UNITED STATES OF AMERICA

DEPARTMENT OF ENERGY

OFFICE OF FOSSIL ENERGY

CORPUS CHRISTI LIQUEFACTION STAGE III, LLC	))))	FE DOCKET NO. 18-78-LNG

OPINION AND ORDER GRANTING LONG-TERM
AUTHORIZATION TO EXPORT LIQUEFIED NATURAL GAS
TO NON-FREE TRADE AGREEMENT NATIONS

DOE/FE ORDER NO. 4490

FEBRUARY 10, 2020

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FREQUENTLY USED ACRONYMS

AEO	Annual Energy Outlook
Bcf/d	Billion Cubic Feet per Day
Bcf/yr	Billion Cubic Feet per Year
CCL	Corpus Christi Liquefaction, LLC
CCL Stage III	Corpus Christi Liquefaction Stage III, LLC
CCPL	Cheniere Corpus Christi Pipeline, L.P.
DOE	U.S. Department of Energy
EIA	U.S. Energy Information Administration
EA	Environmental Assessment
EPA	U.S. Environmental Protection Agency
FE	Office of Fossil Energy, U.S. Department of Energy
FERC	Federal Energy Regulatory Commission
FONSI	Finding of No Significant Impact
FTA	Free Trade Agreement
GDP	Gross Domestic Product
GHG	Greenhouse Gas
LCA	Life Cycle Analysis
LNG	Liquefied Natural Gas
Mcf	Thousand Cubic Feet
MMBtu	Million British Thermal Units
mtpa	Million Metric Tons per Annum
NEPA	National Environmental Policy Act
NERA	NERA Economic Consulting
NETL	National Energy Technology Laboratory
NGA	Natural Gas Act

I. INTRODUCTION

On June 29, 2018, Corpus Christi Liquefaction Stage III, LLC (CCL Stage III) filed an Application[1] with the Office of Fossil Energy (FE) of the Department of Energy (DOE) under section 3 of the Natural Gas Act (NGA).[2] CCL Stage III requests long-term, multi-contract authorization to export domestically produced liquefied natural gas (LNG) by vessel from proposed natural gas liquefaction and export facilities (Stage 3 LNG Project), to be located at the existing Corpus Christi LNG Terminal in San Patricio and Nueces Counties, Texas.[3]

As part of the Stage 3 Project, Cheniere Corpus Christi Pipeline, L.P. (CCPL) is developing the proposed Stage 3 Pipeline Project to transport natural gas bi-directionally between the Stage 3 LNG Project and interconnections with existing pipeline systems.[4] Together, CCL Stage III, Corpus Christi Liquefaction, LLC (CCL), and CCPL[5] are developing the Stage 3 Project as an expansion of the Liquefaction Project at the Corpus Christi LNG Terminal, which is already the subject of several DOE/FE export authorizations granted to CCL and Cheniere Marketing, LLC (collectively, Corpus Christi).[6]

CCL Stage III seeks to export LNG in a volume of 11.45 million metric tons per annum (mtpa), which it states is equivalent to 582.14 billion cubic feet (Bcf) per year (Bcf/yr) of natural gas, or 1.59 Bcf per day (Bcf/d).[7] CCL Stage III requests authorization to export this LNG to:

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[1] Corpus Christi Liquefaction Stage III, LLC, Application for Long-Term Authorization to Export Liquefied Natural Gas to Free Trade Agreement Nations and Non-Free Trade Agreement Nations, FE Docket No. 18-78-LNG (June 29, 2018) [hereinafter App.].
[2] The authority to regulate the imports and exports of natural gas, including liquefied natural gas, under section 3 of the NGA (15 U.S.C. § 717b) has been delegated to the Assistant Secretary for FE in Redelegation Order No. 00-002.04G, issued on June 4, 2019.
[3] App. at 1-2.
[4] *Id*. at 1 n.5. For brevity, we generally refer to the "Stage 3 Project" herein.
[5] Although other entities are involved in the FERC proceeding, CCL Stage III is the sole applicant in this proceeding.
[6] *See* App. at 1 nn.4, 6; *see also infra* at 4 and § IV.B (Procedural History).
[7] *See* App. at 1 n.3.

(i) any country with which the United States has entered into a free trade agreement (FTA) requiring national treatment for trade in natural gas (FTA countries), pursuant to NGA section 3(c);[8] and (ii) any other country with which trade is not prohibited by U.S. law or policy (non-FTA countries), pursuant to NGA 3(a).[9] On November 9, 2018, in Order No. 4277, DOE/FE granted the FTA portion of the Application in the requested volume of 582.14 Bcf/yr of natural gas.[10]

CCL Stage III requests the non-FTA authorization for a period of 20 years, commencing on the earlier of the date of first commercial export of LNG produced by the proposed Stage 3 Project or seven years from the date the authorization is granted.[11] Additionally, CCL Stage III seeks to export this LNG on its own behalf and as agent for other entities that will hold title to the LNG at the time of export.[12]

Previously, in 2014, the Federal Energy Regulatory Commission (FERC) authorized Corpus Christi Liquefaction, LLC to site, construct, and operate the Liquefaction Project (Trains 1-3) at the Corpus Christi LNG Terminal in a total liquefaction capacity of 767 Bcf/yr (2.1 Bcf/d) of natural gas.[13]

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[8] 15 U.S.C. § 717b(c). The United States currently has FTAs requiring national treatment for trade in natural gas with Australia, Bahrain, Canada, Chile, Colombia, Dominican Republic, El Salvador, Guatemala, Honduras, Jordan, Mexico, Morocco, Nicaragua, Oman, Panama, Peru, Republic of Korea, and Singapore. FTAs with Israel and Costa Rica do not require national treatment for trade in natural gas.
[9] 15 U.S.C. § 717b(a).
[10] *Corpus Christi Liquefaction Stage III, LLC*, DOE/FE Order No. 4277, FE Docket No. 18-78-LNG, Order Granting Long-Term, Multi-Contract Authorization to Export Liquefied Natural Gas by Vessel from the Proposed Stage 3 LNG Facilities to be Located at the Corpus Christi LNG Terminal in San Patricio and Nueces Counties, Texas, to Free Trade Agreement Nations (Nov. 9, 2018). At CCL Stage III's request, the FTA authorization is for a term of 25 years.
[11] App. at 2.
[12] *Id.*
[13] *See Corpus Christi Liquefaction, LLC, et al.*, Order Granting Authorization Under Section 3 of the Natural Gas Act and Issuing Certificates, 149 FERC ¶ 61,283 (Dec. 30, 2014), *reh'g denied*, 151 FERC ¶ 61,098 (May 6, 2015); *see also* App. at 1 n.4.

On November 22, 2019, FERC issued an order authorizing: (i) CCL Stage III and CCL to site, construct, and operate the Stage 3 LNG Project at the Corpus Christi LNG Terminal, and (ii) and CCPL to construct and operate the Stage 3 Pipeline Project to deliver feed gas to the Stage 3 LNG Project.[14] As approved by FERC, the Stage 3 LNG Project will have a maximum liquefaction capacity of 11.45 mtpa,[15] which CCL Stage III states is equivalent to 582.14 Bcf/yr of natural gas. The FERC Order thus brings the maximum liquefaction capacity of the Liquefaction Project at the Corpus Christi LNG Terminal to 1,349.14 Bcf/yr, or 3.70 Bcf/d (equivalent to approximately 26.45 mtpa of LNG).

DOE/FE published a notice of the non-FTA portion of the Application in the *Federal Register* (Notice of Application).[16] The Notice of Application provided a 60-day comment period for interested persons to submit protests, motions to intervene, and comments. In response to the Notice of Application, DOE/FE received one filing submitted by the Industrial Energy Consumers of America (IECA), entitled "Notice of Intervention, Protest, and Comment."[17] CCL Stage III submitted an answer opposing IECA's filing on both procedural and substantive grounds.[18] On April 10, 2019, DOE/FE issued an order dismissing IECA's filing on procedural grounds.[19] Accordingly, the non-FTA portion of CCL Stage III's Application is uncontested.

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[14] *Corpus Christi Liquefaction Stage III, LLC, et al.*, Order Granting Authorizations Under Sections 3 and 7 of the Natural Gas Act, 169 FERC ¶ 61,135 (Nov. 22, 2019) [hereinafter FERC Order]. *See infra* § VI.C.
[15] FERC Order at ¶¶ 3, 7.
[16] U.S. Dep't of Energy, Corpus Christi Liquefaction Stage III, LLC; Application for Long-Term Authorization to Export Liquefied Natural Gas to Non-Free Trade Agreement Nations, Notice of Application, 83 Fed. Reg. 40,269 (Aug. 14, 2018) [hereinafter Notice of Application].
[17] Industrial Energy Consumers of America, Notice of Intervention, Protest and Comment, FE Docket No. 18-78-LNG (Oct. 15, 2018).
[18] Corpus Christi Liquefaction Stage III, LLC, Answer of Corpus Christi Liquefaction Stage III in Opposition to Deficient Motion to Intervene, Protest, and Comments, FE Docket No. 18-78-LNG (Jan. 17, 2019).
[19] U.S. Dep't of Energy, Order Dismissing Industrial Energy Consumers of America's Notice of Intervention, Protest, and Comment, FE Docket No. 18-78-LNG, at 6 (Apr. 10, 2019) (finding that IECA had "never completed filing and service of its Pleading.").

DOE/FE has reviewed the non-FTA portion of the Application, DOE's economic and environmental studies, the Environmental Assessment (EA) prepared for the Stage 3 Project by FERC staff, the FERC Order, and the most recent projections of the U.S. Energy Information Administration (EIA), among other evidence discussed below. On the basis of this substantial administrative record, DOE/FE has determined that it has not been shown that CCL Stage III's proposed exports will be inconsistent with the public interest, as would be required to deny the Application under NGA section 3(a). DOE/FE therefore grants the non-FTA portion of the Application in the requested volume of 582.14 Bcf/yr of natural gas (1.59 Bcf/d).[20]

With the issuance of this Order, the Corpus Christi entities (CCL; Cheniere Marketing, LLC; and CCL Stage III) now collectively hold a total of four long-term authorizations issued by DOE/FE—two FTA and two non-FTA—approving exports of LNG from the Corpus Christi LNG Terminal. These authorizations are summarized below and in the Appendix to this Order.[21] Because the approved FTA and non-FTA export volumes reflect the planned liquefaction capacity at the Corpus Christi LNG Terminal, the FTA volumes (in DOE/FE Order Nos. 3164-A[22] and 4277[23]) are not additive to the non-FTA volumes (in DOE/FE Order Nos. 3638[24] and this Order).

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[20] *See infra* §§ VII-X.
[21] *See infra* § IV.B and Appendix.
[22] *See Cheniere Marketing, LLC*, DOE/FE Order No. 3164, FE Docket No. 12-99-LNG, Order Granting Long-Term Multi-Contract Authorization to Export Liquefied Natural Gas by Vessel from the Proposed Corpus Christi Liquefaction Project to Free Trade Agreement Nations (Oct. 16, 2012), *amended by Cheniere Marketing, LLC*, DOE/FE Order Nos. 3538 and 3164-A, FE Docket Nos. 12-97-LNG and 12-99-LNG, Order Amending Application in Docket No. 12-97-LNG to Add Corpus Christi Liquefaction, LLC as Applicant, and Granting Request in DOE/FE Order No. 3164, Docket No. 12-99-LNG, to Add Corpus Christi Liquefaction, LLC as Authorization Holder (Oct. 29, 2014).
[23] *See supra* note 10.
[24] *Cheniere Marketing, LLC and Corpus Christi Liquefaction, LLC*, DOE/FE Order No. 3638, FE Docket No. 12-97-LNG, Final Opinion and Order Granting Long-Term, Multi-Contract Authorization to Export Liquefied Natural Gas by Vessel from the Proposed Corpus Christi Liquefaction Project to be Located in Corpus Christi, Texas, to Non-Free Trade Agreement Nations (May 12, 2015).

Additionally, DOE/FE participated as a cooperating agency in FERC's environmental review of the Stage 3 Project under the National Environmental Policy Act of 1969 (NEPA), 42 U.S.C. § 4321 *et seq*. FERC issued the EA for the Stage 3 Project on March 29, 2019.[25] Concurrently with this Order, DOE/FE is adopting FERC's EA and issuing a Finding of No Significant Impact (FONSI) for the Stage 3 Project (DOE/EA-2111).[26] This Order requires CCL Stage III's compliance with the 129 environmental conditions adopted in the FERC Order.[27]

Concurrently with this Order, DOE/FE is issuing three additional non-FTA orders as follows:

(i) *Texas LNG Brownsville LLC*, in a volume equivalent to 204.4 Bcf/yr (0.56 Bcf/d);[28]

(ii) *Annova LNG Common Infrastructure, LLC*, in a volume equivalent to 360 Bcf/yr (0.99 Bcf/d);[29] and

(iii) *Rio Grande LNG, LLC*, in a volume equivalent to 1318 Bcf/yr (3.61 Bcf/d).[30]

The volumes approved in this Order—1.59 Bcf/d—and the three additional orders total 6.75 Bcf/d of natural gas. Together, these orders bring DOE/FE's cumulative total of approved non-FTA exports of LNG and compressed natural gas to 44.81 Bcf/d of natural gas.[31]

[25] Federal Energy Regulatory Comm'n, *Stage 3 Project Environmental Assessment (Corpus Christi Liquefaction Stage III, LLC, et al.*), Docket Nos. CP18-512-000, *et al.* (Mar. 29, 2019), *available at*: https://www.ferc.gov/industries/gas/enviro/eis/2019/CP18-512-EA.pdf [hereinafter FERC EA].
[26] U.S. Dep't of Energy, Finding of No Significant Impact for the Stage 3 Project at the Corpus Christi LNG Terminal, DOE/EA-2111 (Feb. 10, 2020).
[27] *See infra* § X (Ordering Para. H); *see also infra* § VI.
[28] *Texas LNG Brownsville LLC*, DOE/FE Order No. 4489, FE Docket No. 15-62-LNG, Opinion and Order Granting Long-Term Authorization to Export Liquefied Natural Gas to Non-Free Trade Agreement Nations (Feb. 10, 2020).
[29] *Annova LNG Common Infrastructure, LLC*, DOE/FE Order No. 4491, FE Docket No. 19-34-LNG, Opinion and Order Granting Long-Term Authorization to Export Liquefied Natural Gas to Non-Free Trade Agreement Nations (Feb. 10, 2020).
[30] *Rio Grande LNG, LLC*, DOE/FE Order No. 4492, FE Docket No. 15-190-LNG, Opinion and Order Granting Long-Term Authorization to Export Liquefied Natural Gas to Non-Free Trade Agreement Nations (Feb. 10, 2020).
[31] *See infra* § VII.D.

II. BACKGROUND

A. DOE's LNG Export Studies

1. 2012 EIA and NERA Studies

In 2011, DOE/FE engaged EIA and NERA Economic Consulting (NERA) to conduct a two-part study of the economic impacts of U.S. LNG exports, which together was called the "2012 LNG Export Study." The first part, performed by EIA and published in January 2012, assessed how specified scenarios of increased natural gas exports could affect domestic energy markets. Specifically, EIA examined how prescribed levels of natural gas exports (at 6 Bcf/d and 12 Bcf/d) above baseline cases could affect domestic energy markets.

