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UNITED STATES OF AMERICA
DEPARTMENT OF ENERGY
OFFICE OF FOSSIL ENERGY

14-002-CIC

In The Matter Of:)
Pangea LNG (North America) Holdings, LLC)
)

Docket No. 12-184-LNG

AMENDMENT OF APPLICATION TO EXPORT LNG TO NON-FREE TRADE AGREEMENT COUNTRIES TO REFLECT A CHANGE IN OWNERSHIP OF PANGEA LNG (NORTH AMERICA) HOLDINGS, LLC AND A REVISION OF THE POINT FROM WHICH THE EXPORT OF LNG TO FREE TRADE AGREEMENT NATIONS IS TO OCCUR

Pursuant to Section 3 of the Natural Gas Act ("NGA"), 15 U.S.C. § 717b (2006), and Section 590.204(a) of the Department of Energy's ("DOE") regulations, 10 C.F.R. § 590.204(a) (2014) ("Section 590.204(a)"), Pangea LNG (North America) Holdings, LLC ("Pangea") hereby amends its Application for Long-Term, Multi-Contract Authorization to Export Liquefied Natural Gas to Non-Free Trade Agreement Countries, as originally filed with the DOE's Office of Fossil Energy ("FE") on December 19, 2012 in DOE/FE Docket No. 12-184-LNG ("Original Application").

While the specific changes being made by Pangea do not have a material impact on the consistency of Pangea's proposed exports with the public interest, the modifications to Pangea and the South Texas LNG Project ("ST LNG Project") do include two items that the FE has made clear the FE considers in determining whether proposed exports are inconsistent with the public interest: (1) the details of the upstream ownership of the applicant/proposed export authorization holder, and (2) the point of export. In addition, Pangea wishes to update certain other information set forth in its Original Application, including: (1) the identity of two of Pangea's points of contract; (2) the identity of the Pangea representative designated as the point of contact concerning any reports to be filed by Pangea in connection with this application; (3) the location of Pangea's principal place of business/administrative offices, (4) the length of the proposed South Texas Pipeline ("ST Pipeline"), which will deliver natural gas to the ST LNG Project; and (5) the project's timeline. Except as otherwise described herein, Pangea is not proposing any other changes to its proposed exports or the ST LNG Project or the ST Pipeline and is not making any other changes to the Pangea Application.

I. COMPANY INFORMATION

The exact legal name of Pangea remains Pangea LNG (North America) Holdings, LLC. Pangea continues to be a limited liability company organized under the laws of Delaware. It has recently moved its principal place of business from 21 Waterway Avenue, Suite 550, The Woodlands, Texas 77380 to 3 Waterway Square Place, Suite 400, The Woodlands, Texas 77380. Its telephone remains (832) 403-3040, and its facsimile number is now the same as its telephone number, a change from the information provided in the Original Application. Pangea's current ownership remains as described in Pangea's November 29, 2012 application in this docket, but is anticipated to change in the near future in the manner described below.

II. AMENDMENTS TO APPLICATION

Pangea is not seeking a change in the volume of its export authorization (*i.e.*, up to 398.5 Bcf/y of natural gas in the form of LNG, which is the equivalent of approximately 8 MTPA); the manner of exports (*i.e.*, by vessel); the permitted destination of such exports (*i.e.*, any country with which the U.S. trades, but does not have a Free Trade Agreement requiring national treatment of trade in natural gas); the term of permitted exports (*i.e.*, 25 years); the time from which such term will run (*i.e.*, the date of first export, with such first export to occur no later than seven years from the FE's authorization of the requested exports); or the commitments made by Pangea in the Original Application with respect to (a) exporting LNG on its own behalf and as agent for third parties, and (b) contract submission and disclosure.

Pangea will continue to rely on the ST LNG Project, as described in the Original Application, albeit in a new location, to liquefy U.S. sourced gas and perform the other functions necessary to produce marketable LNG and load it on vessels for export. Pangea's business plans remain unchanged with respect to supplying liquefaction and export services for itself and others, including its affiliates, pursuant to long-term contracts. The gas supply underlying these long-term contracts is still planned to come from various sources in the U.S. through the ST LNG Project's connection to the interstate and intrastate pipeline grid via the ST Pipeline (*i.e.*, a pipeline to be developed, owned and operated by a Pangea affiliate). Despite the proposed change in location of the ST LNG Project described below, which will necessarily change the downstream terminus of the ST Pipeline, the location of the upstream terminus of the pipeline will not materially change as the pipeline will access the same natural gas marketing regional hub at Agua Dulce and leave the relevant pipeline interconnects and natural gas supply situation unchanged. Compression will be used as necessary to ensure that adequate gas flows can be achieved from the interconnected pipelines into the ST Pipeline and to the ST LNG Project at the delivery pressure required by the liquefaction process.

A. Proposed Change in Project Location

Pangea's preferred site for the ST LNG Project is now a 500 acre parcel of land in Cameron County, TX, which is located at approximately Latitude (North): 26° 01'15.04" and Longitude (West): 97° 15'33.06", as further described in Appendices A & B (the "San Martin – Boca Chica Site"). While the new site is slightly smaller, as to total acres, than Pangea's prior site, the San Martin – Boca Chica Site has a much more regular shape, which allows for a better facility layout while maintaining necessary safety buffer zones. Among other things, the improved layout will allow Phase II of the ST LNG Project to be constructed with minimal interference with the operation of Phase I. In addition, the San Martin – Boca Chica Site enjoys easy access to the Brownsville Ship Channel, which is currently dredged to 42 feet and has been approved to be dredged down to a controlling depth of 52 feet. This will allow the ST LNG Project to be constructed with much less dredging than would have been required at the original site, producing a cost savings and reducing potential environmental impacts.[1] Pangea believes the fact that the San Martin – Boca Chica Site lies farther from occupied structures not associated with the ST LNG Project is another advantage to the new site. Finally, through the use of a longer pipeline (approximately 125 miles in total length) with appropriate compression,[2] Pangea will be able to interconnect to the same pipelines previously proposed in its initial application and thus rely on the same supplies of natural gas as originally contemplated.

Pangea's affiliate, Next Decade, LLC, currently has an option to enter into a long-term lease for the San Martin – Boca Chica Site and will assign its option (as permitted by the terms of the option) to Pangea once the FE has approved the same requested change to the point of export (and ST LNG Project location) for Pangea's existing authorization to export LNG to

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[1] Of course the ST LNG Project and ST Pipeline will be the subject of extensive environmental review by the Federal Energy Regulatory Commission before they can be constructed.

[2] Considered in isolation, the rerouted, longer ST Pipeline represents a minor disadvantage to the new site. However, an affiliate of Pangea is currently considering the development of a distinct LNG export project to be located along the Brownsville Ship Channel at a second site. If both projects proceed, they would likely utilize a shared pipeline (designed to accommodate their combined requirements) for most of the route, leading to a cost savings and avoiding environmental impacts. However, the exports that are the subject of this application do not depend on the second project going forward. Moreover, Pangea has concluded, on the basis of detailed engineering and design work, that the amount of dredging required at the San Martin – Boca Chica Site is substantially less than for the original Corpus Christi site. The savings from the reduced dredge requirements are expected to more than offset the higher expected cost of the ST Pipeline. (Despite such savings, Pangea's cost estimate has gone up for the project as a whole due to factors that would apply to either site. It now stands at approximately $9 billion).

countries with which the U.S. does have Free Trade Agreements requiring national treatment of trade in natural gas.[3]

B. Proposed Changes in Ownership

On March 17, 2014, NextDecade Partners, LLC ("NDP") entered into an agreement to take a 100% ownership interest in Pangea, replacing Pangea LNG B.V. NDP is a U.S. based company that is developing LNG liquefaction solutions in North America. NDP is owned by four individual investors (three of which are U.S. citizens and the fourth is a citizen of the United Kingdom of Great Britain and Northern Ireland) and Cryztal Capital, LLC, a Delaware corporation. Cryztal Capital, LLC is an investment firm operating in the US-Indian corridor since 2001. The change in ownership is conditioned upon receipt of FE approval, as may be required.[4]

In addition, consistent with an executed Letter of Intent dated October 22, 2013, Pangea has commenced working closely with Oil and Natural Gas Corporation ("ONGC") on the development of the ST LNG Project. ONGC is an Indian multinational oil and gas company headquartered in Dehradun, India. It is a Public Sector Undertaking of the Government of India, administered by the Ministry of Petroleum and Natural Gas. It is India's largest oil and gas

3 *Pangea LNG (North America) Holdings, LLC, Order Granting Long-Term Multi-Contract Authorization to Export Liquefied Natural Gas by Vessel from the Proposed South Texas LNG Export Project to Free Trade Nations*, DOE/FE Order No. 3227 (January 30, 2013) ("*Pangea FTA Export Authorization*"). Pangea is concurrently filing its Application to Amend Authorization to Revise the Point from which Export of LNG to Free Trade Agreement Nations Is to Occur and, as May Be Necessary, to Effect Transfers of Control of Pangea LNG (North America) Holdings, LLC ("Application to Amend FTA Authorization") in DOE/FE Docket No. 12-174-LNG, so as to obtain in advance the FE's approval as may be required with respect to the *Pangea FTA Export Authorization*.

4 No prior FE approval is required for changes to a project that is in the application stage, though the applicant is required to apprise FE of material changes to facts underlying its application per Section 590.204(a). Further, it is Pangea's understanding that the FE's regulations do not require Pangea, as the holder of the *Pangea Export Authorization*, to obtain the FE's approval prior to making the ownership changes described herein. However, in order to ensure full compliance with any implicit requirements of the FE, Pangea, as noted above, is filing a separate request in DOE/FE Docket No. 12-174-LNG for FE approval, as may be required, of the proposed ownership changes.

exploration and production company, producing almost two-thirds of India's natural gas supply. Further, ONGC and Pangea are in active negotiations with respect to ONGC acquiring up to a 49% equity stake in Pangea and utilizing up to 100% of the liquefaction and export capacity of the ST LNG Project. Pangea also has requested the FE to approve this ownership change in DOE/FE Docket No. 12-174-LNG.

The proposed changes in ownership will not impair the day-to-day management of Pangea's project development effort or have a negative impact of Pangea's long-term vision for its project. The Managing Partner of NDP is also the Chief Executive Officer ("CEO") of Pangea and has been Pangea's CEO since its inception. Two individual owners of NDP were also owners of NextDecade International Coöperatief U.A., which was an owner of Pangea B.V., and the four owners were the primary developers of the ST LNG project. After the transaction is consummated these individuals' combined interests will represent the majority ownership in Pangea.

Pangea commits to promptly notify the FE if and when such changes in ownership occur.

C. Other Minor Changes

1. <u>Points of Contact</u>

As reflected in Section III below, Shaun Davison is now the Project Manager for this matter, and, as such, replaces John Godbold as a point of contact. In addition, Islara Rodriguez has replaced Rabeha Kamaluddin as one of the outside counsel assisting Pangea with this matter.[5] Please see Section III for their contact information.

