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December 17, 2010

10-160-LNG

VIA COURIER

Mr. John Anderson
Office of Fossil Energy [FE-34]
U.S. Department of Energy
1000 Independence Avenue, S.W.
Washington, D.C. 20585

RE: In the Matter of Freeport LNG Expansion, L.P.
FLNG Liquefaction, LLC
FE Docket No. 10-160-LNG
Application for Long-Term Authorization to Export Liquefied Natural Gas
To Free Trade Agreement Countries

Dear Mr. Anderson:

Enclosed for filing on behalf of Freeport LNG Expansion L.P. and FLNG Liquefaction, LLC (collectively, "FLEX"), please find an original and five (5) copies of Freeport's application for long-term, multi-contract authorization to engage in exports up to the equivalent of 9 million metric tons per year of liquefied natural gas ("LNG"), up to a total of 225 million metric tons. Authorization is sought for a 25-year period, to commence on the date of first export or 5 years from the date of issuance of the authorization requested by this application, whichever is sooner.

FLEX proposes to export LNG from Quintana Island near Freeport, Texas to any country which has or in the future develops the capacity to import LNG via ocean-going carrier, and with which the United States currently has, or in the future enters into, a Free Trade Agreement ("FTA") requiring national treatment for trade in natural gas and LNG.

This application is filed in parallel with FLEX's contemporaneous, separate application with DOE/FE requesting long-term, multi-contract authorization to export LNG to any country with which the United States does not have an FTA requiring national treatment for trade in natural gas and LNG, which has developed or in the future develops the capacity to import LNG via ocean-going carrier, and with which trade is not prohibited by U.S. law or policy.

FLEX respectfully requests that DOE/FE issue an order pursuant to Section 3(c) of the Natural Gas Act, as amended by Section 201 of the Energy Policy Act of 1992, for long-term, multi-contract authorization to export LNG to FTA countries.

Respectfully submitted,

Les Lo Baugh
Attorneys for
Freeport LNG Expansion, L.P.
FLNG Liquefaction, LLC

UNITED STATES OF AMERICA
BEFORE THE
DEPARTMENT OF ENERGY
OFFICE OF FOSSIL ENERGY

In the Matter of:
FREEPORT LNG EXPANSION, L.P.
FLNG LIQUEFACTION, LLC

Docket No. 10-160 LNG

APPLICATION OF FREEPORT LNG EXPANSION, L.P. AND FLNG LIQUEFACTION, LLC FOR LONG-TERM AUTHORIZATION TO EXPORT LIQUEFIED NATURAL GAS TO FREE TRADE AGREEMENT COUNTRIES

Communications with respect to this Application should be addressed to:

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UNITED STATES OF AMERICA
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Freeport LNG Expansion, L.P.
FLNG Liquefaction, LLC

DOCKET NO. 10-160 LNG

APPLICATION OF
FREEPORT LNG EXPANSION, L.P. AND FLNG LIQUEFACTION, LLC
FOR LONG-TERM AUTHORIZATION TO EXPORT LIQUEFIED NATURAL GAS
TO FREE TRADE AGREEMENT COUNTRIES

Freeport LNG Expansion, L.P. ("FLNG Expansion") and FLNG Liquefaction, LLC ("FLNG Liquefaction") (collectively, "FLEX") request that the Department of Energy ("DOE") Office of Fossil Energy ("FE"), grant a long-term, multi-contract authorization for FLEX to export up to the equivalent of 9 million metric tons per annum ("mtpa")[1] of liquefied natural gas ("LNG"), up to a total of 225 million metric tons. Authorization is sought for a 25-year period, to commence on the date of first export or 5 years from the date of issuance of the authorization requested by this application, whichever is sooner. FLEX proposes to export LNG from Quintana Island near Freeport, Texas to any country which has or in the future develops the capacity to import LNG via ocean-going carrier, and with which the United States currently has, or in the future enters into, a Free Trade Agreement ("FTA") requiring national treatment for

[1] 9 mtpa of LNG is equivalent to 1.4 billion cubic feet per day ("Bcf/d") of LNG, which is equivalent to approximately 1.4 trillion BTUs per day. When operating at full capacity, the Liquefaction Project will consume approximately 0.1 Bcf/d to power the liquefaction facilities, resulting in a total gas volume requirement of 1.5 Bcf/d.

trade in natural gas and LNG.[2] This application is submitted pursuant to Section 3 of the Natural Gas Act (NGA),[3] Part 590 of the Regulations of the DOE,[4] and Section 201 of the Energy Policy Act of 1992.[5]

This application is filed in parallel with FLEX's contemporaneous, separate application with DOE/FE requesting long-term, multi-contract authorization to export LNG to any country with which the United States does not have an FTA requiring national treatment for trade in natural gas and LNG, which has developed or in the future develops the capacity to import LNG via ocean-going carrier, and with which trade is not prohibited by U.S. law or policy.

FLEX's non-FTA application will require a public interest analysis by DOE/FE before it issues its order. Applications such as this one, which request authorization to export to countries with which the United States has an FTA, are reviewed pursuant to the standard established by the Energy Policy Act of 1992. Section 3(c) of the Natural Gas Act, as amended by § 201 of the Energy Policy Act of 1992, established a statutory presumption that exports to FTA countries must be authorized.[6] Such exports are "deemed to be within the public interest," and applications for such exportation "shall be granted without modification or delay."[7] In support of this application, FLEX respectfully shows as follows:

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[2] The United States currently has free trade agreements with Australia, Bahrain, Canada, Chile, Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras, Israel, Jordan, Nicaragua, Mexico, Morocco, Oman, Peru, and Singapore. Congressional approval is currently pending on FTAs with Columbia, Panama, and South Korea.

[3] 15 U.S.C. § 717b (2010).

[4] 10 C.F.R. § 590 (2010).

[5] PUB. L. NO. 102-486, § 201, 106 STAT. 2776.2866 (1992) (codified as amended at 15 U.S.C. § 717b(c) (2010)).

[6] In order to deny such an application, the DOE/FE would require "an affirmative showing of inconsistency with the public interest." *Panhandle Producers v. Economic Regulatory Admin*, 822 F.2d 1105, 1111 (DC Cir. 1987).

[7] 15 U.S.C. § 717b(c) (2010). ("For purposes of [15 U.S.C. § 717b(a)] of this section, the importation of the natural gas referred to in [15 U.S.C. § 717b(b)] of this section, or the exportation of natural gas to a nation with which there

I.
COMMUNICATIONS AND CORRESPONDENCE

Correspondence and communications regarding this application should be addressed to the following:

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II.

DESCRIPTION OF THE APPLICANT

The exact legal name of FLNG Expansion is Freeport LNG Expansion, L.P., a Delaware limited partnership and a wholly owned subsidiary of Freeport LNG Development, L.P. ("FLNG Development"). The exact legal name of FLNG Liquefaction is FLNG Liquefaction, LLC, a Delaware limited liability company and a wholly owned subsidiary of FLNG Expansion. The principal place of business for both FLNG Expansion and FLNG Liquefaction is located at 333 Clay Street, Suite 5050, Houston, Texas 77022. FLNG Expansion and FLNG Liquefaction are authorized to do business in the State of Texas.

FLNG Development is a Delaware limited partnership with four limited partners: (1) Freeport LNG Investments, LLLP, a Delaware limited liability limited partnership, which owns a 20% limited partnership interest in FLNG Development; (2) ZHA FLNG Purchaser LLC, a Delaware limited liability company and wholly owned subsidiary of Zachry American

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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.").

Infrastructure, LLC, which owns a 55% limited partnership interest in FLNG Development; (3) Texas LNG Holdings LLC, a Delaware limited liability company and wholly owned subsidiary of The Dow Chemical Company, which owns a 15% limited partnership interest in FLNG Development; and (4) Turbo LNG, LLC, a Delaware limited liability company and wholly owned subsidiary of Osaka Gas Co., Ltd., which owns a 10% limited partnership interest in FLNG Development.

In addition to the limited partners, FLNG Development has one general partner that manages the company, Freeport LNG-GP, Inc., a Delaware corporation, which is owned 50% by an individual, Michael S. Smith, and 50% by ConocoPhillips Company.

On March 28, 2003, FLNG Development filed an application with the Federal Energy Regulatory Commission ("FERC") under Section 3 of the Natural Gas Act requesting authority to site, construct and operate what is now known as Phase I of the Freeport Terminal on Quintana Island, southeast of the City of Freeport in Brazoria County, Texas.[8] The Phase I facilities, authorized by FERC on June 18, 2004 and completed in June 2008, include an LNG ship marine terminal and unloading dock, LNG transfer lines and storage tanks, high-pressure vaporizers, and a 9.6-mile send-out pipeline extending to the Stratton Ridge meter station.

FLNG Development filed a second application with FERC on May 26, 2005 requesting authorization to expand the Phase I facilities. Phase II, as the expansion is known, would increase the Freeport Terminal's send-out capacity by adding a second marine berthing dock and additional vaporization and storage capacity. Phase II was authorized by FERC on September 26, 2006, but expansion under this order has not commenced.

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[8] *See Freeport LNG Development, L.P.*, 107 FERC ¶ 61,278, (2004), *order granting rehearing and clarification*, 108 FERC ¶ 61,253 (2004), *order amending Section 3 authorization*, 112 FERC ¶ 61,194 (2005), *order issuing authorization*, 116 FERC ¶ 61,290 (2006).

On January 15, 2008 the DOE/FE granted FLNG Development blanket authorization to import LNG, in a total amount up to the equivalent of 30 billion cubic feet (Bcf) from various international sources pursuant to transactions that have terms of up to two years.[9] On December 4, 2009, FLNG Development filed another application with the DOE/FE under Section 3 of the NGA, for blanket authorization to import LNG for an additional two-year term. On December 15, 2009 DOE/FE granted FLNG Development authorization to import LNG in an amount up to the equivalent of 30 Bcf of natural gas from various international sources for a second two-year term beginning on March 1, 2010 and ending February 29, 2012.[10]

Also in 2008, FLNG Development filed an application with FERC requesting authorization to modify the Freeport Terminal to enable the loading and export of foreign-source LNG from the Freeport Terminal. In an order dated May 6, 2009, FERC authorized certain equipment modifications at the Freeport Terminal as required to engage in such export activities.[11] While seeking authorization from FERC, FLNG Development sought parallel authorization from DOE/FE to export foreign-sourced LNG on a short-term basis, which was granted on May 28, 2009 under DOE/FE Order No. 2644.[12] Under that order, FLNG Development was authorized to export, on its own behalf or as an agent for others, up to a total quantity of 24 Bcf of foreign-source LNG from the Freeport Terminal over a two-year period to customers in the U.K., Belgium, Spain, France, Italy, Japan, South Korea, India, China and/or Taiwan. This authorization was later amended to permit export to Canada, Mexico, and any

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[9] *Freeport LNG Development, L.P.*, FE Docket No. 07-136-LNG, Order No. 2457 (Jan. 15, 2008). 15 U.S.C. §717b. This authority is delegated to the Assistant Secretary for FE pursuant to Redelegation Order No. 00.002.04D (November 6, 2007).