The second part, performed by NERA under contract to DOE, evaluated the macroeconomic impact of LNG exports on the U.S. economy. NERA used a general equilibrium macroeconomic model of the U.S. economy with an emphasis on the energy sector and natural gas in particular. The 2012 NERA Study projected that, across all scenarios studied—assuming either 6 Bcf/d or 12 Bcf/d of LNG export volumes—the United States would experience net economic benefits from allowing LNG exports.

In December 2012, DOE/FE published a notice of availability of the 2012 LNG Export Study in the *Federal Register* for public comment.[32] DOE/FE subsequently responded to the public comments in connection with the LNG export proceedings identified in that notice.[33]

[32] *See* 2012 LNG Export Study, 77 Fed. Reg. 73,627 (Dec. 11, 2012), *available at*: http://energy.gov/sites/prod/files/2013/04/f0/fr_notice_two_part_study.pdf (Notice of Availability of the LNG Export Study).

[33] *See, e.g.*, *Freeport LNG Expansion L.P., et al.*, DOE/FE Order No. 3282, FE Docket No. 10-161-LNG, Order Conditionally Granting Long-Term, Multi-Contract Authorization to Export Liquefied Natural Gas by Vessel from the Freeport LNG Terminal on Quintana Island, Texas to Non-Free Trade Agreement Nations, at 56-109 (May 17, 2013).

2. 2014 and 2015 LNG Export Studies

By May 2014, in light of the volume of LNG exports to non-FTA countries then-authorized by DOE/FE and the number of non-FTA export applications still pending, DOE/FE determined that an updated study was warranted to consider the economic impacts of exporting LNG from the lower-48 states to non-FTA countries.[34] DOE announced plans to undertake new economic studies to gain a better understanding of how higher levels of U.S. LNG exports—at levels between 12 and 20 Bcf/d of natural gas—would affect the public interest.[35]

DOE/FE commissioned two new macroeconomic studies. The first, *Effect of Increased Levels of Liquefied Natural Gas Exports on U.S. Energy Markets*, was performed by EIA and published in October 2014 (2014 EIA LNG Export Study or 2014 Study).[36] The 2014 Study assessed how specified scenarios of increased natural gas exports could affect domestic energy markets. At DOE's request, this 2014 Study served as an update of EIA's January 2012 study of LNG export scenarios and used baseline cases from EIA's *Annual Energy Outlook 2014* (AEO 2014).[37]

The second study, *The Macroeconomic Impact of Increasing U.S. LNG Exports*, was performed jointly by the Center for Energy Studies at Rice University's Baker Institute and Oxford Economics under contract to DOE/FE (together, Rice-Oxford) and published in October

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[34] Because there is no natural gas pipeline interconnection between Alaska and the lower 48 states, DOE/FE generally views those LNG export markets as distinct. Accordingly, DOE/FE focuses on LNG exports from the lower-48 states for purposes of determining macroeconomic impacts.

[35] *See* U.S. Dep't of Energy, Office of Fossil Energy, Request for an Update of EIA's January 2012 Study of Liquefied Natural Gas Export Scenarios, *available at*: https://www.energy.gov/fe/downloads/request-update-eia-s-january-2012-study-liquefied-natural-gas-export-scenarios (May 29, 2014) (memorandum from FE to EIA).

[36] U.S. Energy Info. Admin., *Effect of Increased Levels of Liquefied Natural Gas Exports on U.S. Energy Markets* (Oct. 2014), *available at*: https://www.eia.gov/analysis/requests/fe/pdf/lng.pdf.

[37] Each Annual Energy Outlook (AEO) presents EIA's long-term projections of energy supply, demand, and prices. It is based on results from EIA's National Energy Modeling System (NEMS) model.

2015 (2015 LNG Export Study or 2015 Study).[38] The 2015 Study was a scenario-based assessment of the macroeconomic impact of levels of U.S. LNG exports, sourced from the lower-48 states, under different assumptions including U.S. resource endowment, U.S. natural gas demand, international LNG market dynamics, and other factors. The 2015 Study considered export volumes ranging from 12 to 20 Bcf/d of natural gas, as well as a high resource recovery case examining export volumes up to 28 Bcf/d of natural gas. The analysis covered the 2015 to 2040 time period.

In December 2015, DOE/FE published a Notice of Availability of the 2014 and 2015 LNG Export Studies in the *Federal Register*, and invited public comment on those Studies.[39] DOE/FE subsequently responded to the public comments in connection with the LNG export proceedings identified in that notice.[40]

3. 2018 LNG Export Study

a. Overview

At the time DOE commissioned the 2018 LNG Export Study in 2017, 25 non-FTA applications were pending before DOE/FE.[41] In light of both the volume of LNG requested for export in those pending applications and the cumulative volume of non-FTA exports then-authorized (equivalent to 21.35 Bcf/d of natural gas), DOE/FE determined that a

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[38] Center for Energy Studies at Rice University Baker Institute and Oxford Economics, *The Macroeconomic Impact of Increasing U.S. LNG Exports* (Oct. 29, 2015), *available at*: http://energy.gov/sites/prod/files/2015/12/f27/20151113_macro_impact_of_lng_exports_0.pdf.
[39] U.S. Dep't of Energy, Macroeconomic Impacts of LNG Exports Studies; Notice of Availability and Request for Comments, 80 Fed. Reg. 81,300, 81,302 (Dec. 29, 2015).
[40] *See, e.g.*, *Sabine Pass Liquefaction, LLC,* DOE/FE Order No. 3792, FE Docket No. 15-63-LNG, Final Opinion and Order Granting Long-Term, Multi-Contract Authorization to Export Liquefied Natural Gas by Vessel From the Sabine Pass LNG Terminal Located in Cameron Parish, Louisiana, to Non-Free Trade Agreement Nations, at 66-121 (Mar. 11, 2016).
[41] *See* U.S. Dep't of Energy, Study on Macroeconomic Outcomes of LNG Exports; Notice of Availability of the 2018 LNG Export Study and Request for Comments, 83 Fed. Reg. 27,314 (June 12, 2018) (identifying 25 docket proceedings) [hereinafter 2018 Study Notice].

new macroeconomic study was warranted.[42] Accordingly, DOE/FE, through its support contractor KeyLogic Systems, Inc., commissioned NERA to conduct the 2018 LNG Export Study. DOE published the 2018 LNG Export Study on its website on June 7, 2018,[43] and concurrently provided notice of the availability of the Study, as discussed below.[44]

Like the four prior economic studies, the 2018 Study examines the impacts of varying levels of LNG exports on domestic energy markets. However, the 2018 Study differs from DOE/FE's earlier studies in the following ways:

(i) Includes a larger number of scenarios (54 scenarios) to capture a wider range of uncertainty in four natural gas market conditions than examined in the previous studies;

(ii) Includes LNG exports in all 54 scenarios that are market-determined levels, including the three alternative baseline scenarios that are based on the projections in EIA's *Annual Energy Outlook 2017* (AEO 2017);[45]

(iii) Examines unconstrained LNG export volumes beyond the levels examined in the previous studies;

(iv) Examines the likelihood of those market-determined LNG export volumes; and

(v) Provides macroeconomic projections associated with several of the scenarios lying within the more likely range of exports.[46]

b. Methodology and Scenarios

In its Response to Comments published in the *Federal Register* in December 2018, DOE/FE provided a detailed discussion of the methodology and scenarios used in the 2018

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[42] Additionally, as of the date of the 2018 Study, DOE/FE had authorized a cumulative total of LNG exports to FTA countries under section 3(c) of the NGA in a volume of 59.33 Bcf/d of natural gas. These FTA volumes are not additive to the authorized non-FTA volumes.

[43] *See* NERA Economic Consulting, Macroeconomic Outcomes of Market Determined Levels of U.S. LNG Exports (June 7, 2018), *available at*: https://www.energy.gov/sites/prod/files/2018/06/f52/Macroeconomic%20LNG%20Export%20Study%202018.pdf [hereinafter 2018 LNG Export Study or 2018 Study].

[44] *See* 2018 Study Notice.

[45] U.S. Energy Info. Admin., *Annual Energy Outlook 2017* (with projections to 2050) (Jan. 5, 2017), *available at*: https://www.eia.gov/outlooks/aeo/pdf/0383(2017).pdf.

[46] *See* 2018 Study Notice, 83 Fed. Reg. at 27,316.

Study, including NERA's Global Natural Gas Model (GNGM) and N_{ew}ERA models.[47] The 2018 Study develops 54 scenarios by identifying various assumptions for domestic and international supply and demand conditions to capture a wide range of uncertainty in natural gas markets. The scenarios include three baseline cases based on EIA's AEO 2017 projections (the most recent EIA projections available at the time), with varying assumptions about U.S. natural gas supply.[48] The three cases for U.S. natural gas supply derived from AEO 2017 are:

i. AEO 2017's Reference case, which provides a central estimate of U.S. natural gas production;

ii. High Oil and Gas Resource and Technology (HOGR) case, which provides more optimistic resource development estimates than the Reference case; and

iii. Low Oil and Gas Resource and Technology (LOGR) case, which provides less optimistic resource development estimates than the Reference case.[49]

Alternative scenarios add other assumptions about future U.S. and international demand for natural gas. The three cases for U.S. natural gas demand are:

i. AEO 2017's Reference case, which provides a central estimate of U.S. natural gas demand;

ii. A Robust Economic Growth case, which provides a high estimate for U.S. natural gas demand driven by higher levels of gross domestic product growth; and

iii. A Renewables Mandate case, which provides a low estimate for U.S. natural gas demand driven by the imposition of a stringent renewables mandate.[50]

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[47] *See* U.S. Dep't of Energy, Study on Macroeconomic Outcomes of LNG Exports; Response to Comments Received on Study, 83 Fed. Reg. 67,251 (Dec. 28, 2018) [hereinafter 2018 Study Response to Comments].
[48] 2018 Study Response to Comments, 83 Fed. Reg. at 67,256 (stating that the differences in the natural gas production levels across these cases arise from varying assumptions around unproven offshore resources, onshore shale gas resources, tight gas resources, and conventional and tight oil associated gas resources, as well as the costs of producing these resources).
[49] *See id*.
[50] *See id*.

International assumptions are based on EIA's *International Energy Outlook* 2017 (IEO 2017) and the International Energy Agency's (IEA) *World Energy Outlook* 2016 (WEO 2016).

As noted above, the 2018 Study also examines the likelihood of conditions leading to various export scenarios. This unique feature provides not only quantification of the effects to the U.S. natural gas market and its overall economy under each of the scenarios outlined, but also an assessment of the probability of each of these scenarios, and thus the probability of the natural gas and macroeconomic outcomes associated with each scenario.[51]

In developing this aspect of the Study, NERA first developed estimates of the probabilities for the level of U.S. supply and demand, as well as supply and demand in the rest of the world.[52] DOE/FE and KeyLogic, Inc. contacted a set of independent experts recommended by DOE (referred to as the peer reviewers) to obtain their probability assignments for these same four metrics. After receiving feedback from the peer reviewers, NERA reevaluated the original probability assignments to arrive at the final probabilities. These peer-reviewed probabilities of uncertainties surrounding developments in the international and domestic natural gas markets were, in turn, combined to develop the 54 export scenarios and their associated macroeconomic impacts.

c. Study Results

The 54 scenarios in the 2018 Study provide a wide range of results. NERA chose to focus on a subset of more likely outcomes, given DOE's assumptions about the probabilities associated with U.S. natural gas production, demand, and supply, and demand for natural gas in the rest of the world. NERA's key results include the following:

[51] *See id*.
[52] *See id*.

- The more likely range of LNG exports in the year 2040 was judged to range from 8.7 to 30.7 Bcf/d of natural gas.

- U.S. natural gas prices range from $5 to approximately $6.50 per million British thermal unit (MMBtu) in 2040 (in constant 2016 dollars) under Reference case supply assumptions. These central cases have a combined probability of 47%.

- Levels of gross domestic product (GDP) are most sensitive to assumptions about U.S. supply of natural gas, with high supply driving higher levels of GDP. For each of the supply scenarios, higher levels of LNG exports in response to international demand consistently lead to higher levels of GDP. GDP achieved with the highest level of LNG exports in each group exceeds GDP with the lowest level of LNG exports by $13 to $72 billion in 2040 (in constant 2016 dollars).

- About 80% of the increase in LNG exports is satisfied by increased U.S. production of natural gas, with positive effects on labor income, output, and profits in the natural gas production sector.

- Chemical industry subsectors of the economy that rely heavily on natural gas for energy and as a feedstock continue to exhibit robust growth even at higher LNG export levels. This growth is only insignificantly slower than cases with lower LNG export levels.

- Even the most extreme scenarios of high LNG exports outside the more likely probability range (exhibiting a combined probability of less than 3%) show higher overall economic performance in terms of GDP, household income, and consumer welfare than lower export levels associated with the same domestic supply scenarios.[53]

[53] *See* 2018 Study Response to Comments, 83 Fed. Reg. at 67,255.

d. DOE/FE Proceeding

On June 12, 2018, DOE published a notice of availability of the 2018 LNG Export Study and a request for comments.[54] The purpose of the notice of availability was "to enter the 2018 LNG Export Study into the administrative record of the 25 pending non-FTA export proceedings [identified in the notice] and to invite comments on the Study for consideration in the pending and future non-FTA application proceedings."[55] DOE received 19 comments on the 2018 LNG Export Study from a variety of sources, including participants in the natural gas industry, environmental organizations, and individuals.[56] Of those, nine comments supported the Study,[57] eight comments opposed the 2018 Study or exports of LNG,[58] one comment took no position,[59] and one comment was non-responsive.[60]

DOE/FE has evaluated the comments to the 2018 Study. DOE/FE summarized and responded to these comments in the Response to Comments document, published on December 28, 2018.[61] As explained in the Response to Comments, DOE/FE determined that none of the eight comments opposing the 2018 Study provided sufficient evidence to rebut or otherwise undermine the 2018 Study.[62]

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[54] *See* 2018 Study Notice.
[55] *Id*. at 27,315.
[56] The public comments are posted on the DOE/FE website at: https://fossil.energy.gov/app/docketindex/docket/index/10.
[57] Supporting comments were filed by the Marcellus Shale Coalition; the Center for Liquefied Natural Gas (CLNG); the Pennsylvania Chamber of Business and Industry; the American Petroleum Institute (API); Cheniere Energy, Inc.; Jordan Cove Energy Project L.P. (JCEP); LNG Allies; NextDecade Corp.; and Anonymous. The Anonymous comment is comprised of five comments filed by the same anonymous author.
[58] Opposing comments were filed by Patricia Weber; Oil Change International; Food & Water Watch; Industrial Energy Consumers of America (IECA); Oregon Wild; Sierra Club; Deb Evans and Ron Schaaf (the Evans Schaaf Family); and Jody McCaffree (individually and as executive director of Citizens for Renewables/Citizens Against LNG). Oil Change International and Food & Water Watch filed identical comments.
[59] Comment of John Young.
[60] Comment of Vincent Burke.
[61] *See* 2018 Study Response to Comments, 83 Fed. Reg. at 67,260-72.
[62] *See id*. at 67,272.