[5] Tania Perez remains at Fulbright & Jaworski LLP, is still actively involved with the Pangea project, and can still be reached using the contact information in the Original Application. However, Erik Swenson and Islara Rodriguez are the attorneys most familiar with the current changes and should be considered the primary contacts with respect to this amendment to the application.

2. Report Contact Information

The contact for any reports required in connection with the requested authorization is now Shaun Davison. Please see Section III below for his contact information.

3. Applicant's Principal Place of Business and Contact Number

Applicant's principal place of business and the location of its administrative offices have recently moved a short distance to:

3 Waterway Square Place
Suite 400
The Woodlands, TX 77380

Its telephone has not changed since the Original Application was filed. However, its facsimile number is now the same as its telephone number – a change from the Original Application.

4. Length of ST Pipeline

In order to interconnect the newly proposed location for the ST LNG Project with the same, favorable, natural gas supply sources as proposed in the Original Application, the ST Pipeline's proposed length has had to be increased to approximately 125 miles. Because, as stated in the Original Application, it will be developed by an affiliate of Pangea, Pangea can be assured that the pipeline will be constructed with adequate capacity to meet the ST LNG Project's natural gas supply needs. Further, Pangea anticipates that another affiliate will shortly file a separate application with the FE seeking authorization to export LNG from a distinct facility to be located at a different point along the Brownsville Ship Channel. A second facility would present an opportunity to take advantages of economies of scale in the design, construction and operation of the ST Pipeline. It also would likely reduce environmental impacts as compared to two entirely separate pipelines for the ST LNG Project and the second project. The Federal Energy Regulatory Commission ("FERC") would have primary responsibility for reviewing and approving the ST Pipeline whether or not the pipeline serves one or two LNG export facilities.

5. Project Timeline

The Original Application contemplated that Pangea would commence the mandatory FERC pre-filing process in 2013 to be followed later in the year by the commencement of the formal FERC application process. As previously reported to the FE, in Pangea's bi-annual progress reports, this schedule has slipped. Pangea now anticipates commencing the FERC's pre-filing process during the third quarter of 2014. The target dates for commencing commercial operation of Phase I and Phase II are now fourth quarter of 2019 and second quarter of 2020 respectively.

III.
APPLICANT CONTACT INFORMATION

All correspondence and communications concerning this amendment to the Original Application, including all service of pleadings and notices, should be directed to the following persons:[6]

Shaun Davison Project Director Pangea LNG (North America) Holdings, LLC 3 Waterway Square Place Suite 400 The Woodlands, TX 77380 Telephone & Facsimile: (832) 403-3040 Email: shaun@nextdecadepartners.com	Erik J.A. Swenson Partner Fulbright & Jaworski LLP 801 Pennsylvania Avenue, NW Washington, D.C. 20004 Telephone: (202) 662-4555 Facsimile: (202) 662-4643 Email: erik.j.a.swenson@nortonrosefulbright.com

6 Pangea requests waiver of Section 590.202(a) of DOE's regulations, 10 C.F.R. § 590.202(a) (2014), to the extent necessary to include outside counsel on the official service list in this proceeding.

Ray Eisbrenner
Project Administration
Pangea LNG (North America) Holdings, LLC
3 Waterway Square Place
Suite 400
The Woodlands, TX 77380
Telephone & Facsimile: (832) 426-1871
Email: ray@nextdecadepartners.com

Islara Rodriguez
Associate
Fulbright & Jaworski LLP
1301 McKinney, Suite 5100
Houston, TX 77010-3095
Telephone: (713) 651-3703
Facsimile: (713) 651-5246
Email:
islara.rodriguez@nortonrosefulbright.com

Pursuant to Section 590.103(a) of the DOE regulations, 10 C.F.R. §590.103(a) (2014), Pangea hereby certifies that the persons listed above and the undersigned are the duly authorized representatives of Pangea.

IV.
STANDARD OF LEGAL REVIEW

The standard of review remains unchanged by the current amendment to the Original Application.[7]

V.
PUBLIC INTEREST ANALYSIS

Pangea stands by its public interest analysis contained in its Original Application. Accordingly, Pangea limits its discussion here to a consideration of whether its proposed changes with respect to the point of export/ location of the ST LNG Project and ownership should have an impact on the FE's review of Pangea's pending request for authorization to export LNG to non-FTA Countries. For the reasons stated below, Pangea concludes such changes have no material impact on such review.

[7] As more fully described in the Original Application, under Section 3 of the NGA, FE is required to authorize exports to a foreign country unless there is a finding that such exports "will not be consistent with the public interest." This constitutes a statutory presumption in favor of approval of the Original Application as now amended, which opponents bear the burden of overcoming.

A. Change in Location

A change to the point of export/ location of the associated LNG export project, in theory, could affect whether a proposed export of LNG would be inconsistent with the public interest in three ways. First, the change to the export point could alter the markets to which LNG is to be exported or the ability of an exporter to serve its intended markets. Second, a change to the export point could be associated with a change in the intended source of natural gas used to produce the LNG to be exported or the ability of the natural gas transportation system to supply the natural gas required to support the proposed LNG exports. Finally, a relocated export point could cause a change in location of the associated LNG export facility that would lead to different environmental impacts. However, in the case of Pangea's application, as explained below, the proposed change in location does not have any impact on the first two aspects of the FE's public interest analysis, and, to the extent the third aspect is impacted, the change increases the overall public interest benefits associated with the requested export authorization.

With regard to the first consideration, Pangea has not changed its intended delivery markets and the new export location is not materially different than the former location. Both sites are in Texas with convenient access to the Gulf of Mexico. Because the newly proposed location is essentially due south of the previously proposed location, the sea routes from and to the new site should be slightly shorter for any and all non-FTA countries that Pangea might serve.

With regard to the second consideration, it is not the point of export or the LNG export facility location that is the controlling factor. Instead, it is the point at which the proposed LNG export facility's supply pipeline interconnects with the U.S. natural gas transportation system that is critical. In this case, Pangea is not proposing to significantly change that point.

Consequently, Pangea's proposed changes would have no impact on natural gas supplies or the cost of natural gas in the U.S. To confirm this, Pangea commissioned Black & Veatch ("B&V") to perform an assessment[8] of the impact of the site change on the analysis previously conducted by B&V and submitted to the FE as part of the Original Application. The *B&V Assessment* states: "[T]he basic structure of the [ST] LNG Project and the manner in which it interacts with the natural gas infrastructure have not changed with the proposed change in its location from Ingleside to Brownsville. As such, the analysis and price impacts highlighted in the Black & Veatch 2012 report are expected to continue to be relevant...."[9]

With regard to the final consideration, while the San Martin – Boca Chica Site has generally similar characteristics as the Corpus Christi site (both located in southern coastal Texas, along the Gulf of Mexico, in industry friendly areas), Pangea recognizes that each site is unique to some degree and the San Martin – Boca Chica Site will have to be thoroughly reviewed in accordance with the National Environmental Policy Act ("NEPA"). Fortunately, the broad review of the ST LNG Project and ST Pipeline required by NEPA has not yet commenced at FERC and other agencies. So, the change in site will not adversely affect the overall environmental review process.

However, Pangea recognizes that, at an earlier stage in the process, the FE directly considers the economic impact of the proposed exports, including the effects of any associated LNG liquefaction and export facility. Siting the ST LNG Project at the San Martin - Boca Chica location would result in various changes in the detailed design of the project (even though the project's capacity is not being changed and floating liquefaction facilities remain a key design

[8] BLACK & VEATCH, ASSESSMENT OF THE IMPACT OF CHANGE IN SITE LOCATION OF THE SOUTH TEXAS LNG PROJECT (March 24, 2014) ("*B&V Assessment*"). The *B&V Assessment* is attached hereto as Appendix E.

[9] *Id.* at 2.

feature) and such changes altered Pangea's project cost estimates, including its estimates of the domestic component of total project costs. As a consequence, Pangea commissioned The Perryman Group to perform an analysis[10] of the impact of construction and operation of the ST LNG Project on business activity in the Brownsville, Texas area to replace The Perryman Group's essentially similar study for the Corpus Christi site.

In conducting the analysis, The Perryman Group employed the same techniques it used for the study included in the Original Application. However, updated information was used in performing the analysis. For example, the attached *Perryman Study*: (1) reflects Pangea's better understanding of (a) the total project costs (which are higher, due in large part to the need for a longer pipeline), and (b) the distribution of costs between on-shore components and floating components (which is important since the ST LNG Project's floating components are expected to be constructed outside of the U.S., while construction of its on-shore components will involve proportionately higher spending on domestic goods and services); (2) is stated in terms of 2013 dollars, rather than 2012 dollars; (3) uses current natural gas prices; and (4) employs multipliers and related data applicable to the Brownsville-Harlingen Metropolitan Statistical Area, rather than the Corpus Christi Metropolitan Area. Consequently, even though the capacity of the ST LNG Project is not changing and the estimated construction period for the project has not changed, the *Perryman Study's* impact estimates differ from those in the corresponding 2012 analysis that formed part of the Original Application.

The following table contains a summary of results from the current study compared to the prior study in order to highlight selected differences.

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[10] THE PERRYMAN GROUP, THE IMPACT OF CONSTRUCTION AND OPERATION OF PANGEA'S SOUTH TEXAS LNG EXPORT PROJECT ON BUSINESS ACTIVITY IN THE BROWNSVILLE AREA (March 2014) ("*Perryman Study*"). The *Perryman Study* is attached hereto as Appendix F.

Comparison of Selected Results of 2012 and 2014 Impact Studies Performed by The Perryman Group with respect to Pangea's Proposed Exports		
Input or Result	**2012 Study**	**2014 Study**
Project Cost	Between \$5 and \$8 billion	Approx. \$9 billion
Total Local Economic Gain Prior to Commencement of Commercial Operation	More than \$1.4 billion (gross product)	Almost \$6.0 billion (gross product)
	17,230 person-years (employment)	34,942 person-years (employment)
Local Operational Benefits	\$151 million/year (gross product)	\$130.5 million/year (gross product)
	1,340 permanent jobs	1,227 permanent jobs
Primary Area of Local Impact	Corpus Christi Metropolitan Area	Brownsville-Harlingen Metropolitan Statistical Area
Value of Exports (per year)	Between \$3.7 and \$6 billion	Between \$4.7 and \$7.6 billion

It is evident from the table that many of the anticipated benefits of the proposed LNG exports and related ST LNG Project and ST Pipeline have increased since the earlier 2012 study was developed by The Perryman Group. However, in some instances, the anticipated benefits have decreased slightly (*e.g.*, the number of permanent jobs that will be created). Therefore, FE should refer to the full *Perryman Study* in making a public interest determination with respect to Pangea's application, as amended.

