr, which remains unchanged. In contrast, a liquefaction rate of 12.8 MTPA is only about 3,420 m^3/hr, well within the spill containment design flowrate. Therefore, the uprated liquefaction will not result in any conditions where a spill from the liquefaction rundown header will overflow the impoundment designed to safely collect spills from the liquefaction area.

The HMBs provided by Calcasieu Pass to support the 12.4 MTPA export rate were developed using the Average Gas and Average Ambient conditions. Typically, the maximum instantaneous LNG rundown from liquefaction will occur during periods of simultaneous Cold Ambient and Rich Feed Gas. While the liquefaction production is greater during periods of Rich Feed Gas and Cold Ambient than the Average Gas and Average Ambient, the liquefaction production is only greater by a few percentage points. Therefore, even a liquefaction rundown spill during simultaneous Rich Gas and Cold Ambient temperatures will not exceed the design basis of the spill containment.

Spacing and Plant Layout

The October 2018 final EIS discusses the Calcasieu Pass LNG facility will meet the plant spacing and layout requirements in Chapter 2 of National Fire Protection Association (NFPA) 59A (2001), *Standard for the Production, Storage, and Handling of LNG*, as adopted by 49 CFR

Part 193. NFPA 59A (2001) addresses the requirements for spill containment, leak control, spacing between containers, spacing of containers from property lines, and maximum allowable heat fluxes from impoundment fires on property lines.

As discussed above, the uprated liquefaction rate is not the result of any additional equipment or processes to the facilities approved under the existing liquefaction project. Therefore, there is no additional equipment which would require spacing evaluation, nor any new impoundments with the potential for fires and heat flux limitations to property lines.

Ignition Controls

To prevent the ignition of unintentionally released hazardous fluids, hazardous area zones around potential leak sources are defined in industry codes such as NFPA 59A, 70, 497, and American Petroleum Institute (API) Recommended Practice 500. Depending on the potential risk of an area containing hazardous fluids, the area is designated either unclassified, Class 1 Division 1, or Class 1 Division 2 and a Group based on associated maximum experimental safety gap and ignition energy properties. Equipment installed in these areas is then rated accordingly to prevent ignition from a release.

Since the liquefaction uprate does not involve the installation of new piping or equipment, there are no areas previously considered unclassified that need to be classified. Furthermore, since the operating pressures in the liquefaction system did not change, there is likewise no change to existing classified areas which may utilize process pressure in determination of the hazardous area classification.

Hazard Detection, Emergency Shutdown, and Depressurization Systems

In the event of a hazardous fluid release, the Calcasieu Pass LNG facility utilizes a variety of detectors to alert operators to hazardous fluid releases and ignitions. The Calcasieu Pass LNG facility utilizes both open path gas detectors, which detects when flammable gasses have crossed the linear path between two detectors, as well as point detectors which detect when gas has moved across a stationary point. Since the liquefaction uprate does not involve adding any new process equipment nor changing process fluids, there are no new potential leak sources resulting from the uprated performance.

If a flammable fluid release happens to ignite, the Calcasieu Pass LNG facility utilizes flame detectors to detect fires. Since the liquefaction uprate does not involve the addition of any new equipment, there are no additional potential sources of fire which would necessitate the installation of additional flame detectors.

Hazard Control

In the event of an ignition of a hazardous fluid release, the Calcasieu Pass LNG facility utilizes several methods of controlling the hazards, including portable handheld fire extinguishers, and fire water.

Selection and placement of handheld extinguishers depends on the location of the potential hazard, and the type of hazardous fluid. Since the increase in liquefaction rate proposes

no new equipment, there are no new potential sources of hazardous releases which would necessitate additional handheld extinguishers.

Firewater in the liquefaction area is provided by a combination of deluge systems and firewater monitors. Deluge systems provide coverage for certain vessels within the liquefaction system. Deluge systems are sized to provide vessels a specified firewater density expressed as gallons per min per square foot. The liquefaction uprate does not propose any new equipment, nor increase the size of existing equipment. Therefore, the existing deluge systems providing coverage to vessels in the liquefaction system do not need to change because of the uprated performance.

Passive Cryogenic Temperature and Fire Protection

Process structures in the liquefaction facility are potentially exposed to both cold temperatures from cryogenic releases, and high temperatures from pool fires. Structural steel is treated with a combination cryogenic protection, and high heat protection. Since the liquefaction uprate does not propose new equipment, or relocating new equipment, there are no new sources of cryogenic releases or pool fires not considered under the base project. Therefore, no additional passive protection is necessary for this liquefaction uprate.

Civil and Geotechnical Design

Civil and Geotechnical designs of LNG facilities are required to withstand loads from natural hazards, as well as the dead and live loads from the process equipment. A geotechnical analysis was conducted for the base project, and from the results of that analysis, equipment foundations were designed to adequately support process equipment. Since the liquefaction uprate does not require the addition of new equipment, there is no new geotechnical analysis required, nor any new foundation designs required. Furthermore, the uprate results in process fluids circulating and passing through the liquefaction facilities at a higher flowrate. However, the volumes of process fluids contained in the liquefaction equipment will not change. Therefore, the contribution from the process fluids to the foundational loadings will not change with the liquefaction uprated performance.

