

TABLE OF CONTENTS

I.	INTRODUCTION.....	1
II.	BACKGROUND.....	4
	A. DOE’s LNG Export Studies.....	4
	1. 2012 EIA and NERA Studies.....	4
	2. 2014 and 2015 LNG Export Studies.....	5
	3. 2018 LNG Export Study.....	7
	B. DOE’s Environmental Studies.....	14
	C. Judicial Decisions Upholding DOE’s Non-FTA Authorizations.....	17
III.	PUBLIC INTEREST STANDARD.....	20
IV.	DESCRIPTION OF REQUEST.....	22
	A. Description of Applicant.....	22
	B. The Texas LNG Project.....	23
	C. Project Pipeline.....	24
	D. Source of Natural Gas.....	24
	E. Business Model.....	25
V.	APPLICANT’S PUBLIC INTEREST ANALYSIS.....	26
	A. Overview.....	26
	B. Economic Benefits.....	26
	C. Impacts on Domestic Natural Gas Supply and Demand.....	27
	D. Environmental Impacts.....	28
	E. Other Positive Impacts.....	28
VI.	FERC PROCEEDING.....	29
	A. FERC’s Pre-Filing Procedures.....	29
	B. FERC’s Environmental Review.....	30
	C. FERC’s Order Granting Authorization.....	31
VII.	DISCUSSION AND CONCLUSIONS.....	33
	A. Non-Environmental Issues.....	34
	1. Significance of the 2018 LNG Export Study.....	34
	2. Texas LNG’s Application.....	35
	3. Price Impacts.....	36
	4. Benefits of International Trade.....	38
	B. Environmental Issues.....	39
	1. Adoption of FERC’s Final EIS.....	39
	2. Environmental Impacts Associated with Induced Production of Natural Gas.....	39

3. Greenhouse Gas Impacts Associated with U.S. LNG Exports	41
C. Other Considerations.....	43
D. Conclusion	44
VIII. FINDINGS	50
IX. TERMS AND CONDITIONS	50
A. Term of the Authorization.....	50
B. Commencement of Operations.....	50
C. Commissioning Volumes.....	51
D. Make-Up Period.....	51
E. Transfer, Assignment, or Change in Control	52
F. Agency Rights.....	52
G. Contract Provisions for the Sale or Transfer of LNG to be Exported.....	53
H. Export Quantity.....	54
I. Combined FTA and Non-FTA Export Authorization Volumes	54
X. ORDER	55
APPENDIX: RECORD OF DECISION	60
A. Alternatives	60
B. Environmentally Preferred Alternative	63
C. Decision.....	63
D. Mitigation.....	63
E. Floodplain Statement of Findings	64

FREQUENTLY USED ACRONYMS

AEO	Annual Energy Outlook
Bcf/d	Billion Cubic Feet per Day
Bcf/yr	Billion Cubic Feet per Year
CPP	Clean Power Plan
DOE	U.S. Department of Energy
EIA	U.S. Energy Information Administration
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
FE	Office of Fossil Energy, U.S. Department of Energy
FERC	Federal Energy Regulatory Commission
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
NGL	Natural Gas Liquid
Tcf	Trillion Cubic Feet
TRR	Technically Recoverable Resources

I. INTRODUCTION

On April 15, 2015, Texas LNG Brownsville LLC (Texas LNG) filed an Application (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 Texas LNG requests long-term, multi-contract authorization to export domestically produced liquefied natural gas (LNG) by vessel from the proposed Texas LNG Brownsville LLC Liquefied Natural Gas Export Project (Project) that it proposes to site, construct, and operate at the Port of Brownsville, approximately 19 miles northeast of the City of Brownsville, Texas. Texas LNG seeks to export the LNG to: (i) any country with which the United States has, or in the future enters into, a free trade agreement (FTA) requiring national treatment for trade in natural gas (FTA countries);³ and (ii) any other country with which trade is not prohibited by United States law or policy (non-FTA countries).⁴

Texas LNG requests authority to export LNG to both FTA and non-FTA countries in a volume of four million tons per annum (mtpa) of LNG, which it stated in the Application is equivalent to approximately 0.55 billion cubic feet per day (Bcf/d) of natural gas.⁵ On May 22, 2015, Texas LNG filed a First Amendment to the Application, in which it clarified that the requested export volume is equivalent to 0.56 Bcf/d of natural gas, or 204.4 Bcf per year

¹ Texas LNG Brownsville LLC, Application for Multi-Contract Long-Term Authorization to Export Liquefied Natural Gas to Free Trade and Non-Free Trade Agreement Countries, FE Docket No. 15-62-LNG (Apr. 15, 2015) [hereinafter App.].

² 15 U.S.C. § 717b. 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 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.

⁴ 15 U.S.C. § 717b(c); *see* App. at 3-4.

⁵ App at 1.

(Bcf/yr).⁶ On September 24, 2015, in Order No. 3716, DOE/FE granted the FTA portion of the Application in the requested volume of 204.4 Bcf/yr of natural gas.⁷

Texas LNG requests the non-FTA authorization for a period of 25 years, commencing on the earlier of the date of first export or 10 years from the date this authorization is granted. Additionally, Texas LNG requests the authorization on its own behalf and as agent for other entities that hold title to the LNG at the time of export.⁸

On August 6, 2015, DOE/FE published a notice of the non-FTA portion of the Application in the *Federal Register* (Notice of Application).⁹ The Notice of Application called on interested persons to submit protests, motions to intervene, and comments by October 5, 2015.¹⁰ No protests or motions to intervene in opposition to the Application were filed, and therefore the Application is uncontested.

On November 22, 2019, the Federal Energy Regulatory Commission (FERC) issued an order authorizing Texas LNG to site, construct, and operate the Project with a liquefaction capacity of four mtpa of LNG, which we find is equivalent to 0.56 Bcf/d (204.4 Bcf/yr) of natural gas.¹¹ DOE/FE notes that certain parties to the FERC proceeding have sought rehearing of the FERC Order, and that rehearing proceeding is ongoing.¹²

⁶ Texas LNG Brownsville LLC, First Amendment to Application by Texas Brownsville LNG LLC, FE Docket No. 15-62-LNG (May 22, 2015) [hereinafter First Amendment to App.].

⁷ *Texas LNG Brownsville LLC*, DOE/FE Order No. 3716, FE Docket No. 15-62-LNG, Order Granting Long-Term, Multi-Contract Authorization to Export Liquefied Natural Gas by Vessel from the Proposed LNG Terminal at the Port of Brownsville in Brownsville, Texas, to Free Trade Agreement Nations (Sept. 24, 2015). At Texas LNG's request, the FTA authorization is for a term of 25 years.

⁸ App. at 11.

⁹ Texas LNG Brownsville LLC, Application for Long-Term, Multi-Contract Authorization to Export Liquefied Natural Gas to Non-Free Trade Agreement Nations for a 25-Year Period, Notice of Application, 80 Fed. Reg. 46,966 (Aug. 6, 2015) [hereinafter Notice of Application].

¹⁰ DOE finds that the requirement for public notice of applications in 10 C.F.R. Part 590 is applicable only to non-FTA applications under NGA section 3(a).

¹¹ *Texas LNG Brownsville LLC*, Order Granting Authorization Under Section 3 of the Natural Gas Act, 169 FERC ¶ 61,130 (Nov. 22, 2019) [hereinafter FERC Order]; *see also infra* § VI.C.

¹² *See, e.g.*, Federal Energy Regulatory Comm'n, Order Granting Rehearing for Further Consideration, Texas LNG Brownsville LLC, Docket No. CP16-116-001 (Jan. 21, 2020).

DOE/FE has reviewed the non-FTA portion of the Application, DOE's economic and environmental studies, the final environmental impact statement (EIS) for the Project prepared 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 Texas LNG'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 full volume requested—204.4 Bcf/yr of natural gas.¹³ Because the export volumes authorized in Texas LNG's FTA order (DOE/FE Order No. 3716) and this Order each reflect the planned liquefaction capacity of the Project as approved by FERC, the FTA and non-FTA volumes are not additive.