DOE/FE incorporates into the record of this proceeding the 2018 LNG Export Study, the 2018 Study Notice, the public comments received on the 2018 Study, and the 2018 Study Response to Comments—which together constitute the full proceeding for the 2018 LNG Export Study.

e. DOE/FE Conclusions

Based upon the record in the 2018 Study proceeding, DOE/FE determined that the 2018 Study provides substantial support for non-FTA applications within the export volumes considered by the 2018 Study—ranging from 0.1 to 52.8 Bcf/d of natural gas.[63] The principal conclusion of the 2018 LNG Export Study is that the United States will experience net economic benefits from the export of domestically produced LNG.[64] DOE highlighted the following key findings of the Study:

- "Increasing U.S. LNG exports under any given set of assumptions about U.S. natural gas resources and their production leads to only small increases in U.S. natural gas prices."[65]
- "Increased exports of natural gas will improve the U.S. balance of trade and result in a wealth transfer into the United States."[66]
- "Overall [U.S.] GDP improves as LNG exports increase for all scenarios with the same U.S. natural gas supply condition.[67]
- "There is no support for the concern that LNG exports would come at the expense of domestic natural gas consumption."[68]
- "[A] large share of the increase in LNG exports is supported by an increase in domestic natural gas production."[69]

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[63] *See id*.
[64] *See id*.
[65] *Id*. (quoting 2018 LNG Export Study at 55).
[66] 2018 Study Response to Comments, 83 Fed. Reg. at 67,273 (quoting 2018 LNG Export Study at 64).
[67] *Id*. (quoting 2018 LNG Export Study at 67).
[68] *Id*. (quoting 2018 LNG Export Study at 77).
[69] *Id*. (quoting 2018 LNG Export Study at 77).

- "Natural gas intensive [industries] continue to grow robustly at higher levels of LNG exports, albeit at slightly lower rates of increase than they would at lower levels."[70]

DOE/FE also observed that EIA's projections in *Annual Energy Outlook 2018* (AEO 2018) showed market conditions that will accommodate increased exports of natural gas.[71] DOE/FE concluded that, when compared to prior AEO Reference cases—including AEO 2017's Reference case used in the 2018 Study—the AEO 2018 Reference case projected increases in domestic natural gas production in excess of what is required to meet projected increases in domestic consumption.[72]

For all of these reasons, DOE/FE found that "the 2018 LNG Export Study is fundamentally sound and supports the proposition that exports of LNG from the lower-48 states, in volumes up to and including 52.8 Bcf/d of natural gas, will not be inconsistent with the public interest."[73] DOE stated, however, that it will consider each application to export LNG as required under the NGA and NEPA based on the administrative record compiled in each individual proceeding.[74]

B. DOE's Environmental Studies

On June 4, 2014, DOE/FE issued two notices in the *Federal Register* proposing to evaluate different environmental aspects of the LNG production and export chain. First, DOE/FE announced that it had conducted a review of existing literature on potential environmental issues associated with unconventional natural gas production in the lower-48 states. The purpose of this review was to provide additional information to the public concerning

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[70] *Id*. (quoting 2018 LNG Export Study at 70).
[71] U.S. Energy Info. Admin., *Annual Energy Outlook 2018* (with projections to 2050) (Feb. 6, 2018), *available at*: https://www.eia.gov/outlooks/aeo/pdf/AEO2018.pdf [hereinafter AEO 2018].
[72] 2018 Study Response to Comments, 83 Fed. Reg. at 67,273.
[73] *Id*. (citing 2018 LNG Export Study at 63 & Appendix F).
[74] *See* 2018 Study Response to Comments, 83 Fed. Reg. at 67,273.

the potential environmental impacts of unconventional natural gas exploration and production activities, including hydraulic fracturing. DOE/FE published its draft report for public review and comment, entitled *Draft Addendum to Environmental Review Documents Concerning Exports of Natural Gas from the United States* (Draft Addendum).[75] DOE/FE received public comments on the Draft Addendum, and on August 15, 2014, issued the final Addendum with its response to the public comments contained in Appendix B.[76]

Second, DOE/FE commissioned the National Energy Technology Laboratory (NETL), a DOE applied research laboratory, to conduct an analysis calculating the life cycle greenhouse gas (GHG) emissions for LNG exported from the United States. DOE commissioned this life cycle analysis (LCA) to inform its public interest review of non-FTA applications, as part of its broader effort to evaluate different environmental aspects of the LNG production and export chain.

DOE sought to determine: (i) how domestically-produced LNG exported from the United States compares with regional coal (or other LNG sources) for electric power generation in Europe and Asia from a life cycle GHG perspective, and (ii) how those results compare with natural gas sourced from Russia and delivered to the same markets via pipeline. In June 2014, DOE/FE published NETL's report entitled, *Life Cycle Greenhouse Gas Perspective on Exporting Liquefied Natural Gas from the United States* (LCA GHG Report or 2014 Report).[77] DOE/FE

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[75] U.S. Dep't of Energy, Draft Addendum to Environmental Review Documents Concerning Exports of Natural Gas From the United States, 79 Fed. Reg. 32,258 (June 4, 2014). DOE/FE announced the availability of the Draft Addendum on its website on May 29, 2014.
[76] U.S. Dep't of Energy, Addendum to Environmental Review Documents Concerning Exports of Natural Gas From the United States, 79 Fed. Reg. 48,132 (Aug. 15, 2014) [hereinafter Addendum]; *see also* http://energy.gov/fe/addendum-environmental-review-documents-concerning-exports-natural-gas-united-states.
[77] U.S. Dep't of Energy, Life Cycle Greenhouse Gas Perspective on Exporting Liquefied Natural Gas From the United States, 79 Fed. Reg. 32,260 (June 4, 2014) [hereinafter LCA GHG Report]. DOE/FE announced the availability of the LCA GHG Report on its website on May 29, 2014.

also received public comments on the LCA GHG Report and responded to those comments in prior orders.[78] DOE has relied on the 2014 Report in its review of all subsequent applications to export LNG to non-FTA countries.[79]

Most recently, in 2018, DOE commissioned NETL to conduct an update to the 2014 LCA GHG Report, entitled *Life Cycle Greenhouse Gas Perspective on Exporting Liquefied Natural Gas From the United States: 2019 Update* (LCA GHG Update or 2019 Update).[80] As with the 2014 Report, the LCA GHG Update compared life cycle GHG emissions of exports of domestically produced LNG to Europe and Asia, compared with alternative fuel sources (such as regional coal and other imported natural gas) for electric power generation in the destination countries. Although core aspects of the analysis—such as the scenarios investigated—were the same as the 2014 Report, the LCA GHG Update contained the following three changes:

- Incorporated NETL's most recent characterization of upstream natural gas production, set forth in NETL's April 2019 report entitled, *Life Cycle Analysis of Natural Gas Extraction and Power Generation* (April 2019 LCA of Natural Gas Extraction and Power Generation);[81]

- Updated the unit processes for liquefaction, ocean transport, and regasification characterization using engineering-based models and publicly-available data informed and reviewed by existing LNG export facilities, where possible; and

[78] *See, e.g.*, *Magnolia LNG, LLC*, DOE/FE Order No. 3909, FE Docket No. 13-132-LNG, Opinion and Order Granting Long-Term, Multi-Contract Authorization to Export Liquefied Natural Gas by Vessel From the Proposed Magnolia LNG Terminal to be Constructed in Lake Charles, Louisiana, to Non-Free Trade Agreement Nations, at 95-121 (Nov. 30, 2016) (description of LCA GHG Report and response to comments).
[79] *See, e.g.*, *Venture Global Plaquemines LNG, LLC*, DOE/FE Order No. 4446, FE Docket No. 16-28-LNG, Opinion and Order Granting Long-Term Authorization to Export Liquefied Natural Gas to Non-Free Trade Agreement Nations, 14-15, 38-41 (Oct. 16, 2019).
[80] Nat'l Energy Tech. Lab., *Life Cycle Greenhouse Gas Perspective on Exporting Liquefied Natural Gas from the United States: 2019 Update* (DOE/NETL 2019/2041) (Sept. 12, 2019), *available at*: https://www.energy.gov/sites/prod/files/2019/09/f66/2019%20NETL%20LCA-GHG%20Report.pdf. Although the LCA GHG Update is dated September 12, 2019, DOE announced the availability of the LCA GHG Update on its website and in the *Federal Register* on September 19, 2019.
[81] Nat'l Energy Tech. Lab., *Life Cycle Analysis of Natural Gas Extraction and Power Generation* (DOE/NETL-2019/2039) (Apr. 19, 2019), *available at*: https://www.netl.doe.gov/energy-analysis/details?id=3198.

- Updated the 100-year global warming potential (GWP) for methane (CH_4) to reflect the current Intergovernmental Panel on Climate Change's Fifth Assessment Report.[82]

In all other respects, the LCA GHG Update was unchanged from the 2014 Report.[83]

The LCA GHG Update demonstrated that the conclusions of the 2014 LCA GHG Report remained the same. Specifically, the 2019 Update concluded that the use of U.S. LNG exports for power production in European and Asian markets will not increase global GHG emissions from a life cycle perspective, when compared to regional coal extraction and consumption for power production.[84] On this basis, DOE/FE found that the 2019 Update supports the proposition that exports of LNG from the lower-48 states will not be inconsistent with the public interest.[85] Additional details are discussed below (*see infra* § VII.B.3) and in DOE's Response to Comments on the 2019 Update.

With respect to the Addendum, the 2014 LCA GHG Report, and the 2019 LCA GHG Update, DOE/FE takes all public comments into consideration in this decision and makes those comments, as well as the underlying studies, part of the record in this proceeding.

C. Judicial Decisions Upholding DOE's Non-FTA Authorizations

In 2015 and 2016, Sierra Club petitioned the U.S. Court of Appeals for the District of Columbia Circuit (D.C. Circuit) for review of five long-term LNG export authorizations issued by DOE/FE under the standard of review discussed below. Sierra Club challenged DOE/FE's approval of LNG exports from projects proposed or operated by the following authorization

[82] *See* U.S. Dep't of Energy, Life Cycle Greenhouse Gas Perspective on Exporting Liquefied Natural Gas From the United States; Notice of Availability of Report Entitled Life Cycle Greenhouse Gas Perspective on Exporting Liquefied Natural Gas From the United States: 2019 Update and Request for Comments, 84 Fed. Reg. 49,278, 49,279 (Sept. 19, 2019).
[83] *See* U.S. Dep't of Energy, Life Cycle Greenhouse Gas Perspective on Exporting Liquefied Natural Gas From the United States: 2019 Update – Response to Comments, 85 Fed. Reg. 72, 75 (Jan. 2, 2020) [hereinafter DOE Response to Comments on 2019 Update].
[84] *See id*. at 78, 85.
[85] *See id*. at 86.

holders: Freeport LNG Expansion, L.P., *et al*.; Dominion Cove Point LNG, LP; Sabine Pass Liquefaction, LLC; and Cheniere Marketing, LLC, *et al*. The D.C. Circuit subsequently denied four of the five petitions for review: one in a published decision issued on August 15, 2017 (*Sierra Club I*),[86] and three in a consolidated, unpublished opinion issued on November 1, 2017 (*Sierra Club II*).[87] Sierra Club did not seek further judicial review of either decision. In January 2018, Sierra Club voluntarily withdrew its fifth and remaining petition for review.[88]

In *Sierra Club I*, the D.C. Circuit concluded that DOE/FE had complied with both section 3(a) of the NGA and NEPA in issuing the challenged non-FTA authorization to Freeport LNG Expansion, L.P. and its related entities (collectively, Freeport). DOE/FE had granted the Freeport application in 2014 in a volume equivalent to 0.4 Bcf/d of natural gas, finding that Freeport's proposed exports were in the public interest under NGA section 3(a). DOE/FE also considered and disclosed the potential environmental impacts of its decision under NEPA. Sierra Club petitioned for review of the Freeport authorization, arguing that DOE fell short of its obligations under both the NGA and NEPA. The D.C. Circuit rejected Sierra Club's arguments in a unanimous decision, holding that, "Sierra Club has given us no reason to question the Department's judgment that the [Freeport] application is not inconsistent with the public interest."[89]

First, the Court rejected Sierra Club's principal NEPA argument concerning the alleged indirect effects of LNG exports, such as the effects related to the likely increase in natural gas

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[86] *Sierra Club v. U.S. Dep't of Energy*, 867 F.3d 189 (D.C. Cir. 2017) (denying petition for review of the LNG export authorization issued to Freeport LNG Expansion, L.P., *et al*.).
[87] *Sierra Club v. U.S. Dep't of Energy,* 703 Fed. App'x 1 (D.C. Cir. Nov. 1, 2017) (denying petitions for review in Nos. 16-1186, 16-1252, and 16-1253 of the LNG export authorizations issued to Dominion Cove Point LNG, LP, Sabine Pass Liquefaction, LLC, and Cheniere Marketing, LLC, *et al*., respectively).
[88] *See Sierra Club v. U.S. Dep't of Energy*, No. 16-1426, Per Curiam Order (D.C. Cir. Jan. 30, 2018) (granting Sierra Club's unopposed motion for voluntary dismissal).
[89] *Sierra Club I*, 867 F.3d at 203.

production and usage that would result from the Freeport export authorization.[90] The Court found that DOE "offered a reasonable explanation as to why it believed the indirect effects pertaining to increased [natural] gas production were not reasonably foreseeable."[91] The Court thus held that, "[u]nder our limited and deferential review, we cannot say that the Department failed to fulfill its obligation under NEPA by declining to make specific projections about environmental impacts stemming from specific levels of export-induced [natural] gas production."[92]

Second, the Court rejected Sierra Club's challenge to DOE's examination of the potential "downstream" GHG emissions resulting from the indirect effects of exports—*i.e.*, those resulting from the transport and usage of U.S. LNG abroad.[93] The Court pointed to DOE's 2014 LCA GHG Report, finding there was "nothing arbitrary" about the scope of DOE's analysis of GHG emissions in that Report.[94]

Third, in reviewing Sierra Club's claims under the NGA, the Court found that Sierra Club "repeats the same argument it made to support its NEPA claim—namely, that the Department arbitrarily failed to evaluate foreseeable indirect effects of exports."[95] Having "already rejected this argument" under NEPA, the Court determined that "Sierra Club offers no basis for reevaluating the scope of DOE's evaluation for purposes of the Natural Gas Act."[96]

Subsequently, in the consolidated *Sierra Club II* opinion issued on November 1, 2017, the D.C. Circuit ruled that "[t]he court's decision in [*Sierra Club I*] largely governs the

[90] *Id.* at 192.
[91] *Id*. at 198.
[92] *Id*. at 201.
[93] *Id*.
[94] *Id*. at 202.
[95] *Sierra Club I,* 867 F.3d at 203.
[96] *Id.*

resolution of the [three] instant cases."[97] Upon its review of the remaining "narrow issues" in those cases, the Court again rejected Sierra Club's arguments under the NGA and NEPA, and upheld DOE/FE's actions in issuing the non-FTA authorizations in those proceedings.[98]

The D.C. Circuit's decisions in *Sierra Club I and II* continue to guide DOE's review of applications to export LNG to non-FTA countries.

III. PUBLIC INTEREST STANDARD

Section 3(a) of the NGA sets forth the standard for review of the Application:

> [N]o person shall export any natural gas from the United States to a foreign country or import any natural gas from a foreign country without first having secured an order of the [Secretary of Energy[99]] authorizing it to do so. The [Secretary] shall issue such order upon application, unless after opportunity for hearing, [he] finds that the proposed exportation or importation will not be consistent with the public interest. The [Secretary] may by [the Secretary's] order grant such application, in whole or part, with such modification and upon such terms and conditions as the [Secretary] may find necessary or appropriate.[100]

DOE, as affirmed by the D.C. Circuit, has consistently interpreted NGA section 3(a) as creating a rebuttable presumption that a proposed export of natural gas is in the public interest.[101] Accordingly, DOE will conduct an informal adjudication and grant a non-FTA application unless DOE finds that the proposed exportation will not be consistent with the public interest.[102] Before reaching a final decision, DOE must also comply with NEPA.

