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UNITED STATES OF AMERICA
DEPARTMENT OF ENERGY
OFFICE OF FOSSIL ENERGY

Lake Charles Exports, LLC

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Docket No. 11 - ~~59~~ - LNG

APPLICATION OF LAKE CHARLES EXPORTS, LLC FOR
LONG-TERM AUTHORIZATION TO EXPORT LIQUEFIED NATURAL GAS

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**APPLICATION OF LAKE CHARLES EXPORTS, LLC FOR
LONG-TERM AUTHORIZATION TO EXPORT LIQUEFIED NATURAL GAS**

Pursuant to Section 3 of the Natural Gas Act (“NGA”), 15 U.S.C. § 717b, and Part 590 of the regulations of the Department of Energy (“DOE”), 10 C.F.R. § 590, Lake Charles Exports, LLC (“LCE”) submits this application (“Application”) to the DOE Office of Fossil Energy (“DOE/FE”) for long-term authorization to export 15 million tons per year of liquefied natural gas (“LNG”) (approximately equivalent to 2 billion cubic feet of gas per day (“bcf/d”)) produced from domestic sources for a 25-year period commencing on the earlier of the date of first export or ten years from the date the requested authorization is granted.

LCE seeks authorization to export LNG from the terminal in Lake Charles, Louisiana (“Lake Charles Terminal”) owned by Trunkline LNG Company, LLC (“Trunkline LNG”), to (1) any country with which the United States currently has, or in the future may enter into, a free trade agreement (“FTA”) requiring national treatment for trade in natural gas¹ and (2) any country with which the United States does not have a free trade agreement requiring national treatment for trade in natural gas with which trade is not prohibited by United States law or policy. In support of this Application, LCE respectfully states the following:

¹ The United States currently has FTAs requiring national treatment for trade in natural gas with Australia, Bahrain, Canada, Chile, Dominican Republic, El Salvador, Guatemala, Honduras, Jordan, Nicaragua, Mexico, Morocco, Oman, Peru and Singapore. FTAs with Columbia, Panama and South Korea are currently pending before the United States Congress.

I. DESCRIPTION OF THE APPLICANT AND LNG FACILITY

The exact legal name of the applicant is Lake Charles Exports, LLC. LCE is a limited liability company formed under the laws of Delaware with its principal place of business at 5444 Westheimer, Suite 1200, Houston, Texas 77056. LCE is a jointly-owned subsidiary of BG Group plc (“BG”) and Southern Union Company (“SUG”). BG LNG Services, LLC (“BGLS”), an affiliate of LCE, is an importer of LNG into the United States. BGLS has received both long-term and blanket authorization from DOE to import LNG at the Lake Charles Terminal and the LNG terminal at Elba Island, Georgia from various countries.²

Affiliates of LCE are among the most active participants in the global LNG market. BG is a producer of LNG from Trinidad and Egypt, and is developing LNG production based on coal seam natural gas production in Australia. BG’s LNG portfolio includes LNG purchased under long term firm arrangements with LNG producers in Equatorial Guinea and Nigeria. In addition to North America, where BGLS has for a number of years been the leading importer of LNG, BG has market access to the UK through its 50% ownership of the Dragon LNG terminal. BG also has a long-term contract to supply its Quintero LNG plant in Chile with up to 1.7 mtpa for 21 years. In 2008, BG was selected by the Energy Management Authority of Singapore to source and supply the Singapore market on an exclusive basis with up to 3 mtpa of LNG for up to 20 years. First deliveries to Singapore are expected in 2013. Additionally, BG has made LNG sales to over 40 customers around the globe and is an important supplier to Japan, South Korea, Taiwan and China. BG has sold LNG to importers in 22 of the 23 importing countries in the past eight years and has also bought LNG from 11 of the 18 LNG producing countries.

² *BG LNG Services, LLC*, DOE/FE Order No. 2917 (Jan. 25, 2011); *BG LNG Services, LLC*, DOE/FE Order No. 2756 (March 8, 2010); *BG LNG Services, LLC*, DOE/FE Order No. 2527 (August 27, 2008); *BG LNG Services, LLC*, DOE/FE Order No. 2288 (Nov. 17, 2006); *BG LNG Services, LLC*, Doe/FE Order No. 2285 (Nov. 17, 2006); *BG LNG Services, LLC*, DOE/FE Order No.2199 (May 22, 2006); *BG LNG Services, LLC*, DOE/FE Order No.1977-B (May 22, 2006); *BG LNG Services, LLC*, DOE/FE Order No.1926-A (May 22, 2006); *BG LNG Services, LLC*, DOE/FE Order No.1932 (Dec. 30, 2003).

Affiliates of LCE are also natural gas producers in the US. In a series of transactions entered into in 2009 and 2010, BG purchased major interests in the Haynesville and Marcellus shale plays, as well as other production in Texas, Louisiana, West Virginia, and Pennsylvania. BG's shale gas production has complemented its LNG imports and has supported BG's rise to being among the top 10 natural gas marketers in the US.

FERC certificated the Lake Charles Terminal in 1977, with the original construction completed in July 1981.³ In 2001, BGLS entered into a firm terminalling services agreement under which it subscribed all of the capacity of the Lake Charles Terminal to receive, store and vaporize LNG. In cooperation with BGLS, Trunkline LNG, a wholly-owned subsidiary of SUG, has expanded and enhanced the terminal through the construction of additional storage capacity, additional gas-fired vaporization capacity, an additional marine berth, ambient air vaporization equipment and natural gas liquids extraction capability. Today, the Lake Charles Terminal has a firm sustained sendout capacity of 1.8 bcf/d (13.7 mmtpa) and a peak sendout capacity of 2.1 bcf/d.⁴ The terminal has four LNG storage tanks with a combined capacity of approximately 2.7 million barrels (425,000 cubic meters) of LNG, or approximately 9.0 bcf of gas. The terminal's natural gas liquids processing facilities allow the extraction of ethane and other heavier hydrocarbons from the LNG stream.

II. COMMUNICATIONS

All communications and correspondence regarding this Application should be directed to the following persons:

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BG LNG Services, LLC

David T. Andril
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³ *Trunkline LNG Company, et al.*, 58 FPC 726 (Opinion No. 796) order on reh'g 58 FPC 2935 (1977) (Opinion No. 796-A).

⁴ *Trunkline LNG Company, LLC*, 117 FERC ¶ 61,339 (2006).

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III. AUTHORIZATION REQUESTED

LCE requests long-term authorization to export up to 15 million tons per year of domestically produced LNG (equivalent to approximately 2 bcf/d) for a 25-year period commencing upon the earlier of the date of first export or the tenth anniversary of the date authorization is granted by DOE/FE. LCE requests that such long-term authorization provide for export to (1) any country with which the United States currently has, or in the future may enter into, an FTA requiring national treatment for trade in natural gas; and (2) any country with which the United States does not have a free trade agreement requiring national treatment for trade in natural gas with which trade is not prohibited by United States law or policy.