Additionally, as discussed below, DOE/FE participated as a cooperating agency in FERC's environmental review of the Project under the National Environmental Policy Act of 1969 (NEPA), 42 U.S.C. § 4321 *et seq.* FERC issued the final EIS for the Project on March 15, 2019.¹⁴ After an independent review, DOE/FE adopted the final EIS on March 25, 2019 (DOE/EIS-0520),¹⁵ and the U.S. Environmental Protection Agency (EPA) published a notice of the adoption on March 29, 2019.¹⁶ As an Appendix to this Order, DOE/FE is issuing the Record

¹³ See *infra* §§ VII-X.

¹⁴ Federal Energy Regulatory Comm'n, *Texas LNG Project Final Environmental Impact Statement*, Docket No. CP16-116-000 (Mar. 15, 2019), available at: <https://www.energy.gov/nepa/downloads/eis-0520-final-environmental-impact-statement> [hereinafter final EIS].

¹⁵ Letter from Amy Sweeney, DOE/FE, to Julie Roemele, U.S. Env'tl. Prot. Agency (Mar. 25, 2019) (adoption of final EIS).

¹⁶ U.S. Env'tl. Prot. Agency, *Environmental Impact Statements; Notice of Availability*, 84 Fed. Reg. 11,972 (Mar. 29, 2019).

of Decision (ROD) under NEPA for the proposed Project. This Order requires Texas LNG’s compliance with the 129 environmental conditions adopted in the FERC Order.¹⁷

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

- (i) *Corpus Christi Liquefaction Stage III, LLC*, in a volume equivalent to 582.14 Bcf/yr (1.59 Bcf/d);¹⁸
- (ii) *Annova LNG Common Infrastructure, LLC*, in a volume equivalent to 360 Bcf/yr (0.99 Bcf/d);¹⁹ and
- (iii) *Rio Grande LNG, LLC*, in a volume equivalent to 1318 Bcf/yr (3.61 Bcf/d).²⁰

The volumes approved in this Order—0.56 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.²¹

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

¹⁷ Although the final EIS recommended 128 environmental mitigation measures, FERC adopted one additional environmental condition for a total of 129 environmental conditions. See FERC Order at ¶ 72; see also *infra* § X (Ordering Para. H); see also *infra* § VI.

¹⁸ *Corpus Christi Liquefaction Stage III, LLC*, DOE/FE Order No. 4490, FE Docket No. 18-78-LNG, Opinion and Order Granting Long-Term Authorization to Export Liquefied Natural Gas to Non-Free Trade Agreement Nations (Feb. 10, 2020).

¹⁹ *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).

²⁰ *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).

²¹ See *infra* § VII.D.

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.²² DOE/FE subsequently responded to the public comments in connection with the LNG export proceedings identified in that notice.²³

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.²⁴ DOE announced plans to undertake new

²² See U.S. Dep't of Energy, Notice of Availability of 2012 LNG Export Study and Request for Comments, 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.

²³ 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).

²⁴ 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.

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.²⁵

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 LNG Export Study or 2014 Study).²⁶ 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).²⁷

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 2015 (2015 LNG Export Study or 2015 Study).²⁸ 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

²⁵ 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).

²⁶ 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>.

²⁷ 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.

²⁸ 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.

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 Studies in the *Federal Register*, and invited public comment on those Studies.²⁹ DOE/FE subsequently responded to the public comments in connection with the LNG export proceedings identified in that notice.³⁰

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.³¹ 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 new macroeconomic study was warranted.³² Accordingly, DOE/FE, through its support contractor KeyLogic Systems, Inc., commissioned NERA to conduct the 2018 LNG Export

²⁹ 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).

³⁰ *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).

³¹ *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].

³² 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.

Study. DOE published the 2018 LNG Export Study on its website on June 7, 2018,³³ and concurrently provided notice of the availability of the Study, as discussed below.³⁴

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),³⁵
- (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.³⁶

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 Study, including NERA's Global Natural Gas Model (GNGM) and N_{ew}ERA models.³⁷ The 2018 Study develops 54 scenarios by identifying various assumptions for domestic and international

³³ 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].

³⁴ See 2018 Study Notice.

³⁵ 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](https://www.eia.gov/outlooks/aeo/pdf/0383(2017).pdf).

³⁶ See 2018 Study Notice, 83 Fed. Reg. at 27,316.

³⁷ 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].

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.³⁸

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 (HOGRT) case, which provides more optimistic resource development estimates than the Reference case; and
- iii. Low Oil and Gas Resource and Technology (LOGRT) case, which provides less optimistic resource development estimates than the Reference case.³⁹

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 (GDP) 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.⁴⁰

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).

³⁸ 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).

³⁹ *See id.*

⁴⁰ *See* 2018 Study Response to Comments, 83 Fed. Reg. at 67,256.

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.⁴¹

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.⁴² 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:

- 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.

⁴¹ *See id.*

⁴² *See id.*

- 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 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.⁴³

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.⁴⁴ The purpose of the notice of availability was “to enter the 2018

⁴³ See 2018 Study Response to Comments, 83 Fed. Reg. at 67,255.

⁴⁴ See 2018 Study Notice.

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.”⁴⁵ 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.⁴⁶ Of those, nine comments supported the Study,⁴⁷ eight comments opposed the 2018 Study and/or exports of LNG,⁴⁸ one comment took no position,⁴⁹ and one comment was non-responsive.⁵⁰

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, 2018.⁵¹ 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.⁵²

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.

⁴⁵ *Id.* at 27,315.

⁴⁶ The public comments are posted on the DOE/FE website at: <https://fossil.energy.gov/app/docketindex/docket/index/10>.

⁴⁷ 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.

⁴⁸ 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.

⁴⁹ Comment of John Young.

⁵⁰ Comment of Vincent Burke.

⁵¹ *See* 2018 Study Response to Comments, 83 Fed. Reg. at 67,260-72.

⁵² *See id.* at 67,272.

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.⁵³ 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.⁵⁴ 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.”⁵⁵
- “Increased exports of natural gas will improve the U.S. balance of trade and result in a wealth transfer into the United States.”⁵⁶
- “Overall [U.S.] GDP improves as LNG exports increase for all scenarios with the same U.S. natural gas supply condition.”⁵⁷
- “There is no support for the concern that LNG exports would come at the expense of domestic natural gas consumption.”⁵⁸
- “[A] large share of the increase in LNG exports is supported by an increase in domestic natural gas production.”⁵⁹
- “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.”⁶⁰

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.⁶¹ DOE/FE

⁵³ *See id.*

⁵⁴ *See id.*

⁵⁵ *Id.* (quoting 2018 LNG Export Study at 55).

⁵⁶ 2018 Study Response to Comments, 83 Fed. Reg. at 67,273 (quoting 2018 LNG Export Study at 64).

⁵⁷ *Id.* (quoting 2018 LNG Export Study at 67).

⁵⁸ *Id.* (quoting 2018 LNG Export Study at 77).

⁵⁹ *Id.*

⁶⁰ *Id.* (quoting 2018 LNG Export Study at 70).

⁶¹ 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>.

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.⁶²

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.”⁶³ 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.⁶⁴

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 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).⁶⁵ DOE/FE received public

⁶² 2018 Study Response to Comments, 83 Fed. Reg. at 67,273.

⁶³ *Id.* (citing 2018 LNG Export Study at 63 & Appx F).

⁶⁴ *See* 2018 Study Response to Comments, 83 Fed. Reg. at 67,273.

⁶⁵ 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.

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.⁶⁶

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).⁶⁷ DOE/FE also received public comments on the LCA GHG Report and responded to those comments in prior orders.⁶⁸ DOE has relied on the 2014 Report in its review of all subsequent applications to export LNG to non-FTA countries.⁶⁹

⁶⁶ 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>.

⁶⁷ 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 2014 LCA GHG Report]. DOE/FE announced the availability of the LCA GHG Report on its website on May 29, 2014.

⁶⁸ *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).

⁶⁹ *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).