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[97] *Sierra Club II,* 703 Fed. App'x 1, at *2.
[98] *Id*.
[99] The Secretary's authority was established by the Department of Energy Organization Act, 42 U.S.C. § 7172, which transferred jurisdiction over imports and export authorizations from the Federal Power Commission to the Secretary of Energy.
[100] 15 U.S.C. § 717b(a).
[101] *See Sierra Club*, 867 F.3d at 203 ("We have construed [NGA section 3(a)] as containing a 'general presumption favoring [export] authorization.'") (quoting *W. Va. Pub. Serv. Comm'n v. U.S. Dep't of Energy*, 681 F.2d 847, 856 (D.C. Cir. 1982)).
[102] *See id.* ("there must be 'an affirmative showing of inconsistency with the public interest' to deny the application" under NGA section 3(a)) (quoting *Panhandle Producers & Royalty Owners Ass'n v. Econ. Regulatory Admin.*, 822 F.2d 1105, 1111 (D.C. Cir. 1987)). As of August 24, 2018, qualifying small-scale exports of natural gas to

Although NGA section 3(a) establishes a broad public interest standard and a presumption favoring export authorizations, the statute does not define "public interest" or identify criteria that must be considered in evaluating the public interest. In prior decisions, DOE has identified a range of factors that it evaluates when reviewing an application for export authorization. These factors include economic impacts, international impacts, security of natural gas supply, and environmental impacts, among others. To conduct this review, DOE looks to record evidence developed in the application proceeding.

DOE's prior decisions have also looked to certain principles established in its 1984 Policy Guidelines.[103] The goals of the Policy Guidelines are to minimize federal control and involvement in energy markets and to promote a balanced and mixed energy resource system. The Guidelines provide that:

> The market, not government, should determine the price and other contract terms of imported [or exported] natural gas …. The federal government's primary responsibility in authorizing imports [or exports] will be to evaluate the need for the gas and whether the import [or export] arrangement will provide the gas on a competitively priced basis for the duration of the contract while minimizing regulatory impediments to a freely operating market.[104]

While the Policy Guidelines are nominally applicable to natural gas import cases, DOE subsequently held in Order No. 1473 that the same Policy Guidelines should be applied to natural gas export applications.[105]

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non-FTA countries are deemed to be consistent with the public interest under NGA section 3(a). *See* 10 C.F.R. § 590.102(p); 10 C.F.R. § 590.208(a); *see also* U.S. Dep't of Energy, Small-Scale Natural Gas Exports; Final Rule, 83 Fed. Reg. 35,106 (July 25, 2018).

[103] U.S. Dep't of Energy, New Policy Guidelines and Delegations Order Relating to Regulation of Imported Natural Gas, 49 Fed. Reg. 6684 (Feb. 22, 1984) [hereinafter 1984 Policy Guidelines].

[104] *Id*. at 6685.

[105] *Phillips Alaska Natural Gas Corp., et al*., DOE/FE Order No. 1473, FE Docket No. 96-99-LNG, Order Extending Authorization to Export Liquefied Natural Gas from Alaska (Apr. 2, 1999), at 14 (citing *Yukon Pacific Corp.*, DOE/FE Order No. 350, Order Granting Authorization to Export Liquefied Natural Gas from Alaska, 1 FE ¶ 70,259, at 71,128 (1989)).

In Order No. 1473, DOE stated that it was guided by DOE Delegation Order No. 0204-111.[106] That delegation order directed the regulation of exports of natural gas "based on a consideration of the domestic need for the gas to be exported and such other matters as the Administrator [of the Economic Regulatory Administration] finds in the circumstances of a particular case to be appropriate."[107]

Although DOE Delegation Order No. 0204-111 is no longer in effect,[108] DOE's review of export applications has continued to focus on: (i) the domestic need for the natural gas proposed to be exported, (ii) whether the proposed exports pose a threat to the security of domestic natural gas supplies, (iii) whether the arrangement is consistent with DOE's policy of promoting market competition, and (iv) any other factors bearing on the public interest, as determined by DOE.

IV. DESCRIPTION OF REQUEST

A. Description of Applicant

CCL Stage III is a Delaware limited liability company with its principal place of business in Houston, Texas. CCL Stage III is a wholly owned subsidiary of Cheniere Energy, Inc. (Cheniere), a Delaware corporation with its principal place of business in Houston, Texas. Cheniere is a developer of LNG import and export terminals and natural gas pipelines on the Gulf Coast, including the Corpus Christi LNG Terminal.[109]

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[106] *See id*. at 13 and n.45.

[107] DOE Delegation Order No. 0204-111 (Feb. 22, 1984), at 1 (¶ (b)); *see also* 1984 Policy Guidelines, 49 Fed. Reg. at 6690 (incorporating DOE Delegation Order No. 0204-111). In February 1989, the Assistant Secretary for Fossil Energy assumed the delegated responsibilities of the Administrator of the Economic Regulatory Administration. *See* Applications for Authorization to Construct, Operate, or Modify Facilities Used for the Export or Import of Natural Gas, 62 Fed. Reg. 30,435, 30,437 n.15 (June 4, 1997) (citing DOE Delegation Order No. 0204-127, 54 Fed. Reg. 11,436 (Mar. 20, 1989)).

[108] DOE Delegation Order No. 0204-111 was later rescinded by DOE Delegation Order No. 00-002.00 (¶ 2) (Dec. 6, 2001), and DOE Redelegation Order No. 00-002.04 (¶ 2) (Jan. 8, 2002).

[109] App. at 2.

B. Procedural History

Prior to this Order, DOE/FE has issued several long-term authorizations to the Corpus Christi entities approving exports of LNG from the Corpus Christi LNG Terminal. As set forth in the Appendix, these authorizations include:

- DOE/FE Order No. 3164-A, authorizing the export of 767 Bcf/yr to FTA countries;
- DOE/FE Order No. 4277, authorizing the export of 582.14 Bcf/yr to FTA countries; and
- DOE/FE Order No. 3638, authorizing the export of 767 Bcf/yr to non-FTA countries.[110]

In sum, DOE/FE has authorized the Corpus Christi entities to export LNG in a cumulative volume equivalent to 1349.14 Bcf/yr of natural gas to FTA countries, and 767 Bcf/yr to non-FTA countries. This Order approves an additional 582.14 Bcf/yr of non-FTA exports from the Stage 3 LNG Facilities, bringing the total non-FTA export volume for the Corpus Christi LNG Terminal to 1349.14 Bcf/yr of natural gas.

C. Stage 3 LNG Project

CCL Stage III states that the proposed Stage 3 LNG Project will be an expansion of the Corpus Christi Liquefaction Project.[111] According to CCL Stage III, approximately 99% of the land necessary for construction and operation of the Stage 3 LNG Project was previously permitted in connection with the Liquefaction Project.[112]

As approved by FERC, the Stage 3 LNG Project will include seven midscale liquefaction trains, one LNG storage tank, and associated appurtenant facilities.[113] Each of the seven

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[110] *See supra* notes 10, 22, 24; *see also* App. at 1-2 n.6, 3-4.
[111] App. at 1 n.4.
[112] *Id*. at 13.
[113] FERC Order at ¶¶ 7-9; App. at 4.

midscale liquefaction trains will have a maximum capacity of approximately 1.64 mtpa of LNG, for a total capacity of approximately 11.45 mtpa of LNG.[114]

D. Stage 3 Pipeline Project

As approved by FERC, the proposed Stage 3 Pipeline will be an approximately 21-mile long, 42-inch-diameter pipeline that will supply feed gas to the Stage 3 LNG Project as part of the existing pipeline system.[115]

E. Source of Natural Gas

The Stage 3 Project, as part of the Corpus Christi LNG Terminal, will receive natural gas from the interstate and intrastate grid at points of interconnection with other pipelines.[116] Through these interconnections, the Corpus Christi LNG Terminal has access to virtually any point on the U.S. interstate pipeline system through direct delivery or by displacement.[117]

F. Business Model

CCL Stage III requests this authorization on its own behalf and as agent for other entities that will hold title to the LNG at the time of export. CCL Stage III LNG states that it has not yet entered into any contracts for natural gas supply or LNG exports. CCL Stage III states that it will file all long-term, binding contracts associated with the export of LNG from the Stage 3 Project, once executed, and will comply with all DOE/FE requirements for exporters and agents, including registration requirements.[118] CCL Stage III further states that, when acting as agent, it will register with DOE/FE each LNG title holder for which it seeks to export LNG as agent, and will comply with other registration requirements as set forth in recent DOE/FE orders.[119]

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[114] FERC Order at ¶ 7; App. at 4.
[115] FERC Order at ¶¶ 2, 13.
[116] *Id.*
[117] *See id.* at ¶ 13; *see also Cheniere Marketing, LLC and Corpus Christi Liquefaction, LLC*, DOE/FE Order No. 3638, at 21-22.
[118] App. at 5-6.
[119] *Id*. at 6.

V. APPLICANT'S PUBLIC INTEREST ANALYSIS

A. Overview

CCL Stage III states that its proposed non-FTA exports are consistent with the public interest under NGA section 3(a). In support of this position, CCL Stage III addresses the following factors: (i) the domestic need for the natural gas to be exported, (ii) the economic benefits associated with its proposed exports; (iii) supporting federal policies; and (iv) environmental considerations.[120]

CCL Stage III notes that DOE/FE previously concluded that exports from the Corpus Christi LNG Terminal to non-FTA nations are not inconsistent with the public interest.[121] According to CCL Stage III, the types of benefits previously attributed to exports of LNG from the Corpus Christi LNG Terminal are equally applicable to the Stage 3 Project.[122]

B. Impacts on Domestic Natural Gas Supply and Demand

In discussing the domestic need for the natural gas to be exported, CCL Stage III points to the following three factors: (i) domestic natural gas supply growth outpacing growth in domestic demand, (2) depressed natural gas prices, and (iii) potential supplies of natural gas "far exceeding market need."[123]

First, citing AEO 2018, CCL Stage III asserts that, even with increasing exports of U.S. LNG, future natural gas supplies will be available at sufficiently low cost to support continued domestic demand growth in the industrial and electric power sectors of the economy.[124]

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[120] App. at 7-14.
[121] *Id*. at 7 (citing *Cheniere Marketing, LLC & Corpus Christi Liquefaction, LLC*, DOE/FE Order No. 3638, cited *supra* note 24).
[122] *Id.*
[123] *Id*. at 7-8.
[124] *Id*. at 8-9 (citations omitted).

Second, citing EIA's June 2018 *Short-Term Energy Outlook*, CCL Stage III states that U.S. natural gas prices are essentially unchanged since the beginning of 2015.[125] CCL Stage III points to EIA's projection that, over the long term, natural gas prices are projected to increase at about 0.9% per year (in 2017 dollars) through 2050.[126] CCL Stage III further observes that this expected long-term increase in natural gas prices (set forth in the AEO 2018 Reference case) is 14% lower on average through 2050 compared to the prices in EIA's *Annual Energy Outlook 2017* (AEO 2017) Reference case.[127]

Third, CCL Stage III states that EIA's projections in 2018 confirm that domestic supplies of natural gas will be adequate to meet demand for both domestic use and LNG exports.[128] According to CCL Stage III, AEO 2018 indicates that this trend will continue into the foreseeable future, with natural gas representing the largest share of total U.S. energy production—at nearly 39%—by 2050.[129]

C. Economic Benefits

CCL Stage III points to the 2018 LNG Export Study, as well as to DOE's prior economic studies, in stating that LNG exports are projected to provide a higher economic output to the U.S. economy as a whole, including an increase in GDP and higher employment levels.[130]

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[125] *Id*. at 9 (citing U.S. Energy Info. Admin., *Short-Term Energy Outlook (STEO)* (June 12, 2018), *available at*: https://www.eia.gov/outlooks/steo/archives/jun18.pdf) [hereinafter EIA June 2018 STEO].
[126] App. at 9 (citing U.S. Energy Info. Admin., *Annual Energy Outlook 2018, Table: Energy Prices by Sector and Source*, *available at*: https://www.eia.gov/outlooks/aeo/data/browser/#/?id=3-AEO2018&cases=ref2018&sourcekey=0).
[127] *Id*. (citing AEO 2018 at 64).
[128] *Id*. at 10.
[129] *Id*. (citing, *e.g.*, AEO 2018 at 20 and EIA June 2018 STEO).
[130] *Id*. at 11.

D. Supporting Federal Policies

CCL Stage III states that natural gas exports, including its proposed exports, are consistent with U.S. energy and trade policies.[131] For example, CCL Stage III cites Executive Order No. 13,766, in which President Trump stated that the Administration's policy is to "streamline and expedite … approvals" for all infrastructure projects.[132]

E. Environmental Considerations

CCL Stage III states that the Stage 3 Project will utilize previously disturbed land and complementary facilities of the Corpus Christi Liquefaction Project, thereby resulting in "far less environmental impact" as compared to the development of an independent greenfield site.[133] CCL Stage III further asserts that the environmental impacts of the Stage 3 Project will be minimal, and that any potential adverse impacts will be avoided or adequately mitigated.[134]

VI. FERC PROCEEDING

A. FERC's Pre-Filing Procedures

Authorizations issued by FERC permitting the siting, construction, and operation of LNG export terminals are reviewed under NGA section 3(a) and (e), 15 U.S.C. § 717b(a), (e). FERC's approval process for such an application consists of a mandatory pre-filing process during which the environmental review required by NEPA commences,[135] and a formal application process that starts no sooner than 180 days after issuance of a notice that the pre-filing process has commenced.[136]

[131] *Id*. at 12.
[132] App. at 12 (quoting Exec. Office of the President, Expediting Environmental Reviews and Approvals for High Priority Infrastructure Projects, Exec. Order No. 13,766, 82 Fed. Reg. 8657 (Jan. 24, 2017)).
[133] *Id*. at 13.
[134] *Id.*
[135] 18 C.F.R. § 157.21.
[136] *Id*. § 157.21(a)(2)(i-ii).

On June 9, 2015, FERC began its pre-filing review of CCL Stage III's and Corpus Christi Liquefaction, LLC's (CCL) joint proposal for the Stage 3 LNG Project and Cheniere Corpus Christi Pipeline, L.P.'s (CPPL) proposal for the Stage 3 Pipeline Project, which FERC refers to collectively as the Stage 3 Project.[137] FERC established pre-filing Docket No. PF15-26-000 to place information related to the Stage 3 Project into the public record.[138] On August 17, 2015, FERC issued a Notice of Intent to Prepare an Environmental Assessment for the Proposed Stage 3 Project, and Request for Comments on Environmental Issues (NOI).[139] DOE agreed to participate as a cooperating agency in FERC's environmental review.[140]

B. FERC's Environmental Review

On June 28, 2018, CCL Stage III and CCL jointly filed an application with FERC under section 3(a) of the NGA for authorization to site, construct, and operate the Stage 3 LNG Project.[141] On the same day, CPPL filed an application with FERC requesting a certificate of public convenience and necessity under section 7(c) of the NGA, 15 U.S.C. § 717f, to construct, operate, and maintain the Stage 3 Pipeline Project.[142] FERC assigned Docket Nos CP18-512-000 and CP18-513-000, respectively, to the applications.[143]

In compliance with NEPA, FERC staff issued a Notice of Availability of the Environmental Assessment on March 29, 2019, and placed the EA into the public record on

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[137] FERC EA at 1, 6; FERC Order at ¶ 40 n.49.
[138] FERC EA at 1; *see also* FERC Order at ¶ 40 n.50 (citing 80 Fed. Reg. 50,843 (Aug. 21, 2015)).
[139] FERC Order at ¶ 40.
[140] FERC EA at 3-4; FERC Order at ¶ 41.
[141] FERC Order at ¶ 1.
[142] *Id*. at ¶ 2.
[143] Federal Energy Regulatory Comm'n, Corpus Christi Liquefaction Stage III, LLC, *et al.*; Notice of Application, Docket Nos. CP18-512-000, *et al.*, 83 Fed. Reg. 33,927 (July 18, 2018).