[10] *Freeport LNG Development, L.P.*, FE Docket No. 09-130-LNG, Order No. 2737 (Dec. 15, 2009).

[11] *Freeport LNG Development, L.P.*, 127 FERC § 61,105 (May 6, 2009).

[12] *Freeport LNG Development, L.P.*, FE Docket No. 08-70-LNG, Order No. 2644 (May 28, 2009).

other country with the capacity to import LNG via ocean-going carrier and with which trade is not prohibited by U.S. law or policy.[13]

On November 19, 2010, FLNG Expansion filed an application for blanket authorization to export up to a combined total of 876 Bcf of LNG to Canada and Mexico for a two-year term. This request was granted by DOE/FE in Order No. 2884 on December 1, 2010.[14]

III.

LIQUEFACTION PROJECT DESCRIPTION

FLEX, through one or more of its subsidiaries, proposes to develop, own and operate natural gas liquefaction facilities to receive and liquefy domestic natural gas for export to foreign markets (the "Liquefaction Project"). The Liquefaction Project facilities will be integrated into the existing Freeport Terminal. The Freeport Terminal presently consists of a marine berth, two 160,000 m^3 full containment LNG storage tanks, LNG vaporization systems, associated utilities and a 9.6-mile pipeline and meter station.

FLEX now proposes to expand the terminal to provide natural gas pretreatment, liquefaction, and export capacity of up to 9 mtpa of LNG. The facility will be designed so that the addition of liquefaction capability will not preclude the Freeport Terminal from operating in vaporization and send-out mode. The proposed Liquefaction Project facilities will include the following facilities that were previously authorized by FERC in its order dated September 26, 2006,[15]:

- A second marine berthing dock;

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[13] *Freeport LNG Development, L.P.*, FE Docket No. 08-70-LNG, Order Nos. 2644-A (Sep. 22, 2009) and 2644-B (May 11, 2010).

[14] *Freeport LNG Expansion, L.P.*, FE Docket No. 10-150-LNG, Order No. 2884 (Dec. 01, 2010).

[15] *Freeport LNG Development, L.P.*, 116 FERC § 61,290, Docket No. CP05-361-000 (Sep. 6, 2006).

- A third LNG storage tank; and
- Transfer pipelines between the second marine dock and LNG storage tanks.

Contemporaneous with the filing of this application, FLEX is requesting that FERC initiate its mandatory National Environmental Policy Act ("NEPA") pre-filing review process for the Liquefaction Project. FLEX anticipates filing a formal application with FERC in the fourth quarter of 2011 requesting that FERC issue an Order authorizing the siting, construction and operation of the Liquefaction Project.

IV.

AUTHORIZATION REQUESTED

In this application, FLEX requests that DOE/FE grant a long-term, multi-contract authorization for FLEX to export LNG from the Freeport Terminal on Quintana Island, Texas, to any country which has or in the future develops the capacity to import LNG via ocean-going carrier, and with which the Unites States currently has, or in the future enters into, an FTA requiring the national treatment for trade in natural gas and LNG. FLEX requests this authorization for up to 9 mtpa of LNG, up to a total of 225 million metric tons, over a 25-year term beginning on the date of first export or 5 years from the date of issuance of the authorization requested by this application, whichever is sooner.

Rather than enter into long-term natural gas supply or LNG export contracts, FLEX contemplates that its business model will be based primarily on Liquefaction Tolling Agreements ("LTA"), under which individual customers who hold title to natural gas will have the right to deliver that gas to FLEX and receive LNG. In the current natural gas market, LTAs fulfill the role previously performed by long-term supply contracts, in that they provide stable commercial arrangements between companies involved in natural gas services. The Liquefaction Project

described above will require significant capital expenditures on fixed assets. Although FLEX has not yet entered into long-term LTAs or other commercial arrangements, long-term export authorization is required to attract prospective LTA customers willing to make large-scale, long-term investments in LNG export arrangements. Both are required to obtain necessary financing for the Liquefaction Project.

FLEX requests long-term, multi-contract authorization to engage in exports of LNG on its own behalf or as agent for others. FLEX contemplates that the title holder at the point of export[16] may be FLEX or one of FLEX's LTA customers, or another party that has purchased LNG from an LTA customer pursuant to a long-term contract. FLEX requests authorization to register each LNG title holder for whom FLEX seeks to export as agent, and proposes that this registration include a written statement by the title holder acknowledging and agreeing to comply with all applicable requirements included by DOE/FE in FLEX's export authorization, and to include those requirements in any subsequent purchase or sale agreement entered into by that title holder. In addition to its registration of any LNG title holder for whom FLEX seeks to export as agent, FLEX will file under seal with DOE/FE any relevant long-term commercial agreements between FLEX and such LNG title holder, including LTAs, once they have been executed.[17]

FLEX is aware of DOE/FE's desire to ensure that all authorized exports are permitted and lawful under U.S. laws and policies, including the rules, regulations, orders, policies and

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[16] LNG exports occur when the LNG is delivered to the flange of the LNG export vessel. *See The Dow Chemical Company*, FE Docket No. 10-57-LNG, Order No. 2859 at p. 7 (Oct. 5, 2010).

[17] The practice of filing of contracts after the DOE/FE has granted export authorization is well-established. *See Yukon Pac. Corp.*, ERA Docket No. 87-68-LNG, Order No. 350 (Nov. 16, 1989); *Distrigas Corp.*, FE Docket No. 95-100-LNG, Order No. 1115, at 3 (Nov. 7, 1995).

other determinations of the Office of Foreign Assets Control of the U.S. Department of the Treasury.[18] Each of these goals of DOE can be efficiently and fully achieved through the arrangements proposed by FLEX. Whether FLEX acts on its own behalf or as agent for others, all parties involved in LNG export through the Liquefaction Project will have notice of all requirements in the export authorization order. As a result, DOE/FE will have each of the items of information it requires to fulfill its regulatory mandate.[19] This approach is responsive to real world market conditions and is fully compliant with the goals and intent of requirements of the applicable DOE regulations.

The source of natural gas supply for the Liquefaction Project will be the robust and liquid general United States natural gas market, including natural gas produced from shale deposits. As noted above, FLEX has not yet entered into LTAs or other long-term supply or export contracts, but FLEX and its LTA customers will file their commercial arrangements under seal with DOE/FE once they have been executed. DOE/FE has previously found that this commitment conforms to the requirements of 10 C.F.R. § 590.202(b), which calls upon applicants to supply transaction-specific information "to the extent practicable."[20]

Pursuant to NEPA, FERC will be the lead agency for environmental review and DOE will act as a cooperating agency. Such conditional orders are routinely issued by DOE/FE, which may review an application to determine whether a proposed authorization is in the public

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[18] *See The Dow Chemical Company*, FE Docket No. 10-57-LNG, Order No. 2859 at 7-8 (Oct. 5, 2010).

[19] *Id.*, at 7.

[20] *Sabine Pass Liquefaction, LLC*, FE Docket 10-85-LNG, Order No. 2833 (September 7, 2010). 10 C.F.R. 590.202(b) requests certain information, "to the extent applicable," and "supported to the extent practicable by necessary data or documents," regarding the source and security of the natural gas supply proposed for export, including contract volume and a description of the specific gas reserves supporting the project during the time of the requested export authorization.

interest concurrent with FERC's review of environmental impacts.[21] FLEX requests that DOE/FE authorize the requested export of LNG produced from domestically sourced natural gas conditioned upon completion of applicable environmental review of the Liquefaction Project by FERC.[22]

As noted above, this application is submitted pursuant to the standard established by the Energy Policy Act of 1992, under which applications for export to FTA countries are deemed to be in the public interest and must be granted without modification or delay.[23] Although its application is presumptively in the public interest, the long-term, multi-contract export authorization requested by FLEX is also compatible with the principles established by the Policy Guidelines,[24] which promote free and open trade by minimizing federal control and involvement in energy markets, and DOE Delegation Order No. 0204-111, which requires "consideration of the domestic need for the gas to be exported."

As a result of technological advances, huge reserves of domestic shale gas that were previously infeasible or uneconomic to develop are now profitably producing natural gas in many regions of the United States. The United States is now estimated to have more natural gas

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[21] *See, e.g. Import and Export of Natural Gas*, 46 Fed. Reg. 44,696 at 44,700 (Sep. 4, 1081); *Rochester Gas and Electric Corp.*, FE Docket No. 90-05-NG, Order No. 503 (May 16, 1991).

[22] 10 C.F.R. § 590.402 (2010) ("The Assistant Secretary may issue a conditional order at any time during a proceeding prior to issuance of a final opinion and order. The conditional order shall include the basis for not issuing a final opinion and order at that time and a statement of findings and conclusions. The findings and conclusions shall be based solely on the official record of the proceeding.")

[23] 15 U.S.C. § 717b(c) (2010), *supra* note 7.

[24] Policy Guidelines and Delegation Orders Relating to the Regulation of Imported Natural Gas, 49 Fed. Reg. 6,684 (Feb. 22, 1984).

resources than it can use in a century.[25] The Annual Energy Outlook 2010, prepared by the U.S. Energy Information Administration ("EIA"), forecasts shale gas production to increase to 3.85 Tcf by 2015 and 6.0 Tcf by 2035, representing 5.3% annual growth from 2008-2035.[26] The Early Release Overview of the EIA's Annual Energy Outlook 2011 more than doubles its estimate of technically recoverable shale gas reserves[27], and doubles its projected shale gas production to 12.0 Tcf by 2035.[28] Large volumes of domestic shale gas reserves and continued low production costs will enable the United States to export LNG while meeting domestic demand for decades to come.