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).⁷⁰ 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);⁷¹
- 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
- Updated the 100-year global warming potential (GWP) for methane (CH₄) to reflect the current Intergovernmental Panel on Climate Change’s Fifth Assessment Report.⁷²

In all other respects, the LCA GHG Update was unchanged from the 2014 Report.⁷³

⁷⁰ 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.

⁷¹ 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>.

⁷² 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).

⁷³ 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].

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.⁷⁴ 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.⁷⁵ 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 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*),⁷⁶ and three in a consolidated, unpublished opinion issued on November 1, 2017

⁷⁴ *See id.* at 78, 85.

⁷⁵ *See id.* at 86.

⁷⁶ *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.*).

(*Sierra Club II*).⁷⁷ 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.⁷⁸

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."⁷⁹

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 production and usage that would result from the Freeport export authorization.⁸⁰ 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."⁸¹ The Court thus held that, "[u]nder our limited and deferential review, we cannot say that the Department

⁷⁷ *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).

⁷⁸ *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)

⁷⁹ *Sierra Club I*, 867 F.3d at 203.

⁸⁰ *Id.* at 192.

⁸¹ *Id.* at 198.

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.”⁸²

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.⁸³ 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.⁸⁴

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.”⁸⁵ 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.”⁸⁶

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 resolution of the [three] instant cases.”⁸⁷ 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.⁸⁸

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.

⁸² *Id.* at 201.

⁸³ *Id.*

⁸⁴ *Id.* at 202.

⁸⁵ *Sierra Club I*, 867 F.3d at 203.

⁸⁶ *Id.*

⁸⁷ *Sierra Club II*, 703 Fed. App’x 1, at *2.

⁸⁸ *Id.*

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 Energy⁸⁹] 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.⁹⁰

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.⁹¹

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.⁹² Before reaching a final decision, DOE must also comply with NEPA.

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

⁸⁹ 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.

⁹⁰ 15 U.S.C. § 717b(a).

⁹¹ 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)).

⁹² 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 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).

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.⁹³ 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.⁹⁴

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.⁹⁵

In Order No. 1473, DOE stated that it was guided by DOE Delegation Order No. 0204-111.⁹⁶ 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

⁹³ 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].

⁹⁴ *Id.* at 6685.

⁹⁵ *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)).

⁹⁶ *See id.* at 13 and n.45.

Administrator [of the Economic Regulatory Administration] finds in the circumstances of a particular case to be appropriate.”⁹⁷

Although DOE Delegation Order No. 0204-111 is no longer in effect,⁹⁸ 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

Texas LNG states that the Project was originally developed by Texas LNG LLC. Texas LNG LLC is owned by Mr. Vivek Chandra (39%), Mr. Langtry Meyer (37%), Mr. Michael Maloney (16%), and Samsung Engineering Co. Ltd. of Seoul, South Korea (less than 10%).⁹⁹

For purposes of developing and financing the Project, Texas LNG Brownsville LLC (Texas LNG)—the applicant in this proceeding—was created.¹⁰⁰ Texas LNG is a Delaware limited liability company with its principal place of business in Houston, Texas.

In the years since the Application was filed, Texas LNG has informed DOE/FE of various changes in its ownership.¹⁰¹ Currently, Brownsville LNG Holdings, LLC (Brownsville

⁹⁷ 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)).

⁹⁸ 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).

⁹⁹ App. at 7.

¹⁰⁰ *Id.*

¹⁰¹ *See* Texas LNG Brownsville LLC, Supplement to Statement and Notice of Change in Control, FE Docket No. 15-62-LNG (May 20, 2019); Texas LNG Brownsville LLC, Statement and Notice of Change in Control, FE Docket No. 15-62-LNG (Apr. 12, 2019); U.S. Dep’t of Energy, Notice of Change in Control, FE Docket No. 15-62-LNG

LNG) is the managing partner of Texas LNG. Brownsville LNG is a Delaware limited liability company with its principal place of business in The Woodlands, Texas. Brownsville LNG is wholly-owned by Alder Midstream, LLC, which is also a Delaware limited liability company with its principal place of business in The Woodlands, Texas. Texas LNG LLC continues as a member of Texas LNG.¹⁰²

B. The Texas LNG Project

Texas LNG states that its proposed Project will consist of a new LNG terminal to be located near the entrance of the Brownsville Ship Channel in an area zoned for heavy industrial use.¹⁰³ The Project site is located approximately 2.5 miles southwest of the Town of Port Isabel, Texas, and 19 miles northeast of the City of Brownsville, Texas.¹⁰⁴ Texas LNG intends to construct the LNG terminal on a 625-acre parcel owned by the Brownsville Navigation District of Cameron County (Brownsville Navigation District), with an additional 26.5 acres necessary outside of the parcel within the banks of the Brownsville Ship Channel to allow for deep water access to the Brownsville Ship Channel. Texas LNG states that it has signed a lease option agreement with the Brownsville Navigation District.¹⁰⁵

As approved by FERC, the Project will include two LNG trains, each with a capacity of two mtpa of LNG for a total capacity of four mtpa for export.¹⁰⁶ Texas LNG states that the trains will be installed in two phases. According to Texas LNG, Phase 1 will be constructed upon

(Aug. 31, 2016); Texas LNG Brownsville LLC, Updated Equity Ownership Information - Change in Control Request, FE Docket No. 15-62-LNG (Feb. 18, 2016).

¹⁰² See U.S. Dep't of Energy, Notice of Change in Control, FE Docket No. 15-62-LNG, at 2-3 (June 21, 2019).

¹⁰³ App. at 8; *see also* FERC Order at ¶¶ 1, 6.

¹⁰⁴ Final EIS at 1-1.

¹⁰⁵ App. at 8; *see also id.* at Appendix A (copy of the lease option agreement).

¹⁰⁶ *Id.* at 3; *see also* First Amendment to App. at 2; FERC Order at ¶¶ 4-5.

receipt of all required governmental authorizations. Phase 2 will be constructed based upon market demand.¹⁰⁷

Texas LNG further states that Phase 1 LNG production will be stored in one single 210,000 cubic meter (m³) capacity storage tank. Phase 2 will include a second, similar single containment storage tank.¹⁰⁸ Other features of the Project approved by FERC include an LNG carrier berthing dock, mooring and loading facilities, and associated infrastructure and support facilities.¹⁰⁹

C. Project Pipeline

The proposed Project will receive natural gas via a non-jurisdictional intrastate natural gas pipeline that will be constructed, owned, and operated by a third party.¹¹⁰ Texas LNG anticipates that the pipeline will be approximately 10.2 miles long (1.3 miles of which will be within the Project site) and will interconnect with the Valley Crossing Pipeline.¹¹¹ The Valley Crossing Pipeline is an intrastate natural gas pipeline that provides natural gas from the Agua Dulce Hub in Nueces County, Texas.¹¹²

D. Source of Natural Gas

Pointing to the size and liquidity of the natural gas market in the Gulf Coast region and the United States generally, Texas LNG states that the Project will have access to a diverse, reliable source of natural gas.¹¹³

¹⁰⁷ App. at 3-4; *see also* FERC Order at ¶ 5.

¹⁰⁸ App. at 4.

¹⁰⁹ FERC Order at ¶ 5.

¹¹⁰ *Id.* at ¶ 4; *see also* App. at 13; Final EIS at 1-17.

¹¹¹ Final EIS at 1-17; FERC Order at ¶ 4.

¹¹² Final EIS at 4-286; FERC Order at ¶ 4.

¹¹³ App. at 13.

E. Business Model

Texas LNG anticipates that the Project will be developed as a tolling facility.¹¹⁴

According to Texas LNG, it will be a toll processor of natural gas into LNG and a producer of extracted natural gas liquids (NGLs), without taking ownership of the feed gas or the produced LNG.¹¹⁵ Texas LNG states that LNG offtakers will be responsible for contracting feed gas deliveries to the Project, as well as ships to export the LNG. Texas LNG further states that it will be compensated through a fixed and variable toll by LNG off-takers, who will contract to purchase feed gas from natural gas producers and trading organizations.¹¹⁶

Texas LNG requests this authorization on its own behalf and as agent for other parties who will hold title to the LNG at the time of export.¹¹⁷ Texas LNG states that it has not yet entered into long-term supply and export agreements related to its Project.¹¹⁸ However, Texas LNG states that it will file all long-term, binding contracts associated with the export of LNG from the Project, once executed, in accordance with established policy and precedent.¹¹⁹

Texas LNG 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 set forth in recent DOE/FE orders.¹²⁰

¹¹⁴ *Id.* at 8.