Trunkline LNG and BGLS are currently developing plans to modify the existing facilities at the Lake Charles Terminal to permit LNG to be loaded from the terminal's storage tanks onto vessels berthed at the existing marine facility. Trunkline LNG and BGLS are also jointly developing plans to install liquefaction facilities that would permit gas to be received by pipeline at the terminal and liquefied for subsequent export. The liquefaction and export facilities would be the subject of an additional service agreement between BGLS and Trunkline LNG. LCE would purchase LNG produced by the liquefaction facilities at the Lake Charles Terminal from BGLS prior to export. The long-term export authorization sought in this application is necessary

in order to permit BGLS and Trunkline LNG to proceed to incur the substantial cost of developing the liquefaction and export project. Any modifications to the Lake Charles Terminal would be subject to FERC approval.⁵ Following the completion of the project, the Lake Charles Terminal will be bi-directional, and its peak and sustained sendout capabilities will not be affected.

LCE will enter into a long-term LNG export contract with BGLS on a date that is closer to the date of first export. Pursuant to the agreement, LCE will purchase LNG from BGLS at the point of export at the Lake Charles Terminal for delivery to markets around the world. The agreement will have a twenty-year term that will run concurrently with the LCE's export authorization.

IV. EXPORT SOURCES

LCE seeks authorization to export natural gas available in the United States natural gas pipeline system. While LCE anticipates that sources of natural gas will include Texas and Louisiana producing regions and the offshore gulf producing regions, the natural gas to be exported may be produced throughout the Lower 48, which is the world's most liquid natural gas market with an unparalleled transportation infrastructure.

V. PUBLIC INTEREST

LCE's authorization as described herein is not inconsistent with the public interest and should be granted by DOE/FE under the individual statutory provisions that apply separately to exporting LNG to FTA and non-FTA countries.

A. FTA Countries

⁵ As with all the prior activities at the Lake Charles Terminal, FERC would only approve any such modifications once all NEPA requirements had been satisfied fully. *See e.g., Trunkline LNG Company, LLC*, 100 FERC ¶ 61,217 (2002), *order denying reh'g and granting authorization under Section 3 of the NGA*, 101 FERC ¶ 61,300 (2002), *order denying reh'g*, 102 FERC ¶ 61,306 (2003), *order amending certificate*, 105 FERC ¶ 61,137 (2003).

NGA Section 3(c), as amended by Section 201 of the Energy Policy Act of 1992 (Pub. L. 102-486), provides that:

[T]he exportation of natural gas to a nation with which there is in effect a free trade agreement requiring national treatment for trade in natural gas, shall be deemed to be consistent with the public interest, and applications for such importation or exportation shall be granted without modification or delay.⁶

Under this statutory presumption, that portion of this Application that seeks to export LNG to nations with which the United States currently has, or in the future may enter into, an FTA requiring national treatment for trade in natural gas, shall be deemed to be consistent with the public interest and should be granted by DOE/FE without modification or delay. Indeed, DOE/FE promptly grants authorization for export to FTA nations as a matter of statutory requirement.⁷

B. Non-FTA Countries

Section 3(a) of the NGA sets forth the general standard for review of export applications:

[N]o person shall export any natural gas from the United States to a foreign country or import any natural gas from a foreign country without first having secured an order of the [Secretary of Energy] authorizing it to do so. The [Secretary] *shall issue* such order upon application, *unless*, after opportunity for hearing, [the Secretary] 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 in part, with such modification and upon such terms and conditions as the [Secretary] may find necessary or appropriate.⁸

⁶ 15 U.S.C. § 717b(c) (2009).

⁷ Consolidated Edison Company of New York and Orange and Rockland Utilities, Inc., DOE/FE Order No. 2894 (Dec. 21, 2010); El Paso Marketing, L.P., DOE/FE Order No. 2895 (Dec. 21, 2010); Arizona Public Service Company, DOE/FE Order No. 2893 (Dec. 17, 2010); Selkirk Cogen Partners L.P., DOE/FE Order No. 2892 (Dec. 17, 2010); Energia De Baja California, S De R. L. De C.V., DOE/FE Order No. 2867 (Oct. 19, 2010); Sabine Pass Liquefaction, LLC, DOE/FE Order No. 2833 (Sept. 7, 2010).

⁸ 15 U.S.C. § 717b(a) (2009) (emphasis added). This authority has been delegated to the Assistant Secretary for Fossil Energy pursuant to Redelegation Order No. 00-002.04D (Nov. 6, 2007).

According to the DOE/FE, “[a]pplying the foregoing statutory language, DOE has consistently ruled that Section 3(a) of the NGA creates a rebuttable presumption that proposed exports of natural gas are in the public interest.”⁹ To overcome this rebuttable presumption an opponent must affirmatively demonstrate that the proposal is inconsistent with the public interest.¹⁰

In evaluating the “public interest” the DOE/FE, consistent with its Policy Guidelines and Delegation Orders Relating to the Regulation of Imported Natural Gas, examines whether “domestic supply shortages or domestic security needs overcome the statutory presumption that a proposed export is not inconsistent with the public interest.”¹¹ While the Policy Guidelines deal specifically with imports, the DOE/FE has found that the principles are applicable to exports.¹² The Policy Guidelines are intended to promote free and open trade by minimizing federal government interference:

The market, not government, should determine the price and other contract terms of imported [or exported] gas. . . . The federal government’s primary responsibility in authorizing imports [or exports] should 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.¹³

DOE/FE recently affirmed that “the principal focus of this agency’s review of export applications in decisions under current delegated authority has continued to be the domestic need for the natural gas proposed to be exported, and any other factors to the extent they are shown to

⁹ *Sabine Pass Liquefaction, LLC*, FE Docket 10-111-LNG, Opinion and Order Denying Request for Review Under Section 3(c) of the NGA (Oct. 21, 2010) (“Sabine Section 3(c) Order”); *see also Panhandle Producers and Royalty Owners Assoc. v. ERA*, 822 F.2d 1105, 1111 (D.C. Cir. 1987) (“A presumption favoring import authorization, then, is completely consistent with, if not mandated by, the statutory directive.”).

¹⁰ Sabine Section 3(c) Order at 5; *see also Phillips Alaska Natural Gas Corp. and Marathon Oil Co.*, DOE/FE Order No. 1473 (April 2, 1999) (“Section 3 creates a statutory presumption in favor of approval of an export application and the Department must grant the requested export [application] unless it determines the presumption is overcome by evidence in the record of the proceeding that the proposed export will not be consistent with the public interest.”).

¹¹ Sabine Section 3(c) Order at 5; Policy Guidelines and Delegation Orders Relating to the Regulation of Imported Natural Gas, 49 Fed. Reg. 6,684 (Feb. 22, 1984) (“Policy Guidelines”).