The public interest benefits of FLEX's requested export authorization include:

- Direct and Indirect Job Creation:
    - ***Construction Jobs***: Over its 2-3 year design and construction period, the Liquefaction Project will directly create more than 1,000 on-site engineering and construction jobs. Hundreds of off-site jobs will be created to support the facility's design, fabrication and construction.
    - ***Operational Jobs***: the ongoing management and operation of the Liquefaction Project will create approximately 20-30 new permanent positions.
    - ***Indirect Job Creation***: the Liquefaction Project will indirectly create between 17,000 and 21,000 new American jobs as a result of the increase

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[25] Domestic natural gas reserves, including both Alaska and the Lower 48, are estimated to total about 2,100 Tcf, which is about 92 times the annual U.S. consumption of 22.8 Tcf in 2009. MIT ENERGY INITIATIVE, INTERIM REPORT ON THE FUTURE OF NATURAL GAS 9 (2010).

[26] U.S. ENERGY INFORMATION ADMINISTRATION, ANNUAL ENERGY OUTLOOK 2010 135, Table A-14 (2010), *available at* http://www.eia.doe.gov/oiaf/aeo/pdf/0383(2010).pdf (hereinafter "EIA ANNUAL ENERGY OUTLOOK 2010").

[27] U.S. ENERGY INFORMATION ADMINISTRATION, ANNUAL ENERGY OUTLOOK 2011 EARLY RELEASE OVERVIEW, Executive Summary (2010), *available at* http://www.eia.doe.gov/forecasts/aeo/executive_summary.cfm.

[28] *Id.*, at Table A-14 (2010), *available at* http://www.eia.doe.gov/forecasts/aeo/pdf/tbla14.pdf.

in drilling for and production of natural gas.[29]

- Significant Economic Stimulus:
    - The total economic benefits of the Liquefaction Project to the American economy are estimated to be between $3.6 and $5.2 billion per year from 2015-2040, or $90 to $130 billion over the requested 25-year export term.[30]
- Material Improvement in the U.S. Balance of Trade:
    - Assuming an average value of $7 per MMBtu, exporting approximately 1.4 Bcf/d of LNG through the Liquefaction Project will improve the United States balance of payments by approximately $3.9 billion per year, or $97.5 billion over the requested 25-year export term.[31]
- Significant Environmental Benefits:
    - As the cleanest-burning fossil fuel, natural gas significantly reduces total greenhouse gas emissions when used as a substitute for coal or fuel oil.
    - If the projected 1.4 Bcf/d of LNG is exported to countries that use it as a substitute for coal and fuel oil, it will significantly reduce global greenhouse emissions over the requested 25-year export term.
- Supports American Energy Security:
    - The United States has developed a massive natural gas resource base that is sufficient to supply domestic demand for a century, even with significant exports of LNG. The Liquefaction Project will not adversely affect U.S. energy security.
    - According to The Future of Natural Gas, an interim report published in 2010 by the Massachusetts Institute of Technology's Energy Initiative (the "MIT Report"), "for reasons of both economy and global security, the U.S. should pursue policies that encourage an efficient integrated global

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[29] THOMAS CHOI, DALE NESBITT, AND BRAD BARNDS, ANALYSIS OF FREEPORT LNG EXPORT IMPACT ON U.S. MARKETS 12 (Altos Management Partners, Inc. 2010) (hereinafter "ALTOS REPORT").

[30] *Id.*

[31] *Id.* Assumes export of 1.4 Bcf/d LNG valued at $7.50 per Mcf. In 2009, the total U.S. trade deficit was $380 billion.

gas market with transparency and diversity of supply, and governed by economic considerations."[32]

- The MIT Report concludes that "[t]he U.S. should sustain North American energy market integration and support development of a global "liquid" natural gas market with diversity of supply. A corollary is that the U.S. should not erect barriers to gas imports or exports."[33]

V.

ENVIRONMENTAL IMPACT

FERC has already authorized the Phase II expansion of the Freeport Terminal. The Liquefaction Project improvements will be contained within the previously authorized operational area of the Freeport Terminal on Quintana Island. The potential air impacts of the Liquefaction Project will be reviewed by the Texas Commission on Environmental Quality ("TCEQ") and the Environmental Protection Agency ("EPA"). Other environmental impacts of the Liquefaction Project will be reviewed by FERC under NEPA. FERC authorization will be conditioned upon issuance of air quality permits from TCEQ and EPA. Accordingly, FLEX requests that DOE/FE issue a conditional order authorizing long-term, multi-contract export of domestically produced LNG pending completion of FERC's environmental review.

VI.

REPORTING REQUIREMENTS

For all imports and exports made pursuant to the authorization requested herein, FLEX will undertake to file reports with the DOE/FE in the month following the close of each calendar quarter, indicating by month whether exports have occurred, and if so, the details of each

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[32] MIT REPORT, *supra* note 20, at xvii (2010).

[33] *Id.* at 71.

transaction, including the total volumes of exports in Mcf and the average price for exports per MMBtu at the international border.[34] The reports shall include the name of the seller, the name of the purchaser, the estimated or actual duration of the agreements, the name of the U.S. transporter(s), the point of exit, whether the sales are made on an interruptible or firm basis, and, if applicable, the per unit (MMBtu) demand/commodity/reservation charge breakdown of the contract price. FLEX will notify the DOE/FE in writing of the date of the first delivery of natural gas exported under the requested authorization within two weeks of such delivery.

FLEX's reporting contact is:

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VII.

APPENDICES

Appendix A: Opinion of Counsel.

Appendix B: Verification and Certified Statement

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[34] *See* Procedural Order Eliminating Quarterly Reporting Requirement and Amending Monthly Reporting Requirement for Natural Gas and LNG Import/Export Holders, FE Docket No. 08-01-PO, DOE/FE Order No. 2464 (Feb. 6, 2008).

VIII.

CONCLUSION

FLEX requests long-term, multi-contract authorization to export up to 9 mtpa of LNG, up to a total of 225 million metric tons over the requested 25 year term, from the Freeport Terminal to any country which has or will in the future develop the capacity to LNG via ocean-going carrier, and with which the United States currently has, or in the future enters into, an FTA requiring the national treatment for trade in natural gas and LNG. FLEX requests authorization to export LNG on its own behalf or as agent for others, and FLEX requests that it be authorized to register each LNG title holder for whom FLEX seeks to export as agent.

Based on the reasoning provided in this application, FLEX respectfully requests that the DOE/FE determine that FLEX's request for long-term, multi-contract authorization to export natural gas to FTA countries is not inconsistent with the public interest. Accordingly, FLEX requests that DOE/FE issue an order pursuant to Section 3(c) of the Natural Gas Act, as amended by Section 201 of the Energy Policy Act of 1992, for long-term, multi-contract authorization to export LNG to FTA countries.

Respectfully submitted,

Attorneys for
Freeport LNG Expansion, L.P.
FLNG Liquefaction, LLC

December 17, 2010

VERIFICATION
and
CERTIFIED STATEMENT

County of Los Angeles

State of California

I, Les LoBaugh, being duly sworn on his oath, do hereby affirm that I am a duly authorized representative of Freeport LNG Expansion, L.P. and FLNG Liquefaction LLC; that I am familiar with the contents of this application; and that the matters set forth therein are true and correct to the best of my knowledge, information and belief.

Les LoBaugh

Sworn to and subscribed before me, a Notary Public, in and for the State of California, this 17th day of December, 2010.

Notary Public

ROBIN L. BRAM
Commission # 1723016
Notary Public - California
Los Angeles County
My Comm. Expires Feb 2, 2011

APPENDIX A

Brownstein | Hyatt
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December 17, 2010

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Mr. John Anderson
Office of Fossil Energy [FE-34]
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Washington, D.C. 20585

RE: Freeport LNG Expansion, L.P.
FLNG Liquefaction, LLC
Application for Long-Term Authorization to Export Liquefied Natural Gas
To Free Trade Agreement Countries

Dear Sir:

This opinion is submitted pursuant to Section 590.202(c) of the U.S. Department of Energy's regulations. I have examined the Amended and Restated Articles of Incorporation of both Freeport LNG Expansion, L.P. and FLNG Liquefaction, LLC and other authorities as necessary, and have concluded that the proposed exportation of liquefied natural gas from the United States, as described in the application for long-term authorization to export to Free Trade Act countries to which this Opinion of Counsel is attached as Appendix A, is within the corporate powers of both Freeport LNG Expansion, L.P. and FLNG Liquefaction, LLC.

Respectfully submitted,

Les Lo Baugh

APPENDIX B

ANALYSIS OF FREEPORT LNG EXPORT IMPACT ON U.S. MARKETS

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1 EXECUTIVE SUMMARY

Altos Management Partners (Altos) was retained by Freeport LNG Expansion, LP to analyze the potential impact of a liquefaction project capable of processing the equivalent of 1.5 Bcf/d of feed gas at its Freeport terminal. When fully built-out, the Freeport's liquefaction project (hereafter "the Project") is expected to produce approximately up to 9.0 million tons per annum ("mtpa") of LNG. Using our sophisticated energy models and the EIA's own demand forecast, we analyzed the impact of the Project on domestic natural gas prices and the economic benefits that would result from the incremental natural gas production. We found that the price impact on U.S. natural gas prices is quite minimal, especially when viewed in context of 17,000 to 21,000 new jobs and between $3.6 and $5.2 billion per year of economic benefits created by the incremental production.

Given the huge volumes of domestic shale gas that are now economic to produce, natural gas prices in the United States have fallen to the point where they are among the lowest in the developed world. Domestic shales are estimated to hold more than 2,000 Tcf of technically recoverable gas, more than the United States can consume in a 100 years at current rates. The massive volumes of domestic shale gas have been known to exist for decades, but only in the past several years have technological advancements made them economic to produce at prevailing prices. Indeed, shale gas production surged from practically nothing in 2000 to about 17% of the total domestic production in 2009 and helped drive down domestic prices.

Furthermore, low domestic prices have resulted in low utilization rates at Gulf of Mexico LNG import terminals, which can be converted to export terminals with the addition of liquefaction capability. Shale gas is expected to sustain low domestic prices for decades and provide ample economic incentive to export LNG from the United States. Accordingly, we found that the price impact of the Project's proposed export of 1.5 Bcfd is quite minimal.

During the assumed period of export (2015 to 2040), the Project exports increased projected Henry Hub prices by $0.03/MMBtu, representing only a 0.5% increase in projected prices. Even at the Houston Ship Channel pricing hub, to which the Freeport terminal delivers, the price impact is $0.09/MMBtu, representing only a 1.2% increase in projected prices. The price impact dissipates with distance from the Freeport location. Projected prices in the large consuming Mid-Atlantic region increased only by 0.2%, a barely perceptible amount. Given that the increased domestic production has pushed gas prices significantly lower in 2010, it should be noted that lower gas prices than those used in the study will reduce or leave unchanged the impact of the Project on natural gas prices.