¹¹⁵ App. at 8.

¹¹⁶ *Id.*

¹¹⁷ *Id.* at 11.

¹¹⁸ *Id.*

¹¹⁹ App. at 11-12.

¹²⁰ *Id.* at 11.

V. APPLICANT’S PUBLIC INTEREST ANALYSIS

A. Overview

Texas LNG states that its requested non-FTA authorization will advance the public interest and should be granted.¹²¹ In support of this position, Texas LNG addresses the following factors: (i) the economic benefits associated with its proposed exports, (ii) impacts on domestic natural gas supply and demand, (iii) environmental impacts; and (iv) other positive impacts.

B. Economic Benefits

Texas LNG cites DOE’s 2012 and 2014 LNG Export Studies in asserting that LNG exports will have “economic multiplier effects” while producing only “moderate” impacts on domestic U.S. natural gas prices.¹²² Texas LNG points to these Studies in stating that LNG exports are projected to provide “positive overall benefits” to the U.S. economy as a whole, including an increase in GDP, investment, and higher levels of employment.¹²³ Additionally, Texas LNG incorporates by reference several other publicly available studies, including a study conducted by ICF International in May 2013 to evaluate the economic impacts of U.S. LNG exports generally (ICF Study).¹²⁴

Citing the ICF Study, Texas LNG asserts that U.S. LNG exports are projected to create an average net job growth of 73,100 to 452,300 jobs between 2016 and 2035, including all economic multiplier effects.¹²⁵ More specifically, Texas LNG estimates that its Project will create more than 600 onsite engineering and construction jobs, as well as hundreds of offsite jobs

¹²¹ *Id.* at 17.

¹²² App. at 17-21.

¹²³ *Id.* at 33; *see also id.* at 20-23, 27-28 (discussing potential price impacts).

¹²⁴ *Id.* at 18-19; ICF International, *U.S. LNG Exports: Impacts on Energy Markets and the Economy* (May 2013) [hereinafter ICF Study].

¹²⁵ App. at 22.

to support the Project’s design, fabrication, and construction.¹²⁶ Texas LNG further asserts that the Project will create approximately 80 new permanent positions related to management and operation.¹²⁷ In sum, Texas LNG states that the Project is expected to generate numerous benefits to the South Texas economy.¹²⁸

C. Impacts on Domestic Natural Gas Supply and Demand

Texas LNG asserts that domestic natural gas resources are abundant and thus sufficient to meet “both the domestic consumption demand and any expected level of LNG exports (including all those proposed by Texas LNG) in the long-term.”¹²⁹ In support of this position, Texas LNG highlights three measures of domestic natural gas supplies: (i) estimates of future natural gas production, (ii) measures of proved reserves, and (iii) technically recoverable resources (TRR). Texas LNG maintains that EIA data (available at the time that the Application was filed) projects ample supplies of domestic natural gas using each of these measures.¹³⁰

First, with respect to estimates of future production, Texas LNG cites EIA projections showing that U.S. natural gas production is continuing the “phenomenal increase” of recent years.¹³¹ Texas LNG states that “[t]he growing surplus of [natural] gas production over consumption sets the stage for the U.S. to become a net export[er] of gas before 2020.”¹³² We take administrative notice that the United States, in fact, became a net exporter of natural gas on an annual basis in 2017.¹³³

¹²⁶ *Id.* at 32-33.

¹²⁷ *Id.* at 33.

¹²⁸ *Id.*

¹²⁹ App. at 24.

¹³⁰ *Id.*

¹³¹ *Id.*

¹³² *Id.* (citation omitted).

¹³³ U.S. Energy Info. Admin., *U.S. Natural Gas Summary (Annual)* (Jan. 31, 2019), available at: https://www.eia.gov/dnav/ng/ng_sum_lsum_dcunus_a.htm (2017 data).

Second, Texas LNG states that the increase in proved reserves of natural gas has been more dramatic than the increase in natural gas production.¹³⁴ Citing EIA data from 2014, Texas LNG states that proved dry natural gas reserves increased to 338 trillion cubic feet (Tcf) as of year-end 2013, an all-time record high.¹³⁵

Third, Texas LNG maintains that, although EIA's estimates of TRR have fluctuated in recent years, EIA estimated TRR of 2,266 Tcf in *Annual Energy Outlook 2014*.¹³⁶

Texas LNG contends that, in light of the ample supply of U.S. natural gas, its proposed exports are "unlikely to affect the availability of natural gas to domestic consumers," and thus DOE/FE should grant its requested authorization.¹³⁷

D. Environmental Impacts

Texas LNG states that exporting natural gas will benefit the United States internationally by promoting the use of more environmentally-friendly natural gas for the generation of electricity, as opposed to diesel or heavy fuel oil used in foreign countries.¹³⁸ According to Texas LNG, exporting LNG will allow the United States to share the environmental benefits of natural gas with other nations.¹³⁹

E. Other Positive Impacts

Texas LNG identifies several other positive impacts associated with exports of U.S. LNG generally. For example, Texas LNG contends that LNG exports will increase government revenues at the federal, state, and local levels due to both taxes on related GDP gains and royalty

¹³⁴ App. at 25.

¹³⁵ *Id.* at 26 n.38 (citation omitted).

¹³⁶ App. at 26-27 (citing U.S. Energy Info. Admin., *Annual Energy Outlook 2014* (Apr. 2014), available at: [https://www.eia.gov/outlooks/aeo/pdf/0383\(2014\).pdf](https://www.eia.gov/outlooks/aeo/pdf/0383(2014).pdf)).

¹³⁷ *Id.* at 27.

¹³⁸ *Id.* at 34.

¹³⁹ *Id.*

payments to the government for natural gas production on government lands.¹⁴⁰ Citing the ICF Study, Texas LNG contends that state and local taxes will comprise the largest share of government revenues, with federal taxes making up a smaller portion.¹⁴¹ Texas LNG points to the various estimates of government revenues set forth in the ICF Study—including that, under the ICF Base Case, government revenues associated with LNG exports will reach between \$6.4 billion and \$9.3 billion annually by 2035.¹⁴²

Texas LNG further contends that exports of LNG will stimulate additional natural gas production, as well as the production of NGLs and ethylene.¹⁴³ According to Texas LNG, this increased production is an important public benefit of LNG exports.¹⁴⁴ Texas LNG also asserts that the development of commercial shale gas resources will have beneficial effects for U.S. energy security and national interests. For this reason, Texas LNG states that its proposed exports will not adversely affect U.S. energy security.¹⁴⁵

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 subsections 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,¹⁴⁶ and a formal application process that starts no sooner than 180 days after issuance of a notice that the pre-

¹⁴⁰ *Id.* at 29-30.

¹⁴¹ *Id.*

¹⁴² App. at 30.

¹⁴³ *Id.* at 31.

¹⁴⁴ *Id.* at 27.

¹⁴⁵ *Id.* at 21.

¹⁴⁶ 18 C.F.R. § 157.21.

filing process has commenced.¹⁴⁷

On April 14, 2015, FERC began its pre-filing review of Texas LNG's Project.¹⁴⁸ FERC established pre-filing Docket No. PF15-14-000 to place information related to the Project into the public record.¹⁴⁹ On July 23, 2015, FERC issued a Notice of Intent to Prepare an Environmental Impact Statement for the proposed Project.¹⁵⁰ DOE agreed to participate as a cooperating agency in FERC's environmental review.¹⁵¹

B. FERC's Environmental Review

On March 30, 2016, Texas LNG filed an application with FERC under section 3 of the NGA to site, construct, and operate the Project.¹⁵² FERC assigned Docket No. CP16-116-000 to Texas LNG's proposal.