External Impacts

FERC staff reviews the potential risk to the facility from external incidents at nearby roads, railways, aircraft, pipelines, and other hazardous material facilities and power plants. Since the uprate application includes construction of no new equipment, there is not any additional risk to the facility from the forementioned external incidents.

A higher liquefaction rate could result in a higher hydrocarbon condensate production. However, the Calcasieu Pass facility vaporizes the condensate and utilizes it as fuel. Therefore, any additional condensate production from the uprated performance would not increase the risk to the facility from a trucking incident.

Onsite and Offsite Emergency Response Plans

LNG facilities are required to develop plans to protect personnel and the public following an emergency at the facility. Emergency response plans are often tailored to the specific hazards

located at each facility. Since the Calcasieu Pass uprate includes no new equipment or hazardous fluids, there are no additional hazards beyond the existing hazards covered by the existing Emergency Response Plan.

4.0 CUMULATIVE IMPACTS

In accordance with NEPA, we considered the cumulative impacts of the Amendment and other projects or actions in the area. Cumulative impacts represent the incremental effects of the proposed action when added to other past, present, or reasonably foreseeable future actions.

The cumulative impact analysis generally follows the methodology set forth in relevant guidance from the CEQ and the USEPA and focuses on potential impacts from the proposed projects on resource areas or issues where incremental contributions would be potentially significant when added to potential impacts of other actions if they take place in the same general area over a given period of time. To avoid unnecessary discussions of insignificant impacts and to adequately address and accomplish the purpose of this analysis, an action must meet the following criteria to be included in the cumulative impacts analysis:

- impact a resource area potentially affected by the Project;
- cause this impact within all, or part, of the Project's geographic scope; and
- cause this impact within all, or part, of the time span for the potential impact of the Project.

This EA analyzes the Amendment impacts on environmental justice, air quality, and reliability and safety. As described earlier in section A of this EA, the Amendment would not impact geology and soils; groundwater; wetlands; water resources; fisheries and marine mammals; special status species; vegetation and terrestrial wildlife (including threatened and endangered species); land use, recreation, traffic, or visual resources; socioeconomics; cultural resources; noise or air emissions from construction. In addition, the five to six additional port calls per year would be very minor and result in negligible impacts above what was analyzed in the final EIS. Therefore, cumulative impacts on these resources would not be realized and are not evaluated for cumulative impacts. Below, we assess the potential for cumulative impacts on air quality during operation and environmental justice. The geographic scope used to assess cumulative impacts for each resource is discussed below in table 4.

Table 4
Geographic Scope for Cumulative Impact Analysis

Environmental Resource	Area of Impact
Air Quality – Operations	25 kilometers based on the air quality modeling that was completed in the Final EIS
Environmental Justice	Affected environmental justice block groups.

RESTORE stated that scoping must include also the combined effects of proposals for CP2/CPExpress and Commonwealth projects because they would be adjacent to the existing Export Terminal operation and its increased activity. These projects are discussed below.

4.1 PROJECTS IDENTIFIED WITHIN THE GEOGRAPHIC SCOPE

Table 5 identifies three present and reasonably foreseeable projects or actions that would occur within the Amendment's geographic scope. These projects were identified by a review of publicly available information; and information provided by Calcasieu Pass. These projects include two FERC jurisdictional projects as well as one non-jurisdictional project. Cumulative impacts from other facilities were analyzed in the October 2018 final EIS (section 4.13); those impacts remain unchanged, and are therefore not addressed further in this EA.

Table 5 Other Actions Considered in the Cumulative Impacts Analysis for the Proposed Amendment					
Project	**Parish or County, State**	**Description**	**Construction/ Operational Status**	**Distance/Direction to Proposed Project**	**Resources Considered**
Liquefied Natural Gas (LNG) Terminals					
CP2 LNG Project/Venture Global CP2 LNG, LLC (CP22-21-000) CP Express Project/Venture Global CP Express, LLC (CP22-22-000)	Cameron and Calcasieu Parishes, LA and Jasper and Newton Counties, TX	New LNG export facility and associated 85.4 mile-long pipeline and 6.0 mile-long lateral	FERC application filed in 2021. Construction anticipated to begin Q2 2023 with Phase 1 in-service anticipated Q2 2025. Construction and in-service of Phase 2 expected to follow Phase 1 by 12 months.	0.5 mile east of and adjacent to Export Terminal Site	Air quality Environmental justice
Commonwealth LNG Project/ Commonwealth LNG, LLC (CP19-502)	Cameron Parish, LA	New LNG export facility and a 3-mile-long pipeline	FERC application filed in 2019. Commonwealth Terminal construction anticipated to begin in Q3 2023, and operations are anticipated to begin in 2026. Pipeline construction is anticipated to begin Q1 2024 and be completed in Q1 2025.	0.5 mile southwest of Export LNG Terminal Site	Air quality Environmental justice
Other Projects or Reasonably Foreseeable Future Actions					
Calcasieu River and Pass, LA Operations and Maintenance Location / U.S. Army Corps of Engineers	Calcasieu and Cameron Parishes, LA	Periodic dredging of the river and channel to facilitate boat traffic	Annual dredging.	<0.1 mile west of the Export LNG Terminal Site	Air quality Environmental justice