¹² *Phillips Alaska Natural Gas Corp. and Marathon Oil Co.*, DOE/FE Order No. 1473 at 14.

¹³ Policy Guidelines at 6685.

be relevant to a public interest determination.”¹⁴ As demonstrated herein, LCE’s application is not inconsistent with the public interest.

(i) **Domestic Need for the Natural Gas Proposed to be Exported**

The main focus of the DOE/FE’s public interest analysis has been the projected domestic need for the gas to be exported. Domestic need can be measured by looking at domestic natural gas supply versus natural gas demand. DOE/FE has historically compared the total volume of natural gas reserves and recoverable resources available to be produced during the proposed export period to total gas demand during the export period to determine whether there is a domestic need for the gas to be exported.¹⁵

It is LCE’s view that recoverable natural gas resources in the U.S. are abundant, cheap and sufficient to meet demand for domestic consumption and LCE’s proposed export over the long-term. It is also LCE’s belief that exports will not cause a significant increase in domestic natural gas prices. Accordingly, this proposed export authorization will not have a detrimental impact on the domestic supply of natural gas and, therefore, is not inconsistent with the public interest.

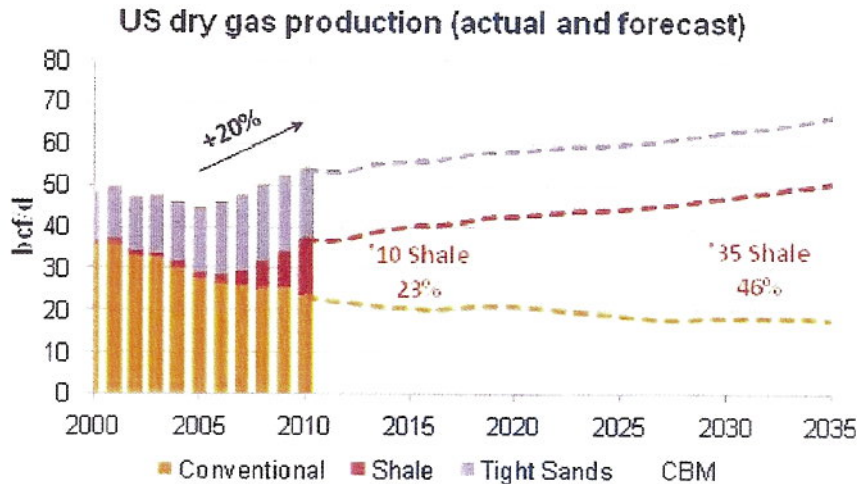
(1) *Domestic natural gas supply*

Recent improvements in natural gas exploration and production technology have changed the outlook for the U.S. natural gas market. Technical and efficiency improvements in horizontal drilling and hydraulic fracturing have combined to reduce the cost of producing natural gas from shale resources, making shale gas economically viable. Production from shale resources has not only offset declines in conventional natural gas production but has also led to a 20% increase in dry gas production between 2005 and 2010. From just 2% of production in

¹⁴ Sabine Section 3(c) Order at 6.

¹⁵ *Phillips Alaska Natural Gas Corp. and Marathon Oil Co.*, DOE/FE Order No. 1473 at pp. 29, 40, 46.

2000,¹⁶ shale gas reached 23% of total production in 2010.¹⁷ The U.S. Energy Information Administration (“EIA”) projects the share of shale production will double to 46% by 2035.¹⁸



Sources: Woodmac (2000-2009); EIA AEO 2011 (2010-2035)

As shale resources have become an increasingly viable source of production, expanded exploration and drilling activity has increased producers’ knowledge of known shale reserves. This has directly affected domestic resource estimates, which have been revised progressively higher since 2008. During a presentation made in February 2011, EIA stated “shale gas has been the primary source of recent growth in U.S. technically recoverable natural gas resources.”¹⁹ In the EIA’s 2011 Early Release Overview of its *Annual Energy Outlook 2011* (“EIA 2011 Overview”), EIA, citing additional information that has become available with more drilling activity in new and existing shale plays, doubled its estimate of the technically recoverable unproved shale gas resource and doubled its forecast for shale gas production in 2035 as

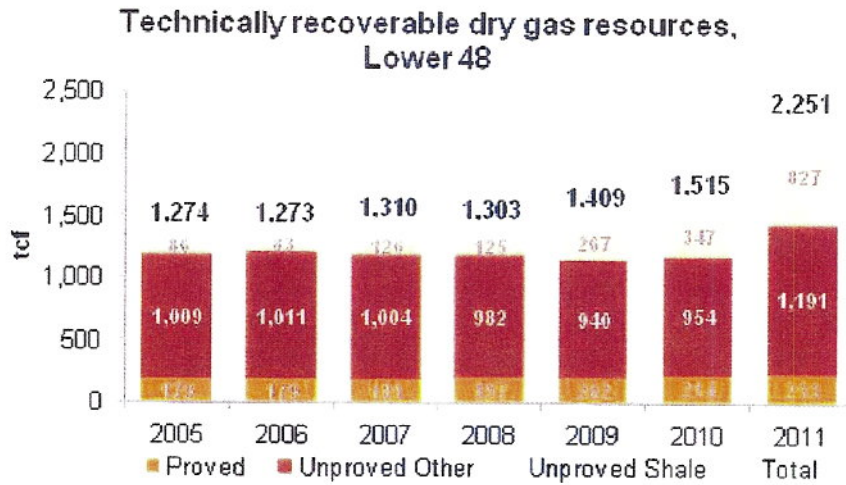
¹⁶ Wood MacKenzie, *North American Natural Gas Long-Term View*, Table: Supply-by-Type (April 2011).

¹⁷ U.S. Energy Information Administration, *Annual Energy Outlook 2011 Early Release Overview*, Table 14 Oil and Gas Supply (Dec. 2010), available at http://www.eia.doe.gov/forecasts/aeo/tables_ref.cfm.

¹⁸ *Id.*

¹⁹ U.S. Energy Information Administration, *The Long-Term Outlook for Natural Gas* (presentation prepared for Saudi Arabia--United States Energy Consultation) (Feb. 2, 2011), available at http://www.eia.doe.gov/neic/speeches/newell_aeo_ng.pdf.

compared to the *Annual Energy Outlook 2010*.²⁰ EIA now estimates that the technically recoverable natural gas resource base in the Lower 48 is 2,251 tcf, nearly double EIA’s 2005 estimate.²¹



Sources: EIA AEO 2005-2011 with adjustments to exclude Alaska

LCE expects assessments of the U.S. recoverable natural gas resource base to continue to be revised higher. Producers will expand their exploration and production efforts beyond today’s high profile shale plays, increasing knowledge of plays considered to be on the frontier today. Moreover, uncertainty regarding the total volume of U.S. recoverable resources will decrease over time as technically recoverable resources are delineated and become proved reserves.