In compliance with NEPA, FERC staff issued a Notice of Availability of a Draft Environmental Impact Statement on October 26, 2018, and placed the draft EIS into the public record.¹⁵³ On March 15, 2019, FERC staff issued the final EIS for the Project.¹⁵⁴ The final EIS responded to comments received on the draft EIS, and addressed numerous potential impacts of

¹⁴⁷ *Id.* § 157.21(a)(2)(i-ii).

¹⁴⁸ *Texas LNG Brownsville LLC*, Approval of Pre-Filing Request, FERC Docket No. PF15-14-000 (Apr. 14, 2015); Final EIS at 1-10.

¹⁴⁹ *See* Final EIS at 1-10.

¹⁵⁰ *Texas LNG Brownsville LLC*, Notice of Intent To Prepare an Environmental Impact Statement for the Planned Texas LNG Project, Request for Comments on Environmental Issues, and Notice of Public Scoping Meeting, FERC Docket No. PF15-14-000, 80 Fed. Reg. 45,520 (July 30, 2015).

¹⁵¹ *See id.* at 45,522.

¹⁵² *Texas LNG Brownsville LLC*, Application for Authorization under Section 3 of the Natural Gas Act, FERC Docket No. CP16-116-000 (Mar. 30, 2016).

¹⁵³ *Texas LNG Brownsville LLC*, Notice of Availability of the Draft Environmental Impact Statement for the Proposed Texas LNG Project, FERC Docket No. CP16-116-000, 83 Fed. Reg. 55,156 (Nov. 2, 2018); *see also* FERC Order at ¶ 23.

¹⁵⁴ *See Texas LNG Brownsville LLC*, Notice of Availability of the Final Environmental Impact Statement for the Proposed Texas LNG Project, FERC Docket No. CP16-116-000, 84 Fed. Reg. 10,818 (Mar. 22, 2019); *see also* FERC Order at ¶ 24.

the Project, including but not limited to wetlands, geological conditions, water resources, air quality, and cumulative impacts.¹⁵⁵

Based on its environmental analysis, FERC staff concluded in the final EIS that, “with the exception of visual impacts, implementation of the mitigation proposed by Texas LNG and our recommended mitigation would ensure that impacts in the Project area would be avoided or minimized and would not be significant.”¹⁵⁶ The final EIS contained 128 site-specific environmental mitigation measures, which FERC staff recommended that FERC attach as conditions to any authorization of the Project.¹⁵⁷

C. FERC’s Order Granting Authorization

On November 22, 2019, FERC issued its Order authorizing Texas LNG to site, construct, and operate the Project with a liquefaction capacity of four mtpa of LNG.¹⁵⁸ FERC cited the final EIS in stating that “construction and operation of the project will result in some adverse environmental impacts,” but that, with the exception of impacts on visual resources and certain cumulative impacts discussed below, “these impacts will be reduced to less-than-significant levels with the implementation of [Texas LNG’s] proposed, and Commission staff’s recommended, mitigation measures, which are included as conditions ... to this order.”¹⁵⁹ On this basis, FERC approved Texas LNG’s application under NGA section 3. FERC also made minor modifications to the 128 mitigation measures recommended in the final EIS, resulting in FERC adopting 129 environmental conditions in an appendix of the Order.¹⁶⁰

¹⁵⁵ See final EIS at ES-2 to ES-17; FERC Order at ¶ 24.

¹⁵⁶ Final EIS at 5-358.

¹⁵⁷ *Id.* at 5-375 to 5-397 (list of mitigation measures).

¹⁵⁸ FERC Order at ¶¶ 4-5, 21.

¹⁵⁹ *Id.* at ¶ 25.

¹⁶⁰ See *id.* at ¶ 72 (FERC modifying certain mitigation measures for consistency with recently issued orders and adding Environmental Condition 97 to require an assessment of structural passive protection systems); see also *id.* ¶ 85 & Appendix (Environmental Conditions).

FERC considered the major environmental issues reviewed in the final EIS.¹⁶¹ In addressing GHG emissions, for example, FERC pointed to the estimate in the final EIS that “operation of the completed Texas LNG Project could result in GHG emissions of up to 613,901.2 metric tons per year of carbon dioxide equivalent (CO₂e).”¹⁶² FERC further stated that the “operational emissions of this project could potentially increase annual CO₂e emissions based on the 2017 levels by approximately 0.011 percent at the national level.”¹⁶³

On the basis of these estimates, FERC acknowledged the finding in the final EIS that “the quantified GHG emissions from the construction and operation of the project will contribute incrementally to climate change.”¹⁶⁴ However, FERC stated that it “previously concluded it could not determine a project’s incremental physical impacts on the environment caused by GHG emissions,” and that “it could not determine whether a project’s contribution to climate change would be significant.”¹⁶⁵

Additionally, FERC considered the cumulative impacts of the Project with other projects or actions in the same geographic and temporal scope.¹⁶⁶ First, FERC stated that, for the majority of resources where a level of impact could be ascertained, the Project’s contribution to cumulative impacts “would not be significant,” and the potential cumulative impacts of the Project and the other projects “would be minor or insignificant.”¹⁶⁷ Next, FERC observed that the Project combined with other projects with the geographic scope (including the proposed Annova LNG and Rio Grande LNG Projects) would contribute to certain significant cumulative

¹⁶¹ See generally *id.* at ¶¶ 22-80.

¹⁶² *Id.* at ¶ 67 (citing final EIS at Table 4.11.1-11).

¹⁶³ *Id.*

¹⁶⁴ FERC Order at ¶ 68 (citing final EIS at 4-344).

¹⁶⁵ *Id.* at ¶ 68 (citations omitted).

¹⁶⁶ *Id.* at ¶ 74 (citing final EIS at ES-13 to ES-15, 4-269 to 4-270).

¹⁶⁷ *Id.* at ¶ 75 (citing final EIS at 5-371 to 5-374).

impacts, including but not limited to surface water quality in the Brownsville Ship Channel and on visual resources due to the presence of new facilities.¹⁶⁸

In addressing these potentially significant cumulative impacts, FERC noted that “[t]he final EIS discusses applicable mitigation measures, laws, and regulations protecting environmental resources, as well as permitting requirements to minimize effects on those resources.”¹⁶⁹ FERC further emphasized that it “has the authority to take whatever steps are necessary to ensure the protection of environmental resources during construction and operation of the project,” including the authority to impose any additional measures deemed necessary to ensure compliance with the intent of the conditions of the FERC Order.¹⁷⁰

In sum, FERC agreed with the conclusions presented in the final EIS and found that “the project, if constructed and operated as described in the final EIS, is an environmentally acceptable action.”¹⁷¹ FERC also found that that the Texas LNG Project is not inconsistent with the public interest under NGA section 3.¹⁷²

We note that certain parties have requested rehearing of the FERC Order, and that rehearing proceeding is ongoing.¹⁷³

VII. DISCUSSION AND CONCLUSIONS

In reviewing Texas LNG’s Application, DOE/FE has considered 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:

¹⁶⁸ *Id.*; see also *id.* ¶¶ 76-79 (discussing potentially significant cumulative impacts).

¹⁶⁹ *Id.*

¹⁷⁰ FERC Order at ¶ 85.

¹⁷¹ *Id.* at ¶ 86.

¹⁷² See *id.*

¹⁷³ See, e.g., Federal Energy Regulatory Comm’n, Order Granting Rehearing for Further Consideration, Texas LNG Brownsville LLC, Docket No. CP16-116-001 (Jan. 21, 2020).

- Texas LNG’s uncontested Application;
- FERC’s final EIS and Order, including the 129 environmental 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.¹⁷⁴ DOE/FE analyzed this material in its Response to Comments, 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.¹⁷⁵ 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.¹⁷⁶

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, 2020.¹⁷⁷ DOE/FE has assessed AEO 2020 to evaluate any differences from AEO 2017, which formed the basis for the 2018 LNG Export Study.¹⁷⁸ The AEO 2017 Reference case

¹⁷⁴ See *supra* § II.A.3.

¹⁷⁵ See 2018 Study Response to Comments, 83 Fed. Reg. at 67,272.

¹⁷⁶ See *id.* at 67,273.