B. Change in Ownership

The proposed changes in ownership discussed herein are not inconsistent with the public interest. Pangea is currently owned by Pangea LNG B.V., a Netherlands-based company, that is, in turn, owned by three entities controlling the following respective percentages of Pangea LNG B.V.'s ordinary shares: Daewoo Shipbuilding & Marine Engineering Co., Ltd. ("DSME") (70%), D&H Solutions AS (20%), and NextDecade International Coöperatief U.A. ("NextDecade International") (10%). DSME is a South Korea-based company whose major shareholders consist of two Korean entities – Korea Development Bank (31.27%) and Korea

Asset Management Corporation (19.11%), and whose combined individual interests exceed 50% ownership of DSME. D&H Solutions AS is a Norwegian-based joint venture company that is owned 50/50 by Hemla II AS and DSME. NextDecade International is a Netherlands based cooperative with six (6) individual investors from the United States, Spain and the Netherlands.

When the proposed changes in ownership are consummated, the ownership structure will be simplified. After the first of the proposed changes, Pangea will be 100% owned by NDP. NDP, in turn, has only five (5) owners and four (4) of those owners are individuals. Thus, the chief effect of the initial change of upstream ownership planned here is to increase aggregate ownership of the project by U.S. citizens (to 57%)[11] and reduce foreign ownership.

Assuming ONGC takes the anticipated 49% stake in Pangea, all the interests of Pangea's other owners would be proportionately diluted. As a result, ownership by U.S. citizens would be approximately 29% of Pangea. However, this is still more than three times larger the percentage ownership of Pangea by U.S. citizens under the existing ownership structure.

The FE has indicated that foreign ownership of a U.S. LNG export project is not inconsistent with the public interest as a general matter. For example, in the FE stated: "[W]hile FDI [(foreign direct investment)] may be used to finance purchases of natural gas for export as LNG and the construction of LNG liquefaction and export facilities, we are not persuaded the inflow of foreign capital for these purposes would be inconsistent with the public interest...."[12] While Pangea concurs with that conclusion, it is certainly also true that increasing U.S. citizens' ownership in a U.S. LNG export project, as proposed here, is not inconsistent with the public

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[11] This ignores any ownership of Cryztal Capital, LLC by U.S. citizens.

[12] *Jordan Cove Energy Project, L.P., Order Conditionally Granting Long-Term Multi-Contract Authorization to Export Liquefied Natural Gas by Vessel from the Jordan Cove LNG Terminal in Coos Bay, Oregon to Non-Free Trade Nations*, DOE/FE Order No. 3413 (March 24, 2014) at 120.

interest. Thus, this change in the application should be considered immaterial for the purposes of FE's review.

VI.
MISCELLANEOUS

Pangea requests secondary distribution of the order by email. DOE/FE should communicate with Pangea by email, telephone, and fax.

To the best of undersigned's knowledge, neither this nor any related matter is being considered by any other part of the U.S. Department of Energy.

VII.
APPENDICES

The following appendices are included with this Application:

Appendix A	Locator Map and Project Location Information
Appendix B	Assignment of Purchase Option Agreement and Option to Lease
Appendix C	Opinion of Counsel
Appendix D	Verification
Appendix E	B&V Assessment
Appendix F	Perryman Study
Appendix G	Certificate of Service

VIII.
CONCLUSION

For the foregoing reasons, Pangea respectfully amends its existing application for authorization to export LNG to non-FTA Countries to reflect those changes in facts set forth above.

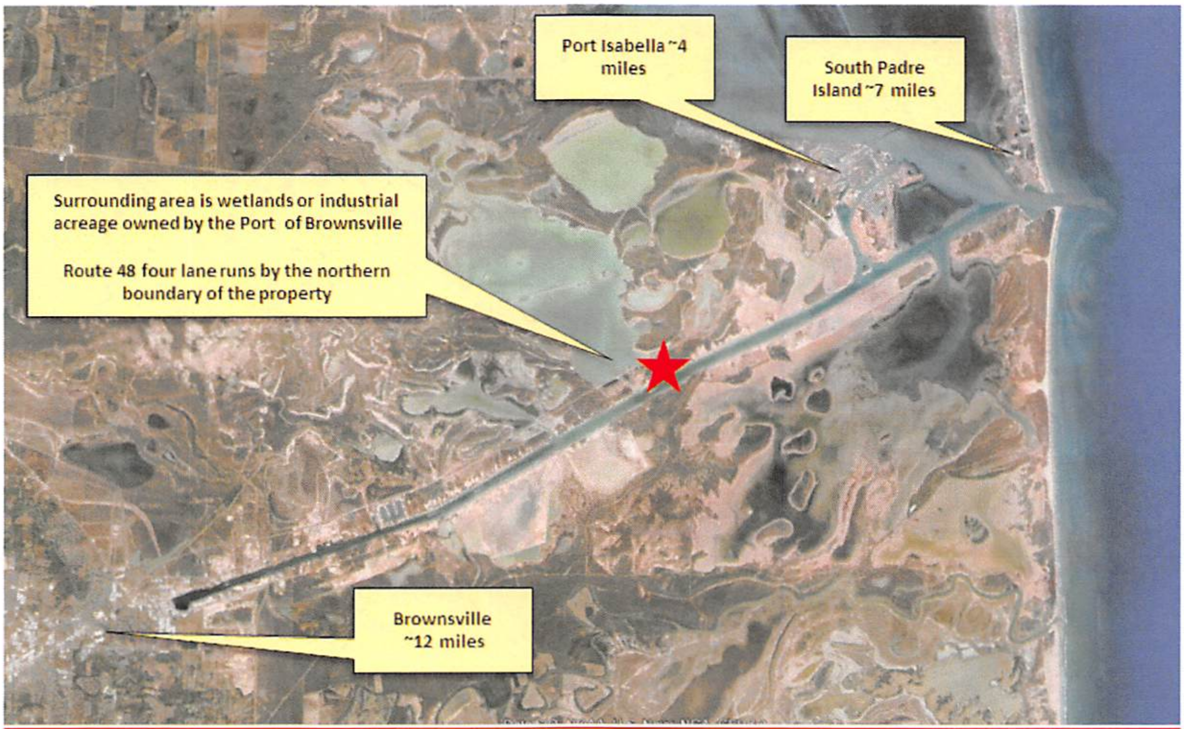
Respectfully submitted,

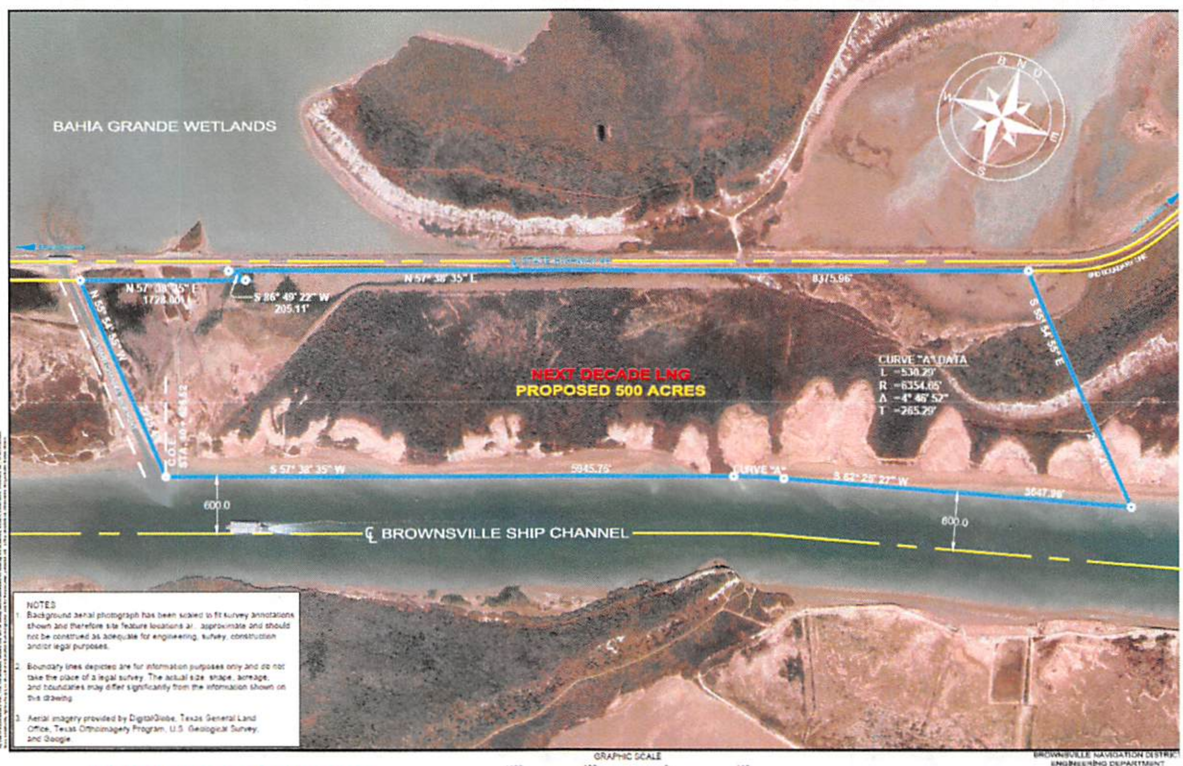
Erik J.A. Swenson
Islara Rodriguez
Attorneys for Pangea LNG (North America) Holdings, LLC

Dated: March 31, 2014

APPENDIX A

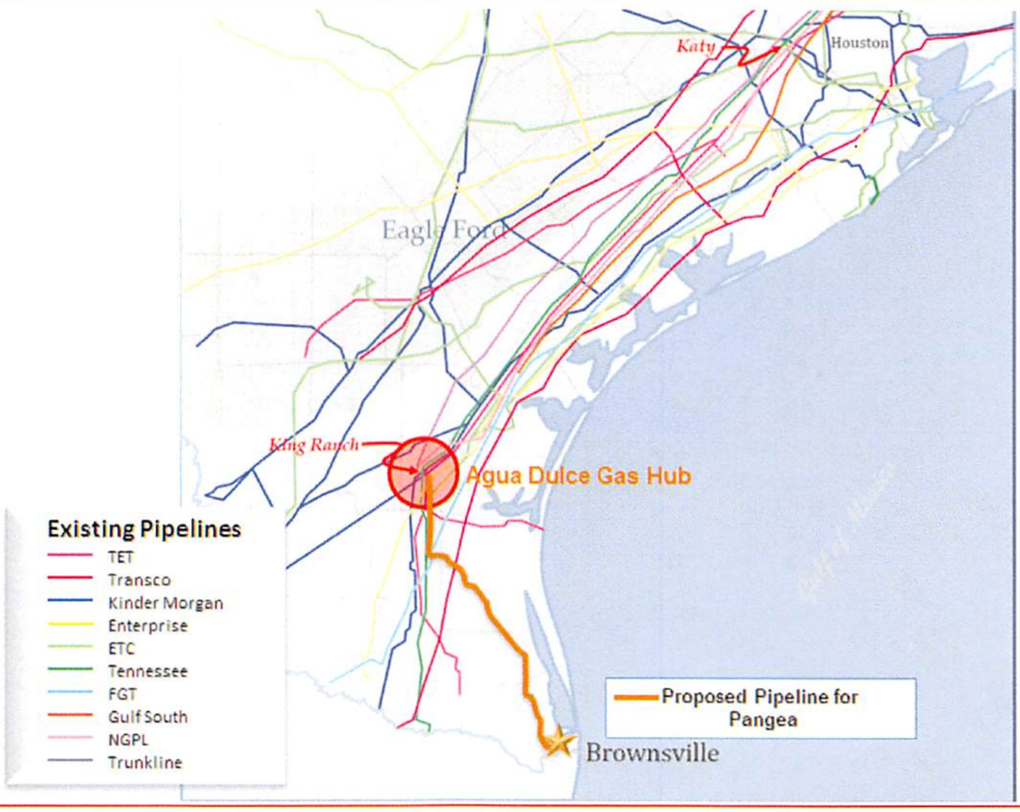
LOCATOR MAP AND PROJECT LOCATION INFORMATION





SUBJECT TO SURVEY


Looking WSW


Katy
Houston
Eagle Ford
King Ranch
Agua Dulce Gas Hub
Existing Pipelines
TET
Transco
Kinder Morgan
Enterprise
ETC
Tennessee
FGT
Gulf South
NGPL
Trunkline
Proposed Pipeline for Pangea
Brownsville