The miniscule price impacts reflect the fact that the incremental demand represented by the Project is quite small, only about 2%, relative to the entire domestic market. Furthermore, the huge domestic resource base including unconventional gas supplies, such as shale gas and coalbed methane, and conventional gas supplies mitigate the price impact of this relatively small

increase in demand. The market will develop incremental supplies in time to minimize their price impacts of clearly anticipated infrastructure projects such as the Project.

Offsetting the minimal price impacts, the Project will provide significant economic stimulus resulting in the creation of 17,000 to 21,000 new jobs and between $3.6 and $5.2 billion per year in total economic benefits for the U.S. economy. Of this economic benefit, $2.7 billion per year is estimated from direct employment and expenditures by companies engaged in natural gas exploration and production (E&P). When indirect benefits enjoyed by other industries are included, the total economic benefits from the Project increase to between $3.6 and $5.2 billion per year. Compared to the economic benefits the Project is expected to generate, the price impacts appear insignificant. Furthermore, LNG exports will improve the U.S. balance of trade by approximately $3.9 billion per year, a full 1% of the 2009 U.S. trade deficit. However, the benefits of improved balance of trade are not factored into our analysis.

Altos performed the analysis using its proprietary MarketBuilder software which uses an approach that has been independently validated by a third party under sponsorship of the Energy Information Administration ("EIA") during the 1980-81 period. (The trade name of the MarketBuilder technology at that time was GEMS, which stood for Generalized Equilibrium Modeling System. The methodology they validated remains largely unchanged to this day and therefore their validation remains valid today.) EIA expended in excess of $1 million (in 1981 dollars) with Oak Ridge National Laboratories to validate the methodology. In particular, EIA endeavored to verify and validate the software, data, results, underlying economic theory, suitability and completeness of documentation, accuracy of forecasts, proper program implementation, sensitivity analysis, and other relevant attributes of the program. In effect, EIA subjected the model to a severe and comprehensive professional peer review in order to ensure that it was operating correctly and was appropriate for EIA's intended needs. As part of the validation, Oak Ridge made a number of suggestions (which were ultimately incorporated into our model and software), and they gave the GEMS approach and software a clean bill of health. To our knowledge, our GEMS model is the only model in existence that has been independently validated to such a degree. The MarketBuilder software is a modern embodiment of the GEMS approach.

2 KEY RESULTS

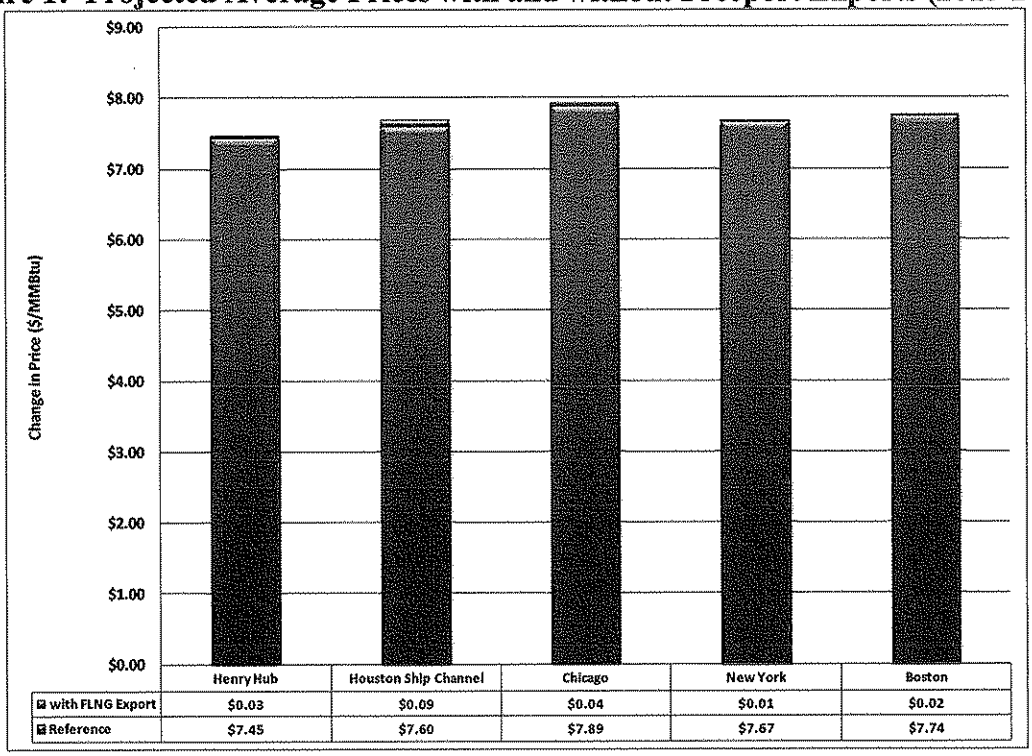
2.1 Price Impact

The primary question we addressed is to what extent LNG exports from the United States will raise domestic natural gas prices. In theory, any increase in demand, whether it comes from increase in domestic consumption or export, will raise domestic prices unless the supply curve is absolutely flat (i.e., abundant and identical cost supplies). However, the real issue is whether the price increase is significant.

Our in-depth analysis shows that the price impact associated with the export of 1.5 Bcfd from the Project, assuming constant year-round utilization, will result in barely perceptible price impacts.

Figure 1 shows the average price impacts relative to projected reference prices for 2015 to 2040, the period in which the Freeport terminal is assumed to be exporting LNG. The price impact in the local Houston Ship Channel market increase is only $0.09/MMBtu and quickly dissipates as you move further away from the point of export. As demonstrated in the following graph, the incremental price increase due to the Project is hardly visible relative to the over projected prices of natural gas. Given that the increased domestic production has pushed gas prices significantly lower in 2010, it should be noted that lower gas prices than those used in the study will reduce or leave unchanged the impact of the Project on natural gas prices.

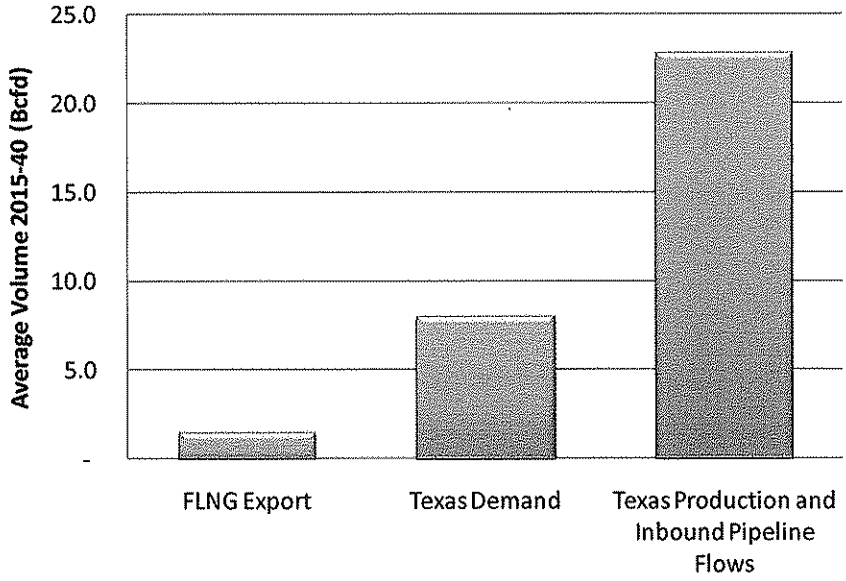
Figure 1: Projected Average Prices with and without Freeport Exports (2015-2040)



	Henry Hub	Houston Ship Channel	Chicago	New York	Boston
with FLNG Export	$0.03	$0.09	$0.04	$0.01	$0.02
Reference	$7.45	$7.60	$7.89	$7.67	$7.74

To understand the price impact of the Project, we examined not just the Texas market but the entire North American market. The domestic United States demand is projected to be about 60 Bcfd (22 Tcf), compared to the Project export volumes of 1.5 Bcfd. Hence, the Project reflects only about a 2% increase total domestic demand. Even relative to the Texas market alone, the Project is still relatively small, as shown in Figure 2. The Texas natural gas market, which includes production in offshore State and Federal waters, is one of the largest gas markets in the world. Texas natural gas demand is comparable in size to the entire German or Japanese market. Furthermore, Texas is intricately connected to other major markets via natural gas pipelines, making it a highly liquid market. The total volume that is produced in Texas or flows through Texas from other states is projected to be about 18 Bcfd, dwarfing the incremental the Project volumes.

Figure 2: Projected Average Volumes with and without Freeport Exports (2015-2040)

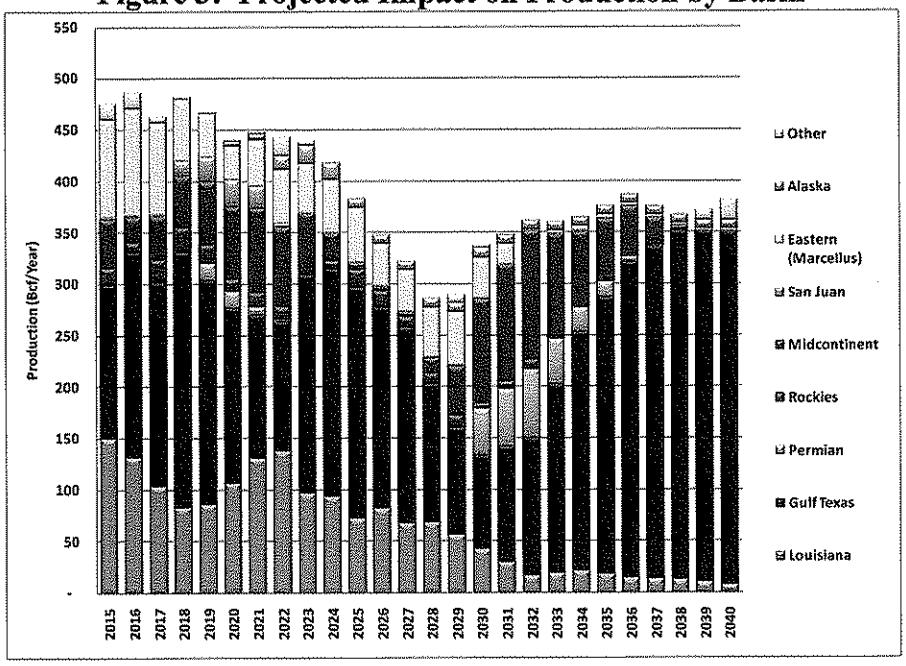


Short term unexpected changes in demand can have significant price impacts because in the short term, supply is relatively inelastic. However, in the long term, the market can make appropriate decisions in anticipation of announced or known supply or demand changes. Since the Project will be fully anticipated by the market (construction alone will take over two years), incremental gas volumes will be developed in advance to supply the Project. Hence, the price impact of the Project will be determined by the difference between the cost of the marginal supply to meet the marginal demand with and without the Project. That is, it will be determined by the difference in cost of producing 61.5 Bcfd versus 60 Bcfd. With the huge volumes of shale gas that are known to exist, the cost difference is slight, as indicated by our price impact projection.