(2) *Domestic natural gas demand*

Domestic natural gas demand is the second component in the DOE/FE’s analysis. The export of domestic LNG, as proposed by LCE, should be considered to be in the public interest as U.S. natural gas available for supply far exceeds demand. EIA estimates that domestic natural

²⁰ U.S. Energy Information Administration, *Annual Energy Outlook 2011 Early Release Overview (2010)*, available at <http://www.eia.doe.gov/forecasts/aeo/index.cfm>; see also U.S. Energy Information Administration, *Annual Energy Outlook 2010 (2010)* (“EIA Outlook 2010”), available at [http://www.eia.gov/FTP/forecasting/0383\(2010\).pdf](http://www.eia.gov/FTP/forecasting/0383(2010).pdf).

²¹ U.S. Energy Information Administration, *Assumptions to the Annual Energy 2005-2010*, available at <http://www.eia.gov/oiaf/archive.html>; see also U.S. Energy Information Administration, *Alaska Dry Gas Proved Reserve*, available at http://www.eia.doe.gov/dnav/ng/ng_enr_dry_dc_u_SAK_a.htm.

gas demand will grow from 23.9 tcf per year in 2010 to 26.5 tcf per year in 2035.²² EIA further estimates that cumulative domestic gas consumption from 2011 through 2035 will be 629 tcf.²³ IHS CERA, an independent industry consultant, estimates that cumulative domestic gas consumption over the same period will be 709 tcf.²⁴

Neither the EIA demand projection nor the IHS CERA demand projection includes an estimate of LNG exports. The export authorization requested by LCE hereunder would increase demand by a maximum of 2 bcf/d (0.730 tcf per year) from 2015 through 2035.²⁵ Recognizing, however, that there are two applications to export domestic LNG pending before DOE²⁶ and that other applicants may seek authorizations, LCE has estimated not only the impact of LCE's proposed export but also the potential for LNG exports during the export period of 2015 through 2035.

There are presently 12 LNG terminals in operation or under construction in the U.S. with a total combined import capacity of approximately 18 bcf/d. Authorized expansions would increase the total capacity to just over 21 bcf/d (see Appendix C). Although many new terminals have been proposed in recent years, the emergence of shale gas as a viable, low cost supply has meant that the U.S. no longer needs LNG imports to balance its natural gas market. As a result, additional import terminals appear unlikely to be built.

²² U.S. Energy Information Administration, Annual Energy Outlook 2011 Early Release Overview, Table 13 Natural Gas Supply, Disposition, and Prices (Dec. 2010), available at http://www.eia.doe.gov/forecasts/aeo/tables_ref.cfm.

²³ U.S. Energy Information Administration, Annual Energy Outlook 2011 Early Release Overview, Table 13 Natural Gas Supply, Disposition, and Prices (Dec. 2010), available at http://www.eia.doe.gov/forecasts/aeo/tables_ref.cfm.

²⁴ IHS CERA, *North American Gas Market Outlook Data Tables*, Table 7: US Lower-48 Gas Supply and Demand Balance, 2005-2035 (Mar. 2011). The use of this content was authorized in advance by IHS. Any further use or redistribution of this content is strictly prohibited without written permission by IHS. All rights reserved.

²⁵ Although LCE has requested that its twenty-year authorization commence as late as 10 years from the date of the DOE/FE's order, LCE has assumed for purposes of this analysis that the most likely period of export is 2015 through 2035.

²⁶ Sabine Pass Liquefaction, LLC, FE Docket No. 10-111-LNG; Freeport LNG Expansion, L.P., FE Docket No. 10-161-LNG.

Of the 12 import terminals, the offshore facilities cannot practically be converted to export use as a technical matter. The facilities at Everett, Massachusetts and Elba Island, Georgia are market area terminals that lack access to gas supply for liquefaction. Some portion of the capacity of the remaining projects will not be converted to export as it is part of foreign LNG producers' supply chains and switching to exports would not be consistent with the sponsor aim of maintaining a chain to monetize home resources. Assuming that the remaining capacity is fully converted to exports (*i.e.*, is not operated on a bi-directional basis) the total export capacity would be 12 bcf/d (4.38 tcf per year).

However, it is known that some of the existing terminals are planning to develop as bi-directional facilities, which will reduce export capacity versus the overall terminal capacity (as some capacity is retained for imports). Hence, 12 bcf/d is considered LCE's high (stress) export case with 6 bcf/d (2.19 tcf per year) LCE's base export case. This would represent four export terminals in the Gulf of Mexico: Sabine Pass (2 bcf/d) and Freeport (1 bcf/d) as already filed, Lake Charles (2 bcf/d), and one other (1 bcf/d).

Greenfield capacity is unlikely to be developed. The cost associated with construction of a greenfield terminal is estimated to be at least double the incremental cost of adding liquefaction capability to an existing terminal, making the cost of greenfield supply from the U.S. economically uncompetitive versus other competing options such as Australia, Nigeria, and Canada.

LCE's base export case of 6 bcf/d from 2015 through 2035 is equivalent to increasing cumulative natural gas demand by 46 tcf between 2011 and 2035. LCE's high export case of 12 bcf/d from 2015 through 2035 is equivalent to increasing cumulative demand by 92 tcf between

2011 and 2035. The total cumulative demand for domestic natural gas between 2011 and 2035 using the EIA demand projections plus LCE's base and high export cases are as follows:

	Demand for Domestic Natural Gas 2011-2035
No Export Case	629 tcf
Base Export Case	675 tcf
High Export Case	721 tcf

The EIA's current estimate of 2,251 tcf of technically recoverable dry gas resources in the Lower 48 indicates that recoverable resources are more than adequate in the long run to meet domestic demand as well as LNG exports as high as 12 bcf/d. Looking at the recoverable resource base another way, 2,251 tcf is equivalent to:

- 94 years of supply based on 2010 consumption (23.9 tcf per year);
- 85 years of supply based on EIA's projection of 2035 consumption (26.5 tcf per year; and
- 73 years of supply based on EIA's projection of 2035 consumption plus LCE's high export case of 12 bcf/d (30.8 tcf per year).

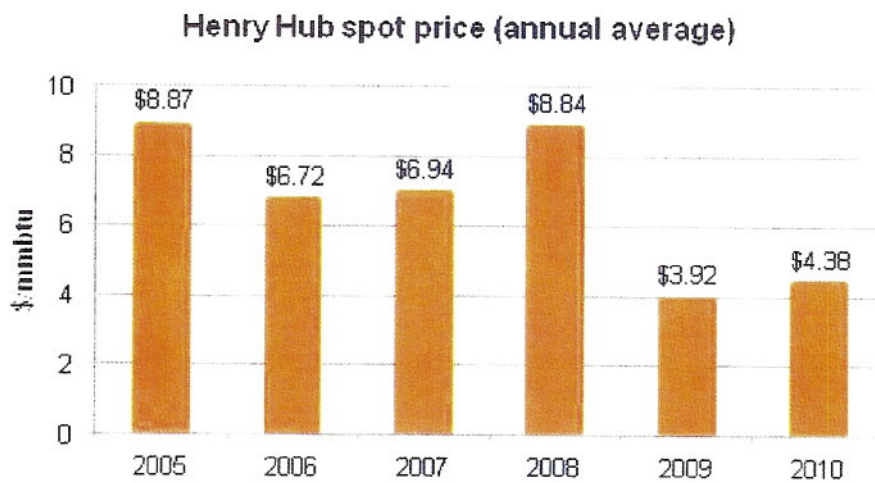
As demonstrated by the foregoing analysis, the natural gas to be exported pursuant to this application will not be needed to meet demand in the U.S., and therefore permitting its export is not inconsistent with the public interest.