APPENDIX B

<u>ASSIGNMENT OF PURCHASE OPTION AGREEMENT AND OPTION TO LEASE</u>

NEXTDECADE™

3 Waterway Square Place, Suite 400
The Woodlands, TX 77380
001-713-574-1880
info@next-decade.com
www.next-decade.com

March 24, 2014

Erik Swenson | Partner
Norton Rose Fulbright LLP
801 Pennsylvania Avenue,
NW, Washington, D.C.
20004-2623, United States
Tel +1 202 662 4555 | Fax +1 202 662 4643

TO WHOM IT MAY CONCERN:

Next Decade, LLC, a Delaware limited liability company ("ND"), holds the right, title and interest in and to that certain Option to Lease a certain parcel of land (the "Premises"), by and between Brownsville Navigation District and recorded on December 6, 2013 at the Cameron County Clerk office of Cameron, Texas. The Option To Lease Agreement ("Option") (attached hereto as Annex A) was signed on November 6, 2013 and recorded in the Official Public Records in Cameron County, Texas.

Pangea LNG (North America) Holdings, LLC ("Pangea LNG"), a Delaware limited liability company is the holder of an authorization to export LNG to certain countries via a facility currently proposed to be located at the Port of Corpus Christi in Ingleside, TX. Pangea LNG has concluded that the Premises would be a superior location from which to conduct its LNG export activities and is undertaking to apply to the Department of Energy to amend such export authorization to provide for exports via facilities located on, or berthed at, the Premises, in lieu of the site previously identified to the DOE.

By this letter, ND with cooperation of the Port of Brownsville, confirms that it will assign its right, title and interest in the Option to Pangea LNG upon Pangea LNG's export authorization being appropriately amended to allow LNG exports to be made from facilities to be located at the Premises.

Regards,

Kathleen Eisbrenner
CEO

Cameron County
Joe G Rivera
County Clerk
Brownsville, TX 78520

70 2013 00046198

Instrument Number: 2013-00046198
As
Real Property

Recorded On: December 06, 2013

Billable Pages: 5

Parties:

Number of Pages: 6

To

Comment:

(Parties listed above are for Clerks reference only)

**** Examined and Charged as Follows: ****

Real Property	42.00
Total Recording:	42.00

************** DO NOT REMOVE. THIS PAGE IS PART OF THE INSTRUMENT **************

Any provision herein which restricts the Sale, Rental or use of the described REAL PROPERTY because of color or race is invalid and unenforceable under federal law.

File Information:

Document Number: 2013-00046198
Receipt Number: 669308
Recorded Date/Time: December 06, 2013 04:09:04P
Book-Vol/Pg: BK-OR VL-19837 PG-55
User / Station: I Guerra - Cash Station # 5

Record and Return To:

RENTFRO LAW FIRM
P.O. BOX 6355
BROWNSVILLE TX 78523

I hereby certify that this instrument was filed on the date and time stamped hereon and was duly recorded in the Official Public Records in Cameron County, Texas

THE COUNTY OF CAMERON BROWNSVILLE, TEXAS

Joe G. Rivera
Cameron County Clerk

MEMORANDUM OF OPTION

STATE OF TEXAS §
§
COUNTY OF CAMERON §

This Memorandum of Option is executed pursuant to a certain Option to Lease dated effective November 6, 2013 (the "***Option Agreement***"), by and between the Brownsville Navigation District of Cameron County, Texas, a political subdivision of the State of Texas, whose address is 1000 Foust Road, Brownsville, Texas 78521 ("***Optionor***") and Next Decade, LLC, a Delaware limited liability company, and it successors and assigns whose address is 21 Waterway Avenue, Suite 550, The Woodlands, Texas 77380 ("***Optionee***"). This Memorandum of Option and the Option Agreement constitute an agreement concerning that certain real property located in Cameron County, Texas, as more particularly described on Exhibit A attached hereto and incorporated herein (the "***Property***").

Pursuant to the Option Agreement, Optionor granted Optionee the exclusive right and option to lease the Property at the price and under the terms and conditions described in the Option Agreement.

This Memorandum of Option may be executed in multiple counterparts, each of which will be considered an original for all purposes, and the signature pages from such counterparts may be attached to a single instrument for recording purposes.

[*Signatures appear on following page.*]

Executed as of the dates of the acknowledgment below, but effective for all purposes as of the 6th day of November, 2013.

OPTIONOR:

BROWNSVILLE NAVIGATION DISTRICT OF CAMERON COUNTY, TEXAS

By: ______________________
Sergio Tito Lopez, Chairman

STATE OF TEXAS

COUNTY OF CAMERON

This instrument was acknowledged before me this 2nd day of December, 2013, by Sergio Tito Lopez, Chairman of Brownsville Navigation District of Cameron County, Texas, on behalf of said District.

Beatrice G. Rosenbaum
Notary Public, State of Texas

NOTARY PUBLIC STATE OF TEXAS
BEATRICE G ROSENBAUM
My Commission Expires
February 17, 2017

9759865v.1 143833/00002

OPTIONEE:

NEXT DECADE, LLC, a Delaware limited liability company

By: [signature]
Name: Ray Eisbrenner
Title: Chief Administration Officer

STATE OF TEXAS

COUNTY OF ~~CAMERON~~ MONTGOMERY

This instrument was acknowledged before me this 6th day of November, 2013, by Ray Eisbrenner, Chief Admin. Officer of Next Decade, LLC, a Delaware limited liability company, on behalf of said limited liability company.

CHRISTINE MARIE COIT
Notary Public, State of Texas
My Commission Expires
November 17, 2015

Christine Marie Coit
Notary Public, State of Texas

EXHIBIT "A"

NEXT DECADE, LLC
METES AND BOUNDS DESCRIPTION
500.0 ACRE TRACT

November 26, 2013

BEING 500.0 ACRES of land out of Share 3, San Martin Grant, Cameron County, Texas, said 500.0 Acre Tract being more particularly described as follows:

BEGINNING at the intersection point of the U.S.E.D. Station 40+626.52 and the North 6+00 Reference Line from the original centerline of the Brownsville Ship Channel, said point being the Southeast corner of the 200.0 Ft. Gayman Channel Easement, for the Southwest corner and **PLACE OF BEGINNING** of this tract;

THENCE along the East line of said 200.0 Ft. Gayman Channel Easement, North 55 deg. 54 min. 55 sec. West, 2,225.49 feet to the Northeast corner of said Gayman Channel Easement, said point being on the South Right-of-Way line of State Highway No. 48, for the Northwest corner of this tract;

THENCE along the South Right-of-Way line of said State Highway No. 48, North 57 deg. 38 min. 35 sec. East, 1,728.00 feet to a point for a corner of this tract;

THENCE South 86 deg. 49 min. 22 sec. West, 205.11 feet to a point on the South Right-of-Way line of said State Highway No. 48, for a corner of this tract;

THENCE along the South Right-of-Way line of said State Highway No. 48, North 57 deg. 38 min. 35 sec. East, 8,375.96 feet to a point for the Northeast corner of this tract;

THENCE South 55 deg. 54 min. 55 sec. East, 2,690.41 feet to a point on the North 6+00 Reference Line from the original centerline at the Brownsville Ship Channel, for the Southeast corner of this tract;

THENCE along the North 6+00 Reference Line from the original centerline of the Brownsville Ship Channel, South 62 deg. 25 min. 27 sec. West, 3,647.96 feet to the point of curvature of a curve to the left for a corner of this tract;

THENCE continuing along the North 6+00 Reference Line from the original centerline of the Brownsville Ship Channel and along said curve to the left having a radius of 6,354.65 feet, a delta of 04 deg. 46 min. 52 sec. and a total length curve of 530.29 feet, to the point of tangency on the Corps of Engineers Station 34+680.76 for a corner of this tract;

THENCE continuing along the North 6+00 Reference Line from the original centerline of the Brownsville Ship Channel, South 57 deg. 38 min. 35 min. West, 5,945.76 feet to the **PLACE OF BEGINNING**, containing 500.0 Acres of land more or less.

This description is not based on an on-the-ground survey.

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FILED AND RECORDED
OFFICIAL PUBLIC RECORDS
On: Dec 06,2013 at 04:09P

Document Number: 00046198

By
Ivan Guerra
Joe G Rivera, County Clerk
Cameron County

APPENDIX C

OPINION OF COUNSEL

COGAN & PARTNERS LLP

1001 McKinney, Suite 1600
Houston, Texas 77002

www.coganpartners.com
t: 713.651.1881 f: 713.651.1888

OPINION OF COUNSEL

March 31, 2014

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: (1) Application to Amend Authorization Necessary to Effect a Transfer of Control of Pangea LNG (North America) Holdings, LLC and Revise the Point from which the Export of LNG to Free Trade Agreement Nations Is to Occur, DOE/FE Docket No. 12-174-LNG; and (2) Pangea LNG (North America) Holdings, LLC, Amendment of Application to Export LNG to Non-Free Trade Agreement Countries, DOE/FE Docket No. 12-184-LNG

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.P.R.§ 590.202(c) (2014). I am counsel to Pangea LNG (North America) Holdings, LLC ("Pangea LNG"). I have reviewed the organizational and internal governance documents of Pangea LNG and it is my opinion that (1) the proposed transfer of control of Pangea LNG, and (2) the proposed change in location of the ST LNG Project and point of export of LNG by Pangea LNG, as described in the foregoing document to which this Opinion of Counsel is attached as Appendix C, is within the company powers of Pangea LNG and that, even with such changes, the export of LNG as previously proposed by Pangea LNG to the Department of Energy's Office of Fossil Energy will remain within the corporate powers of Pangea LNG.