2.2 Sources of Incremental Supply

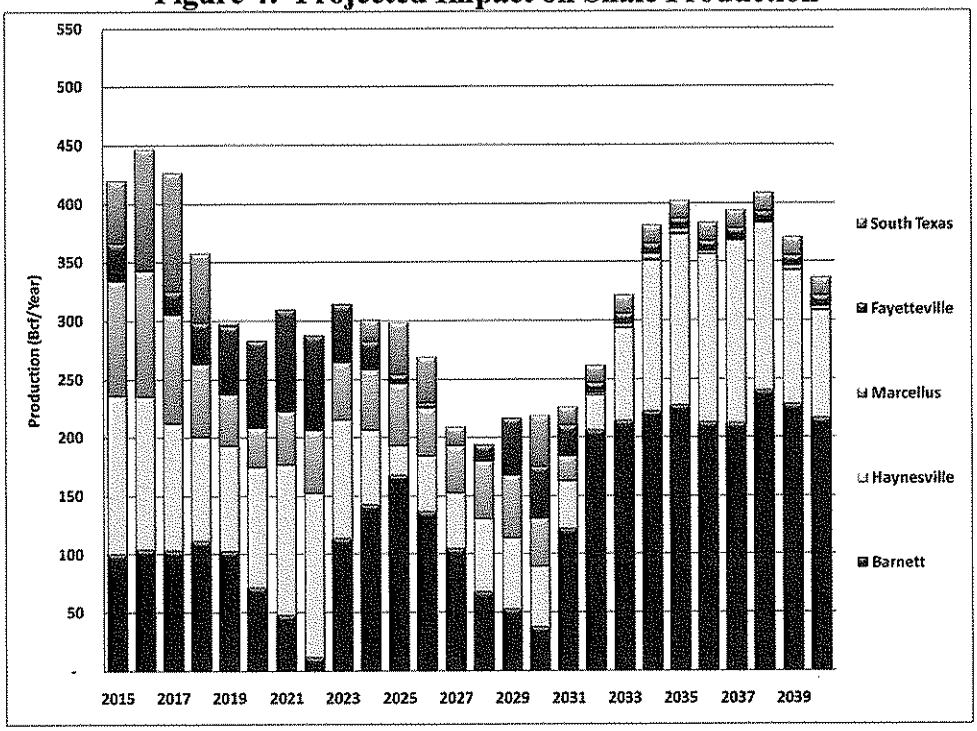
Shale gas will comprise the bulk of the incremental supplies required as feedstock for the Project. Figure 3 shows the additional supplies that would be produced to provide feedstock for the Project. The export volume is assumed to be 547 Bcf/year (1.5 Bcfd x 365 days). Most of the incremental supplies resulting from the Project are in the Gulf of Mexico region with Texas being the largest incremental producer followed by Louisiana. Large supply basins nearest the Freeport terminal see the greatest impact. However, other supply regions also contribute incremental supplies because the Gulf of Mexico region is highly interconnected to the rest of the United States market. Indeed, the natural gas system is highly interconnected and interdependent. A change in one market will reverberate in every other market. This interconnectedness is an important factor in the mitigation of future price impacts. All producers, not just those closest to Freeport, will compete to provide incremental supplies for the Project.

Figure 3: Projected Impact on Production by Basin



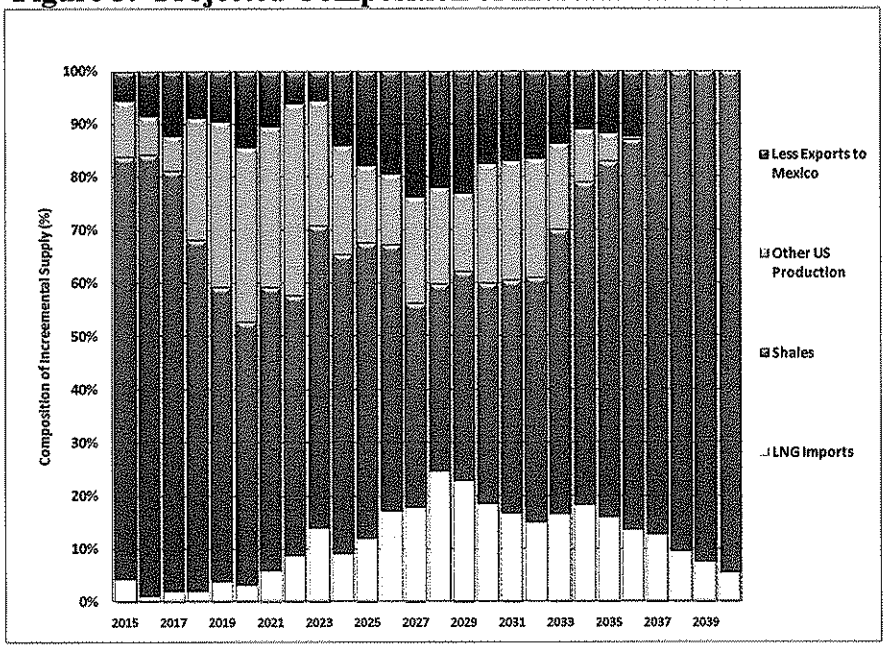
Upon closer examination of supplies, we see that it is production from shale gas basins that provides the bulk of the incremental supplies and is the primary marginal supply in the United States. The estimated shale gas volumes are huge, over 2,000 Tcf are technically recoverable, and several hundred Tcf are economically recoverable with current technologies. This newly economic shale gas has transformed the domestic gas market and provides the impetus for LNG export projects. As noted in Figure 4, the primary shale basins providing incremental supplies for the Project are Barnett, Haynesville, South Texas (Eagle Ford), and Marcellus basins.

Figure 4: Projected Impact on Shale Production



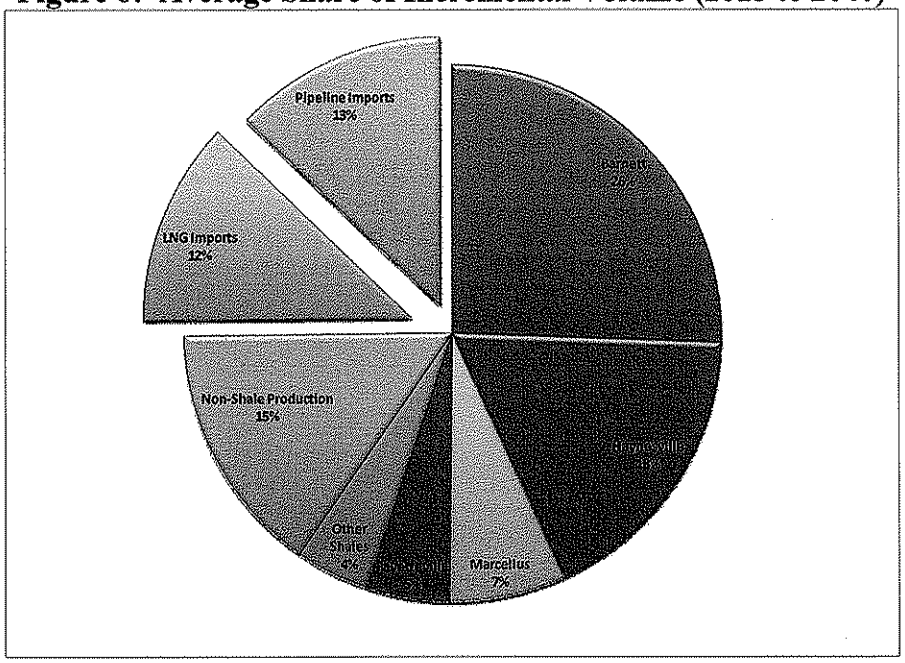
In addition to domestic supplies, the rest of the incremental supplies resulting from the Project will be comprised in effect by LNG imports and diminished exports to Mexico. The composition of incremental volumes by shares is shown in Figure 5. Most of the volume is comprised of domestic production, including shale gas and other unconventional supplies, as well as conventional supplies. There is some increase LNG imports, as will be explained later, and some diversion of supplies that would have been exported to Mexico via export pipelines in Texas.

Figure 5: Projected Composition of Incremental U.S. Volumes



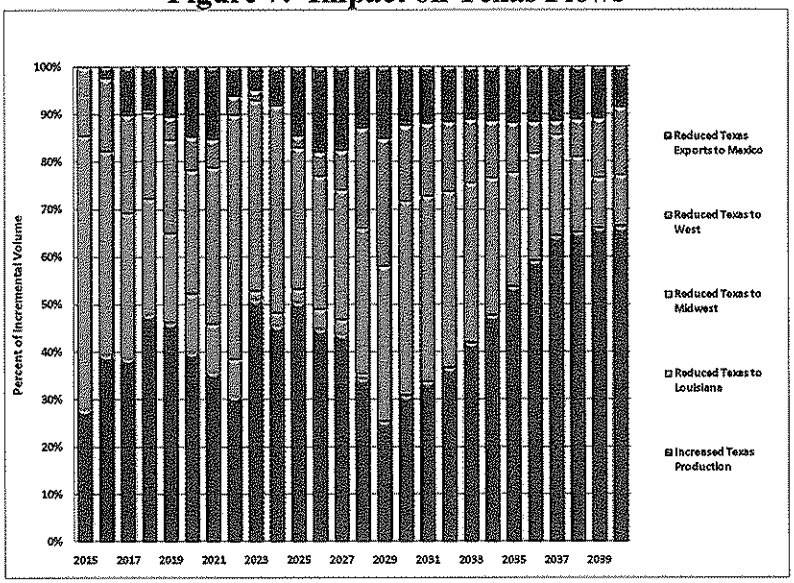
The composition of incremental volumes averaged over the years of the Project operations is shown in Figure 6. Incremental production of shale gas comprises more than 50% of the incremental volume. Including non-shale gas domestic production, which comprises another 19% of the incremental volumes, the domestic production provides 70% of the total incremental volumes. The next largest source comes from reduction in volumes that would have been exported but instead is used for the Project. This volume will not affect domestic prices since it is just a diversion of destinations. Finally, there is a slight increase in LNG imports to the United States. Most of the LNG imports occur during the summer because of the seasonal load attributable to power generation and existence of ample gas storage. It is important to note that our analysis predicts an erosion of oil-parity pricing of LNG contracts as world supply of LNG doubles within a decade. Furthermore, proposed or under construction international pipelines, such as South Stream (or Nabucco), Medgaz, and Trans Asian Pipeline, are poised to deliver new supplies to Europe and Asia and apply additional competitive pressures. Hence, our analysis predicts that future European and Asian prices will be set by gas on gas competition, and LNG supplies will be attracted to U.S. markets by prices below the marginal cost of supply for some domestic U.S. basins.