April 4, 2019.[144] The EA addressed numerous potential impacts of the Stage 3 Project, including but not limited to wetlands, geology, water resources, air quality, and cumulative impacts.[145]

Based on its environmental analysis, FERC staff recommended 128 site-specific mitigation measures (or environmental conditions) to minimize impacts of the Stage 3 Project.[146] FERC staff concluded that, if CCL Stage III, CCL, and CPPL construct and operate the proposed facilities "in accordance with [the] application[s] and supplements and our recommended mitigation measures, approval of this proposal would not constitute a major federal action significantly affecting the quality of the human environment."[147] On this basis, FERC staff recommended that FERC issue an order containing a Finding of No Significant Impact and include the mitigation measures as conditions of the authorization.[148]

C. FERC's Order Granting Authorization

On November 22, 2019, FERC issued its Order authorizing CCL Stage III and CCL to site, construct, and operate the Stage 3 LNG Project, and CCPL to construct and operate the Stage 3 Pipeline Project.[149] Based on the analysis in the EA, as supplemented in the FERC Order, FERC concluded that "if constructed and operated in accordance with [the] application and supplements, and in compliance with the environmental conditions in the appendix to this order, our approval of this proposal would not constitute a major federal action significantly affecting the quality of the human environment."[150] FERC added that "[c]ompliance with the

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[144] Federal Energy Regulatory Comm'n, Corpus Christi Liquefaction Stage III, LLC, *et al.*; Notice of Availability of the Environmental Assessment for the Proposed Stage 3 Project, Docket Nos. CP18-512-000, *et al.*, 84 Fed. Reg. 13,285 (Apr. 4, 2019).
[145] FERC EA at 3; FERC Order at ¶ 41.
[146] FERC EA at 3, 244-61 (list of mitigation measures).
[147] *Id.* at 244.
[148] *Id.*
[149] FERC Order at ¶¶ 1-3.
[150] *Id*. ¶ 61.

environmental conditions … is integral to ensuring that the environmental impacts of approved projects are consistent with those anticipated by our environmental analyses."[151]

Although the final EA recommended 128 environmental mitigation measures, FERC adopted 129 environmental conditions in the FERC Order to reflect various modifications made by FERC to the mitigation measures recommended in the EA.[152] These 129 environmental conditions were included in the appendix of the Order.[153]

FERC reviewed and addressed the major environmental issues addressed in the final EA.[154] Addressing GHG emissions, for example, FERC pointed to the EA's estimate that "operation of the project, including the terminal expansion, modifications to the Sinton Compressor Station, fugitive emissions from pipeline operations, and marine emissions, will result in direct and indirect GHG emissions of up to 619,700 metric tons per year of carbon dioxide equivalent (CO_2e)."[155] FERC further stated that the "direct and indirect operational emissions of the terminal expansion and modifications to the Sinton Compressor Station could potentially increase CO_2e emissions based on the 2017 levels by 0.01 percent at the national level."[156]

On the basis of these estimates, FERC acknowledged the finding in the EA that "the GHG emissions, such as those emitted from the construction and operation of the project will contribute incrementally to climate change."[157] However, FERC stated that it "previously concluded it could not determine a project's incremental physical impacts on the environment

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[151] *Id*.
[152] *See, e.g.*, FERC Order at ¶¶ 47-54 (FERC modifying and renumbering certain mitigation measures in response to comments provided on the EA, and adding a new condition 25).
[153] *Id*. at Appendix.
[154] *See generally id*. at ¶¶ 40-60.
[155] *Id*. at ¶ 56.
[156] *Id*.
[157] *Id*. at ¶ 57 (citing FERC EA at 235).

caused by GHG emissions," and therefore "concluded it could not determine whether a project's contribution to climate change would be significant."[158]

In sum, FERC found that that the Stage 3 LNG Project is not inconsistent with the public interest under NGA section 3 and issued a certificate of public convenience and necessity under NGA section 7(c) for the Stage 3 Pipeline.[159]

VII. DISCUSSION AND CONCLUSIONS

In reviewing the non-FTA portion of CCL Stage III's Application, DOE/FE has considered both its obligations under NGA section 3(a) and NEPA. To accomplish these purposes, DOE/FE has examined a wide range of information addressing environmental and non-environmental factors, including but not limited to:

- CCL Stage III's uncontested Application;[160]
- FERC's EA and Order, including the 129 conditions adopted in that Order;
- The Draft Addendum, comments received in response to the Draft Addendum, and the final Addendum;
- The 2014 LCA GHG Report and the 2019 LCA GHG Update, including comments submitted in response to those documents; and
- The 2018 LNG Export Study, including comments received in response to that Study.

A. Non-Environmental Issues

1. Significance of the 2018 LNG Export Study

As discussed above, DOE/FE commissioned the 2018 LNG Export Study and invited public comments on the Study.[161] DOE/FE analyzed this material in its Response to Comments,

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[158] FERC Order at ¶ 57 (citations omitted).
[159] *See id.* at ¶¶ 23, 29, Ordering Paras. (A), (C).
[160] As noted above, the Application is uncontested because DOE/FE previously issued an order dismissing the Industrial Energy Consumers of America's (IECA) filing on procedural grounds. *See supra* at § I.
[161] *See supra* § II.A.3.

published in the *Federal Register* on December 28, 2018. On the basis of the 2018 Study, DOE/FE concluded that the United States will experience net economic benefits from the issuance of authorizations to export domestically produced LNG.[162] The 2018 Study further supports the proposition that exports of LNG from the lower-48 states, in volumes up to and including 52.8 Bcf/d of natural gas, will not be inconsistent with the public interest.[163]

We take administrative notice of EIA's recent authoritative projections for natural gas supply, demand, and prices, set forth in the *Annual Energy Outlook 2020* (AEO 2020), issued on January 29, 2020.[164] DOE/FE has assessed AEO 2020 to evaluate any differences from AEO 2017, which formed the basis for the 2018 LNG Export Study.[165] The AEO 2017 Reference case without the CPP shows lower net LNG exports of 12.5 Bcf/d of natural gas in 2050, compared with the AEO 2020 Reference case that shows net LNG exports of 15.8 Bcf/d in 2050. As discussed below, the AEO 2020 Reference case is even more supportive of exports than the AEO 2017 Reference case.

EIA's projections in AEO 2020 continue to show market conditions that will accommodate increased exports of natural gas. When compared to the AEO 2017 Reference case without the CPP, the AEO 2020 Reference case projects increases in domestic natural gas

162 *See* 2018 Study Response to Comments, 83 Fed. Reg. at 67,272.
163 *See id.* at 67,273.
164 U.S. Energy Info. Admin., *Annual Energy Outlook 2020* (Jan. 29, 2020), *available at*: https://www.eia.gov/outlooks/aeo/pdf/aeo2020.pdf.
165 AEO 2017 included two versions of the Reference case—one with, and one without, the implementation of the Clean Power Plan (CPP). In recent non-FTA orders, we discussed both versions of the AEO 2017 Reference case, noting that the U.S. Environmental Protection Agency (EPA) was reviewing the CPP and considering an alternative regulatory approach. On June 19, 2019, EPA repealed the CPP and issued the final Affordable Clean Energy (ACE) rule. *See* U.S. Envtl. Prot. Agency, Repeal of the Clean Power Plan; Emission Guidelines for Greenhouse Gas Emissions From Existing Electric Utility Generating Units; Revisions to Emission Guidelines Implementing Regulations, 84 Fed. Reg. 32,520 (July 8, 2019). Accordingly, in this Order, we refer only to the AEO 2017 Reference case without the CPP. The AEO 2020 Reference case does not include the CPP, so the comparisons between AEO 2017 and AEO 2020 are consistent in that regard.

production—well in excess of what is required to meet projected increases in domestic consumption.

For these reasons, we reaffirm that the 2018 LNG Export Study is fundamentally sound. The 2018 Study, as well as AEO 2020, support our finding that CCL Stage III's proposed authorization will not be inconsistent with the public interest.

2. CCL Stage III's Application

Upon review, DOE/FE finds that several factors identified in the Application, as well as in the 2018 LNG Export Study, support a grant of CCL Stage III's requested authorization under NGA section 3(a).

First, CCL Stage III points to DOE's 2018 Export Study, as well as DOE's prior economic studies, in asserting that the United States has significant natural gas resources available to meet both projected future domestic needs and demand for the proposed exports. We agree, based on recent projections and analyses. Specifically, we find that the 2018 LNG Export Study and AEO 2020 continue to project robust domestic supply conditions that are more than adequate to satisfy both domestic needs and exports of LNG, including those proposed in the Application.[166]

Second, the 2018 LNG Export Study indicates that exports of LNG will generate net economic benefits to the broader U.S. economy.[167] Indeed, the 2018 Study consistently shows macroeconomic benefits to the U.S. economy in every scenario, as well as positive annual growth across the energy intensive sectors of the economy.[168]

[166] *See*, *e.g.*, 2018 Study Response to Comments, 83 Fed. Reg. at 67,262-63.
[167] *Id*. at 67,263-66.
[168] *See* 2018 Study Response to Comments, 83 Fed. Reg. at 67,268-69 (citing 2018 LNG Export Study at 67, 70).

Third, as discussed below, over the 20-year term of the authorization, the proposed exports will improve the liquidity of international natural gas markets and will make a positive contribution to the United States' trade balance. For these reasons, we agree with CCL Stage III that its proposed exports are consistent with U.S. policy.[169]

Accordingly, based on the 2018 Study and the more recent data in AEO 2020, DOE/FE finds that the market will be capable of sustaining the level of exports requested in CCL Stage III's Application over the authorization term without negative economic impacts, including domestic price impacts (discussed below).

3. Price Impacts

As discussed above, the 2018 LNG Export Study projects the economic impacts of LNG exports in a range of scenarios, including scenarios that exceed the current amount of LNG exports authorized in the final non-FTA export authorizations to date (equivalent to a total of 44.81 Bcf/d of natural gas with the issuance of this Order and the three additional non-FTA orders being issued today). The 2018 Study found that, "[i]ncreasing U.S. LNG exports under any given set of assumptions about U.S. natural gas resources and their production leads to only small increases in U.S. natural gas prices."[170]

Additionally, DOE/FE has analyzed AEO 2020 to evaluate any differences from AEO 2017, which formed the basis for the 2018 LNG Export Study. Comparing key results from 2050 (the end of the projection period in Reference case projections from AEO 2017) shows that the Reference case outlook in AEO 2020 projects lower-48 market conditions that would be even more supportive of LNG exports than in AEO 2017, including higher production and demand coupled with lower prices. For example, for the year 2050, the AEO 2020 Reference case

[169] *See* App. at 7, 12.
[170] *See* 2018 Study Response to Comments, 83 Fed. Reg. at 67,258 (citing 2018 LNG Export Study at 55).

anticipates over 13% more natural gas production in the lower-48 than the AEO 2017 Reference case. It also projects an average Henry Hub natural gas price that is lower than the AEO 2017 Reference case by over 38%. Table 1 below shows these comparisons:

Table 1: Year 2050 Reference Case Comparisons in AEO 2017 and AEO 2020

	AEO 2017 Reference Case	**AEO 2020 Reference Case**
Lower-48 Dry Natural Gas Production (Bcf/d)	107.9	122.3
Total Natural Gas Consumption (Bcf/d)	92.4	100.0
Electric Power Sector Consumption (Bcf/d)	31.8	33.4
Net Exports by Pipeline (Bcf/d)	3.4	6.5
Net LNG Exports (Bcf/d)	12.5	15.8
LNG Exports – Total (Bcf/d)	12.7	15.9
Henry Hub Spot Price ($/MMBtu) (Note 1)	$6.00 (2019$)	$3.69 (2019$)

Note 1: Prices adjusted to 2019$ with the AEO 2017 projection of a Gross Domestic Product price index.

For these reasons, and as explained in DOE/FE's Response to Comments on the 2018 Study, we find that arguments concerning domestic price increases are not supported by the record evidence.[171]

[171] *See* 2018 Study Response to Comments, 83 Fed. Reg. at 67,267-69 (§ VI.G) (DOE/FE's response to comments on natural gas price impacts).

4. Benefits of International Trade

We have not limited our review to the 2018 LNG Export Study and data from AEO 2020, but have considered the international consequences of our decision. As discussed above, we review applications to export LNG to non-FTA nations under section 3(a) of the NGA. The United States' commitment to free trade is one factor bearing on that review.

Additionally, an efficient, transparent international market for natural gas with diverse sources of supply provides both economic and strategic benefits to the United States and our allies. Indeed, increased production of domestic natural gas has significantly reduced the need for the United States to import LNG. In global trade, LNG shipments that would have been destined to U.S. markets have been redirected to Europe and Asia, improving energy security for many of our key trading partners. To the extent U.S. exports can diversify global LNG supplies and increase the volumes of LNG available globally, these exports will improve energy security for many U.S. allies and trading partners. Therefore, we agree with CCL Stage III that authorizing its exports may advance the public interest for reasons that are distinct from and additional to the economic benefits identified in the 2018 LNG Export Study.

B. Environmental Issues

In reviewing the potential environmental impacts of CCL Stage III's proposal to export LNG, DOE/FE has considered both its obligations under NEPA and its obligation under NGA section 3(a) to ensure that the proposal is not inconsistent with the public interest.

1. Adoption of FERC's Environmental Assessment

DOE/FE participated in FERC's environmental review of the proposed Stage 3 Project as a cooperating agency and has examined FERC's reasoning and conclusions. For the reasons set forth below, DOE/FE has not found that the arguments raised in the FERC proceeding, the current proceeding, or the 2018 LNG Export Study proceeding detract from the reasoning and conclusions contained in FERC's EA. Accordingly, DOE has adopted the EA (*see supra* § I), and hereby incorporates the reasoning contained in the EA in a Finding of No Significant Impact (FONSI), issued concurrently with this Order.

2. Environmental Impacts Associated with Induced Production of Natural Gas

The current rapid development of natural gas resources in the United States likely will continue, with or without the export of natural gas to non-FTA nations.[172] Nevertheless, a decision by DOE/FE to authorize exports to non-FTA nations could accelerate that development by some increment. As discussed above, the Addendum reviewed the academic and technical literature covering the most significant issues associated with unconventional natural gas production, including impacts to water resources, air quality, greenhouse gas emissions, induced seismicity, and land use.

The Addendum shows that there are potential environmental issues associated with unconventional natural gas production that need to be carefully managed, especially with respect to emissions of volatile organic compounds (VOCs) and methane, and the potential for groundwater contamination. These environmental concerns do not lead us to conclude, however, that exports of natural gas to non-FTA nations should be prohibited. Rather, we believe the public interest is better served by addressing these environmental concerns directly—through federal, state, or local regulation, or through self-imposed industry guidelines where appropriate—rather than by prohibiting exports of natural gas. Unlike DOE, environmental regulators have the legal authority to impose requirements on natural gas production that appropriately balance benefits and burdens, and to update these regulations from time to time as technological practices and scientific understanding evolve.