¹⁷⁷ U.S. Energy Info. Admin., *Annual Energy Outlook 2020* (Jan. 29, 2020), available at: <https://www.eia.gov/outlooks/aeo/pdf/aeo2020.pdf>.

¹⁷⁸ AEO 2017 included two versions of the Reference case—one with, and one without, the implementation of the

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 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 Texas LNG's proposed authorization will not be inconsistent with the public interest.

2. Texas LNG'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 Texas LNG's requested authorization under NGA section 3(a).

First, Texas LNG points to DOE's 2012 and 2014 LNG Export Studies, as well as older third-party 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.

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. Env'tl. 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.

We agree, based on more 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.¹⁷⁹

Second, the 2018 LNG Export Study indicates that exports of LNG will generate net economic benefits to the broader U.S. economy.¹⁸⁰ 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.¹⁸¹

Third, over the 20-year term of the authorization, the proposed exports will improve the United States' ties with its trade partners and make a positive contribution to the United States' trade balance. For these reasons, we find that the proposed exports are consistent with U.S. policy.

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 Texas LNG's Application over the authorization term without negative economic impacts, including domestic price impacts (discussed below).

3. Price Impacts

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

¹⁷⁹ See, e.g., 2018 Study Response to Comments, 83 Fed. Reg. at 67,262.

¹⁸⁰ *Id.*

¹⁸¹ See *id.* at 67,268-69 (citing 2018 LNG Export Study at 67, 70).

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.”¹⁸²

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 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
<u>Net Exports by Pipeline</u> (Bcf/d)	3.4	6.5
<u>Net LNG Exports</u> (Bcf/d)	12.5	15.8

¹⁸² See 2018 Study Response to Comments, 83 Fed. Reg. at 67,258 (citing 2018 LNG Export Study at 55).

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.¹⁸³

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 Texas LNG that authorizing

¹⁸³ 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).

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 Texas LNG'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 Final EIS

DOE/FE participated in FERC's environmental review of the proposed Project as a cooperating agency. Because DOE was a cooperating agency, DOE/FE is permitted to adopt without recirculating the final EIS, provided that DOE/FE has conducted an independent review of the EIS and determines that its comments and suggestions have been satisfied.¹⁸⁴ 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 the final EIS. Accordingly, DOE has adopted the final EIS (DOE/EIS-0520) (*see supra* § I), and hereby incorporates the reasoning contained in the final EIS in this Order. Additionally, in the Appendix to this Order, DOE/FE is issuing the Record of Decision (ROD) under NEPA for the proposed Project.

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.¹⁸⁵ Nevertheless, a decision by DOE/FE to authorize exports to non-FTA nations could accelerate that development

¹⁸⁴ *See* 40 C.F.R. § 1506.3(c).

¹⁸⁵ Addendum at 2.

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 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.

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 Sierra Club's

arguments on this basis, and we find that the Court's conclusions and reasoning control in this proceeding.¹⁸⁶

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.¹⁸⁷ 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.¹⁸⁸

The 2019 Update demonstrates that the conclusions of the 2014 LCA GHG Report have not changed.¹⁸⁹ 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.¹⁹⁰ 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.¹⁹¹

¹⁸⁶ 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.

¹⁸⁷ See *supra* § II.B.

¹⁸⁸ Response to Comments on 2019 Update, 85 Fed. Reg. at 85.

¹⁸⁹ See *id.*

¹⁹⁰ See *id.* at 85; see also *id.* at 86.

¹⁹¹ See *id.*

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.¹⁹² 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.¹⁹³ 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 the public interest determination in DOE’s non-FTA proceedings.¹⁹⁴ 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.¹⁹⁵

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

¹⁹² See *id.* at 81.

¹⁹³ Response to Comments on 2019 Update, 85 Fed. Reg. at 81.

¹⁹⁴ See *id.*

¹⁹⁵ See *id.* at 86.

sources.¹⁹⁶ The Court’s decision in *Sierra Club I* guided DOE’s development of the 2019 Update.¹⁹⁷

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 have also 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 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 Guidelines¹⁹⁸ 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.¹⁹⁹ Given

¹⁹⁶ *Sierra Club I*, 867 F.3d at 202 (finding that “Sierra Club’s complaint ‘falls under the category of flyspecking’”) (citation omitted).

¹⁹⁷ *See supra* at § II.B, C.

¹⁹⁸ 1984 Policy Guidelines, 49 Fed. Reg. 6684.

¹⁹⁹ 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

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 Texas LNG'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 Tcf per year, as follows: Sabine Pass Liquefaction, LLC (2.2 Bcf/d),²⁰⁰ Carib Energy (USA) LLC (0.04 Bcf/d),²⁰¹ Cameron LNG, LLC (1.7 Bcf/d),²⁰² FLEX I (1.4 Bcf/d),²⁰³ FLEX II (0.4 Bcf/d),²⁰⁴ Dominion Cove Point LNG,

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.

²⁰⁰ *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).

²⁰¹ *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).

²⁰² *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).

²⁰³ *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).

²⁰⁴ *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

LP (0.77 Bcf/d),²⁰⁵ Cheniere Marketing, LLC and Corpus Christi Liquefaction, LLC (2.1 Bcf/d),²⁰⁶ Sabine Pass Liquefaction, LLC Expansion Project (1.38 Bcf/d),²⁰⁷ American Marketing LLC (0.008 Bcf/d),²⁰⁸ Emera CNG, LLC (0.008 Bcf/d),²⁰⁹ Floridian Natural Gas Storage Company, LLC,²¹⁰ Air Flow North American Corp. (0.002 Bcf/d),²¹¹ Bear Head LNG Corporation and Bear Head LNG (USA), LLC (0.81 Bcf/d),²¹² Pieridae Energy (USA) Ltd.,²¹³

Freeport LNG Terminal on Quintana Island, Texas, to Non-Free Trade Agreement Nations (Nov. 14, 2014) (FLEX II Final Order).

²⁰⁵ *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).

²⁰⁶ *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).

²⁰⁷ *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).

²⁰⁸ *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).

²⁰⁹ *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).

²¹⁰ *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).

²¹¹ *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).

²¹² *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).

²¹³ *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).

Sabine Pass Liquefaction, LLC Design Increase (0.56 Bcf/d),²¹⁴ Cameron LNG, LLC Design Increase (0.42 Bcf/d),²¹⁵ Cameron LNG, LLC Expansion Project (1.41 Bcf/d),²¹⁶ Lake Charles Exports, LLC (2.0 Bcf/d),²¹⁷ Lake Charles LNG Export Company, LLC,²¹⁸ Carib Energy (USA), LLC (0.004),²¹⁹ Magnolia LNG, LLC (1.08 Bcf/d),²²⁰ Southern LNG Company, L.L.C. (0.36 Bcf/d),²²¹ the FLEX Design Increase (0.34 Bcf/d),²²² Golden Pass Products LLC (2.21 Bcf/d),²²³ Delfin LNG LLC,²²⁴ the Lake Charles LNG Export Company, LLC Design Increase (0.33

²¹⁴ *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).

²¹⁵ *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).

²¹⁶ *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).

²¹⁷ *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).

²¹⁸ *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).

²¹⁹ *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).

²²⁰ *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).

²²¹ *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).

²²² *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).

²²³ *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).

²²⁴ *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).

Bcf/d),²²⁵ the Lake Charles Exports, LLC Design Increase,²²⁶ Eagle LNG Partners Jacksonville II LLC (0.01 Bcf/d),²²⁷ Mexico Pacific Limited LLC (1.7 Bcf/d),²²⁸ Venture Global Calcasieu Pass, LLC (1.7 Bcf/d),²²⁹ ECA Liquefaction, S. de R.L. de C.V. (Mid-Scale Project) (0.44 Bcf/d),²³⁰ Energía Costa Azul, S. de R.L. de C.V. (Large-Scale Project) (1.3 Bcf/d),²³¹ Port Arthur LNG, LLC (1.91 Bcf/d),²³² Driftwood LNG LLC (3.88 Bcf/d),²³³ FLEX4 (0.72 Bcf/d),²³⁴ Gulf LNG Liquefaction Company, LLC (1.5 Bcf/d),²³⁵ Eagle LNG Partners Jacksonville LLC (0.14

²²⁵ *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).