4.2 POTENTIAL CUMULATIVE IMPACT ON SPECIFIC RESOURCES WITHIN THE PROJECT AREA

Environmental Justice

The Amendment itself would not result in increased air emissons; however, changes in operational emissions disclosed in this EA have resulted in permanent impacts on air quality (lasting the operational length of the Export Terminal). Project operation would contribute cumulatively to air pollutant levels in combination with the other projects listed in table 5 and the inventory sources included in the 2018 cumulative modeling. In order to evaluate the cumulative air quality impact of the Export Terminal on nearby environmental justice communities, we evaluated the maximum Export Terminal impacts combined with impacts due to inventory sources that would occur within every census block group within the radius of impact that coincides with an environmental justice population. As further detailed in *Air Quality-Operations* below, the radius of impact is the distance from the center of the facility to the furthest receptor that is equal to or greater than the Significant Impact Level (SIL).[15] If the modeled level is less than the SIL, then the impact is considered to be less than significant with respect to the NAAQS for that pollutant and further analysis is not required. Therefore, the air quality impact from the Export Terminal is considered less than significant beyond the radius of impact. In this case, the radius of impact for cumulative NO_2 is 9.3 kilometers (km), and for $PM_{2.5}$ is 2.2 km, while all remaining pollutants are less than 1 km.

Tables 6 and 7 below show the maximum modeled concentrations due to the Export Terminal and all other nearby inventory sources from the 2018 modeling completed for the final EIS and for the state permitting. Because the Amendment itself would not result in increased air emissions, and the changes in operational emissions disclosed in this EA would not significantly impact the modeling results that was completed for the final EIS, the CP2 and Commonwealth Projects emission sources were not included in the dispersion modeling. These projects would be required to complete dispersion modeling as part of their air permitting process with the state; the existing emissions of the Export Terminal would be included as part of background air quality during that permitting process. Table 6 indicates that for all receptors in the census block groups with environmental justice communities where the model predicts an exceedance of the NAAQS for 1-hour NOx, the Amendment project would add a less than significant contribution to the predicted exceedance. In other words, the maximum predicted Export Terminal-only concentrations are less than the SIL at these receptors.

[15] The USEPA has historically interpreted Clean Air Act section 165(a)(3) and associated regulations to mean that a source must have a "significant impact" on ambient air quality in order to cause or contribute to a violation. Consequently, EPA designated emission levels for criteria pollutants that if exceeded by a source, could cause or contribute to an exceedance of the NAAQS. These levels are conservative to ensure the protection of air quality and, if predicted, would trigger additional analyses to include ambient conditions. The term used for these designated emission concentrations are the significant impact levels, or SILs. The SILs are based on standard deviation confidence intervals to represent the inherent variability in pollutant concentrations, as determined by the national monitoring network. For the purposes of our analysis, an exceedance of a SIL concentration indicates that the impact may be significant; however, we would only conclude significance if further analysis determines that the emissions would lead to an exceedance of the NAAQS.

Table 7 provides the maximum Export Terminal impacts for pollutants in the nearest census block group to the Export Terminal. This table indicates that the maximum concentrations from the Export Terminal in the nearest census block group are greater than the SIL for annual NO_2, 1-hour CO, 3-hour SO_2, 24-hour $PM_{2.5}$, and annual $PM_{2.5}$. However, these maximum concentrations from the Export Terminal, when combined with nearby inventory sources, would not result in an exceedance of the NAAQS. In other words, the Export Terminal and inventory sources combined contribute to between 0.3 to 11.1 percent of the total NAAQS for each pollutant in table 7. Therefore, the Export Terminal would not result in significant impacts on air quality for nearby environmental justice populations.

Table 6 Maximum NO_2 1-Hour LNG Export-Only and Cumulative Impacts in Census Block Groups with Environmental Justice Communities Within the Radius of Impact					
Census Block Group	**NAAQS (µg/m³)**	**SIL (µg/m³)**	**Maximum Modeled Concentration (µg/m³)**		
			Export Terminal	**2018 Inventory Cumulative Sources**	**Total (Project and Inventory)**
Census Tract 9701.01, Block Group 2	188	7.5	0.09	191	191
Census Tract 9702.02, Block Group 2			2.84	480	483
Census Tract 9702.03, Block Group 1			0.10	234	234
Census Tract 9702.03, Block Group 2			0.09	257	257
Census Tract 9701.02, Block Group 1			0.18	176	176

Table 7 The Maximum LNG Export-Only and Cumulative Impacts for Pollutants and Averaging Periods in each Census Block Group within the Radius of Impact (Except for NO_2 1-hour Averaging Period)								
Census Block Group	**Pollutant**	**Averaging Period**	**SIL**	**Maximum Concentration (µg/m3)**		**Total Concentration**	**NAAQS**	**Percent of NAAQS**
				Export Terminal	**2018 Inventory Cumulative Sourcese**			
Census Tract 9702.02, Block Group 2	NO_2	Annual	1	**1.2**	4.6	5.8	100	5.8
	CO	1-hour	2,000	**2,087.6**	1,974.3	4,061.9	40,000	10.2
		8-hour	500	179.6	-	179.6	10,000	1.8
	SO_2	1-hour	7.8	7	-	7.0	196	3.6
		3-hour	25	**53.9**	53	106.9	1,300	8.2
		24-hour	5	3.05	-	3.1	365	0.8
		Annual	1	0.2	-	0.2	80	0.3
	$PM_{2.5}$	24-hour	1.2	**2.8**	1.1	3.9	35	11.1
		Annual	0.3	**0.4**	-	0.4	12	3.3
	PM_{10}	24-hour	5	3.2	2.1	5.3	150	3.5
		Annual	N/A	0.5	0.4	0.9	N/A	N/A

Bold concentrations indicate where the pollutant concentration exceeds the SIL.