(ii) Impact on U.S. Natural Gas Market Prices

Once it is determined that an export will not jeopardize supply to domestic needs during the term of the export, the public interest test of Section 3 of the NGA is met, regardless of the impact of the proposed export on domestic prices. As the Policy Guidelines make clear, it is not

the policy of the federal government to manipulate domestic energy prices by approving or disapproving import and export applications.²⁷ U.S. policy is that markets, and not the government, should allocate resources, determine supply and demand, and set prices. Nonetheless, LCE's analysis shows that the proposed export, as well as the likely level of total LNG exports during the term of the proposed authorization, will not have a significant impact on domestic natural gas prices.

The surge in shale gas production and recoverable resource estimates has had a bearish effect on domestic natural gas prices over the last two years. Spot prices at Henry Hub have fallen from an average of \$8.84 in 2008 to \$4.38 in 2010 as the amount of unconventional shale gas production has increased significantly.²⁸

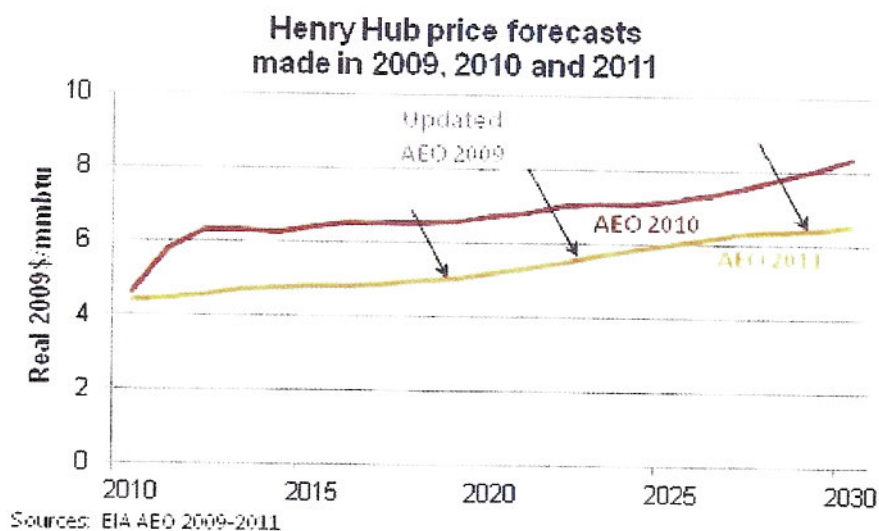


Sources: Bloomberg

²⁷ See *supra* note 13 and accompanying text.

²⁸ Part of the decrease in natural gas prices from 2008 to 2009 can be attributed to the 2009 recession, which depressed natural gas usage. In the industrial sector, natural gas usage decreased by 0.5 bcf/d from 2008. However, the downward price impact of declining usage was compounded by a 0.7 bcf/d increase in domestic production. With the market oversupplied, prices fell low enough to stimulate additional demand. This primarily occurred in the electric power sector as natural gas generators gained a greater share of the market at the expense of coal fired generation. This has continued into 2010 and 2011 due to continued growth in domestic production even as demand exceeded pre-recession levels.

As shown in the chart below, forecasts of future prices have also been falling. In EIA’s 2011 Overview, EIA stated, “A higher updated estimate of domestic shale gas resources supports increased natural gas production at prices below those in last years’ Outlook.”²⁹ Accordingly, EIA lowered its 2011-2030 price forecast by roughly 30% relative to Annual Energy Outlook 2009. The new price outlook averages just \$5.40 over those years. This forecast is in line with other forecasters’ views.



LNG exports from the U.S. can be considered as an additional demand element in the market. To understand how exports of LNG might impact domestic prices in the long run, LCE analyzed internal and external assessments of recoverable resource potential and production costs by natural gas play. In the following analysis, producers are assumed to satisfy cumulative demand from 2011 through 2035 by monetizing resources in order from the lowest cost resource to the highest. The highest cost of supply needed to meet cumulative demand is assumed to set the long-run marginal price. With this approach, one can identify the additional resources that

²⁹ EIA AEO2011, Executive Summary.

must be produced to meet added supply delivered to LNG export terminals and the additional cost needed to produce the gas.

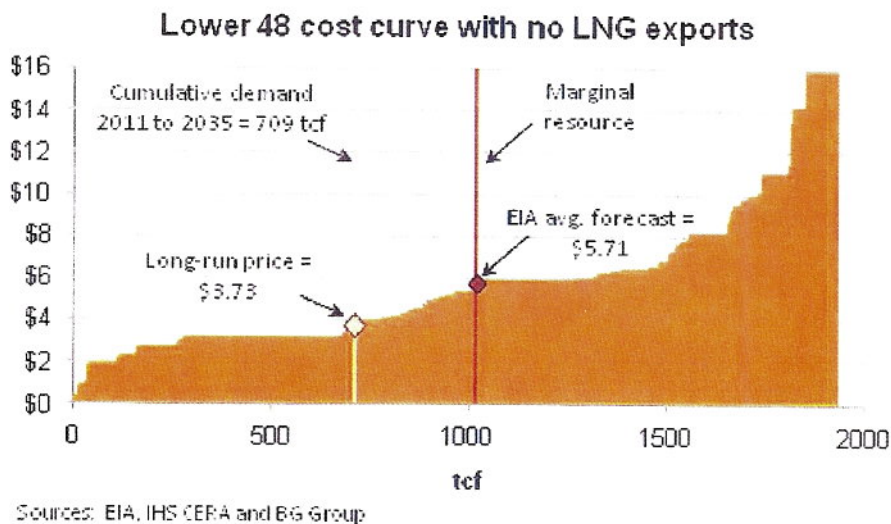
LCE constructed a long-run cost curve using estimates of Henry Hub equivalent break even production costs (*i.e.*, adjusted for the cost of transportation to Henry Hub) and volumes of U.S. recoverable resources by play. LCE incorporated data from IHS CERA which has published a cost of supply curve for 40 high profile unconventional plays totaling roughly 1,200 tcf.³⁰ Because the IHS CERA cost curve is not comprehensive, LCE included estimates based on BGNA's internal analysis and data provided by Advanced Resources International, Inc. ("ARI") for approximately 750 tcf of conventional, tight sands and coal bed methane resources. The combined dataset defines 197 plays, totaling roughly 1,950 tcf. This is lower than EIA's recent assessment of 2,251 tcf of recoverable resources in the Lower 48. The use of a smaller recoverable resource base is conservative with respect to the price estimate. Assuming high cost resources were omitted in the analysis, there is no impact to the long-run price estimate. If low cost resources were omitted from the analysis, this would suggest that this analysis overstates the long-run price estimate, since in reality additional resources will be available at a lower price.