Respectfully submitted,

John P. Cogan Jr.

APPENDIX D

VERIFICATION

UNITED STATES OF AMERICA DEPARTMENT OF ENERGY
OFFICE OF FOSSIL ENERGY

VERIFICATION

Shaun Davison, first being sworn, states that he is Project Director for Pangea LNG (North America) Holdings, LLC with responsibility for the proposed South Texas LNG Export Project; that he is duly authorized to execute this Verification; that he has read the foregoing filing and is familiar with the contents thereof; and that all of the statements of fact therein contained are true and correct to the best of his knowledge and belief.

Shaun Davison
On behalf of
Pangea LNG (North America) Holdings, LLC

STATE OF TEXAS)

Subscribed and sworn to before me on this 28th day of March, 2014, by Shaun Davison proved to me on the basis of satisfactory evidence to be the person who appeared before me.

NOTARY PUBLIC SIGNATURE

NOTARY PUBLIC SEAL

CHRISTINE MARIE COIT
Notary Public, State of Texas
My Commission Expires
November 17, 2018

APPENDIX E

B&V ASSESSMENT

ASSESSMENT OF THE IMPACT OF CHANGE IN SITE LOCATION OF THE SOUTH TEXAS LNG PROJECT

B&V PROJECT NO. 182863.0100

PREPARED FOR

Pangea LNG (North America) Holdings, LLC

24 MARCH 2014

BLACK & VEATCH
Building a world of difference.

BLACK & VEATCH STATEMENT

This report was prepared for Pangea LNG (North America) Holdings, LLC ("Client") by Black & Veatch Corporation ("Black & Veatch") and is based in part on information not within the control of Black & Veatch. As such, Black & Veatch has not made an analysis, verified, or rendered an independent judgment of the validity of the information provided by others, and, therefore, Black & Veatch does not guarantee the accuracy thereof.

In conducting our analysis, Black & Veatch has made certain assumptions with respect to conditions, events, and circumstances that may occur in the future. The methodologies we utilize in performing the analysis and making these projections follow generally accepted industry practices. While we believe that such assumptions and methodologies as summarized in this report are reasonable and appropriate for the purpose for which they are used; depending upon conditions, events, and circumstances that actually occur but are unknown at this time, actual results may materially differ from those projected.

Readers of this report are advised that any projected or forecast price levels and price impacts, reflects the reasonable judgment of Black & Veatch at the time of the preparation of such information and is based on a number of factors and circumstances beyond our control. Accordingly, Black & Veatch makes no assurances that the projections or forecasts will be consistent with actual results or performance. To better reflect more current trends and reduce the chance of forecast error, we recommend that periodic updates of the forecasts contained in this report be conducted so more recent historical trends can be recognized and taken into account.

Neither this report, nor any information contained herein or otherwise supplied by Black & Veatch in connection with the services, shall be released or used in connection with any proxy, proxy statement, and proxy soliciting material, prospectus, Securities Registration Statement, or similar document without the written consent of Black & Veatch.

Use of this report, or any information contained therein, shall constitute the user's waiver and release of Black & Veatch from and against all claims and liability, including, but not limited to, any liability for special, incidental, indirect or consequential damages, in connection with such use. In addition, use of this report or any information contained therein shall constitute an agreement by the user to defend and indemnify Black & Veatch from and against any claims and liability, including, but not limited to, liability for special, incidental, indirect or consequential damages, in connection with such use. To the fullest extent permitted by law, such waiver and release, and indemnification shall apply notwithstanding the negligence, strict liability, fault, or breach of warranty or contract of Black & Veatch. The benefit of such releases, waivers or limitations of liability shall extend to B&V's related companies, and subcontractors, and the directors, officers, partners, employees, and agents of all released or indemnified parties. USE OF THIS REPORT SHALL CONSTITUTE AGREEMENT BY THE USER THAT ITS RIGHTS, IF ANY, IN RELATION TO THIS REPORT SHALL NOT EXCEED, OR BE IN ADDITION TO, THE RIGHTS OF THE CLIENT.

BLACK & VEATCH ASSESSMENT

In November 2012, Black & Veatch was retained by Pangea LNG (North America) Holdings, LLC ("Pangea") to provide an independent assessment of the market price impact of Pangea's proposed South Texas LNG Project, an LNG liquefaction facility to be constructed in Ingleside, Texas at the Port of Corpus Christi.

Black & Veatch utilized RBAC, Inc.'s GPCM™ model to assess the regional and national market price impact of liquefying and exporting 1.2 billion cubic feet per day (Bcf/d) of domestic gas supplies at the South Texas LNG Project from 2018 through 2042. Black & Veatch's report ("Black & Veatch 2012 Report") explored three LNG export scenarios to test the impact of exports from the South Texas LNG project on national and regional natural gas prices.

The *Base Case* market impact was derived by comparing regional and national prices with and without the proposed South Texas LNG Project. The fundamental market assumptions of the analysis were based on Black & Veatch's Year-End 2012 Energy Market Perspective ("EMP"), an integrated and comprehensive bi-annual outlook on North American energy markets that reflects Black and Veatch's most recent expectations at that time on key power and natural gas drivers as of November 2012.

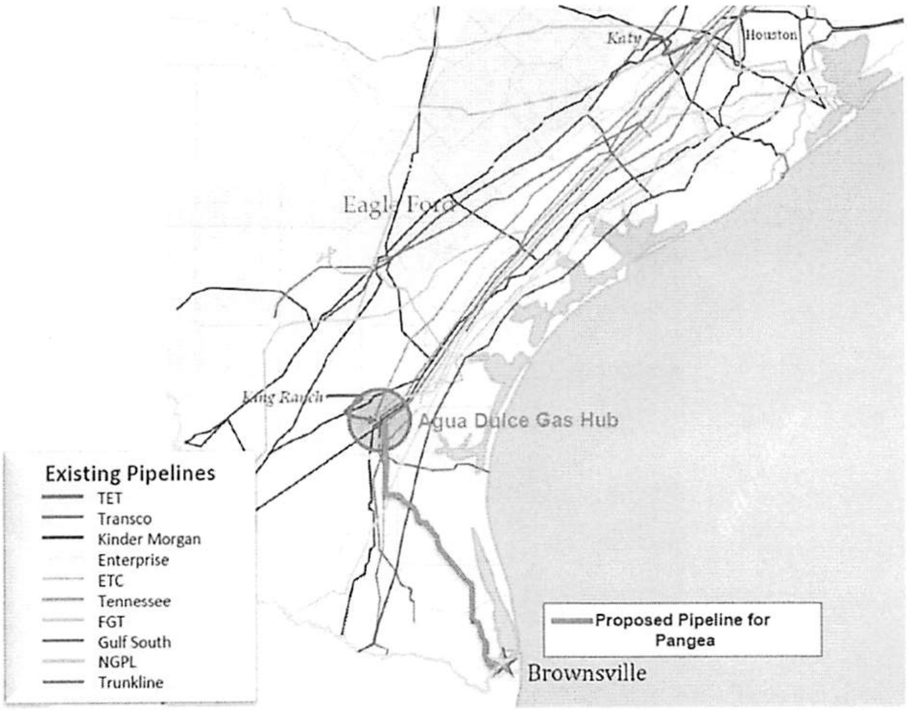
While Black & Veatch has updated its underlying view of the market through subsequent releases of the Energy Market Perspective, the discussion below highlights that the basic structure of the proposed South Texas LNG Project and the manner in which it interacts with the natural gas infrastructure have not changed with the proposed change in its location from Ingleside to Brownsville. As such, the analysis and price impacts highlighted in the Black & Veatch 2012 report are expected to continue to be relevant for the South Texas LNG Project.

Black & Veatch's *Base Case* analysis indicated that export volumes from the South Texas LNG Project would contribute to an estimated $0.12/MMBtu (2.0%) increase in gas prices at the Henry Hub during the first 10 years of operation. The price impact during the remaining 15 years is expected to be an average increase of $0.17/MMBtu (2.1%) over the *Base Case* average price at Henry Hub.

Black & Veatch estimated that the South Texas LNG Project export volumes are expected to have a similar price impact on the Agua Dulce Hub, the South Texas pricing point which the South Texas LNG Project directly draws supplies from. The *Base Case* price impact at the Agua Dulce Hub is projected to be $0.13/MMBtu (2.2%) over the first 10 years of the South Texas LNG Project's operations and 2.4% during the remaining 15 years.

Pangea now plans to move the South Texas LNG Project's site location approximately 130 miles south from Ingleside to Brownsville, Texas, as illustrated in Figure 1.

Figure 1: Natural Gas Pipeline Route to Port of Brownsville



Black & Veatch expects that, under the same market assumptions, the proposed change in the site location of the South Texas LNG Project will not materially impact the conclusions reached in the Black & Veatch 2012 report. Black & Veatch continues to expect that exports from the South Texas LNG Project will exert a minimal impact on regional and national gas prices through 2042.

First, the new terminal location does not change the characteristics of the South Texas LNG Project and the configuration of its pipeline header. The terminal will be constructed in two phases, each bringing two 4 MTPA trains into service by 2020. The header pipeline is designed to have a capacity of 1.2 Bcf/d and will interconnect with the same interstate and Texas intrastate pipelines, as shown in Table 1 as was originally contemplated with the South Texas LNG project and its original location in Ingleside.

Table 1: Proposed Pipeline Lateral Interconnections

INTERSTATE PIPELINES	INTRASTATE PIPELINES
Tennessee Gas Pipeline Company	Kinder Morgan Tejas Pipeline LLC
Transcontinental Gas Pipeline Corporation	CrossTex Energy, LP
Natural Gas Pipeline Company of America	GulfTerra Texas Pipeline, LP
Gulf South Pipeline Company, LP	Channel Industries Gas Company
Texas Eastern Transmission Corporation	

Examination of the interconnecting pipeline capacity and throughput near these two terminal locations has led Black & Veatch to conclude that both locations will have similar access to over 4.4 Bcf/d of throughput capacity via the terminal's proposed header pipeline. Primarily, the South Texas LNG Project is expected to continue to receive 1.2 Bcf/d of natural gas supply sourced through the same nine pipeline interconnections that were proposed in Pangea's initial application materials. Therefore, the terminal is expected to interact with the natural gas grid in a manner identical to the assumptions applied to the analysis in Black & Veatch's 2012 report. Most importantly, the shift in site location from Ingleside to Brownsville is not expected to alter the way the South Texas LNG Project will affect volumes traded at the Agua Dulce Hub, the South Texas pricing point where Black & Veatch's 2012 report anticipated the South Texas LNG Project to have the greatest price impact. Prices at the Agua Dulce Hub are determined by deliveries to the hub via eight pipeline systems, four of which will be interconnected to the South Texas LNG Project.