The change in operational emissions disclosed in this EA would increase the atmospheric concentration of GHGs (CO_2e would increase 1.6 percent from what was disclosed in the final EIS issuance), in combination with past and future emissions from all other sources and would contribute incrementally to future climate change impacts. While the climate change impacts taken individually may be manageable for certain communities, the impacts of compounded extreme events (such as simultaneous heat and drought, or flooding associated with high precipitation on top of saturated soils) may exacerbate preexisting community vulnerabilities and have a cumulative adverse impact on environmental justice communities. This EA is not characterizing the Amendment's GHG emissions as significant or insignificant because the Commission is conducting a generic proceeding to determine whether and how the Commission

will conduct significance determinations going forward.[16] GHG impacts are more fully addressed in the climate change dicussion in this section below.

Air Quality – Operations

Amendment operations would not result in changes to the existing, permitted emissions of the facility; however, emissions have changed from those estimated in the October 2018 final EIS, resulting in minor increases in three pollutants and decreases in the remaining three pollutants. Therefore, we are re-examining the air quality dispersion modeling results as summarized in the final EIS here in order to provide a cumulative air impact analysis. The emissions would contribute cumulatively to air pollutant levels in combination with other projects nearby identified as part of the cumulative impact analysis.

As summarized in the final EIS, Calcasieu Pass conducted an air quality dispersion modeling analysis to estimate ambient pollutant concentrations in the vicinity of the project. [17] The analysis used the American Meteorological Society/USEPA Regulatory Model (AERMOD) to predict maximum short-term and annual concentrations. Initially, Calcasieu Pass conducted a preliminary modeling analysis for those pollutants that are subject to Prevention of Significant Deterioration (PSD) (CO, NO_2, PM_{10}, $PM_{2.5}$, and SO_2). Most of the pollutants of concern regarding dispersion modeling decreased from the final EIS issuance to those in the current air quality permit; therefore, we conclude the model results are still applicable, and the increase of SO_2 pollutant concentrations would not significantly change the final EIS dispersion modeling results given the minor increase (1.5 percent). VOCs and CO_2e are not modeled as criteria pollutants using AERMOD. In a preliminary impact analysis, the net emissions increases of PSD pollutants from the project are evaluated to determine whether they have the potential to have significant impacts on air quality in the area surrounding the facility. Modeled concentrations are compared to the respective USEPA SILs and PSD Increments. If the modeled level is less than the SIL, then the impact is considered to be less than significant with respect to the NAAQS for that pollutant and further analysis is not required. If the modeled level is greater than the SIL, or if the SIL plus a relevant background concentration exceeds the corresponding NAAQS, then a full impact analysis is required. Calcasieu Pass determined relevant background concentrations from nearby LDEQ monitoring stations, in consultation with LDEQ, and used these background concentrations in the full impact analysis. Similarly, if the modeled impact of any pollutant indicates a potential violation of the corresponding PSD increment or NAAQS, then a full impact analysis is required.

The preliminary modeling results in 2018 demonstrated that the Export Terminal would not cause or contribute to a violation of the NAAQS or PSD Increments. However, modeled impacts for the following pollutants and averaging periods exceeded the corresponding SILs for 1-hour CO, 1-hour NO_2, Annual NO_2, 24-hour $PM_{2.5}$, Annual $PM_{2.5}$, and 3-hour SO_2. Therefore, Calcasieu Pass conducted a full impact analysis for these pollutants and averaging periods.

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[16] See Order on Draft Policy Statements, 178 FERC ¶ 61,197 (2022).

[17] FERC eLibrary Accession No. 20180813-5059.

Full Modeling Analysis

Dispersion Model

The dispersion modeling was conducted using version 15181 of USEPA's AERMOD model. AERMOD is recommended by USEPA's 2016 Appendix W Guidance (USEPA, 2016) for determining near-field impacts (impacts within a 31-mile [50-kilometer] radius of the facility) and is approved for regulatory determinations.

All model assessments were performed using the regulatory default options. The final EIS provides additional detail regarding the model inputs for emission sources, land use and terrain, receptor grids, meteorological data, and NO_x to NO_2 conversion factors. AERMOD calculates concentrations at each receptor[18] for each hour of meteorological data. Pollutant concentrations were averaged over short-term (1-hour, 3-hour, 8-hour, or 24-hour) or annual averaging periods as required by the applicable NAAQS averaging period for each modeled pollutant.