Assuming that the cheapest resources are produced first (which is consistent in the long run with the efficiency of the U.S. natural gas market), the resource cost curve can be used to analyze prices for a given level of demand over the long run. The horizontal axis on the chart below illustrates the volume that is considered economic to produce for a given Henry Hub equivalent break even price (which is depicted on the vertical axis). For example, more than 1,500 tcf of gas can be produced at prices of approximately \$6.50 in the long run. As discussed

³⁰ IHS CERA, *Fueling North America's Energy Future: The Unconventional Natural Gas Revolution and the Carbon Agenda*, Chapter 1: The "Shale Gale" – A Game Changer for the Natural Gas Industry (July 28, 2010). The use of this content was authorized in advance by IHS. Any further use or redistribution of this content is strictly prohibited without written permission by IHS. All rights reserved.

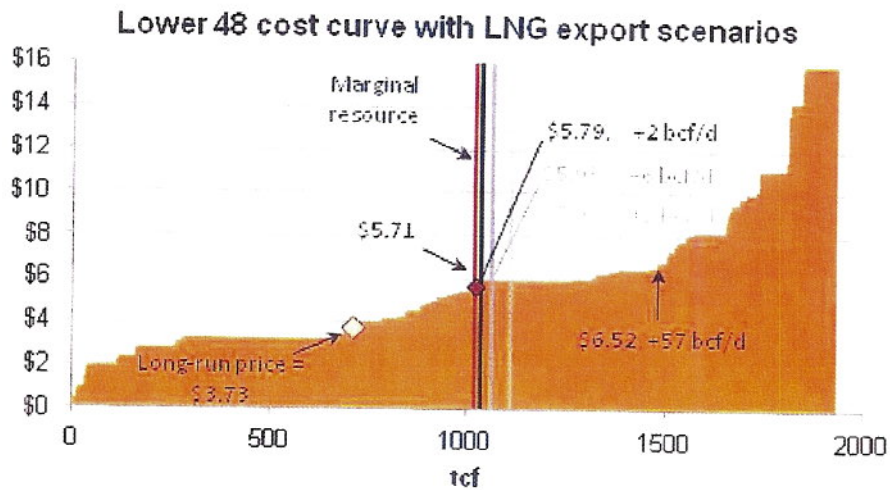
above, using IHS CERA’s long-term demand forecast published in March 2011, cumulative U.S. natural gas consumption is projected to total 709 tcf between 2011 and 2035. From the cost curve, 709 tcf can be produced at long-run marginal cost of \$3.73.

This analysis, however, simplifies short-term constraints that restrict the rate at which resources can be developed and produced, preventing the lowest cost resources from being exploited in sequence. Instead, producers monetize a portfolio of resources over time by producing a portion of the lowest cost resource in various plays each year. This temporal inefficiency has the effect of shrinking the short-term supply curve, causing average annual prices that are higher than the long-run marginal cost of supply. To account for this constraint, LCE used EIA’s AEO 2011 average price forecast of \$5.71 for the years 2011-2035 – which falls within the range of industry estimates – to identify the marginal resource. As shown below, a price of \$5.71 corresponds to the resource at roughly 1000 tcf of natural gas on the supply curve.



Using the marginal resource implied by EIA’s long-run average price, a similar approach can be used to identify the additional resources that must be developed to supply LNG exports

and assess the impact on domestic prices. First, assuming Lake Charles is the only facility exporting LNG with an average sendout of 2 bcf/d from 2015-2035, an additional 15 tcf of dry gas must be produced, increasing domestic prices to an average of \$5.79 – an increase of slightly more than one percent. Under the 6 bcf/d base export case, production must increase by 46 tcf. This has an impact of \$0.22 (or just under four percent), bringing the marginal price to \$5.93. Because the supply curve is very flat in this range, moving from the 6 bcf/d base export case to the 12 bcf/d high LNG export case has no additional impact on prices.



Sources: EIA, IHS CERA and BG Group

Even the estimated long-run price of \$5.93 in the high export case (12 bcf/d) is quite low relative to historical prices which reached an annual average of \$8.87 in 2005 before falling to \$4.38 in 2010 with the growth in shale production. LCE believes this highlights the structural change in production technology and the cost of domestic natural gas production. In particular, significantly lower cost of supply and higher assessment of technically recoverable resources in the Lower 48 have combined to create a flat cost of supply curve in which only a small change in price is required to incentivize a large increase in domestic production. Thus, the impact of increasing domestic demand or LNG exports has only a limited impact on domestic prices. This

can also mute the potential impact of temporal inefficiencies, particularly between 1000 tcf and 1500 tcf where the supply curve is essentially flat. Furthermore, as shown above, cumulative resource extraction in the Lower 48 can reach 1500 tcf in the long-run before prices exceed approximately \$6.50 on a Henry Hub equivalent basis. Furthermore, the U.S. “shale revolution” is still in an early stage. Historically, the exploration and production industry has been able to reduce production costs over time as best practices emerge, further deepening the supply curve.

The risk to domestic consumers lies with the assessment of resource volumes and the relative cost among plays. However, the resource curve is very flat at \$6.00. This suggests that LNG exports of any reasonable volume are unlikely to significantly impact prices. A significant price impact would only result from a smaller resource assessment or a steeper cost curve. However, LCE has taken a conservative approach by using a smaller recoverable resource base than the EIA’s assessment and relying predominately on supply cost data from an independent third-party (IHS CERA) for shale resources, which represent the bulk of supply in the range of current demand forecasts including LNG export scenarios.

There are several other factors that make the foregoing analysis conservative. It ignores the development of new shale plays in Canada and imports of natural gas from Canada, which have recently comprised a significant portion of U.S. supply. As DOE/FE recognizes, the U.S. and Canada act as a single integrated market for natural gas. Western Canada has some of the best quality shale gas plays in North America and these are just starting to be delineated. Recoverable gas resources in just two plays identified to date, the Horn River Basin and the Montney, are expected to be in excess of 300 tcf.³¹ Excluding Canadian demand and supply is a conservative approach to the assessment since, even if it commences LNG exports, Canada is expected to be a net exporter of natural gas to the U.S.

³¹ ARI.