²²⁶ *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).

²²⁷ *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).

²²⁸ *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).

²²⁹ *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).

²³⁰ *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).

²³¹ *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 Gas from Mexico to Non-Free Trade Agreement Countries (ECA Large-Scale Project) (Mar. 29, 2019).

²³² *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).

²³³ *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).

²³⁴ *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).

²³⁵ *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).

Bcf/d),²³⁶ Venture Global Plaquemines LNG, LLC (3.40 Bcf/d),²³⁷ Corpus Christi Liquefaction Stage III, LLC (1.59 Bcf/d),²³⁸ Annova LNG Common Infrastructure, LLC (0.99 Bcf/d),²³⁹ Rio Grande LNG, LLC (3.61 Bcf/d),²⁴⁰ 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.²⁴¹ 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 Terminal.²⁴² 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.²⁴³ 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

²³⁶ *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).

²³⁷ *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).

²³⁸ *Corpus Christi Liquefaction Stage III, LLC*, DOE/FE Order No. 4490, FE Docket No. 18-78-LNG, Opinion and Order Granting Long-Term Authorization to Export Liquefied Natural Gas to Non-Free Trade Agreement Nations (Feb. 10, 2020).

²³⁹ *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).

²⁴⁰ *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).

²⁴¹ *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).

²⁴² *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.

²⁴³ *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.”).

0.81 Bcf/d to reflect the current capacity of the Maritimes Northeast Pipeline at the U.S.-Canadian border.²⁴⁴

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.²⁴⁵ 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.²⁴⁶

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.

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

²⁴⁴ 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.”).

²⁴⁵ See 2018 Study Response to Comments, 83 Fed. Reg. at 67,273 (citing 2018 LNG Export Study at 63 & Appx F).

²⁴⁶ 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).

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 Texas LNG's Application in FE Docket No. 15-62-LNG 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. Texas LNG must abide by each Term and Condition or face appropriate sanction.

A. Term of the Authorization

Texas LNG requests a 25-year term for the authorization. However, consistent with the final non-FTA authorizations issued to date, we believe that caution recommends limiting this authorization to no longer than a 20-year term beginning from the date of first export. The 20-year term will begin on the date when Texas LNG commences commercial export of domestically sourced LNG from the Project, but not before.

B. Commencement of Operations

Texas LNG requests that this authorization commence on the earlier of the date of first export or 10 years from the date of the issuance of this Order. Consistent with our final non-FTA authorizations to date, DOE/FE will add as a condition of the authorization that Texas LNG 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

Texas LNG 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 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 Texas LNG’s long-term contracts.²⁴⁷ The Commissioning Volumes will not be counted against the maximum level of volumes previously authorized in Texas LNG’s FTA authorization (DOE/FE Order No. 3716) or in this Order.

D. Make-Up Period

Texas LNG 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.”

The Make-Up Period does not affect or modify the total volume of LNG previously authorized in Texas LNG’s FTA authorization (DOE/FE Order No. 3716) or in this Order. Insofar as Texas LNG may seek to export additional volumes not previously authorized for export, it will be required to obtain appropriate authorization from DOE/FE.

²⁴⁷ 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).

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.²⁴⁸ 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.²⁴⁹ 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.²⁵⁰

F. Agency Rights

Texas LNG 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

²⁴⁸ 10 C.F.R. § 590.405.

²⁴⁹ See U.S. Dep't of Energy, Procedures for Changes in Control Affecting Applications and Authorizations to Import or Export Natural Gas, 79 Fed. Reg. 65,541, 65,542 (Nov. 5, 2014).

²⁵⁰ See *id.*

(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.²⁵¹

To ensure that the public interest is served, this authorization shall be conditioned to require that where Texas LNG proposes to export LNG from the 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 Texas LNG file or cause to be filed with DOE/FE any relevant long-term commercial agreements, including liquefaction tolling agreements, pursuant to which Texas LNG 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 procedures described below will be consistent with the “to the extent practicable” requirement of section 590.202(b).²⁵²

In addition, DOE/FE finds that section 590.202(c) of DOE/FE’s regulations²⁵³ requires that Texas LNG file, or cause to be filed, all long-term contracts associated with the long-term supply of natural gas to the Project, whether signed by Texas LNG or the Registrant, within 30 days of their execution.

²⁵¹ 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 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 the Freeport LNG Terminal to Free Trade Agreement Nations, at 7-8 (Feb. 10, 2011).

²⁵² 10 C.F.R. § 590.202(b).

²⁵³ *Id.* § 590.202(c).

DOE/FE recognizes that some information in Texas LNG'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 Project, may be commercially sensitive. DOE/FE therefore will provide Texas LNG the option to file or cause to be filed either unredacted contracts, or in the alternative (A) Texas LNG 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.²⁵⁴

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.

H. Export Quantity

This Order grants Texas LNG's Application, as modified by the Amendment, in the full volume of LNG requested for export to non-FTA countries, up to the equivalent of 204.4 Bcf/yr of natural gas.

I. Combined FTA and Non-FTA Export Authorization Volumes

The volumes of LNG authorized for export in Texas LNG's FTA authorization (DOE/FE Order No. 3716) and this Order reflect the planned liquefaction capacity of the Project, as

²⁵⁴ *Id.* § 590.202(e) (allowing confidential treatment of information in accordance with 10 C.F.R. § 1004.11).

approved by FERC. Accordingly, Texas LNG may not treat the FTA and non-FTA export volumes as additive to one another.

X. ORDER

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

A. Texas LNG Brownsville LLC (Texas LNG) is authorized to export domestically produced LNG by vessel from the proposed Texas LNG Brownsville LLC Liquefied Natural Gas Export Project (Project) to be located at the Port of Brownsville, Texas in a volume up to the equivalent of 204.4 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. Texas LNG 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. Texas LNG may export Commissioning Volumes prior to the commencement of the terms 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 Texas LNG's FTA authorization or in this Order.

C. Texas LNG 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 Texas LNG's FTA authorization or in this Order. Insofar as Texas LNG may seek to export additional volumes not previously authorized, it will be required to obtain appropriate authorization from DOE/FE.

D. Texas LNG must commence export operations using the planned Project 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 204.4 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. Texas LNG 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. Texas LNG shall ensure compliance with all terms and conditions established by FERC in the final EIS, including the 129 environmental conditions adopted in the FERC Order issued on November 22, 2019. Additionally, this authorization is conditioned on Texas LNG's on-going compliance with any other preventative and mitigative measures at the Project imposed by federal or state agencies.

I. (i) Texas LNG 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 Project. The non-redacted copies must be filed within 30 days of their execution and may be filed under seal, as described above.

(ii) Texas LNG 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 Project. The non-redacted copies must be filed within 30 days of their execution and may be filed under seal, as described above.

J. Texas LNG 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 Texas LNG with all information necessary to permit Texas LNG 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. Texas LNG, or others for whom Texas LNG 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. 4489, issued February 10, 2020, in FE Docket No. 15-62-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 Texas LNG Brownsville 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 Texas LNG Brownsville LLC is made aware of all such actual destination countries.

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

M. Texas LNG shall file with the Office of Regulation, Analysis, and Engagement, on a semi-annual basis, written reports describing the status of the proposed 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 Project, the date the 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, Texas LNG must comply with DOE/FE's Procedures for Change in Control Affecting Applications and Authorizations to Import or Export Natural Gas.²⁵⁵

O. Monthly Reports: With respect to the exports authorized by this Order, Texas LNG 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)

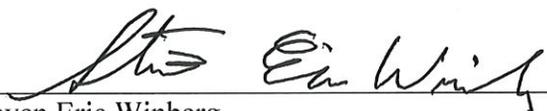
²⁵⁵ See 79 Fed. Reg. at 65,541-42.