Modeling Results

Calcasieu Pass submitted a refined air modeling analysis on August 13, 2018.[19] The results, as discussed in the final EIS, indicate that all predicted concentrations were less than the NAAQS except for 1-hour NO_2 and 24-hour PM_{10}.[20] To address the 1-hour NO_2 and 24-hour PM_{10} exceedances, a "culpability analysis" was performed. A culpability analysis looks not only at the maximum values, but at the contribution of the project to each individual exceedance over all receptors and modeled hours in comparison to other inventory sources.

As summarized in the final EIS, off-site emission inventory data was obtained from LDEQ's Emissions Reporting and Inventory Center database for other industrial sources as described below for the area encompassed by the radius of impact plus an additional 15 km. Based on LDEQ's guidance, to ensure inclusion of all major inventory sources, Calcasieu Pass included any major inventory sources out an additional 5 km in the NAAQS modeling (i.e. radius of impact plus 20 km). These major sources were defined as facilities with emissions (for each modeled pollutant) greater than 250 tpy.

The culpability analysis accounts for situations in which emissions and meteorological conditions are such that the modeled exceedances of the NAAQS are due to other sources only, with little or no contribution from the project. The USEPA's guidance addresses this situation by deeming a project to be in compliance with the NAAQS if the project does not significantly contribute to the modeled exceedances. The USEPA guidance provides that a project does not significantly contribute to a modeled exceedance if its own contribution to the modeled exceedance is less than the SIL. Thus, in addition to the comparison of total concentrations to

[18] A receptor is any location at which the model calculates pollutant concentrations.

[19] FERC eLibrary Accession No. 20180813-5059.

[20] See table 4.11.1.6-2 of the final EIS.

the NAAQS, the culpability analysis adds a second comparison: if the project's contribution to each individual modeled exceedance is less than the SIL, then USEPA and LDEQ consider the project to comply with the NAAQS even though maximum modeled concentrations from all sources exceed the NAAQS. That is the case here. None of the Export Terminal contributions to modeled NAAQS exceedances were greater than the SILs. For 1-hour NO_2, the Export Terminal would contribute only 4 percent of the total, including offsite inventory sources (4.4 $\mu g/m^3$ of the total 119.2 $\mu g/m^3$).

The cumulative model used the higher of the predicted model concentration, using various operating conditions and supporting vessel emissions, for the Export Terminal. The cumulative model indicated that the Export Terminal did not significantly contribute to any of the modeled NAAQS exceedances as the project-related concentrations were all below the SIL. Therefore, the Export Terminal would be in compliance with the NAAQS and would not result in significant impacts on air quality. In addition, based on the reduction of NO_2 that resulted from change in emissions from the final EIS to the current air permit, we further conclude that the Amendment would not result in significant impacts on air quality.

Climate Change

Deep South states that the Amendment would result in increased GHG emissions from the LNG facility that would result in climate change impacts, including accelerated coastal erosion. Climate change is the variation in the Earth's climate (including temperature, precipitation, humidity, wind, and other meteorological variables) over time. Climate change is driven by accumulation of GHGs in the atmosphere due to the increased consumption of fossil fuels (e.g.,coal, petroleum, and natural gas) since the early beginnings of the industrial age and accelerating in the mid- to late-20th century.[21] The GHGs produced by fossil-fuel combustion are CO_2, methane, and nitrous oxide.

In 2017 and 2018, the U.S. Global Change Research Program (USGCRP) issued its *Climate Science Special Report: Fourth National Climate Assessment*, Volumes I and II.[22] This report and the recently released report by the Intergovernmental Panel on Climate Change, *Climate Chaange 2021: The Physical Science Basis*, states that climate change has resulted in a wide range of impacts across every region of the country and the globe.[23] Those impacts extend

[21] Intergovernmental Panel on Climate Change, United Nations, Summary for Policymakers of Climate Change 2021: The Physical Science Basis. (Valerie Masson-Delmotte et al., eds.) (2021), https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM.pdf (IPCC Report) at SPM-5. Other forces contribute to climate change, such as agriculture, forest clearing, and other anthropogenically driven sources

[22] U.S. Global Change Research Program. *Climate Science Special Report: Fourth National Climate Assessment, Volume 1, Chapter 3 Detection and Attribution of Climate Change* (2017), available at: https://science2017.globalchange.gov/downloads/CSSR2017_FullReport.pdf (accessed June 3, 2021).

[23] IPCC, 2021: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Masson-Delmotte, V., P. Zhai, A. Pirani, S. L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M. I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J. B. R. Matthews, T. K. Maycock, T. Waterfield, O. Yelekçi, R. Yu and B. Zhou (eds.)]. Cambridge University Press. In Press.

beyond atmospheric climate change alone and include changes to water resources, agriculture, ecosystems, human health, and ocean systems.[24] According to the Fourth Assessment Report, the United States and the world are warming; global sea level is rising and oceans are acidifying; and certain weather events are becoming more frequent and more severe. These impacts have accelerated throughout the end of the 20th and into the 21st century.[25]

GHG emissions do not result in proportional local and immediate impacts; it is the combined concentration in the atmosphere that affects the global climate. These are fundamentally global impacts that feed back to local and regional climate change impacts. Thus, the geographic scope for cumulative analysis of GHG emissions is global rather than local or regional. For example, a project 1 mile away emitting 1 ton of GHGs would contribute to climate change in a similar manner as a project 2,000 miles distant also emitting 1 ton of GHGs.