Some commentators have suggested that drilling rigs and crews required to produce unconventional gas may be a constraint to production over the longer-term. LCE believes that this is unlikely given:

- the long-lead visibility of the LNG export projects and
- the ease with which rigs and rig crews can be expanded over the long-term; the former can be built within the US and the latter can be trained.

The long planning horizon for LNG exports leaves ample time to develop shale gas take-away and needed long-haul capacity. Also, the Gulf Coast pipeline system was designed for significant flows. Regional pipeline flows are therefore unlikely to be affected by the use of Gulf Coast LNG terminals for exports in the long-run, minimizing any long-term basis impact.

Exports of LNG will not have a material impact on domestic natural gas prices. Accordingly, the proposed export is not inconsistent with the public interest.

(iii) Economic Benefits

The requested authorization will benefit local, regional and national economies and is in the public interest. The proposed export of LNG would allow natural gas that might otherwise be shut-in to be sold into the global LNG market, spurring the development of new natural gas resources that might not otherwise make their way to market.

The development of new resources creates new jobs and new opportunities for American workers and is consistent with President Obama's National Export Initiative signed in 2010.³² The President noted that "[a] critical component of stimulating economic growth in the United States is ensuring that U.S. businesses can actively participate in international markets by increasing their exports of goods Improved export performance will, in turn, create good

³² Exec. Order No. 13534, 75 Fed. Reg. 12433 (March 11, 2010).

high-paying jobs.”³³ The National Export Initiative has the goal of doubling exports over the next five years by helping businesses overcome hurdles to entering new export markets, assisting with financing and pursuing a government-wide approach to export advocacy abroad.³⁴ In his 2011 State of the Union Address, the President stated:

To help businesses sell more products abroad, we set a goal of doubling our exports by 2014 – because the more we export, the more jobs we create here at home. Already, our exports are up. . . . Now, before I took office, I made it clear that we would enforce our trade agreements, and that I would only sign deals that keep faith with American workers and promote American jobs. That’s what we did with Korea, and that’s what I intend to do as we pursue agreements with Panama and Colombia and continue our Asia Pacific and global trade talks.³⁵

Exporting natural gas that is not needed in the United States promotes the President’s pro-export policies, while providing a much needed boost to local, regional, and national economies through resource development, an enhanced tax base, job creation and increased overall economic activity. An expansion in available markets for natural gas supplies will have a ripple effect throughout the economy by creating additional employment opportunities.

As the Lake Charles Terminal is currently equipped only for importing LNG, modifications to the terminal would be required before exports could occur. Such a project would directly benefit the local economy by offering construction and engineering jobs. The manufacturing and supply of the required equipment and materials for the project will result in an investment of approximately \$600 million per train, most of which will be sourced from the U.S. The project will require approximately 4.5 million construction man hours per train, generating wages of approximately \$120 million. In addition, there will be approximately 200

³³ *Id.*

³⁴ *Id.*

³⁵ President Barack Obama, State of the Union Address (Jan. 25, 2011), *transcript available at* <http://www.whitehouse.gov/the-press-office/2011/01/25/remarks-president-state-union-address>.

supervisors and managerial staff required to oversee the construction of each train, adding approximately \$140 million in wages. Completing the engineering work on the project (which will likely be done at the contractors' headquarters) will support approximately 150 jobs, creating approximately \$100 million in wages for each train.

Granting the requested authorization would also positively impact the U.S. balance of trade. In 2010, the U.S. trade deficit was \$497.8 billion, an increase of \$122.9 billion from the 2009 figure.³⁶ Notably, of the \$497.8 billion deficit, \$265 billion (over half) resulted from a negative balance in the trade of petroleum products.³⁷ At EIA's projected gas price of \$5.71, LNG exports of 2 bcf/d will make a positive impact on the balance of trade of over \$4 billion per year. The DOE/FE, in approving export applications, has acknowledged the positive impact that LNG exports can have on the balance of trade with destination countries.³⁸ Moreover, consistent with the aims of the National Export Initiative and the DOE's policy of "promoting competition in the marketplace by allowing commercial parties to freely negotiate their own trade arrangements",³⁹ the export of LNG will help to improve economic trade and ties between the U.S. and the destination countries, which could include key industrialized nations in Europe and Asia, as well as developing nations in Asia, South America, the Middle East, and the Caribbean.

Furthermore, it would be inconsistent with U.S. obligations under World Trade Organization ("WTO") Agreements to restrict exports of LNG to other WTO countries except in certain narrow circumstances not applicable here. The U.S. has undertaken commitments not to restrict such exports to other WTO countries, whether directly or indirectly, through quantitative

³⁶ Bureau of Economic Analysis, U.S. Department of Commerce, *U.S. International Trade in Goods and Services*, (Feb. 11, 2011), available at <http://www.bea.gov/newsreleases/international/trade/2011/pdf/trad1210.pdf>.

³⁷ *Id.* at 11. In 2010, the U.S. exported only \$70 billion in petroleum products while importing over \$335 billion.

³⁸ See, e.g., *ConocoPhillips Company*, FE Docket No. 09-92-LNG, Order No. 2731 at 10 (Nov. 30, 2009); *Cheniere Marketing, Inc.*, FE Docket No. 08-77-LNG, Order No. 2651 at 14 (June 8, 2009) ("[M]itigation of balance of payments issues may result from a grant of the [export] application.").

³⁹ *Cheniere Marketing, Inc.*, FE Docket No. 08-77-LNG, Order No. 2651 at 11 (June 8, 2009).

measures or other administrative measures. It would be a further violation of the most-favored-nation obligations under WTO Agreements for the U.S. to grant applications for exports to countries with which the United States has separate FTAs while denying applications for exports to other WTO countries with which the U.S. does not have separate FTAs.

(iv) Environmental Benefits

LNG export can have significant environmental benefits as natural gas is cleaner burning than other fossil fuels. According to the U.S. Environmental Protection Agency (“EPA”), compared to the average air emissions from coal-fired generation, natural gas-fired generation produces half as much carbon dioxide, less than a third as much nitrogen oxides, and one percent as much sulfur oxides at the power plant.⁴⁰ Accordingly, an increased supply of natural gas made possible through LNG export can help countries break their dependence on less environmentally friendly fuels.

VI. ENVIRONMENTAL IMPACT

Presently, the Lake Charles Terminal is equipped for and authorized only to receive imports of LNG. Trunkline LNG will file an application with FERC for authorization to modify the existing authorized facilities for exports, in accordance with NGA Section 3 and subpart B of part 153 of the Commission’s Regulations, 18 C.F.R. § 153.4 *et seq.*⁴¹

Regarding the proposed export to FTA countries, pursuant to the terms of the National Environmental Policy Act, 42 U.S.C. § 4231 *et seq.* (“NEPA”), while DOE shall give appropriate consideration to the environmental effects of its proposed decisions, as in *Sabine Pass Liquefaction LLC*, that consideration is provided “in light of DOE’s statutory obligation to

⁴⁰ See <http://www.epa.gov/cleanenergy/energy-and-you/affect/natural-gas.html>.