In addition, the shift in site location from Ingleside to Brownsville is not expected to alter the supply sources available to serve the South Texas LNG Project. The new site at Brownsville retains a close proximity to Eagle Ford Shale and other plays within the Maverick and Gulf Coast Basins, such as the Pearsall shale mentioned in the Black & Veatch 2012 report. The same pipeline interconnects of the header system are expected to allow identical channels and transportation costs for natural gas supplies to reach the new terminal location as assumed in the Black & Veatch 2012 report.

Natural gas to supply the South Texas LNG project is expected to be purchased the same way for both the original location and the new site - either directly at the well-head or the plant tailgate from Eagle Ford Shale or other south Texas production basins, or from producers or natural gas marketers at the Agua Dulce Hub. Either way, the South Texas LNG terminal impacts the regional market by directly increasing demand at the Agua Dulce Hub market, potentially increasing the market price at Agua Dulce and indirectly increasing prices downstream. Therefore, the regional and national market impact of the re-located terminal can be measured by price differentials with and without the project at the Agua Dulce Hub and the Henry Hub. Under the same market conditions, the magnitude of these impacts is expected to be the same due to the new location's identical pipeline capacity, supply access and transportation costs. Black & Veatch's market impact analysis in 2012 is therefore expected to be directly applicable to the re-located project site.

APPENDIX F

<u>PERRYMAN STUDY</u>

March 2014

The Impact of Construction and Operation of Pangea's South Texas LNG Export Project on Business Activity in the Brownsville Area

THE PERRYMAN GROUP

510 N. Valley Mills Dr., Suite 300

Waco, TX 76710

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THE PERRYMAN GROUP

Table of Contents

INTRODUCTION

INTRODUCTION

Pangea LNG (North America) Holdings, LLC (Pangea) is planning to construct and operate a liquefied natural gas (LNG) export facility and associated pipeline near Brownsville, Texas (the South Texas LNG Export Project). The Perryman Group (TPG) conducted an analysis of the proposed project and identified substantial, long-term economic benefits including job creation, economic investment, and tax revenue. The project as currently envisioned would involve a combination of floating and on-shore assets with a total cost in the range of $9 billion, though only a fraction of this investment would occur within the United States and the local area.

Direct investments to construct and operate facilities needed to export LNG through the proposed facility would lead to a sizable stimulus in a variety of sectors, as well as generating spill-over benefits for an even wider range of businesses. In addition, the potential project would support substantial fiscal revenues for governments at all levels.

To measure the total economic benefits stemming from the LNG export project, The Perryman Group utilized its proprietary US Multi-Regional Impact Assessment System. The economic benefits were quantified for the Brownsville-Harlingen Metropolitan Statistical Area (MSA—Cameron County), which was found to be the primary impact area through an assessment of economic linkages in the region.

The Perryman Group estimates that construction and preoperational spending associated with the proposed South Texas LNG Project would lead to total economic gains in the Brownsville-Harlingen MSA of almost $6.0 billion in gross product and 34,942 person-years of employment. The economic benefits of the facility once fully operational include some $130.5 million in gross product each year for the Brownsville-Harlingen MSA, as well as creation of 1,227 permanent jobs. The local area would also see considerable incremental tax receipts.

In addition to these gains in business activity, operations of the facilities would stimulate further natural gas production in a broader region, providing further economic stimulus. For the United States as a whole, The Perryman Group's summary analysis based on prior studies shows that the construction and preoperational spending for the project would result in a gain of business activity of about $4.5 billion in gross product and 50,849 person-years of employment. Nationwide operational gains in business activity (including incremental natural gas production) would include approximately $2.8 billion in gross product and 29,860 permanent jobs.

TPG is an economic research and analysis firm with more than 30 years of experience in assessing economic impacts, including hundreds of corporate expansions and LNG projects similar to the one proposed by Pangea. The firm developed and has maintained econometric models (providing current and forecast economic and demographic information) for the project area since the early 1980s. For further information regarding the firm, see Appendix A.

THE PROPOSED PROJECT AND PRIMARY ECONOMIC IMPACT AREA

THE PROPOSED PROJECT AND PRIMARY ECONOMIC IMPACT AREA

The Proposed South Texas LNG Export Project

As noted, the South Texas LNG Export Project would involve a combination of floating and on-shore assets as well as an associated natural gas pipeline. Plans call for construction in two phases, each of which involves four million tons of annual capacity. Phase 2 construction is anticipated to begin approximately 12-18 months[1] after Phase 1, with completion at the end of year three for Phase 1 and the end of year four for Phase 2.

Over an approximately four-year period, the investment in on-shore infrastructure is expected to total $1.4 billion in marine and land work at the site as well as another $615.3 million for the associated pipeline. Major components of these expenditures involve dredging, pipeline and interconnects with interstate and intrastate pipelines, cryogenic piping and interconnections at the site, buildings and other construction, civil engineering, and electric generation turbine installation.

Once operational, the South Texas LNG Export Project will have an estimated send-out capacity of eight million tonnes of liquefied natural gas per year. Employment at the facility was estimated by The Perryman Group based on patterns observed and expected at similarly sized LNG operations.

Primary Impact Area

As an initial phase of this analysis, The Perryman Group defined the primary impact area associated with construction and operation of the South Texas LNG Export Project facilities. The firm's US Multi-Regional Impact Assessment System was utilized in this stage of the assessment to quantify spillover benefits to the surrounding area. It was found that the primary benefits of the project would occur within the Brownsville-Harlingen Metropolitan Statistical Area.

[1] For study purposes, construction of Phase 2 was assumed to begin 18 months after Phase 1.

Other areas beyond the local area will also see economic gains stemming from the project. The Perryman Group has performed multiple analyses of liquefaction projects located in different parts of the state and has consistently found that the benefits for the United States as a whole exceed those for the primary impact area by a significant margin.

ECONOMIC BENEFITS OF THE SOUTH TEXAS LNG EXPORT PROJECT

ECONOMIC BENEFITS OF THE SOUTH TEXAS LNG EXPORT PROJECT

Natural gas demand continues to rise, both in the US and internationally, as a result of its thermal efficiencies and clean burning qualities. Because natural gas is viewed as being environmentally superior to coal and fuel oils, it has become the fuel of choice for numerous applications. Many developing economies around the world are recognizing the value natural gas provides to facilitate growth, from its low cost to its environmentally sensitive properties, and are looking for additional sources of the fuel.

The supply of natural gas in the United States is increasing as a consequence of refined gas exploration and production technology and the discovery of numerous major shale formations containing huge quantities. Converting natural gas to LNG for export would potentially serve to ensure the ongoing development of US natural gas resources by providing access to world markets. Further, the ability to export domestic gas as LNG greatly expands the market scope and access for domestic natural gas producers, encouraging domestic production at times when US market prices might not otherwise do so.

Several sources of economic benefits stemming from the proposed South Texas LNG Export Project were measured. These include the impacts of:

- construction and pre-operational activity,
- ongoing operations, and
- additional natural gas production.

Following an explanation of the methods used in this study, key summary results for each channel of economic effects are presented. A sectoral breakout of gains in business activity is presented in the appendices to this report, together with additional methodological explanation.

Measuring Economic Impacts

Any investment or corporate activity generates multiplier effects throughout the economy. Construction and development of a facility lead to purchases ranging from concrete to engineering services to landscaping. Ongoing operations also stimulate business activity through purchases and the expenditures by employees of payroll dollars for various goods and services.

In addition, the construction and operation of a liquefaction facility will encourage further development of natural gas resources by providing a ready market for LNG exports. Exploration, drilling, production, servicing, pipeline development and operations, royalty payments, and other direct expenditures associated with natural gas exploration and production involve substantial gains.

The Perryman Group's input-output assessment model uses a variety of data (from surveys, industry information, and other sources) to describe the various goods and services (known as resources or inputs) required to produce another good/service. An associated fiscal model allows for estimation of tax receipts to state and local entities. The submodels used in the current analysis reflect the specific industrial composition and characteristics of the Brownsville-Harlingen MSA (the primary impact area).

Impacts were quantified for the following measures of business activity:

- **Total expenditures** (or total spending) measures the dollars changing hands as a result of the economic stimulus.
- **Gross product** (or output) is production of goods and services that will come about in each area as a result of the activity. This measure is parallel to the gross domestic product numbers commonly reported by various media outlets and is a subset of total expenditures.
- **Personal income** is dollars that end up in the hands of people in the area; the vast majority of this aggregate derives from the earnings of employees, but payments such as interest and rents are also included.
- **Job gains** are expressed as **person-years** of employment (one person working for one year) for temporary projects (such as construction of a facility or cumulative assessments over time) or as permanent jobs when evaluating ongoing annual effects.

All results are expressed in constant (2013) dollars. Additional information is provided in the appendices to this report. It should be noted that the planning of this project is in its early stages; as a result, some of the detail within various categories was estimated based on patterns consistently observed in other LNG facilities analyzed by TPG.

Construction and Pre-Operational Activity

As noted, a substantial capital investment will be required by Pangea to facilitate the exportation of LNG. While a sizable portion of procurement may occur outside the United States, local construction activity and other pre-operational development nonetheless lead to sizable gains in business activity.

Estimated construction costs were provided by Pangea; The Perryman Group reviewed these estimates and found that they were reasonable in light of similar initiatives (adjusted for the nature of a partially floating facility). TPG did not, however, independently verify these estimates. TPG further assumed that all initial costs conform to current projections, with direct purchases allocated to the local area based on capacity and historical patterns.

Gains in business activity for the primary impact area stemming from construction and related outlays were found to include more than $2.9 billion in gross product and 34,942 person-years of employment. In addition, the area would also see an increase in tax receipts stemming from construction and pre-operational activities as depicted in the following table. (Although the fiscal outlays to support this project are unlikely to be significant given the nature of the Brownsville area economy, all fiscal effects reported throughout this analysis are determined on a "net" basis.)

The Anticipated Cumulative Impact of Construction and Other Pre-Operational Activities Associated with the Implementation of the Proposed South Texas LNG Export Project on Business Activity in the Brownsville-Harlingen MSA

(Monetary Values in Millions of Constant 2013 Dollars)

ECONOMIC BENEFITS

	Phase 1	Phase 2	Total (Phases 1 and 2)
Total Expenditures	$3,524.6	$2,455.1	$5,979.7
Gross Product	$1,727.9	$1,202.0	$2,929.9
Personal Income	$1,196.9	$831.4	$2,028.3
Retail Sales	$497.9	$347.9	$845.8
Employment (Total Person-Years)	20,609	14,333	34,942
Employment (Average Annual)*	6,870	5,733	8,741

FISCAL BENEFITS

Federal	$190.4	$160.1	$350.5
State (Texas)	$137.3	$95.3	$232.5
Other States	$11.5	$8.0	$19.4
Brownsville-Harlingen MSA	$48.5	$33.7	$82.2
Other Local Governmental Entities Across the US	$16.5	$11.5	$28.0

Source: The Perryman Group

Note: Assumes all initial costs and timing conform to current projections. Direct purchases are allocated across geographic areas based on capacity and historical patterns. Columns may not add to total due to rounding.