Climate change is a global concern; however, for this analysis, we will focus on the existing and potential climate change impacts in the general project area. The USGCRP's Fourth Assessment Report notes the following observations of environmental impacts attributed to climate change in the Southeast region of the United States (USGCRP 2017, USGCRP 2018):

- the near decade of 2010 through 2017 has been warmer than any previous decade since 1920 for average daily maximum and average daily minimum temperature;
- since 1960, there have been lower numbers of days above 95°F compared to the pre-1960 period but during the 2010's the number of nights above 75°F has been nearly double the average over 1901 – 1960. The length of the freeze free season was 1.5 weeks longer on average in the 2010s compared to any other historical period on record;
- number of days with 3 or more inches of rain has been historically high over the past 25 years. The 1990s, 2000s, and 2010s rank first, third and second, respectively in number of events;
- summers have been either increasingly dry or extremely wet, depending on location;
- due to a combination of sea level rise and soil subsidence, approximately 2,006 square miles of land have been lost in Louisiana between 1932 and 2016, or about 23 square miles per year; and
- in southeast Louisiana, relative sea level is rising at a rate of 1 to 3 feet per 100 years.

[24] 6 IPCC Report at SPM-5 to SPM-10.

[25] See, e.g., USGCRP Report Volume II at 99 (describing accelerating flooding rates in Atlantic and Gulf Coast cities).

The USGCRP'S Fourth Assessment Report notes the following projections of climate change impacts in the Project's Southeast United States region with a high or very high level of confidence[26] (USGCRP, 2018):

- climate models project nighttime temperatures above 75°F and daytime maximum temperatures above 95°F become the summer norm. Nights above 80°F and days above 100°F, which are now relatively rare, would become common;
- lowland coastal areas are expected to receive less rainfall on average but experience more frequent intense rainfall events followed by longer drought periods;
- coastal areas along the Gulf of Mexico are flat; therefore, expected sea level rises may cause inundation in certain low lying areas;
- drought and sea level rise will create stressful conditions for coastal trees that are not adapted to higher salinity levels;
- other coastal species may also be stressed by sea level rise and warmer temperatures, prompting migration out of the area; and
- tropical storms and hurricanes may become more intense.

It should be noted that while the impacts described above taken individually may be manageable for certain communities, the impacts of compound events (such as simultaneous heat and drought, or flooding associated with high precipitation on top of saturated soils) can be greater than the sum of the parts.

The USEPA commented that FERC should estimate and analyze potential upstream and downstream GHGs to fully disclose the estimated direct and indirect emissions, broken out by GHG type, associated with the proposed action. Deep South states that the Amendment would result in increased upstream and downstream emissions. Deep South also states that the Amendment would result in increased hydraulic fracturing and natural gas infrastructure in Louisiana. 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.[27] Nevertheless, NEPA requires that

[26] The report authors assessed current scientific understanding of climate change based on available scientific literature. Each "Key Finding" listed in the report is accompanied by a confidence statement indicating the consistency of evidence or the consistency of model projections. A high level of confidence results from "moderate evidence (several sources, some consistency, methods vary and/or documentation limited, etc.), medium consensus." A very high level of confidence results from "strong evidence (established theory, multiple sources, consistent results, well documented and accepted methods, etc.), high consensus." https://science2017.globalchange.gov/chapter/front-matter-guide/

[27] *See Sierra Club v. FERC*, 827 F.3d 36, 46-47 (D.C. Cir. 2016) (*Freeport*); *see also Sierra Club v. FERC*, 867 F.3d 1357, 1373 (D.C. Cir. 2017) (*Sabal Trail*) (discussing *Freeport*).

the Commission consider the direct GHG emissions associated with a proposed LNG export facility.[28]

The GHG emissions associated with the change in operational emissions were identified and quantified in section B.2 of the EA. Emissions of GHGs are typically expressed in terms of CO_2e.[29] The increase in CO_2e emissions identified in the LDEQ air permit would be about 64,307 tons per year tons per year (equivalent to 58,338.33 metric tons) more than those estimated in the 2018 final EIS.[30] Estimates for operational emissions are based on the potential to emit, where the facilities are operated at peak liquefaction capacity.

Project operation would increase the atmospheric concentration of GHGs, in combination with past and future emissions from all other sources globally and would contribute incrementally to future climate change impacts.

To date, Commission staff have not identified a methodology to attribute discrete, quantifiable, physical effects on the environment resulting from a project's incremental contribution to GHGs. Without the ability to determine discrete resource impacts, Commission staff are unable to assess the Amendment's contribution to climate change through any objective analysis of physical impact attributable to the Amendment. Additionally, Commission staff have not been able to find an established threshold for determining the GHG significance when compared to established GHG reduction targets at the state or federal level. Ultimately, this EA is not characterizing the GHG emissions as significant or insignificant because the Commission is conducting a generic proceeding to determine whether and how the Commission will conduct significance determinations going forward.[31]

As noted above, the Amendment itself would not result in increased emissions; however, the EA discloses that facility emissions have changed from those estimated in the October 2018 final EIS as a result of updated engineering and vendor data, reflecting actual equipment performance. In order to provide context of the changed GHG emissions on a national level, we compare the GHG emissions to the total GHG emissions of the United States as a whole. At a national level, 5,222.4 million metric tons of CO_2e were emitted in 2020 (inclusive of CO_2e sources and sinks) (USEPA 2022). The change in emissions could potentially increase CO_2e emissions based on the national 2020 levels by 0.001 percent.