Figure 6: Average Share of Incremental Volume (2015 to 2040)



Examination of the natural gas flows in Texas yields insights into how the Project feedstock will be provided. Figure 7 shows how the Project affects production and flows in Texas. About half of the Project volumes will be comprised by incremental Texas production and the rest of the volume will be comprised by reduced flows out of Texas. That is, volumes that would have been exported out of the state will be used to provide feedstock for the Project. The displaced volumes would then be made up by increased production in other states or other displacements. For example, there is significant reduction in flows to the Midwest, primarily because increased production out of the Midcontinent basin will displace flows from Texas which will instead be used as feedstock for the Project. Thus, the economic benefit of the Project will extend significantly beyond Texas.

Figure 7: Impact on Texas Flows



2.3 Economic Benefits

The economic benefits from incremental production to provide feedstock for the Project will provide not only direct economic benefits from expenditures for exploring, drilling, and producing the gas, but also indirect benefits arising from expenditures in other industries for goods and services. We quantified a range of potential benefits by making computations based on estimates of economic multipliers found in several published sources. Furthermore, economic expansion stimulates employment so we used estimates of jobs created per $1 million of expenditures on natural gas production.

The estimated average annual benefits and jobs created during 2015 to 2040 are shown in the following table. The average direct expenditures to produce incremental volumes required as a result of the Project equates to $2.7 billion per year. Estimates of economic multipliers for natural gas expenditures by three credible sources range from 1.34 to 1.90. That is, $1 of expenditure results in $1.34 to $1.90 of gross economic benefits. Hence, based on the projected direct expenditures from our analysis, we obtain a range of total economic benefits between $3.6 and $5.2 billion per year. The estimated number of jobs created per $1 million of expenditure ranged from 6.2 to 7.7, implying that the number of new jobs created ranges from 17,000 to 21,000 jobs. Furthermore, LNG exports will improve the U.S. balance of trade to the tune of $3.9 billion per year, a full 1% of the 2009 U.S. trade deficit. However, the benefits of improved balance of trade are not factored into our analysis.

Table 1. Total Economic Benefits and Jobs Created

Source	Economic Multiplier	Jobs created/ $ Million	Direct Expenditures	Gross Economic Output ($ Millions)	Jobs Created
1	1.34	6.7	2,718	3,642	18,211
2	1.55	7.7	2,718	4,213	20,929
3	1.90	6.2	2,718	5,164	16,852

Sources:

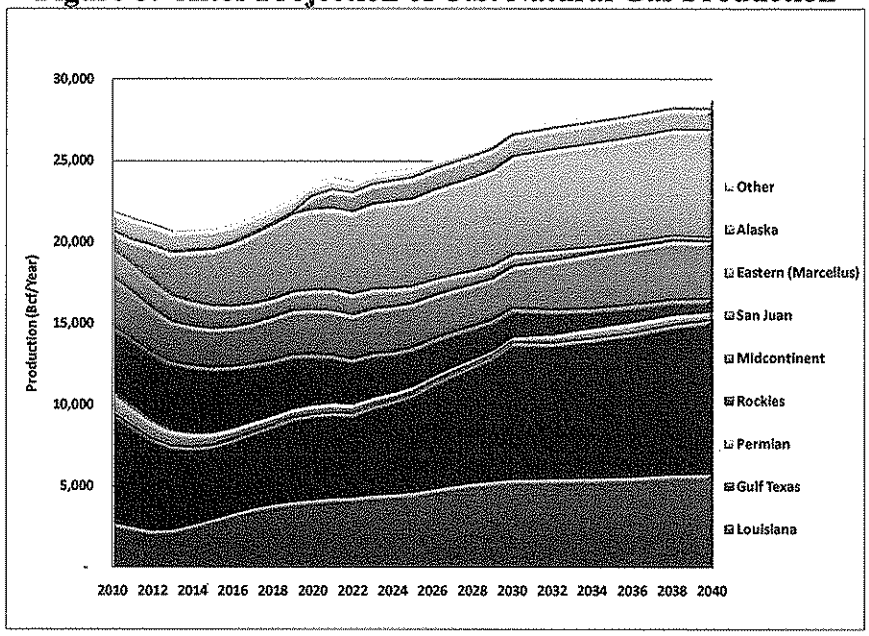
1. Baumann, Robert H., D.E. Dismukes, D.V. Mesyanzhinov, and A.G. Pulsipher (2002) "Analysis of the Economic Impact Associated with Oil and Gas Activities on State Leases," Louisiana State University Center for Energy Studies, Baton Rouge, LA.
2. Snead, Mark C. (2002) "The Economic Impact of Oil and Gas production and Drilling on the Oklahoma Economy." Office of Business and Economic Research, College of Business Administration, Oklahoma State University.
3. Considine, Timothy J., (2010) "The Economic Impacts of the Marcellus Shale: Implications for New York, Pennsylvania, and West Virginia," A Report to The American Petroleum Institute.

3 REFERENCE CASE RESULTS

We ran a Reference case without and with the Project in the WGTM (World Gas Trade Model) to assess its impact on the domestic market. We wanted to know the impact on price and how the market would work to provide feedstock for the Project. We will first examine results of the Reference case which will provide a basis for understanding the impacts of export scenarios.

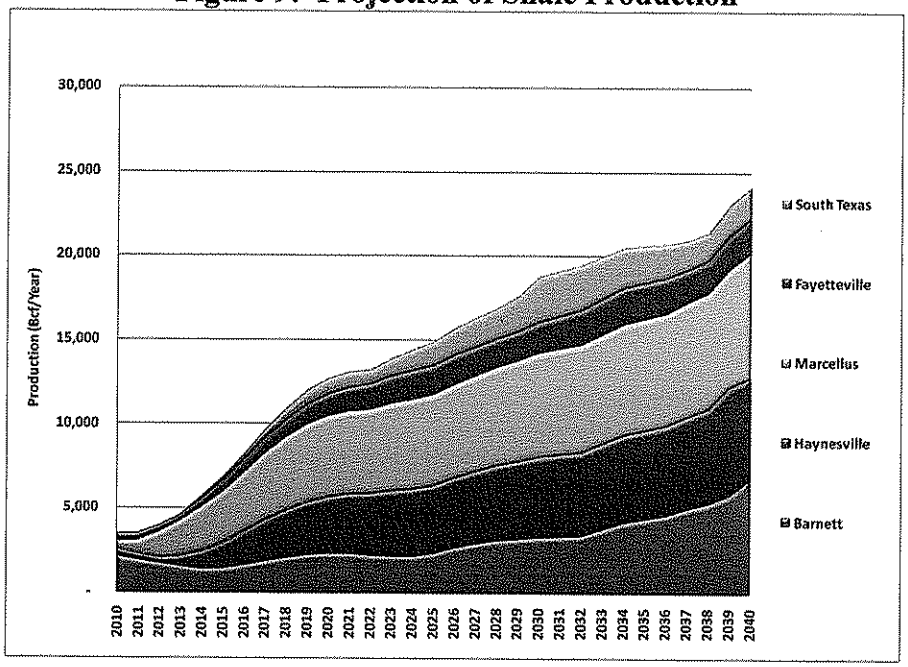
Figure 8 shows the projected production by supply basin. Supply regions have been aggregated for ease of viewing. Production declines in initial years due to a softening of U.S. demand. Total production, led by increases in production in Texas, Louisiana, and Eastern regions, grows with demand starting in 2015. Alaska production jumps in 2020, when the Alaska Gas Pipeline ("Gasline") is projected to come into service. Total production grows beyond 25 Tcf, well in excess of EIA's projected United States demand. WGTM projects that the United States will eventually be a net exporter with pipeline exports to Mexico, which is projected to have rapidly growing natural gas demand, and Canada, where much of the delivered volumes from the Alaska Gas Pipeline will stay. It makes perfect economic sense that the United States, given ample, low cost domestic shale gas supply, would turn into a net exporter.

Figure 8: Altos Projection of U.S. Natural Gas Production



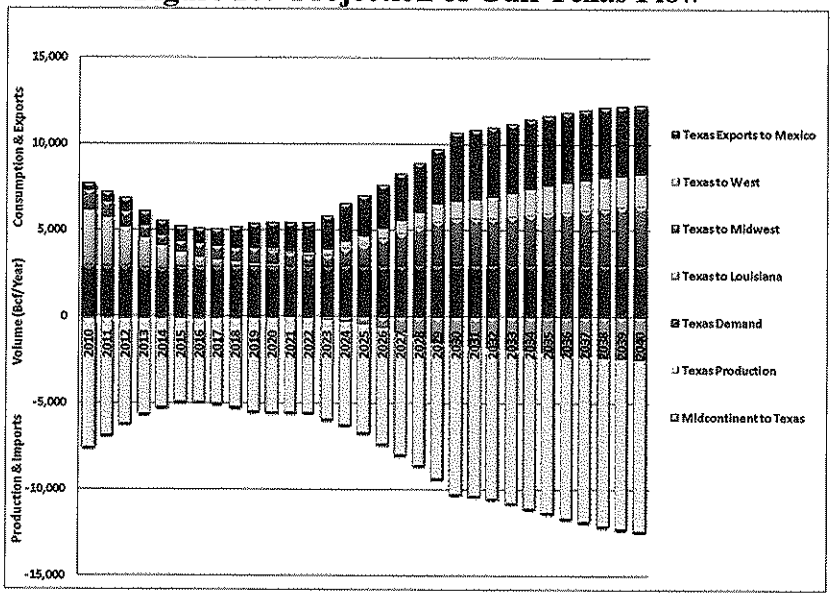
The primary new supply sources are production from shale gas basins. Figure 9 shows the rapid increase in shale gas production. Shale gas is projected to comprise over half of the total domestic production during the analysis period. The potential volumes of shale gas were well known for decades, but only recently have technological advancements made them economic at highly competitive prices. It is the existence of the massive shale resources at competitive costs that provide the basis for LNG exports from the United States.