[172] Addendum at 2.

By comparison, section 3(a) of the NGA is too blunt an instrument to address these environmental concerns efficiently. A decision to prohibit exports of natural gas would cause the United States to forego entirely the economic and international benefits discussed herein, but would have little more than a modest, incremental impact on the environmental issues.

For these reasons, we conclude that the environmental concerns associated with natural gas production do not establish that exports of natural gas to non-FTA nations are inconsistent with the public interest. We note that the D.C. Circuit in *Sierra Club I* rejected arguments on this basis, and we find that the Court's conclusions and reasoning control in this proceeding.[173]

3. Greenhouse Gas Impacts Associated with U.S. LNG Exports

Sierra Club and other commenters on the Addendum, 2014 Life Cycle Greenhouse Gas (LCA GHG) Report, the 2019 LCA GHG Update, and the 2018 LNG Export Study (as well as DOE/FE's earlier economic studies) expressed concern that exports of U.S. LNG may have a negative effect on the total amount of energy consumed in foreign nations and on global GHG emissions.

As explained above, both the 2014 LCA GHG Report and the 2019 Update estimated the life cycle GHG emissions of U.S. LNG exports to Europe and Asia, compared with certain other fuels used to produce electric power in those importing countries.[174] The 2019 Update was based on the most current available science, methodology, and data from the U.S. natural gas system to assess GHGs associated with exports of U.S. LNG.[175]

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[173] *See Sierra Club I*, 867 F.3d at 203 (rejecting argument that DOE arbitrarily failed to evaluate foreseeable indirect effects of exports under NGA section 3(a)); *see supra* § II.C.
[174] *See supra* § II.B.
[175] Response to Comments on 2019 Update, 85 Fed. Reg. at 85.

The 2019 Update demonstrates that the conclusions of the 2014 LCA GHG Report have not changed.[176] While acknowledging uncertainty, the LCA GHG Update shows that, to the extent U.S. LNG exports are preferred over coal in LNG-importing nations, U.S. LNG exports are likely to reduce global GHG emissions on per unit of energy consumed basis for power production.[177] Further, to the extent U.S. LNG exports are preferred over other forms of imported natural gas, they are likely to have only a small impact on global GHG emissions.[178]

The LCA GHG Update (like the 2014 Report) does not provide information on whether authorizing exports of U.S. LNG to non-FTA nations will increase or decrease GHG emissions on a global scale.[179] Recognizing there is a global market for LNG, exports of U.S. LNG will affect the global price of LNG which, in turn, will affect energy systems in numerous countries. DOE further acknowledges that regional coal and imported natural gas are not the only fuels with which U.S.-exported LNG will compete. U.S. LNG exports may also compete with renewable energy, nuclear energy, petroleum-based liquid fuels, coal imported from outside East Asia or Western Europe, indigenous natural gas, synthetic natural gas derived from coal, and other resources. However, to model the effect that U.S. LNG exports would have on net global GHG emissions would require projections of how each of these fuel sources would be affected in each LNG-importing nation.[180] Such an analysis would not only have to consider market dynamics in each of these countries over the coming decades, but also the interventions of numerous foreign governments in those markets. Moreover, the uncertainty associated with estimating each of these factors would likely render such an analysis too speculative to inform

[176] *See id*.
[177] *See id*. at 85; *see also id*. at 86.
[178] *See id*.
[179] *See id*. at 81.
[180] Response to Comments on 2019 Update, 85 Fed. Reg. at 81.

the public interest determination in DOE's non-FTA proceedings.[181] Based on the evidence, however, DOE sees no reason to conclude that U.S. LNG exports will increase global GHG emissions in a material or predictable way.[182]

Finally, we note that the D.C. Circuit held in *Sierra Club I* that there was "nothing arbitrary about the Department's decision" to compare emissions from exported U.S. LNG to emissions of coal or other sources of natural gas, rather than renewables or other possible fuel sources.[183] The Court's decision in *Sierra Club I* guided DOE's development of the 2019 Update.[184]

C. Other Considerations

The conclusion of the 2018 LNG Export Study is that the United States will experience net economic benefits from the export of domestically produced LNG. Nonetheless, our decision in this Order is not premised on an uncritical acceptance of that Study. Certain public comments received on the 2018 Study identify significant uncertainties and even potential negative impacts from LNG exports. The economic impacts of higher natural gas prices and potential increases in natural gas price volatility are two of the factors that we view most seriously. Yet we also have taken into account factors that could mitigate these impacts, such as the current oversupply situation and data indicating that the natural gas industry would increase natural gas supply in response to increasing exports. Further, we note that it is far from certain that all or even most of the proposed LNG export projects will ever be realized because of the

[181] *See id*.
[182] *See id*. at 86.
[183] *Sierra Club I*, 867 F.3d at 202 (finding that "Sierra Club's complaint 'falls under the category of flyspecking'") (citation omitted).
[184] *See supra* at § II.B, C.

time, difficulty, and expense of commercializing, financing, and constructing LNG export terminals, as well as the uncertainties inherent in the global market demand for LNG.

More generally, DOE/FE continues to subscribe to the principle set forth in our 1984 Policy Guidelines[185] that, under most circumstances, the market is the most efficient means of allocating natural gas supplies. However, agency intervention may be necessary to protect the public in the event there is insufficient domestic natural gas for domestic use. There may be other circumstances as well that cannot be foreseen that would require agency action.[186] Given these possibilities, DOE/FE recognizes the need to monitor market developments closely as the impact of successive authorizations of LNG exports unfolds.

D. Conclusion

We have reviewed the evidence in the record and relevant precedent in earlier non-FTA export decisions and have not found an adequate basis to conclude that CCL Stage III's proposed exports will be inconsistent with the public interest.

In deciding whether to grant a final non-FTA export authorization, we also consider the cumulative impacts of the total volume of all non-FTA export authorizations. With the issuance of this Order and the three additional non-FTA orders being issued concurrently (*see supra* § I), there are currently 42 final non-FTA authorizations in a cumulative volume of exports totaling 44.81 Bcf/d of natural gas, or approximately 16.4 trillion cubic feet per year, as follows: Sabine

[185] 1984 Policy Guidelines, 49 Fed. Reg. at 6684-85.

[186] In previous orders, some commenters asked DOE to clarify the circumstances under which the agency would exercise its authority to revoke (in whole or in part) issued LNG export authorizations. DOE/FE stated that it could not precisely identify all the circumstances under which such action might be considered. More recently, on June 15, 2018, DOE/FE issued a policy statement addressing this issue. *See* U.S. Dep't of Energy, Policy Statement Regarding Long-Term Authorizations to Export Natural Gas to Non-Free Trade Agreement Countries, 83 Fed. Reg. 28,841 (June 21, 2018). DOE/FE noted that it has never rescinded a long-term non-FTA export authorization and stated that it "does not foresee a scenario where it would rescind one or more non-FTA authorizations." *Id*. at 28,843.

Pass Liquefaction, LLC (2.2 Bcf/d),[187] Carib Energy (USA) LLC (0.04 Bcf/d),[188] Cameron LNG, LLC (1.7 Bcf/d),[189] FLEX I (1.4 Bcf/d),[190] FLEX II (0.4 Bcf/d),[191] Dominion Cove Point LNG, LP (0.77 Bcf/d),[192] Cheniere Marketing, LLC and Corpus Christi Liquefaction, LLC (2.1 Bcf/d),[193] Sabine Pass Liquefaction, LLC Expansion Project (1.38 Bcf/d),[194] American Marketing LLC (0.008 Bcf/d),[195] Emera CNG, LLC (0.008 Bcf/d),[196] Floridian Natural Gas

[187] *Sabine Pass Liquefaction, LLC*, DOE/FE Order No. 2961-A, FE Docket No. 10-111-LNG, Final Opinion and Order Granting Long-Term Authorization to Export Liquefied Natural Gas From Sabine Pass LNG Terminal to Non-Free Trade Agreement Nations (Aug. 7, 2012).

[188] *Carib Energy (USA) LLC*, DOE/FE Order No. 3487, FE Docket No. 11-141-LNG, Final Order Granting Long-Term, Multi-Contract Authorization to Export Liquefied Natural Gas in ISO Containers by Vessel to Non-Free Trade Agreement Nations in Central America, South America, or the Caribbean (Sept. 10, 2014).

[189] *Cameron LNG, LLC*, DOE/FE Order No. 3391-A, FE Docket No. 11-162-LNG, Final Opinion and Order Granting Long-Term Multi-Contract Authorization to Export Liquefied Natural Gas by Vessel from the Cameron LNG Terminal in Cameron Parish, Louisiana, to Non-Free Trade Agreement Nations (Sept. 10, 2014).

[190] *Freeport LNG Expansion, L.P.*, *et al.*, DOE/FE Order No. 3282-C, FE Docket No. 10-161-LNG, Final Opinion and Order Granting Long-Term Multi-Contract Authorization to Export Liquefied Natural Gas by Vessel from the Freeport LNG Terminal on Quintana Island, Texas, to Non-Free Trade Agreement Nations (Nov. 14, 2014) (FLEX I Final Order).

[191] *Freeport LNG Expansion, L.P.*, *et al.*, DOE/FE Order No. 3357-B, FE Docket No. 11-161-LNG, Final Opinion and Order Granting Long-Term Multi-Contract Authorization to Export Liquefied Natural Gas by Vessel from the Freeport LNG Terminal on Quintana Island, Texas, to Non-Free Trade Agreement Nations (Nov. 14, 2014) (FLEX II Final Order).

[192] *Dominion Cove Point LNG, LP*, DOE/FE Order No. 3331-A, FE Docket No. 11-128-LNG, Final Opinion and Order Granting Long-Term, Multi-Contract Authorization to Export Liquefied Natural Gas from the Cove Point LNG Terminal in Calvert County, Maryland, to Non-Free Trade Agreement Nations (May 7, 2015).

[193] *Cheniere Marketing, LLC and Corpus Christi Liquefaction, LLC*, DOE/FE Order No. 3638, FE Docket No. 12-97-LNG, Final Order and Opinion Granting Long-Term, Multi-Contract Authorization to Export Liquefied Natural Gas by Vessel from the Proposed Corpus Christi Liquefaction Project to Be Located in Corpus Christi, Texas, to Non-Free Trade Agreement Nations (May 12, 2015).

[194] *Sabine Pass Liquefaction, LLC*, DOE/FE Order No. 3669, FE Docket Nos. 13-30-LNG, 13-42-LNG, & 13-121-LNG, Final Opinion and Order Granting Long-Term, Multi-Contract Authorization to Export Liquefied Natural Gas by Vessel from the Sabine Pass LNG Terminal Located in Cameron Parish, Louisiana, to Non-Free Trade Agreement Nations (June 26, 2015).

[195] *American LNG Marketing LLC*, DOE/FE Order No. 3690, FE Docket No. 14-209-LNG, Final Opinion and Order Granting Long-Term, Multi-Contract Authorization to Export Liquefied Natural Gas in ISO Containers Loaded at the Proposed Hialeah Facility Near Medley, Florida, and Exported by Vessel to Non-Free Trade Agreement Nations (Aug. 7, 2015).

[196]*Emera CNG, LLC,* DOE/FE Order No. 3727, FE Docket No. 13-157-CNG, Final Opinion and Order Granting Long-Term, Multi-Contract Authorization to Export Compressed Natural Gas by Vessel From a Proposed CNG Compression and Loading Facility at the Port of Palm Beach, Florida, to Non-Free Trade Agreement Nations (Oct. 19, 2015).

Storage Company, LLC,[197] Air Flow North American Corp. (0.002 Bcf/d),[198] Bear Head LNG Corporation and Bear Head LNG (USA), LLC (0.81 Bcf/d),[199] Pieridae Energy (USA) Ltd.,[200] Sabine Pass Liquefaction, LLC Design Increase (0.56 Bcf/d),[201] Cameron LNG, LLC Design Increase (0.42 Bcf/d),[202] Cameron LNG, LLC Expansion Project (1.41 Bcf/d),[203] Lake Charles Exports, LLC (2.0 Bcf/d),[204] Lake Charles LNG Export Company, LLC,[205] Carib Energy (USA), LLC (0.004),[206] Magnolia LNG, LLC (1.08 Bcf/d),[207] Southern LNG Company, L.L.C. (0.36

[197] *Floridian Natural Gas Storage Co., LLC*, DOE/FE Order No. 3744, FE Docket No. 15-38-LNG, Final Opinion and Order Granting Long-Term, Multi-Contract Authorization to Export Liquefied Natural Gas in ISO Containers Loaded at the Proposed Floridian Facility in Martin County, Florida, and Exported by Vessel to Non-Free Trade Agreement Nations (Nov. 25, 2015).
[198] *Air Flow North American Corp*., DOE/FE Order No. 3753, FE Docket No. 15-206-LNG, Final Opinion and Order Granting Long-Term, Multi-Contract Authorization to Export Liquefied Natural Gas in ISO Containers Loaded at the Clean Energy Fuels Corp. LNG Production Facility in Willis, Texas, and Exported by Vessel to Non-Free Trade Agreement Nations in Central America, South America, the Caribbean, or Africa (Dec. 4, 2015).
[199] *Bear Head LNG Corporation and Bear Head LNG (USA)*, DOE/FE Order No. 3770, FE Docket No. 15-33-LNG, Opinion and Order Granting Long-Term, Multi-Contract Authorization to Export U.S.-Sourced Natural Gas by Pipeline to Canada for Liquefaction and Re-Export in the Form of Liquefied Natural Gas to Non-Free Trade Agreement Countries (Feb. 5, 2016).
[200] *Pieridae Energy (USA) Ltd*., DOE/FE Order No. 3768, FE Docket No. 14-179-LNG, Opinion and Order Granting Long-Term, Multi-Contract Authorization to Export U.S.-Sourced Natural Gas Natural Gas by Pipeline to Canada for Liquefaction and Re-Export in the Form of Liquefied Natural Gas to Non-Free Trade Agreement Countries (Feb. 5, 2016).
[201] *Sabine Pass Liquefaction, LLC*, DOE/FE Order No. 3792, FE Docket No. 15-63-LNG, Final Opinion and Order Granting Long-Term, Multi-Contract Authorization to Export Liquefied Natural Gas by Vessel From the Sabine Pass LNG Terminal Located in Cameron Parish, Louisiana, to Non-Free Trade Agreement Nations (Mar. 11, 2016).
[202] *Cameron LNG, LLC*, DOE/FE Order No. 3797, FE Docket No. 15-167-LNG, Final Opinion and Order Granting Long-Term, Multi-Contract Authorization to Export Liquefied Natural Gas by Vessel from the Cameron Terminal Located in Cameron and Calcasieu Parishes, Louisiana, to Non-Free Trade Agreement Nations (Mar. 18, 2016).
[203] *Cameron LNG, LLC*, DOE/FE Order No. 3846, FE Docket No. 15-90-LNG, Opinion and Order Granting Long-Term, Multi-Contract Authorization to Export Liquefied Natural Gas by Vessel from Trains 4 and 5 of the Cameron LNG Terminal Located in Cameron and Calcasieu Parishes, Louisiana, to Non-Free Trade Agreement Nations (July 15, 2016).
[204] *Lake Charles Exports, LLC*, DOE/FE Order No. 3324-A, FE Docket No. 11-59-LNG, Final Opinion and Order Granting Long-Term, Multi-Contract Authorization to Export Liquefied Natural Gas by Vessel from the Lake Charles Terminal in Calcasieu Parish, Louisiana, to Non-Free Trade Agreement Nations (July 29, 2016).
[205] *Lake Charles LNG Export Co., LLC*, DOE/FE Order No. 3868, FE Docket No. 13-04-LNG, Opinion and Order Granting Long-Term, Multi-Contract Authorization to Export Liquefied Natural Gas by Vessel from the Lake Charles Terminal in Calcasieu Parish, Louisiana to Non-Free Trade Agreement Nations (July 29, 2016).
[206] *Carib Energy (USA) LLC*, DOE/FE Order No. 3937, FE Docket No. 16-98-LNG, Opinion and Order Granting Long-Term, Multi-Contract Authorization to Export Liquefied Natural Gas in ISO Containers Loaded at Designated Pivotal LNG, Inc. Facilities and Exported by Vessel to Non-Free Trade Agreement Nations in Central America, South America, or the Caribbean (Nov. 28, 2016).
[207] *Magnolia LNG, LLC*, DOE/FE Order No. 3909, FE Docket No. 13-132-LNG, Opinion and Order Granting Long-Term, Multi-Contract Authorization to Export Liquefied Natural Gas by Vessel From the Proposed Magnolia LNG Terminal to be Constructed in Lake Charles, Louisiana, to Non-Free Trade Agreement Nations (Nov. 30, 2016).