Based on the patterns in other projects, **employment during the peak period is likely to be in the range of 12,000-12,500 person years**. Note that only about 30% of these positions are in the construction sector.

Ongoing Operations of the Facilities

The South Texas LNG Export Project would serve as an ongoing stimulus to the area, through purchases and payroll. The Perryman Group estimates that economic benefits of ongoing operations of the South Texas LNG Export Project (based on patterns in other facilities and adjusted for volume) when Phase 1 operations begin include $65.2 million in gross product each year in the primary impact area as well as 613 permanent jobs.[2] Once both phases are in place, the benefits rise to $130.5 million in gross product and 1,227 permanent jobs. Incremental tax receipts at all levels are also notable as depicted in the table below.

[2] The project is still in the early stages of planning, and the likely employment at the site at maturity was derived based on analysis of patterns for similar facilities. It is possible that Phase 2 will involve some economies of scale. For simplification purposes, TPG assumed the project's overall likely impact was equally divided between Phase 1 and Phase 2, thus potentially understating effects in early years.

The Anticipated Annual Impact of Ongoing Operations Associated with the Implementation of the Proposed South Texas LNG Export Project on Business Activity in the Brownsville-Harlingen MSA (Monetary Values in Millions of Constant 2013 Dollars)			
ECONOMIC BENEFITS			
	Phase 1	**Phase 2**	**Total (Phases 1 and 2)**
Total Expenditures	$289.8	$289.8	$579.7
Gross Product	$65.2	$65.2	$130.5
Personal Income	$37.6	$37.6	$75.1
Retail Sales	$17.8	$17.8	$35.5
Employment (Permanent Jobs)	613	613	1,227
FISCAL BENEFITS			
Federal	$7.2	$7.2	$14.5
State (Texas)	$5.1	$5.1	$10.1
Other States	$0.7	$0.7	$1.5
Brownsville-Harlingen MSA	$1.5	$1.5	$2.9
Other Local Governmental Entities Throughout the US	$1.2	$1.2	$2.4
Source: The Perryman Group Note: Columns may not add to total due to rounding.			

Once operational, the South Texas LNG Export Project will support jobs across a spectrum of industries as indicated in the Appendices to this report.

Enhanced Natural Gas Production

Exports through the South Texas LNG Export Project will also likely stimulate additional development of natural gas resources by providing a mechanism to export LNG. This development involves sizable investment in exploration and production activity and, thus, further economic stimulus. While this development could occur in various parts of the United States, for study purposes it was assumed that some spillover benefits occur within the Brownsville-Harlingen MSA.

The Perryman Group estimates that in a typical year, incremental natural gas production associated with each phase of the South Texas LNG Export Project would lead to spillover benefits in the Brownsville-Harlingen area of $117.1 million in gross product and 1,341 jobs ($234.2 million in gross product and 2,683 permanent jobs for the project as a whole).

The Potential Annual Impact in a "Typical" Year of Natural Gas Exploration and Production Stimulus Required to Maintain the Level of Incremental Natural Gas Production Associated with the Implementation of the Proposed South Texas LNG Export Project on Business Activity in the Brownsville-Harlingen MSA

(Monetary Values in Millions of Constant 2013 Dollars)

ECONOMIC BENEFITS			
	Phase 1	Phase 2	Total (Phases 1 and 2)
Total Expenditures	$259.2	$259.2	$518.3
Gross Product	$117.1	$117.1	$234.2
Personal Income	$79.2	$79.2	$158.4
Retail Sales	$32.5	$32.5	$65.0
Employment (Permanent Jobs)	1,341	1,341	2,683
FISCAL BENEFITS			
Federal	$2,723.7	$2,723.7	$5,447.4
State (Texas)	$1,727.1	$1,727.1	$3,454.1
Other States	$77.8	$77.8	$155.5
Brownsville-Harlingen MSA	$3.2	$3.2	$6.4
Other Governmental Entities Throughout the US	$921.0	$921.0	$1,842.1

Source: The Perryman Group

Note: Columns may not add to total due to rounding.

Likely US Effects

The business model utilized by Pangea (with floating assets constructed outside of the United States) tends to reduce the preoperational economic benefits relative to other liquefaction operations of similar size. However, once the South Texas LNG Export Project is in operation, it is likely to generate a similar stimulus to the national economy (relative to other facilities). Effects on the US balance of payments and energy security are also expected to be in line with similarly sized facilities.

Although a full analysis of the impact of the South Texas LNG Export Project facilities on business activity in the United States was beyond the scope of this study, The Perryman Group performed a summary analysis of approximate benefits for the nation as a whole based on patterns in prior studies.

During Phase 1 of construction, the gain in business activity for the United States is likely to include approximately $2.4 billion in gross product and 27,339 person-years of employment. Phase 2 involves an additional $2.1 billion in gross product and 23,510 person-years of employment, for a total gain during the preoperational and construction period of approximately $4.5 billion in gross product and 50,849 person-years of employment.

Once the facility is operational, ongoing gains in business activity were estimated to be approximately $243.8 million in gross product and 2,060 permanent jobs. In addition to these benefits stemming from the facility itself, enhanced natural gas production could be expected to generate gains in business activity in the US of almost $2.6 billion in gross product and 27,800 jobs. The total ongoing benefits are, thus, approximately $2.8 billion in gross product and 29,860 permanent jobs.

Other Potential Considerations

The Brownsville-Harlingen area has a sizable construction workforce, with nearby areas (such as McAllen-Edinburg-Mission) offering thousands of potential workers. Within approximately 150 miles is the Corpus Christi area, with additional firms and workers with experience in refining and petrochemical facilities and related construction. As a result, virtually all of the workforce will likely be available in the region, and it is not anticipated that any temporary housing will be required or that construction workers would be housed in hotels to any significant degree. (Note that this analysis is limited to the South Texas LNG Export Project facilities and does not include the potential effects of other large projects that might be developed simultaneously in the region.)

Given the availability of the necessary workforce in the local area or nearby, it is not anticipated that the project will require a significant number of net new residences. However, because of the creation of high paying direct and spinoff jobs, the value of local housing is likely to increase (as there is a greater demand for higher quality owner-occupied and rental housing).

Because it is unlikely that hotels would be used to house construction workers to a significant degree, incremental needs would stem primarily from visitors to the site such as off-site personnel or suppliers. (Recall that, as noted earlier, this analysis does not account for other regional facilities that could possibly be developed contemporaneously.) This relatively low volume is not likely to significantly affect local market conditions, particularly given the relatively low occupancy rates (less than 54%, according to a report for the Texas Governor's Office by Source Strategies) common in the area in recent years.

As a conservative and simplifying assumption for study purposes, it was assumed that no additional housing or hotel space would be constructed as a result of the South Texas LNG Export Project.

Balance of Trade Benefits

Improving the US balance of trade is a stated policy goal; increasing US exports reduces the balance of trade deficit the US has experienced for many years. The South Texas LNG Export Project would help improve the balance of trade by increasing US exports of LNG.

The Perryman Group estimates that exports through the facility would have a value in the range of $4.686 billion to $7.577 billion per year based on current prices, and would improve the US balance of payments. (The actual amount will depend on destination, transportation costs, and other market factors.) These estimates assume displacement of imports of oil and natural gas liquids (other than ethane) and export of LNG. They are based on two scenarios which reflect alternative market situations. The "low" scenario reflects a situation characterized by distant destinations (such as Asia) with high shipping costs, low prices (50% of the oil-indexed export price), and a relatively low volume of exportable byproduct liquids. The "high" scenario reflects a situation of relatively proximate (South American) customers (and, thus, low shipping costs (90% of the indexed oil export prices)), and relatively high volumes of liquid byproducts. Although the calculations of these effects are straightforward, the wide range of unknown factors necessitates the use of scenarios to provide a reasonable range of potential outcomes.

Based on projections of future gas prices by the Energy Information Administration and other sources, this amount is expected to increase over time.

CONCLUSION

CONCLUSION

The proposed South Texas LNG Export Project would generate a substantial economic stimulus through construction and ongoing operations. The Perryman Group estimates that if costs are incurred as projected, construction and other pre-operational spending related to the South Texas LNG Export Project would lead to gains in business activity in the Brownsville-Harlingen MSA of more than $2.9 billion in gross product and 34,942 person-years of employment for both phases of the project. Gains would occur across a broad spectrum of industries. For the United States as a whole, likely construction and preoperational gains would be approximately $4.5 billion in gross product and 50,849 person-years of employment (based on results from similar studies).

The economic benefits of the South Texas LNG Export Project once both phases are fully operational include some $130.5 million in gross product each year for the Brownsville-Harlingen area as well as 1,227 permanent jobs ($243.8 million in gross product and 2,060 jobs nationwide). Enhanced natural gas production associated with exporting through the South Texas LNG Export Project has the potential for even larger gains of almost $2.6 billion in gross product each year and 27,800 permanent jobs. Overall, the ongoing benefits for the US economy stemming from the facility are estimated to be about $2.8 billion in gross product and 29,860 permanent jobs.

Growth in the US supply of natural gas and the emerging needs for natural gas in the form of LNG in international markets have resulted in a situation where exporting LNG is a viable and attractive option. Investments in facilities for this purpose create substantial and long-lasting economic benefits. In particular, such exports from the South Texas LNG Export Project would lead to gains in business activity and improve the balance of trade by roughly $6.1 billion per year (+/- 24%).

APPENDICES

APPENDIX A: The Perryman Group

The Perryman Group

The Perryman Group is an economic research and analysis firm based in Waco, Texas. The firm has more than 30 years of experience in assessing the economic impact of corporate expansions, regulatory changes, real estate developments, public policy initiatives, and myriad other factors affecting business activity. TPG has conducted hundreds of impact analyses for local areas, regions, and states throughout the U.S. Impact studies have been performed for hundreds of clients including many of the largest corporations in the world, governmental entities at all levels, educational institutions, major health care systems, utilities, and economic development organizations.

Dr. M. Ray Perryman, founder and President of the firm, developed the US Multi-Regional Impact Assessment System (used in this study) in the early 1980s and has consistently maintained, expanded, and updated it since that time. The model has been used in hundreds of diverse applications and has an excellent reputation for reliability.

The firm has conducted numerous investigations related to the oil and gas industry. These analyses have included, among others, forecasts, impact assessments, regulatory and environmental issues, and legislative and policy initiatives. Previous work by The Perryman Group includes an assessment of the effects of offshore drilling for the U.S. Department of the Interior, several studies of specific production areas, and projections of natural gas prices and output. Information has been prepared for the Interstate Oil Compact Commission, the U.S. Department of Energy, the Texas Railroad Commission, and numerous legislative committees regarding energy policy. Additionally, over the past several years, TPG has performed multiple comprehensive assessments of the impact of the Barnett Shale on the local northeast Texas area and the state of Texas, as well as a detailed analysis of the labor market in the Permian Basin oil and gas producing area of west Texas. The firm has also completed in-depth analyses of numerous refineries and petrochemical facilities, various aspects of natural gas taxation in Texas and Arkansas, as well an analysis of other proposed liquefaction export projects.