Figure 9: Projection of Shale Production



Texas is a major natural gas market in its own right, comparable to the entire German or Japanese market. It has major onshore and offshore supply basins, including fast growing shale gas basins. Furthermore, Texas is well connected, both upstream and downstream, to major markets of North America. Figure 10 shows the Gulf Texas (i.e., not including Permian basin) flows including supplies and inbound flows to the state, shown as negative numbers, and demand and outbound flows, shown as positive numbers, in the Reference Case. This figure provides a quick visual of what comes into Texas and how it is used. In the early years, the entire demand and outbound flow is comprised of Texas production. The production declines in the early years, even though Texas demand is fairly flat. The primary reason for the decline is because less gas is exported to Louisiana, which also has rapidly increasing shale gas and is upstream of the rapidly increasing production from the Marcellus shale, which backs out some volumes from the Gulf of Mexico into the Mid-Atlantic market. This indicates that some productive capacity will be available over the next decade. Longer term, Texas supplies grow rapidly, especially with the increase in production of South Texas supplies, including the liquids rich Eagle Ford shale basin. This strong growth enables Texas to export gas to Mexico and the Midwest and West markets.

Figure 10: Projection of Gulf Texas Flow



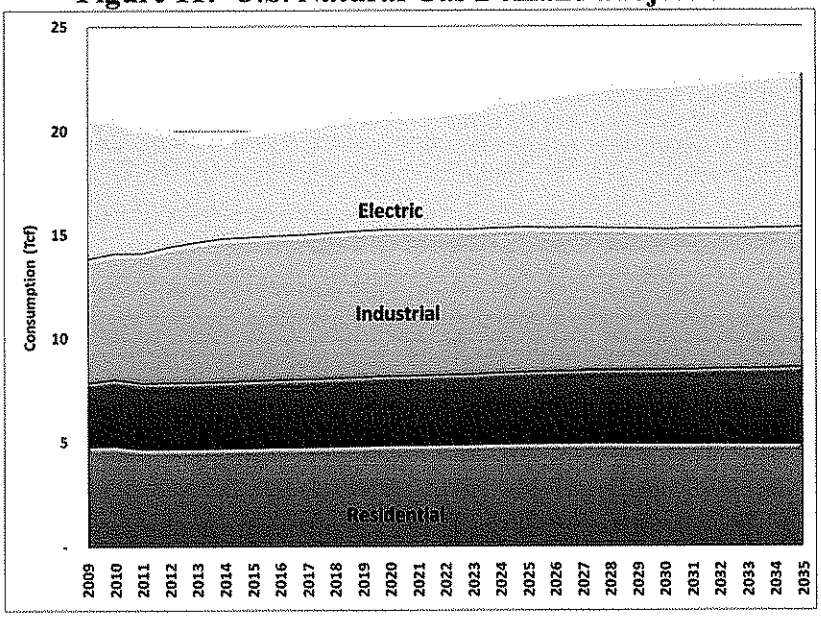
4 ANALYTICAL APPROACH

In order to analyze the impact of LNG exports from the United States on the domestic market, Altos utilized its integrated suite of economic models to provide a comprehensive view of North America with its interconnections with global markets and interconnections with multiple commodities and environmental emissions. Not only is gas connected regionally or temporarily among various regions, gas is regionally or temporarily connected with other fuels—coal, power, tradable emissions allowances, or other fuel forms. Our projections are based on an integrated approach that captures all of the aforementioned factors.

4.1 Key Assumptions

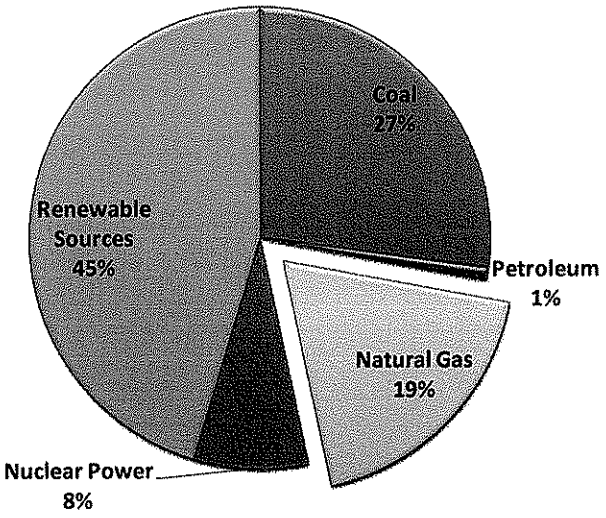
For this analysis, we used the latest demand projections from the EIA's Annual Energy Outlook (AEO) 2010. These demand projections by state and sector are embedded in our WGTM. Figure 11 plots the AEO demand forecast.

Figure 11: U.S. Natural Gas Demand Projection



The EIA did not assume any new environmental regulations in developing its forecast. The electricity sector declines in the near-term before growing steadily because EIA forecasts that renewable sources, much of it mandated by state and federal regulations, and clean coal technologies will provide bulk of the incremental fuel for power generation. Figure 12 shows the shares by fuel for incremental power generation from 2008 to 2035.

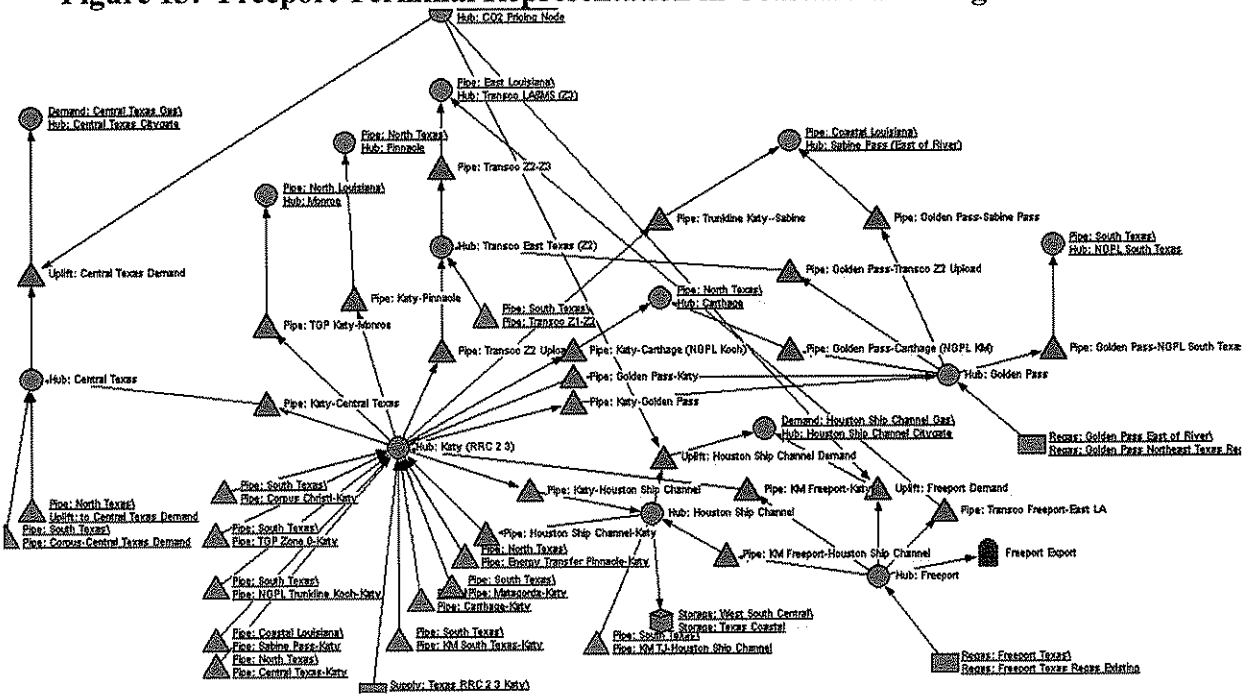
Figure 12: EIA Projection of Incremental Fuel Sources for Power Generation (2008-2035)



We represented the Project terminal as a demand of a constant 1.5 Bcfd from 2015 to 2040. Figure 13 shows the Freeport demand node (in blue) in the Coastal Texas region, just one of hundreds of regions in the WGTM. In the figure, the triangles represent pipelines and circles

represent market hubs or centers. As the figure shows, the Project is connected to the regional market and the region is connected to hubs in contiguous regions, circles with underlined text.

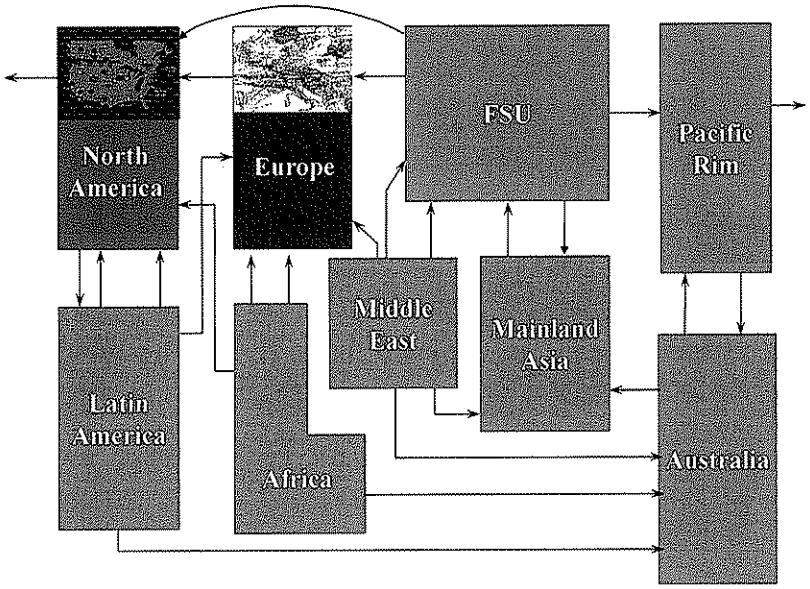
Figure 13: Freeport Terminal Representation in Coastal Texas Region of WGTM