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[28] See *Freeport*, 827 F.3d at 41, 46.

[29] GHG gases are converted to CO_2e by means of the global warming potential, the measure of a particular GHG's ability to absorb solar radiation as well as its residence time within the atmosphere, consistent with the USEPA's established method for reporting GHG emissions for air permitting requirements that allows a consistent comparison with federal regulatory requirements.

[30] Section B.7.1 of the EA, table 13 and pg 68.

[31] Consideration of Greenhouse Gas Emissions in Natural Gas Infrastructure Project Reviews, 178 FERC ¶ 61,108 (2022); 178 FERC ¶ 61,197 (2022).

The USEPA stated that FERC should include a detailed discussion of the Amendment's GHG emissions in the context of national GHG emissions reduction goals over the anticipated Export Terminal lifetime and address the increasing conflict over time between continued emissions and national GHG emissions reduction goals, including ways to avoid or mitigate that conflict. On January 20, 2021, President Biden announced that the U.S. will rejoin the Paris Climate Agreement (Agreement), enabling the United States to be a party to the Agreement on February 19, 2021. The Agreement aims to limit global warming to well below 2 degrees Celsius, and preferably to 1.5 degrees Celsius, compared to pre-industrial levels.[32] On April 20, 2021, the United States submitted a plan for climate action known as nationally determined contributions (NDCs) that communicate actions to reduce GHG contributions in order to reach the goals of the Agreement. Based on this NDC, the United States established an United States economy-wide target of reducing net GHG emissions by 50-52 percent below 2005 levels by 2030.[33] Commission staff are unable to determine how or if the Amendment fits into the United States' NDC.

In order to provide context of the operational emission changes on a state level, we compare the GHG emissions to the state GHG inventory. At the state level, energy related CO_2 emissions in Louisiana were 194.9 million metric tons of CO_2e in 2019.[34] GHG emissions in Louisiana would result from the Export Terminal's operational emissions; no end-use is expected in Louisiana as the natural gas would be exported from the United States. The change in emissions could potentially increase state emissions by 0.027 percent.

The EA also evaluates the change in emissions in the context of Louisiana's GHG reduction goals. The state of Louisiana established executive targets in 2020 to reduce net GHG emissions 26 to 28 percent by 2025 and 40 to 50 percent by 2030, compared to 2005 levels. The targets also aim for net-zero GHG emissions by 2050. GHG emission increases disclosed in this EA would represent 0.04 percent and 0.05 percent of Louisiana's 2025 and 2030 projected GHG emission levels, assuming the reductions from 2005 levels summarized above.[35]

The USEPA states that FERC should use the social cost of GHG estimates to monetize net climate damages of GHG emissions from the Amendment. Deep South states that in the final EIS, FERC failed to discuss the climate damages that were and are caused by Calcasieu Pass' emissions. Deep South also states that FERC should not selectively monetize benefits such as

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[32] Additional information is available at https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement.

[33] The United States of America Nationally Determined Contribution (Apr. 20, 2021), *available at* https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/United%20States%20of%20America%20First/United%20States%20NDC%20April%2021%202021%20Final.pdf (accessed May 17, 2022).

[34] U.S. Energy Information Administration, *Table 1, State Energy-Related Carbon Dioxide Emissions by Year, Unadjusted: Louisiana* (April 13, 2022), https://www.eia.gov/environment/emissions/state/ (accessed May 18, 2022).

[35] *Id*. Louisiana's CO_2 emissions in 2005 were 205.1 million metric tons; therefore, we consider the 2025 GHG emission target to be 149.7 million metric tons and the 2030 target to be 112.8 million metric tons.

tax revenue and job creation while not monetizing the costs of the proposed action. Deep South recommends FERC monetize the social costs of greenhouse gases from the Amendment. The social cost of GHGs is an administrative tool intended to quantify, in dollars, an estimate of long-term damage that may result from future emissions of carbon dioxide, nitrous oxide, and methane. To provide additional context, we are disclosing Commission staff's estimate of the social cost of GHGs associated with the reasonably foreseeable emissions from GHG emission increases disclosed in the Amendment using the calculations described below.[36] However, noting pending litigation challenging federal agencies' use of the Interagency Working Group on the Social Cost of Greenhouse Gas' (IWG) interim values for calculating the social cost of GHGs,[37] we are not relying on or using the social cost of GHGs estimates to make any finding or determination regarding the impact of the GHG emissions.[38]

As both the USEPA and CEQ participate in the IWG, Commission staff used the methods and values contained in the IWG's current draft guidance but note that different values will result from the use of other methods.[39] Accordingly, Commission staff calculated the social cost of carbon dioxide, nitrous oxide, and methane. For the analysis, staff assumed discount rates of 5%, 3%, and 2.5%,[40] assumed the Amendment would begin service in 2022 and that the emissions would be at a constant rate throughout the life of a assumed generic 20-year contract. Noting these assumptions, the emissions from increased GHGs disclosed in the Amendment are

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[36] *See also Vecinos para el Bienestar de la Comunidad Costera v. FERC*, 6 F.4th 1321, 1329-30 (D.C. Cir. 2021).