Bcf/d),[208] the FLEX Design Increase (0.34 Bcf/d),[209] Golden Pass Products LLC (2.21 Bcf/d),[210] Delfin LNG LLC,[211] the Lake Charles LNG Export Company, LLC Design Increase (0.33 Bcf/d),[212] the Lake Charles Exports, LLC Design Increase,[213] Eagle LNG Partners Jacksonville II LLC (0.01 Bcf/d),[214] Mexico Pacific Limited LLC (1.7 Bcf/d),[215] Venture Global Calcasieu Pass, LLC (1.7 Bcf/d),[216] ECA Liquefaction, S. de R.L. de C.V. (Mid-Scale Project) (0.44 Bcf/d),[217] Energía Costa Azul, S. de R.L. de C.V. (Large-Scale Project) (1.3 Bcf/d),[218] Port Arthur LNG,

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[208] *Southern LNG Company, L.L.C.*, DOE/FE Order No. 3956, FE Docket No. 12-100-LNG, Opinion and Order Granting Long-Term, Multi-Contract Authorization to Export Liquefied Natural Gas by Vessel from the Elba Island Terminal in Chatham County, Georgia, to Non-Free Trade Agreement Nations (Dec. 16, 2016).

[209] *Freeport LNG Expansion, L.P., et al.*, DOE/FE Order No. 3957, FE Docket No. 16-108-LNG, Opinion and Order Granting Long-Term, Multi-Contract Authorization to Export Liquefied Natural Gas by Vessel from the Freeport LNG Terminal on Quintana Island, Texas, to Non-Free Trade Agreement Nations (Dec. 19, 2016).

[210] *Golden Pass Products LLC*, DOE/FE Order No. 3978, FE Docket No. 12-156-LNG, Opinion and Order Granting Long-Term, Multi-Contract Authorization to Export Liquefied Natural Gas by Vessel from the Golden Pass LNG Terminal Located in Jefferson County, Texas, to Non-Free Trade Agreement Nations (Apr. 25, 2017).

[211] *Delfin LNG LLC*, DOE/FE Order No. 4028, FE Docket No. 13-147-LNG, Opinion and Order Granting Long-Term, Multi-Contract Authorization to Export Liquefied Natural Gas by Vessel from a Proposed Floating Liquefaction Project and Deepwater Port 30 Miles Offshore of Louisiana to Non-Free Trade Agreement Nations (June 1, 2017).

[212] *Lake Charles LNG Export Co., LLC*, DOE/FE Order No. 4010, FE Docket No. 16-109-LNG, Opinion and Order Granting Long-Term, Multi-Contract Authorization to Export Liquefied Natural Gas by Vessel from the Lake Charles Terminal in Lake Charles, Louisiana, to Free Trade Agreement and Non-Free Trade Agreement Nations (June 29, 2017).

[213] *Lake Charles Exports, LLC*, DOE/FE Order No. 4011, FE Docket No. 16-110-LNG, Opinion and Order Granting Long-Term, Multi-Contract Authorization to Export Liquefied Natural Gas by Vessel from the Lake Charles Terminal in Lake Charles, Louisiana, to Free Trade Agreement and Non-Free Trade Agreement Nations (June 29, 2017).

[214] *Eagle LNG Partners Jacksonville II LLC*, DOE/FE Order No. 4078, FE Docket No. 17-79-LNG, Opinion and Order Granting Long-Term, Multi-Contract Authorization to Export Liquefied Natural Gas in ISO Containers Loaded at the Eagle Maxville Facility in Jacksonville, Florida, and Exported by Vessel to Free Trade Agreement and Non-Free Trade Agreement Nations (Sept. 15, 2017).

[215] *See Mexico Pacific Limited LLC*, DOE/FE Order No. 4312, FE Docket No. 18-70-LNG, Opinion and Order Granting Long-Term, Multi-Contract Authorization to Export U.S.-Sourced Natural Gas by Pipeline to Mexico for Liquefaction and Re-Export in the Form of Liquefied Natural Gas to Non-Free Trade Agreement Countries (Dec. 14, 2018).

[216] *Venture Global Calcasieu Pass, LLC*, DOE/FE Order No. 4346, FE Docket Nos. 13-69-LNG, 14-88-LNG, 15-25-LNG, Opinion and Order Granting Long-Term Authorization to Export Liquefied Natural Gas to Non-Free Trade Agreement Nations (March 5, 2019).

[217] *Energía Costa Azul, S. de R.L. de C.V.,* DOE/FE Order No. 4364, FE Docket No. 18-144-LNG, Opinion and Order Granting Long-Term Authorization to Re-Export U.S-Sourced Natural Gas in the Form of Liquefied Natural Gas from Mexico to Non-Free Trade Agreement Countries (ECA Mid-Scale Project) (Mar. 29, 2019), *as amended ECA Liquefaction, S. de R.L. de C.V.,* DOE/FE Order No. 4364-A, FE Docket No. 18-144-LNG, Order Granting Request to Transfer Authorizations (Oct. 7, 2019).

[218] *Energía Costa Azul, S. de R.L. de C.V.*, DOE/FE Order No. 4365, FE Docket No. 18-145-LNG, Opinion and Order Granting Long-Term Authorization to Re-Export U.S-Sourced Natural Gas in the Form of Liquefied Natural

LLC (1.91 Bcf/d),[219] Driftwood LNG LLC (3.88 Bcf/d),[220] FLEX4 (0.72 Bcf/d),[221] Gulf LNG Liquefaction Company, LLC (1.5 Bcf/d),[222] Eagle LNG Partners Jacksonville LLC (0.14 Bcf/d),[223] Venture Global Plaquemines LNG, LLC (3.40 Bcf/d),[224] Texas LNG Brownsville LLC (0.56 Bcf/d),[225] Annova LNG Common Infrastructure, LLC (0.99 Bcf/d),[226] Rio Grande LNG, LLC (3.61 Bcf/d),[227] and this Order.

On February 5, 2019, DOE/FE vacated a non-FTA authorization previously issued to Flint Hills Resources, LP, in a volume of 0.01 Bcf/d, at the company's request.[228] Additionally, we note that the volumes authorized for export in the *Lake Charles Exports* and *Lake Charles LNG Export* orders are both 2.0 Bcf/d and 0.33 Bcf/d, respectively, yet are not additive to one another because the source of LNG approved under all of those orders is the Lake Charles

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Gas from Mexico to Non-Free Trade Agreement Countries (ECA Large-Scale Project) (Mar. 29, 2019).

219 *Port Arthur LNG, LLC*, DOE/FE Order No. 4372, FE Docket No. 15-96-LNG, Opinion and Order Granting Long-Term Authorization to Export Liquefied Natural Gas to Non-Free Trade Agreement Nations (May 2, 2019).

220 *Driftwood LNG LLC*, DOE/FE Order No. 4373, FE Docket No. 16-144-LNG, Opinion and Order Granting Long-Term Authorization to Export Liquefied Natural Gas to Non-Free Trade Agreement Nations (May 2, 2019).

221 *Freeport LNG Expansion, L.P.*, *et al.*, DOE/FE Order No. 4374, FE Docket No. 18-26-LNG, Opinion and Order Granting Long-Term Authorization to Export Liquefied Natural Gas to Non-Free Trade Agreement Nations (May 28, 2019).

222 *Gulf LNG Liquefaction Co., LLC*, DOE/FE Order No. 4410, FE Docket No. 12-101-LNG, Opinion and Order Granting Long-Term Authorization to Export Liquefied Natural Gas to Non-Free Trade Agreement Nations (July 31, 2019).

223 *Eagle LNG Partners Jacksonville LLC*, DOE/FE Order No. 4445, FE Docket No. 16-15-LNG, Opinion and Order Granting Long-Term Authorization to Export Liquefied Natural Gas to Non-Free Trade Agreement Nations (Oct. 3, 2019).

224 *Venture Global Plaquemines LNG, LLC*, DOE/FE Order No. 4446, FE Docket No. 16-28-LNG, Opinion and Order Granting Long-Term Authorization to Export Liquefied Natural Gas to Non-Free Trade Agreement Nations (Oct. 16, 2019).

225 *Texas LNG Brownsville LLC*, DOE/FE Order No. 4489, FE Docket No. 15-62-LNG, Opinion and Order Granting Long-Term Authorization to Export Liquefied Natural Gas to Non-Free Trade Agreement Nations (Feb. 10, 2020).

226 *Annova LNG Common Infrastructure, LLC*, DOE/FE Order No. 4491, FE Docket No. 19-34-LNG, Opinion and Order Granting Long-Term Authorization to Export Liquefied Natural Gas to Non-Free Trade Agreement Nations (Feb. 10, 2020).

227 *Rio Grande LNG, LLC*, DOE/FE Order No. 4492, FE Docket No. 15-190-LNG, Opinion and Order Granting Long-Term Authorization to Export Liquefied Natural Gas to Non-Free Trade Agreement Nations (Feb. 10, 2020).

228 *Flint Hills Resources, LP*, DOE/FE Order Nos. 3809-A and 3829-A, FE Docket No. 15-168-LNG, Order Granting Request to Vacate Long-Term, Multi-Contract Authorizations to Export LNG to Free Trade Agreement Nations and to Non-Free Trade Agreement Nations (Feb. 5, 2019) (vacating, in relevant part, DOE/FE Order No. 3829 authorizing the export of 0.01 Bcf/d of natural gas to non-FTA countries).

Terminal.[229] Likewise, the *Carib* and *Floridian* orders are both 14.6 Bcf/yr of natural gas (0.04 Bcf/d), yet are not additive to one another because the source of LNG approved under both orders is from the Floridian Facility.[230] Additionally, the volumes authorized for export in the *Bear Head* and *Pieridae US* orders are not additive; together, they are limited to a maximum of 0.81 Bcf/d to reflect the current capacity of the Maritimes Northeast Pipeline at the U.S.-Canadian border.[231]

In sum, the total export volume granted to date is within the range of scenarios analyzed in the 2018 LNG Export Study. The 2018 Study found that exports of LNG from the lower-48 states, in volumes up to and including 52.8 Bcf/d of natural gas, will not be inconsistent with the public interest.[232] DOE/FE further notes that, to date, the amount of U.S. LNG export capacity that is operating or under construction totals 15.54 Bcf/d of natural gas across eight large-scale export projects in the lower-48 states.[233]

DOE/FE will continue taking a measured approach in reviewing the other pending applications to export natural gas. Specifically, DOE/FE will continue to assess the cumulative impacts of each succeeding request for export authorization on the public interest with due regard to the effect on domestic natural gas supply and demand fundamentals.

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[229] *Lake Charles LNG Export Co., LLC*, DOE/FE Order No. 4010, at 55; *see also Lake Charles Exports, LLC*, DOE/FE Order No. 4011, at 54.

[230] *See Floridian Natural Gas Storage Co., LLC*, DOE/FE Order No. 3744, at 22 (stating that the quantity of LNG authorized for export by Floridian in DOE/FE Order No. 3744 "will be reduced by the portion of the total approved volume of 14.6 Bcf/yr that is under firm contract directly or indirectly to Carib Energy (USA), LLC"); *see also id*. at 21 (Floridian "may not treat the volumes authorized for export in the [*Carib* and *Floridian*] proceedings as additive to one another.").

[231] *See Bear Head LNG Corporation and Bear Head LNG (USA)*, DOE/FE Order No. 3770, at 178-79 (stating that the quantity of LNG authorized for export by Bear Head LNG and Pieridae US "are not additive; together, they are limited to a maximum of 0.81 Bcf/d to reflect the current capacity of the M&N US Pipeline.").

[232] *See* 2018 Study Response to Comments, 83 Fed. Reg. at 67,273 (citing 2018 LNG Export Study at 63 & Appx F).

[233] U.S. Energy Info. Admin., *U.S. Liquefaction Capacity* (Jan. 30, 2020), *available at*: https://www.eia.gov/naturalgas/U.S.liquefactioncapacity.xlsx (total of 15.54 Bcf/d calculated by adding Column N in "Existing & Under Construction" worksheet).

The reasons in support of proceeding cautiously are several: (1) the 2018 LNG Export Study, like any study based on assumptions and economic projections, is inherently limited in its predictive accuracy; (2) applications to export significant quantities of domestically produced LNG are still a relatively new phenomena with uncertain impacts; and (3) the market for natural gas has experienced rapid reversals in the past and is again changing rapidly due to economic, technological, and regulatory developments. The market of the future very likely will not resemble the market of today. In recognition of these factors, DOE/FE intends to monitor developments that could tend to undermine the public interest in grants of successive applications for exports of domestically produced LNG and to attach terms and conditions to LNG export authorizations to protect the public interest.

VIII. FINDINGS

On the basis of the findings and conclusions set forth above, DOE/FE grants the non-FTA portion of CCL Stage III's Application, subject to the Terms and Conditions and Ordering Paragraphs set forth below.

IX. TERMS AND CONDITIONS

To ensure that the authorization issued by this Order is not inconsistent with the public interest, DOE/FE has attached the following Terms and Conditions to the authorization. CCL Stage III must abide by each Term and Condition or face appropriate sanction.

A. Term of the Authorization

CCL Stage III requests a 20-year term for the authorization. A 20-year term is consistent with DOE's practice in the final non-FTA authorizations issued to date. The 20-year term will begin on the date when CCL Stage III commences first commercial export of domestically sourced LNG from the Stage 3 Project, but not before.

B. Commencement of Operations

As requested by CCL Stage III and consistent with our final non-FTA authorizations issued to date, DOE/FE will add as a condition of the authorization that CCL Stage III must commence commercial LNG export operations no later than seven years from the date of issuance of this Order. The purpose of this condition is to ensure that other entities that may seek similar authorizations are not frustrated in their efforts to obtain those authorizations by authorization holders that are not engaged in actual export operations.