4.2 The Altos World Gas Trade Model (WGTM).

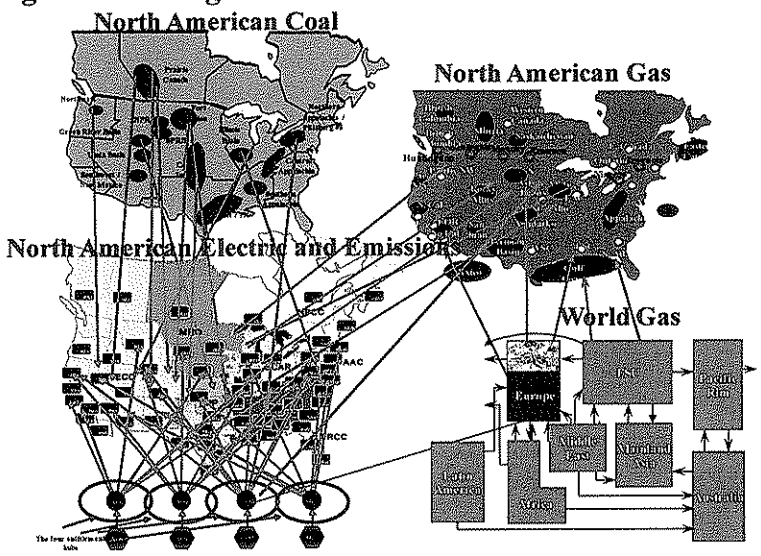
Developed using the MarketBuilder software, WGTM simulates how regional interactions among supply, transportation, and demand interact to determine market clearing prices, flowing volumes, reserve additions, and pipeline entry and exit through 2045. The WGTM, diagramed in Figure 14, divides the world into major geographic regions that are connected by transnational pipelines and LNG cargos. Within each major region are very detailed representations of all market elements: production, liquefaction, transportation, market hubs, regasification and demand by country or sub area. All significant existing and prospective trade routes, LNG liquefaction plants, LNG regasification plants and LNG terminals are represented. Competition with oil and coal is modeled in each region. The ability to model the related markets for emission credits and how these may impact LNG markets is included. Each regional diagram describes how market elements interact internally and with other regions. The North America Regional Gas (NARG) model is embedded in the world model.

Figure 14: Altos World Gas Trade Model



Altos has provided a **fully integrated** view of the energy market, including linkages across commodities, impact of environmental regulations, and temporal tradeoffs. Only Altos has an integrated suite of models, depicted in Figure 15, to provide a complete and consistent view of future markets. For example, our natural gas market forecasts take into account natural gas fuel burn for power generation which in turn takes into account competing fuel prices, including natural gas, oil, and coal, and environmental regulations, especially carbon legislation. Prognosticating gas demand and gas basis without taking explicit, model-based account of the demand-stimulative impact of CO2 regulation is doomed to incorrectness. We take CO2 policy fully into account in our integrated World Gas-North American Power-North American Coal-North American Tradable Emissions model. Very importantly, we do not provide a static analysis in which each sector is kept constant while results of another sector are computed. Rather, we solve for all prices and quantities simultaneously so that we capture the complete feedback loop across commodities and temporalities. Hence, our natural gas forecasts not only include impacts of demand growth, shale production, and LNG imports, but also fully incorporate future developments in the electricity sector and vice versa.

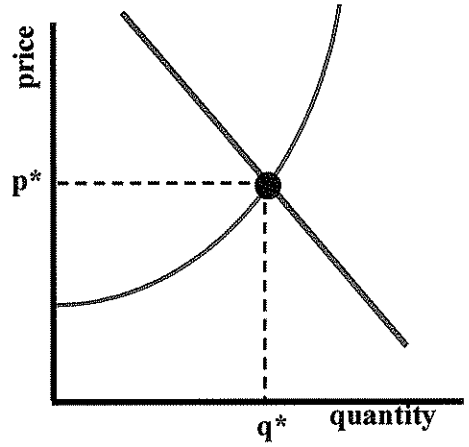
Figure 15: Integrated Gas-Power-Coal-Emissions Model



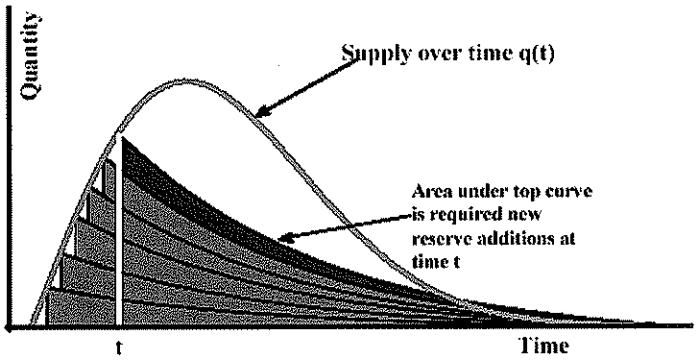
APPENDIX: MARKETBUILDER METHODOLOGY

The Altos suite of models are developed using the MarketBuilder economic software. Some of the key attributes of MarketBuilder are described in the following section.

Agent Based Economic Methodology. MarketBuilder rigorously adheres to accepted microeconomic theory to solve for supply and demand using an "agent based" approach. To understand the unequalled benefits of the agent based approach, suppose you have a market comprised of 1000 agents, i.e., producers, pipelines, refineries, ships, distributors, and consumers. If your model of that market is to be correct, how many optimization problems must there be in your model of that 1000 agent market? The answer is clear—there must be 1000 distinct, independent optimization problems. Every individual agent must be represented as simultaneously solving and pursuing his or her own maximization problem, vying for market share and trying to maximize his or her own individual profits. Market prices arise from the competition among these 1000 disparate, profit-seeking agents. This is the essence of microeconomic theory and competitive markets—people vying in markets for profits—and MarketBuilder scrupulously approaches the problem from this perspective.

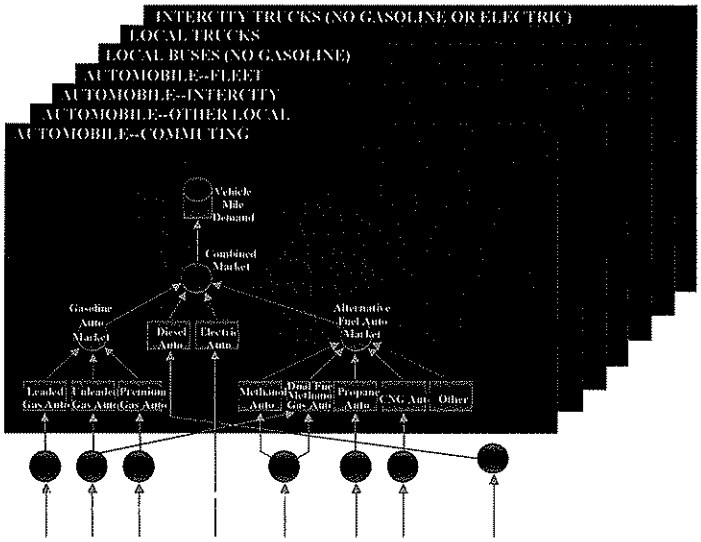


Supply Methodology and Data. MarketBuilder allows the use of sophisticated depletable resource modeling to represent production of primary oil and gas. MarketBuilder embodies the famous Hotelling theory of depletable resource based on a "rational expectations" approach, which assumes that today's drilling affects tomorrow's price and tomorrow's price affects today's drilling. Thus MarketBuilder combines a resource model that approaches resource development the same way real producers do with the best available worldwide supply data from credible sources such as the USGS.

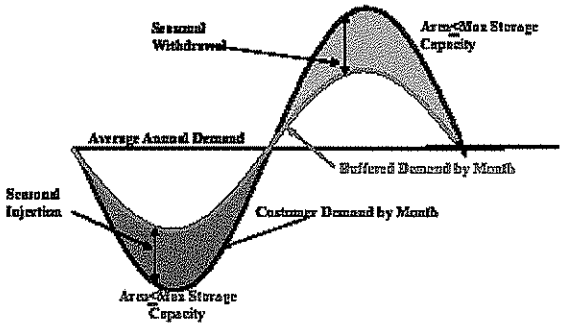


Transportation Data. Altos maintains the best and most current pipeline data and transportation data around the world. Altos and our clients regularly revise and update the transportation data including capacity, tariffs, embedded cost, discounting behavior, dates of entry of prospective new pipelines, and costs of those new pipelines.

Non-Linear Demand Methodology. MarketBuilder allows the use of multi-variate nonlinear representations of demand by sector, without limit on the number of demand sectors. Altos is skilled at performing regression analyses on historical data to evaluate the effect of price, weather, GNP, etc on demand. Using our methodology, Altos systematically models the impact of price change on demand (demand price feedback) to provide much more realistic results than models that use simple exogenous demand projections (e.g. 2% per year increase regardless of price).



Advanced Storage Methodology. MarketBuilder's storage process represents the profit-maximizing behavior of a storage facility owner (or lessee). A schedule of additions and withdrawals is calculated endogenously by the model for each storage facility so as to maximize the present value of profitability of the storage activity, taking full account of current and full forward price over time, storage cost, interest rates, maximum injection rates, and maximum withdrawal rates (with ratchets). The owner of a storage asset is represented as buying from the market when prices are low (e.g., off peak during the summer for heating oil or natural gas) and sell back to the market when prices are high, i.e. during winter for heating oil or natural gas. In the model as in the real world, buying during low price periods and selling during high price periods moderates both the peaks and valleys in market prices. We believe our model to be the only one in the industry that can properly represent the feedback. Modeling this feedback is absolutely essential if you are to represent markets that have storage assets properly and understand their effect on price.



Automatic, endogenous capacity addition. MarketBuilder allows you to represent capacity addition automatically and endogenously. In this mode, MarketBuilder will add capacity as the market would, taking into account that today's capacity addition depends on the full forward schedule of price and simultaneously the full forward schedule of price depends on today's capacity addition.

Endogenous Model of Emission Credit Markets. MarketBuilder enables modeling of markets for emission credit and pollutant entitlements in simultaneous equilibrium with models of primary energy commodities. The energy commodities affect the entitlement price and the entitlement price affects the energy market. This is the ultimate in interconnecting environmental modeling with primary energy models. In general, it is government action that determines the aggregate amount of available entitlement. We think of this aggregate amount as the supply of emissions credits available to be openly traded in markets. Demand for credits is created by energy conversion activities such as electric generation units or refineries. Both in our model and in the real world, emission credit prices result from the interaction of credit supply and demand, and these credit prices become costs for energy conversion process. Thus, the prices for credits and the commodity prices themselves are interdependent. MarketBuilder offers the only fully closed model of energy and pollution available in the market today.