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, 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: RECORD OF DECISION

The Department of Energy’s Office of Fossil Energy (DOE/FE) prepared this Record of Decision (ROD) and Floodplain Statement of Findings pursuant to the National Environmental Policy Act of 1969 (NEPA),²⁵⁶ and in compliance with the Council on Environmental Quality (CEQ) implementing regulations for NEPA,²⁵⁷ DOE’s implementing procedures for NEPA,²⁵⁸ and DOE’s “Compliance with Floodplain and Wetland Environmental Review Requirements.”²⁵⁹

As discussed above, DOE/FE participated as a cooperating agency with FERC in preparing an environmental impact statement (EIS) analyzing the potential environmental impacts of the Texas LNG Brownsville LLC’s (Texas LNG) Project (Project) that would be used to support the export authorization sought from DOE/FE.²⁶⁰ In accordance with 40 C.F.R. § 1506.3, DOE/FE adopted the final EIS on March 25, 2019 (DOE/EIS-0520),²⁶¹ and EPA published a notice of the adoption on March 29, 2019.²⁶²

A. Alternatives

The EIS assessed alternative methods that could be used to achieve Texas LNG’s Project objectives. The range of alternatives analyzed included the No-Action Alternative, system alternatives, and other site and process alternatives that could achieve the Project objectives.²⁶³ Alternatives were evaluated and compared to the proposed Project to determine if the

²⁵⁶ 42 U.S.C. § 4321, *et seq.*

²⁵⁷ 40 C.F.R. Parts 1500-08.

²⁵⁸ 10 C.F.R. Part 1021.

²⁵⁹ *Id.* Part 1022.

²⁶⁰ Federal Energy Regulatory Comm’n, *Texas LNG Project Final Environmental Impact Statement*, Docket No. CP16-116-000 (Mar. 15, 2019), available at: <https://www.energy.gov/nepa/downloads/eis-0520-final-environmental-impact-statement> [hereinafter final EIS].

²⁶¹ Letter from Amy Sweeney, DOE/FE, to Julie Roemele, U.S. Env’tl. Prot. Agency (Mar. 25, 2019) (adoption of final EIS).

²⁶² U.S. Env’tl. Prot. Agency, *Environmental Impact Statements; Notice of Availability*, 84 Fed. Reg. 11,972 (Mar. 29, 2019).

²⁶³ Final EIS at 3-1 to 3-12.

alternatives were environmentally preferable.²⁶⁴

The EIS assessed a No-Action Alternative, in which the Project would not be constructed.²⁶⁵ The EIS determined that, with or without the No-Action Alternative, other LNG export projects could be developed in the Gulf Coast region or elsewhere in the United States that could result in both adverse and beneficial environmental impacts.²⁶⁶ Terminal developments of similar scope and magnitude to the proposed Project would likely result in environmental impacts of comparable significance, especially those projects in a similar regional setting.²⁶⁷ The EIS also determined that the possible use of alternative energy sources would not meet the Project objective of liquefying natural gas to serve export markets.²⁶⁸ FERC staff concluded that the No-Action Alternative was not a reasonable alternative to meet the objectives of the Project.²⁶⁹

The EIS reviewed system alternatives for the Project's LNG export terminal by reviewing 22 approved, proposed, and planned facilities to evaluate the ability of the facilities to meet the stated objectives of the proposed Project, and to determine whether a system alternative exists that would be environmentally preferable.²⁷⁰ The EIS noted that 21 of the facilities had already received approval from DOE to export to countries with which the United States has a free trade agreement requiring national treatment for trade in natural gas (FTA countries).²⁷¹ The EIS concluded that each of the potential system alternatives would likely result in similar impacts to

²⁶⁴ Final EIS at 5-374 to 5-375.

²⁶⁵ *Id.* at 3-2.

²⁶⁶ *Id.* at 3-2 to 3-3.

²⁶⁷ *Id.* at 3-3.

²⁶⁸ *Id.*

²⁶⁹ *Id.*

²⁷⁰ Final EIS at 3-3 to 3-5.

²⁷¹ *Id.* at 3-5.

the proposed Project and would not have a significant environmental advantage.²⁷²

The EIS also evaluated site alternatives in the general area of the proposed Project site, in two tiers of screening.²⁷³ Tier 1 criteria were applied to sites located within port areas including Calhoun Port, Port of Port Arthur, Port of Brownsville, Port of Corpus Christi in Texas, and six additional sites identified by the Army Corps of Engineers.²⁷⁴ After using the Tier 1 screening criteria of land availability, access to natural gas pipelines and transmission lines, and proximity to population centers/residences, the EIS determined that only one area (the Port of Brownsville) met the criteria.²⁷⁵ The EIS then applied Tier 2 screening criteria to identify sites within the Port of Brownsville that had the greatest potential to provide an environmental advantage over the proposed Project site.²⁷⁶ Tier 2 screening criteria included land availability, proximity to population centers/residences, waterfront access, elevation, presence of wetlands, and presence of endangered species habitat.²⁷⁷ The EIS used the Tier 2 criteria to evaluate three alternative sites and the proposed Project site.²⁷⁸ The EIS concluded that no alternative sites offered a significant environmental advantage to the proposed Project site.²⁷⁹

Finally, the EIS considered process alternatives for power generation and flaring. The EIS likewise concluded that none of the alternative processes offered a significant environmental advantage over the proposed technologies.²⁸⁰

²⁷² *Id.*

²⁷³ *Id.* at 3-6.

²⁷⁴ *Id.*

²⁷⁵ Final EIS at 3-6.

²⁷⁶ *Id.* at 3-6 to 3-7.

²⁷⁷ *Id.* at 3-7.

²⁷⁸ *Id.*

²⁷⁹ *Id.* at 3-12.

²⁸⁰ *Id.*

B. Environmentally Preferred Alternative

When compared against the alternatives assessed in the EIS, the Project—as modified by the recommended mitigation measures—is the environmentally preferred alternative to meet the Project’s objectives.²⁸¹

C. Decision

DOE/FE has decided to issue Order No. 4489 authorizing Texas LNG to export domestically produced LNG by vessel from the proposed Texas LNG Project to non-FTA countries in a volume equivalent to 204.4 Bcf/yr of natural gas for a term of 20 years. DOE/FE’s decision is based on: (i) the analysis of potential environmental impacts presented in the EIS; and (ii) DOE’s determination in the Order that the proposed exports will not be inconsistent with the public interest, as would be required to deny the Application under NGA section 3(a).²⁸² DOE/FE also considered the Addendum, which summarizes available information on potential upstream impacts associated with unconventional natural gas activities, such as hydraulic fracturing.²⁸³

D. Mitigation

As a condition of its decision to issue Order No. 4489, DOE/FE is imposing requirements that will avoid or minimize the environmental impacts of the Project. These conditions include the 129 environmental conditions adopted by FERC in its order authorizing the Project on November 22, 2019.²⁸⁴ Mitigation measures beyond those included in DOE/FE Order No. 4489 that are enforceable by other federal and state agencies are additional conditions of DOE/FE

²⁸¹ Final EIS at ES-16 to ES-17.

²⁸² 15 U.S.C. § 717b(a). DOE/FE further notes that the Application is uncontested.

²⁸³ 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).

²⁸⁴ *Texas LNG Brownsville LLC*, Order Granting Authorization Under Section 3 of the Natural Gas Act, 169 FERC ¶ 61,130 (Nov. 22, 2019). Although the final EIS recommended 128 environmental mitigation measures, FERC adopted one additional environmental condition for a total of 129 environmental conditions. *See id.* at ¶ 72.

Order No. 4489. With these conditions, DOE/FE has determined that all practicable means to avoid or minimize environmental harm from the Project have been adopted.

E. Floodplain Statement of Findings

DOE/FE prepared this Floodplain Statement of Findings in accordance with DOE's regulations, entitled "Compliance with Floodplain and Wetland Environmental Review Requirements."²⁸⁵ The required floodplain assessment was conducted during development and preparation of the final EIS, which determined that the Project would be located in the 100-year floodplain.²⁸⁶ While placement of the Project within the floodplain would be unavoidable, DOE/FE has determined that the proposed design for the Project minimizes floodplain impacts to the extent practicable.

²⁸⁵ 10 C.F.R. Part 1022.

²⁸⁶ Final EIS at 4-243 to 4-244.