C. Commissioning Volumes

CCL Stage III will be permitted to apply for short-term export authorizations to export Commissioning Volumes prior to the commencement of the first commercial exports of domestically sourced LNG from the Stage 3 Project. "Commissioning Volumes" are defined as the volume of LNG produced and exported under a short-term authorization during the initial start-up of each LNG train, before each LNG train has reached its full steady-state capacity and begun its commercial exports pursuant to CCL Stage III's long-term contracts.[234] The Commissioning Volumes will not be counted against the maximum level of volumes previously authorized previously authorized in CCL Stage III's FTA authorizations or in this Order.

D. Make-Up Period

CCL Stage III will be permitted to continue exporting for a total of three years following the end of the 20-year term established in this Order, solely to export any Make-Up Volume that it was unable to export during the original export period. The three-year term during which the Make-Up Volume may be exported shall be known as the "Make-Up Period."

[234] For additional discussion of Commissioning Volumes and the Make-Up Period referenced below, see *Freeport LNG Expansion, L.P., et al.*, DOE/FE Order Nos. 3282-B & 3357-A, FE Docket Nos. 10-161-LNG & 11-161-LNG, Order Amending DOE/FE Order Nos. 3282 and 3357, at 4-9 (June 6, 2014).

The Make-Up Period does not affect or modify the total export volume of LNG previously authorized in CCL Stage III's FTA authorization (DOE/FE Order No. 4277) or in this Order. Insofar as CCL Stage III may seek to export additional volumes not previously authorized for export, it will be required to obtain appropriate authorization from DOE/FE.

E. Transfer, Assignment, or Change in Control

DOE/FE's natural gas regulations prohibit authorization holders from transferring or assigning authorizations to import or export natural gas without specific authorization by the Assistant Secretary for Fossil Energy.[235] DOE/FE has found that this requirement applies to any change of control of the authorization holder. This condition was deemed necessary to ensure that DOE/FE will be given an adequate opportunity to assess the public interest impacts of such a transfer or change.

DOE/FE construes a change in control to mean a change, directly or indirectly, of the power to direct the management or policies of an entity whether such power is exercised through one or more intermediary companies or pursuant to an agreement, written or oral, and whether such power is established through ownership or voting of securities, or common directors, officers, or stockholders, or voting trusts, holding trusts, or debt holdings, or contract, or any other direct or indirect means.[236] A rebuttable presumption that control exists will arise from the ownership or the power to vote, directly or indirectly, 10% or more of the voting securities of such entity.[237]

[235] 10 C.F.R. § 590.405.
[236] *See* U.S. Dep't of Energy, Procedures for Changes in Control Affecting Applications and Authorizations to Import or Export Natural Gas, Notice of Procedures, 79 Fed. Reg. 65,541, 65,542 (Nov. 5, 2014).
[237] *See id*.

F. Agency Rights

CCL Stage III requests authorization to export LNG on its own behalf and as agent for other entities that hold title to the LNG at the time of export, pursuant to long-term contracts. DOE/FE previously has determined that, in LNG export orders in which Agency Rights have been granted, DOE/FE shall require registration materials filed for, or by, an LNG title-holder (Registrant) to include the same company identification information and long-term contract information of the Registrant as if the Registrant had filed an application to export LNG on its own behalf.[238]

To ensure that the public interest is served, this authorization shall be conditioned to require that where CCL Stage III proposes to export LNG from the Stage 3 Project as agent for other entities that hold title to the LNG (Registrants), it must register with DOE/FE those entities on whose behalf it will export LNG in accordance with the procedures and requirements described herein.

G. Contract Provisions for the Sale or Transfer of LNG to be Exported

DOE/FE will require that CCL Stage III file or cause to be filed with DOE/FE any relevant long-term commercial agreements, including liquefaction tolling agreements, pursuant to which CCL Stage III exports LNG as agent for a Registrant. DOE/FE finds that the submission of all such agreements or contracts within 30 days of their execution using the

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[238] *See, e.g.*, *Cameron LNG, LLC*, DOE/FE Order No. 3846, FE Docket No. 15-90-LNG, Opinion and Order Granting Long-Term, Multi-Contract Authorization to Export Liquefied Natural Gas by Vessel from Trains 4 and 5 of the Cameron LNG Terminal in Cameron and Calcasieu Parishes, Louisiana, to Non-Free Trade Agreement Nations, at 128-29 (July 15, 2016); *Freeport LNG Expansion, L.P., et al.*, DOE/FE Order No. 2913, FE Docket No. 10-160-LNG, Order Granting Long-Term Authorization to Export Liquefied Natural Gas from Freeport LNG Terminal to Free Trade Agreement Nations, at 7-8 (Feb. 10, 2011).

procedures described below will be consistent with the "to the extent practicable" requirement of section 590.202(b).[239]

In addition, DOE/FE finds that section 590.202(c) of DOE/FE's regulations[240] requires that CCL Stage III file, or cause to be filed, all long-term contracts associated with the long-term supply of natural gas to the Stage 3 Project, whether signed by CCL Stage III or the Registrant, within 30 days of their execution.

DOE/FE recognizes that some information in CCL Stage III's or a Registrant's long-term commercial agreements associated with the export of LNG, and/or long-term contracts associated with the long-term supply of natural gas to the Stage 3 Project, may be commercially sensitive. DOE/FE therefore will provide CCL Stage III the option to file or cause to be filed either unredacted contracts, or in the alternative (A) CCL Stage III may file, or cause to be filed, long-term contracts under seal, but it also will file either: i) a copy of each long-term contract with commercially sensitive information redacted, or ii) a summary of all major provisions of the contract(s) including, but not limited to, the parties to each contract, contract term, quantity, any take or pay or equivalent provisions/conditions, destinations, re-sale provisions, and other relevant provisions; and (B) the filing must demonstrate why the redacted information should be exempted from public disclosure.[241]

To ensure that DOE/FE destination and reporting requirements included in this Order are conveyed to subsequent title holders, DOE/FE will include as a condition of this authorization that future contracts for the sale or transfer of LNG exported pursuant to this Order shall include an acknowledgement of these requirements.

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[239] 10 C.F.R. § 590.202(b).
[240] *Id*. § 590.202(c).
[241] *Id*. § 590.202(e) (allowing confidential treatment of information in accordance with 10 C.F.R. § 1004.11).

H. Export Quantity

This Order grants the non-FTA portion of CCL Stage III's Application in the full volume of LNG requested, up to the equivalent of 582.14 Bcf/yr of natural gas.

I. Combined FTA and Non-FTA Export Authorization Volumes

Corpus Christi is currently authorized to export domestically produced LNG from the Corpus Christi LNG Terminal to non-FTA countries in a volume totaling 767 Bcf/yr of natural gas. In light of the new planned capacity of the Corpus Christi LNG Terminal as approved by FERC, the export volume authorized in this Order for the Stage 3 LNG Facilities (582.14 Bcf/yr) is additive to that volume. Accordingly, the Corpus Christi entities—including CCL Stage III—are authorized to export a total volume of LNG equivalent to 1349.14 Bcf/yr of natural gas, or 3.70 Bcf/d, to non-FTA countries, as set forth in their respective orders.

Because the FTA volumes approved for the Corpus Christi entities, as set forth in DOE/FE Order Nos. 3164-A and 4277, and the non-FTA volume authorized in this Order are from the Corpus Christi LNG Terminal, they are not additive.

X. ORDER

Pursuant to section 3 of the Natural Gas Act, it is ordered that:

A. Corpus Christi Liquefaction Stage III, LLC (CCL Stage III) is authorized to export domestically produced LNG by vessel from the proposed Stage 3 LNG Facilities associated with the Stage 3 Project, to be located at the existing Corpus Christi LNG Terminal in San Patricio and Nueces Counties, Texas. The volume authorized in this Order is equivalent to approximately 582.14 Bcf/yr of natural gas. This authorization is for a term of 20 years to commence from the date of first commercial export, but not before. CCL Stage III is authorized to export the LNG on its own behalf and as agent for other entities who hold title to the natural gas, pursuant to one or more long-term contracts (a contract greater than two years).

B. CCL Stage III may export Commissioning Volumes prior to the commencement of the term of this Order, pursuant to a separate short-term export authorization. The Commissioning Volumes will not be counted against the export volumes previously authorized in CCL Stage III's FTA authorization (DOE/FE Order No. 4277) or in this Order.

C. CCL Stage III may continue exporting for a total of three years following the end of the 20-year export term, solely to export any Make-Up Volume that it was unable to export during the original export period. The three-year Make-Up Period allowing the export of Make-Up Volumes will not affect or modify the export volumes previously authorized in CCL Stage III's FTA authorization or in this Order. Insofar as CCL Stage III may seek to export additional volumes not previously authorized, it will be required to obtain appropriate authorization from DOE/FE.

D. CCL Stage III must commence export operations using the planned liquefaction facilities no later than seven years from the date of issuance of this Order.

E. The LNG export quantity authorized in this Order is equivalent to 582.14 Bcf/yr of natural gas.

F. This LNG may be exported to any country with which the United States does not have a FTA requiring national treatment for trade in natural gas, which currently has or in the future develops the capacity to import LNG, and with which trade is not prohibited by U.S. law or policy.

G. CCL Stage III shall ensure that all transactions authorized by this Order are permitted and lawful under U.S. laws and policies, including the rules, regulations, orders, policies, and other determinations of the Office of Foreign Assets Control of the U.S. Department of the

Treasury and FERC. Failure to comply with these requirements could result in rescission of this authorization and/or other civil or criminal penalties.

H. CCL Stage III shall ensure compliance with all terms and conditions established by FERC in the EA, including the 129 environmental conditions adopted in the FERC Order issued on November 22, 2019. Additionally, this authorization is conditioned on CCL Stage III's on-going compliance with any other preventative and mitigative measures at the Stage 3 Project imposed by federal or state agencies.

I. (i) CCL Stage III shall file, or cause others to file, with the Office of Regulation, Analysis, and Engagement a non-redacted copy of all executed long-term contracts associated with the long-term export of LNG as agent for other entities from the Stage 3 Project. The non-redacted copies must be filed within 30 days of their execution and may be filed under seal, as described above.

(ii) CCL Stage III shall file, or cause others to file, with the Office of Regulation, Analysis, and Engagement a non-redacted copy of all executed long-term contracts associated with the long-term supply of natural gas to the Stage 3 Project. The non-redacted copies must be filed within 30 days of their execution and may be filed under seal, as described above.

J. CCL Stage III is permitted to use its authorization to export LNG as agent for other LNG title-holders (Registrants), after registering those entities with DOE/FE. Registration materials shall include an agreement by the Registrant to supply CCL Stage III with all information necessary to permit CCL Stage III to register that person or entity with DOE/FE, including: (1) the Registrant's agreement to comply with this Order and all applicable requirements of DOE/FE's regulations at 10 C.F.R. Part 590, including but not limited to destination restrictions; (2) the exact legal name of the Registrant, state/location of incorporation/registration, primary place of doing business, and the Registrant's ownership structure, including the ultimate parent entity if the Registrant is a subsidiary or affiliate of another entity; (3) the name, title, mailing address, e-mail address, and telephone number of a corporate officer or employee of the Registrant to whom inquiries may be directed; and (4) within 30 days of execution, a copy of any long-term contracts not previously filed with DOE/FE, described in Ordering Paragraph I of this Order.

Any change in the registration materials—including changes in company name, contact information, length of the long-term contract, termination of the long-term contract, or other relevant modification—shall be filed with DOE/FE within 30 days of such change(s).

K. CCL Stage III, or others for whom CCL Stage III acts as agent, shall include the following provision in any agreement or other contract for the sale or transfer of LNG pursuant to this Order:

> Customer or purchaser acknowledges and agrees that it will resell or transfer LNG, purchased hereunder for delivery only to countries identified in Ordering Paragraph F of DOE/FE Order No. 4490, issued February 10, 2020, in FE Docket No. 18-78-LNG, and/or to purchasers that have agreed in writing to limit their direct or indirect resale or transfer of such LNG to such countries. Customer or purchaser further commits to cause a report to be provided to Corpus Christi Liquefaction Stage III, LLC that identifies the country (or countries) into which the LNG was actually delivered, and to include in any resale contract for such LNG the necessary conditions to ensure that Corpus Christi Liquefaction Stage III, LLC is made aware of all such actual destination countries.

L. Within two weeks after the first export authorized in Ordering Paragraph A occurs, CCL Stage III shall provide written notification of the date that the first export occurred.

M. CCL Stage III shall file with the Office of Regulation, Analysis, and Engagement, on a semi-annual basis, written reports describing the status of the proposed Stage 3 Project. The reports shall be filed on or by April 1 and October 1 of each year, and shall include information on the status of the Stage 3 Project, the date the Stage 3 Project is expected to commence first exports of LNG, and the status of any associated long-term supply and export contracts.

N. With respect to any change in control of the authorization holder, CCL Stage III must comply with DOE/FE's Procedures for Change in Control Affecting Applications and Authorizations to Import or Export Natural Gas.[242]

O. Monthly Reports: With respect to the exports authorized by this Order, CCL Stage III shall file with the Office of Regulation, Analysis, and Engagement, within 30 days following the last day of each calendar month, a report on Form FE-746R indicating whether exports of LNG have been made. The first monthly report required by this Order is due not later than the 30th day of the month following the month of first export. In subsequent months, if exports have not occurred, a report of "no activity" for that month must be filed. If exports of LNG have occurred, the report must give the following details of each LNG cargo: (1) the name(s) of the authorized exporter registered with DOE/FE; (2) the name of the U.S. export terminal; (3) the name of the LNG tanker; (4) the date of departure from the U.S. export terminal; (5) the country (or countries) into which the LNG was actually delivered; (6) the name of the supplier/seller; (7) the volume in thousand cubic feet (Mcf); (8) the price at point of export per million British thermal units (MMBtu); (9) the duration of the supply agreement; and (10) the name(s) of the purchaser(s).

(Approved by the Office of Management and Budget under OMB Control No. 1901-0294.)

P. All monthly report filings on Form FE-746R shall be made to the U.S. Department of Energy (FE-34), Office of Fossil Energy, Office of Regulation, Analysis, and Engagement,

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[242] *See* 79 Fed. Reg. at 65,541-42.

according to the methods of submission listed on the Form FE-746R reporting instructions available at https://www.energy.gov/fe/services/natural-gas-regulation.

Issued in Cairo, Egypt, on February 10, 2020.

Steven Eric Winberg
Assistant Secretary
Office of Fossil Energy

APPENDIX

The long-term authorizations issued by DOE/FE to the Corpus Christi entities (Corpus Christi Liquefaction, LLC; Cheniere Marketing, LLC; and Corpus Christi Liquefaction Stage III, LLC) are identified in the following tables:

Table 1: Orders Issued for the Long-Term Export of Domestic LNG from the Corpus Christi LNG Terminal to FTA Countries

Docket No.	Order No. (as Amended)	Date Originally Issued	Volume (Bcf/yr)	Term/Type
12-99-LNG	3164-A	Oct. 16, 2012	767.0	25 years, multi-contract
18-78-LNG	4277	Nov. 9, 2018	582.14	25 years, multi-contract
Total Volume			**1349.14**	

Table 2: Orders Issued for the Long-Term Export of Domestic LNG from the Corpus Christi LNG Terminal to Non-FTA Countries

Docket No.	Order No.	Date Issued	Volume (Bcf/yr)	Term/Type
12-97-LNG	3638	May 12, 2015	767.0	20 years, multi-contract
18-78-LNG	4490	February 10, 2020	582.14	20 years, multi-contract
Total Volume			**1349.14**	