⁴¹ See, e.g., *Cameron LNG, LLC*, 134 FERC ¶ 61,049 (2011) (FERC amends prior NGA Section 3 import authority to add the additional purpose of exporting LNG).

grant the application without delay or modification.”⁴² That portion of LCE’s Application that seeks authority to export LNG only to nations with which the United States currently has, or in the future may enter into, an FTA requiring national treatment for trade in natural gas, “falls within Section 3(c), as amended, and therefore, DOE/FE is charged with granting the application without delay or modification.”⁴³

Regarding the proposed export to non-FTA countries, LCE requests that the DOE/FE issue the export authorization to non-FTA countries conditioned on the FERC’s completion of the NEPA review and approval of the facility construction. The DOE/FE routinely issues orders with such a condition.⁴⁴

VII. APPENDICES

The following appendices are included with this Application:

Appendix A	Verification
Appendix B	Opinion of Counsel
Appendix C	LNG Export Capacity

VIII. CONCLUSION

WHEREFORE, for the reasons set forth above, LCE respectfully request that the DOE/FE issue an order granting LCE long-term authorization to export up to 15 million tons per year (approximately 0.730 tcf per year) for a term of 25 years of domestic LNG to (1) any country with which the United States currently has, or in the future enters into, an FTA requiring national treatment for trade in natural gas; and (2) any country with which the United States does

⁴² DOE/FE Order No. 2833 (September 7, 2010) at 5.

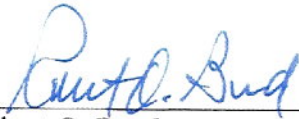
⁴³ *Id.*

⁴⁴ See e.g., *Yukon Pacific Corp.*, ERA Docket No. 87-68-LNG, Order No. 350 (Nov. 16, 1989) (“The DOE believes that energy projects can and must be undertaken consistent with environmentally acceptable practices. To ensure this result, the DOE is attaching a condition to the export approval that all aspects of the export project must be undertaken in accordance with the appropriate environmental review process and must comply with any and all preventative and mitigative measures imposed by Federal or State agencies.”); see also *Rochester Gas and Electric Corp.*, FE Docket No. 90-05-NG, Order No. 503 (May 16, 1991).

not have a free trade agreement requiring the national treatment for trade in natural gas with which trade is not prohibited by United States law or policy.

As demonstrated herein, the authorization requested is not inconsistent with the public interest and, accordingly, should be granted pursuant to Section 3 of the Natural Gas Act.

Respectfully submitted,



Robert O. Bond
President and COO
Trunkline LNG Holdings, LLC
Member of Lake Charles Exports, LLC



Elizabeth Spomer
Senior Vice President
BG LNG Services, LLC
Member of Lake Charles Exports, LLC

Dated May 6, 2011

APPENDIX A
VERIFICATION

VERIFICATION

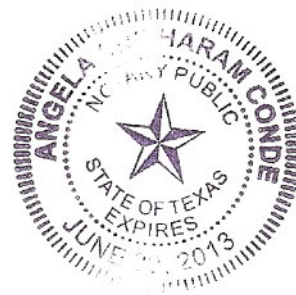
County of Harris)
)
State of Texas)

BEFORE ME, the undersigned authority, on this day personally appeared Elizabeth Spomer, who, having been by me first duly sworn, on oath says that she is the Senior Vice President, Americas and Global LNG Region, BG LNG Services, LLC, member of Lake Charles Exports, LLC and is duly authorized to make this Verification on behalf of Lake Charles Exports, LLC; that she has read the foregoing instrument and that the facts therein stated are true and correct to the best of her knowledge, information and belief.

Elizabeth Spomer

SWORN TO AND SUBSCRIBED before me on the 6th day of May, 2011.

Angela H. Haram Conde
Notary Public



APPENDIX B
OPINION OF COUNSEL

May 6, 2011

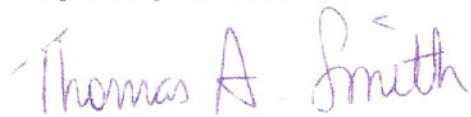
Mr. John A. Anderson
Office of Fossil Energy
U.S. Department of Energy
Docket Room 3F-056, FE-50
Forrestal Building
1000 Independence Avenue, S.W.
Washington, DC 20585

RE: Lake Charles Exports, LLC
Application for Long-Term Authorization to Export Liquefied Natural Gas

Dear Mr. Anderson:

This opinion of counsel is submitted pursuant to Section 590.202(c) of the regulations of the U.S. Department of Energy, 10 C.F.R. § 590.202(c) (2010). The undersigned is counsel to Lake Charles Exports, LLC. I have reviewed the corporate documents of Lake Charles Exports, LLC and it is my opinion that the proposed export of natural gas as described in the application filed by Lake Charles Exports, LLC to which this Opinion of Counsel is attached as Appendix B, is within the limited liability company powers of Lake Charles Exports, LLC.

Respectfully submitted,



Thomas A. Smith
Chief Counsel
BG North America, LLC

APPENDIX C

LNG Export Capacity

US LNG import terminals	Location	Status	Import capacity - current	Import capacity - expanded*	High Case	Base Case
			bcf/d	bcf/d	bcf/d	bcf/d
1 Everett	Atlantic Coast	In operation	1.0	1.0	unlikely	unlikely
2 Cove Point	Atlantic Coast	In operation	1.8	1.8	1.8	unlikely
3 Lake Charles	Gulf Coast	In operation	2.1	2.1	2.0	2.0
4 Elba Island	Gulf Coast	In operation	1.6	2.1	unlikely	unlikely
5 Gulf Gateway	Offshore	In operation	0.5	0.5	na	na
6 North-East Gateway	Offshore	In operation	0.8	0.8	na	na
7 Freeport LNG	Gulf Coast	In operation	1.5	2.5	1.5	1.0
8 Sabine Pass	Gulf Coast	In operation	4.0	4.0	4.0	2.0
9 Sempra LNG	Gulf Coast	In operation	1.8	2.7	2.7	1.0
10 Neptune	Offshore	In operation	0.4	0.4	na	na
11 Golden Pass	Gulf Coast	In operation	1.0	2.0	unlikely	unlikely
12 Gulf LNG Clean Energy	Gulf Coast	Under construction	1.5	1.5	unlikely	unlikely
			18.0	21.4	12.0	6.0

Notes

Source - DOE website

*announced expansions

Scenarios:

Offshore terminals not applicable for conversion

Everett & Elba Island unlikely to be converted due to supply commitments

Golden Pass unlikely to be converted as part of the Ras Laffan supply chain

Gulf Clean Energy unlikely to be converted due to footprint limitations

Base Case:

4 Gulf of Mexico terminals (largely bi-directional)

High Case

5 Gulf of Mexico terminals plus Cove Point (export only)