[37] *Missouri v. Biden*, 8th Cir. No. 21-3013; *Louisiana v. Biden*, No. 21-cv-1074-JDC-KK (W.D. La). On February 11, 2022, the U.S. District Court for the Western District of Louisiana issued a preliminary injunction limiting federal agencies' employment of estimates of the social costs of GHGs and use of the IWG's interim estimates. On March 16, 2022, the U.S. Court of Appeals for the Fifth Circuit issued a stay of the district court's preliminary injunction, finding among other things that the federal agency respondent's continued use of the interim estimates was lawful. *Louisiana v. Biden*, No. 22-30087 (5th Cir. Mar. 16, 2022).

[38] Furthermore, the Commission is not applying the social cost of carbon herein because it has not determined which, if any, modifications are needed to render that tool useful for project-level analyses. *See* CEQ's May 27, 2021 Comments filed in Docket No. PL18-1-000, at 2 (noting that it is working with representatives from the IWG to develop forthcoming additional guidance regarding the application of the social cost of GHGs tool in federal decision-making processes, including in NEPA analyses).

[39] *Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates under Executive Order 13990*, Interagency Working Group on Social Cost of Greenhouse Gases, United States Government, February 2021 (IWG Interim Estimates Technical Support Document).

[40] IWG Interim Estimates Technical Support Document at 24. To quantify the potential damages associated with estimated emissions, the IWG methodology applies consumption discount rates to estimated emissions costs. The IWG's discount rates are a function of the rate of economic growth where higher growth scenarios lead to higher discount rates. For example, IWG's method includes the 2.5% discount rate to address the concern that interest rates are highly uncertain over time; the 3% value to be consistent with Office of Management and Budget Circular A-4 (2003) and the real rate of return on 10-year Treasury Securities from the prior 30 years (1973 through 2002); and the 5% discount rate to represent the possibility that climate-related damages may be positively correlated with market returns. Thus, higher discount rates further discount future impacts based on estimated economic growth. Values based on lower discount rates are consistent with studies of discounting approaches relevant for intergenerational analysis. *Id.* at 18-19, 23-24.

calculated to result in a total social cost of GHGs equal to $14,971,703, $55,961,583 and $84,442,342 and respectively (all in 2020 dollars).[41] Using the 95th percentile of the social cost of GHGs using the 3% discount rate,[42] the total social cost of GHGs from the project is calculated to be $169,388,571 (in 2020 dollars).

5.0 ALTERNATIVES

Because the proposed Amendment does not involve any change in the previously authorized Export Terminal site (i.e., "project footprint"), we did not evaluate any site alternatives. We assessed the No-Action Alternative; that is, if the newly proposed capacity uprate is not initiated and the LNG production capacity remains at 12 MTPA. We conclude that the No-Action Alternative would not allow Calcasieu Pass to meet the purpose and need of the Amendment, and any alternative project to meet the market demand would not likely provide a significant environmental advantage over the proposed action. Therefore, we conclude that the proposed action is the preferred alternative to meet the Amendment's objectives.

[41] The IWG draft guidance identifies costs in 2020 dollars. *Id*. at 5 (Table ES-1).

[42] This value represents "higher-than-expected economic impacts from climate change further out in the tails of the [social cost of CO_2] distribution." *Id*. at 11. In other words, it represents a higher impact scenario with a lower probability of occurring.

C. CONCLUSIONS

Based on the analysis in this EA, we have determined that if Calcasieu Pass operates the proposed Amendment in accordance with its application and supplements, approval of the Amendment would not constitute a major federal action significantly affecting the quality of the human environment. We recommend that the Order contain a finding of no significant impact and include the following mitigation measures listed below as conditions to any authorization the Commission may issue.

1. Calcasieu Pass shall follow the procedures and mitigation measures described in its application and supplements and as identified in the EA, unless modified by the Order. Calcasieu Pass must:

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

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

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

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

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

    a. the modification of conditions of the Order;

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

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

3. Calcasieu Pass shall continue to comply with all environmental and engineering conditions set forth in the Appendix of the February 21, 2019 Order issued in Docket No. CP15-550-000.

4. **Prior to implementation of an increase in export rate above 12.0 MTPA**, Calcasieu Pass shall file with the Secretary for review and written approval by the Director of OEP, or the Director's designee, updated heat and material balances for the Rich Gas Cold Ambient, and Lean Gas Hot Ambient conditions and demonstrate no engineering designs or related safety systems are impacted.

5. **Prior to implementation of an increase in liquefaction rate above 12.4 MTPA**, Calcasieu Pass shall file the Secretary for review and written approval by the Director of OEP, or the Director's designee, an evaluation of dynamic pressure surge effects from valve opening and closure time, and pump operations, for liquid streams which will experience a higher flowrate because of the uprated performance. The analysis shall demonstrate the pressure surge remains within an acceptable range for the piping material for all heat and material balance cases.

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