In addition, TPG has conducted several projects related to the manufacturing benefits associated with a major international pipeline project. The firm has also completed numerous studies specifically dealing with changes in the cost of energy resources, including electricity, oil, and natural gas on both a regional and national basis.

Dr. Perryman developed an econometric model of the area more than 30 years ago and has provided projections for the region on a continuing basis since the early 1980s. TPG has also conducted several projects specific to the region including impact assessments for several local facilities.

APPENDIX B: Detailed Methodology

US Multi-Regional Impact Assessment System

The basic modeling technique employed in this study is known as dynamic input-output analysis. This methodology essentially uses extensive survey data, industry information, and a variety of corroborative source materials to create a matrix describing the various goods and services (known as resources or inputs) required to produce one unit (a dollar's worth) of output for a given sector. Once the base information is compiled, it can be mathematically simulated to generate evaluations of the magnitude of successive rounds of activity involved in the overall production process.

There are two essential steps in conducting an input-output analysis once the system is operational. The first major endeavor is to accurately define the levels of direct activity to be evaluated. In the case of a prospective evaluation, it is necessary to first calculate reasonable estimates of the direct activity. In this instance, data regarding construction costs and schedules and capacity was provided by Pangea and reviewed by The Perryman Group for reasonableness relative to similar initiatives. TPG did not conduct any independent verification. Anticipated staffing was estimated based on patterns in other facilities.

A variety of sources of data regarding natural gas markets, oil and gas exploration and production patterns, and other information necessary to the analysis were collected and analyzed by The Perryman Group. TPG made use of available studies by major private groups and the Energy Information Administration regarding natural gas supplies and pricing. In addition, allocations of local direct contributions made use of extensive databases from the Bureau of Economic Analysis. In particular, TPG used pricing projections developed for Pangea by Black & Veatch.

The second major phase of the analysis is the simulation of the input-output system to measure overall economic effects. The present study was conducted within the context of the US Multi-Regional Impact Assessment System (USMRIAS) which was developed and is maintained by The Perryman Group. This model has been used in hundreds of diverse applications across the country and has an excellent reputation for accuracy and credibility. The systems used in the current simulations reflect the unique industrial structure and characteristics of the Brownsville-Harlingen Metropolitan Area economy. The system was also used in defining the Impact Area, as simulations indicated sufficient spillover activity to establish benefits to the Brownsville-Harlingen MSA.

The USMRIAS is somewhat similar in format to the Input-Output Model of the United States and the Regional Input-Output Modeling System, both of which are maintained by the US Department of Commerce. The model developed by TPG, however, incorporates several important enhancements and refinements. Specifically, the expanded system includes (1) comprehensive 500-sector coverage for any county, multi-county, or urban region; (2) calculation of both total expenditures and value-added by industry and region; (3) direct estimation of expenditures for multiple basic input choices (expenditures, output, income, or employment); (4) extensive parameter localization; (5) price adjustments for real and nominal assessments by sectors and areas; (6) measurement of the induced impacts associated with payrolls and consumer spending; (7) embedded modules to estimate multi-sectoral direct spending effects; (8) estimation of retail spending activity by consumers; and (9) comprehensive linkage and integration capabilities with a wide variety of econometric, real estate, occupational, and fiscal impact models. Moreover, the model uses specific local taxing patterns to estimate the fiscal effects of activity on a detailed sectoral basis. The models used for the present investigation have been thoroughly tested for reasonableness and historical reliability.

The impact assessment (input-output) process essentially estimates the amounts of all types of goods and services required to produce one unit (a dollar's worth) of a specific type of output. For purposes of illustrating the nature of the system, it is useful to think of inputs and outputs in dollar (rather than physical) terms. As an example, the construction of a new building will require specific dollar amounts of lumber, glass, concrete, hand tools, architectural services, interior design services, paint, plumbing, and numerous other elements. Each of these suppliers must, in turn, purchase additional dollar amounts of inputs. This process continues through multiple rounds of production, thus generating subsequent increments to business activity. The initial process of building the facility is known as the *direct effect*. The ensuing transactions in the output chain constitute the *indirect effect*.

Another pattern that arises in response to any direct economic activity comes from the payroll dollars received by employees at each stage of the production cycle. As workers are compensated, they use some of their income for taxes, savings, and purchases from external markets. A substantial portion, however, is spent locally on food, clothing, healthcare services, utilities, housing, recreation, and other items. Typical purchasing patterns in the relevant areas are obtained from the *ACCRA Cost of Living Index*, a privately compiled inter-regional measure which has been widely used for several decades, and the *Consumer Expenditure Survey* of the US Department of Labor. These initial outlays by area residents generate further secondary activity as local providers acquire inputs to meet this consumer demand. These consumer spending impacts are known as the *induced effect*. The USMRIAS is designed to provide realistic, yet conservative, estimates of these phenomena.

Sources for information used in this process include the Bureau of the Census, the Bureau of Labor Statistics, the Regional Economic Information System of the US Department of Commerce, and other public and private sources. The pricing data are compiled from the US Department of Labor and the US Department of Commerce. The verification and testing procedures make use of extensive public and private sources. Note that all monetary values are given in constant (2013) dollars to eliminate the effects of inflation. The USMRIAS generates estimates of the effect on several measures of business activity. The most comprehensive measure of economic activity used in this study is **Total**

Expenditures. This measure incorporates every dollar that changes hands in any transaction. For example, suppose a farmer sells wheat to a miller for $0.50; the miller then sells flour to a baker for $0.75; the baker, in turn, sells bread to a customer for $1.25. The Total Expenditures recorded in this instance would be $2.50, that is, $0.50 + $0.75 + $1.25. This measure is quite broad, but is useful in that (1) it reflects the overall interplay of all industries in the economy, and (2) some key fiscal variables such as sales taxes are linked to aggregate spending.

A second measure of business activity frequently employed in this analysis is that of **Gross Product**. This indicator represents the regional equivalent of Gross Domestic Product, the most commonly reported statistic regarding national economic performance. In other words, the Gross Product of Arkansas is the amount of US output that is produced in that state; it is defined as the value of all final goods produced in a given region for a specific period of time. Stated differently, it captures the amount of value-added (gross area product) over intermediate goods and services at each stage of the production process, that is, it eliminates the double counting in the Total Expenditures concept. Using the example above, the Gross Product is $1.25 (the value of the bread) rather than $2.50. Alternatively, it may be viewed as the sum of the value-added by the farmer, $0.50; the miller, $0.25 ($0.75 - $0.50); and the baker, $0.50 ($1.25 - $0.75). The total value-added is, therefore, $1.25, which is equivalent to the final value of the bread. In many industries, the primary component of value-added is the wage and salary payments to employees.

The third gauge of economic activity used in this evaluation is **Personal Income**. As the name implies, Personal Income is simply the income received by individuals, whether in the form of wages, salaries, interest, dividends, proprietors' profits, or other sources. It may thus be viewed as the segment of overall impacts which flows directly to the citizenry. The fourth measure, **Retail Sales**, represents the component of Total Expenditures which occurs in retail outlets (general merchandise stores, automobile dealers and service stations, building materials stores, food stores, drugstores, restaurants, and so forth). Retail Sales is a commonly used measure of consumer activity.

The final aggregates used are **Permanent Jobs and Person-Years of Employment**. The Person-Years of Employment measure reveals the full-time equivalent jobs generated by an activity. It should be noted that, unlike the dollar values described above, Permanent Jobs is a "stock" rather than a "flow." In other words, if an area produces $1 million in output in 2010 and $1 million in 2011, it is appropriate to say that $2 million was achieved in the 2010-2011 period. If the same area has 100 people working in 2010 and 100 in 2011, it only has 100 Permanent Jobs. When a flow of jobs is measured, such as in a construction project or a cumulative assessment over multiple years, it is appropriate to measure employment in Person-Years (a person working for a year). This concept is distinct from Permanent Jobs, which anticipates that the relevant positions will be maintained on a continuing basis.

APPENDIX C: Detailed Sectoral Results

Construction and Pre-Operational Activity

The Anticipated Cumulative Impact of Construction and Other Pre-Operational Activities Associated with the Implementation of the Proposed South Texas LNG Export Project on Business Activity in the Brownsville-Harlingen Metropolitan Statistical Area: Phase 1

Sector	Total Expenditures	Real Gross Product	Personal Income	Employment
	(2013 Dollars)	(2013 Dollars)	(2013 Dollars)	(Person-Years)
Agriculture	$58,502,198	$16,840,252	$11,099,866	171
Mining	$1,080,368	$372,575	$208,137	2
Construction	$1,247,193,802	$576,380,341	$474,973,298	6,510
Nondurable Manufacturing	$212,315,320	$71,958,026	$38,037,223	702
Durable Manufacturing	$241,645,794	$96,771,127	$59,903,096	924
Transportation and Utilities	$204,817,996	$100,421,864	$62,382,074	765
Information	$47,600,973	$29,293,417	$12,720,636	119
Wholesale Trade	$113,509,623	$76,832,829	$44,302,493	481
Retail Trade	$497,863,345	$375,547,794	$218,682,690	6,448
Finance, Insurance, and Real Estate	$408,131,904	$90,692,981	$34,511,411	341
Business Services	$161,829,018	$102,692,934	$83,771,122	991
Health Services	$117,079,500	$81,828,239	$69,186,534	1,110
Other Services	$213,059,005	$108,312,188	$87,140,763	2,047
TOTAL	$3,524,628,846	$1,727,944,567	$1,196,919,343	20,609

Source: US Multi-Regional Impact Assessment System, The Perryman Group

*Assumes all initial costs conform to current projections. Direct purchases are allocated across geographic areas based on capacity and historical patterns.

The Anticipated Cumulative Impact of Construction and Other Pre-Operational Activities Associated with the Implementation of the Proposed South Texas LNG Export Project on Business Activity in the Brownsville-Harlingen Metropolitan Statistical Area: Phase 2

Sector	Total Expenditures	Real Gross Product	Personal Income	Employment
	(2013 Dollars)	*(2013 Dollars)*	*(2013 Dollars)*	*(Person-Years)*
Agriculture	$40,607,022	$11,657,304	$7,682,906	118
Mining	$821,905	$293,280	$164,632	1
Construction	$865,616,961	$399,044,363	$328,837,409	4,507
Nondurable Manufacturing	$148,425,038	$50,313,704	$26,593,499	490
Durable Manufacturing	$174,373,880	$69,711,328	$42,896,658	661
Transportation and Utilities	$143,826,294	$70,712,735	$43,958,939	540
Information	$33,245,025	$20,461,500	$8,884,267	83
Wholesale Trade	$78,920,782	$53,421,865	$30,803,523	335
Retail Trade	$347,941,821	$262,619,883	$152,951,810	4,505
Finance, Insurance, and Real Estate	$283,304,819	$62,956,671	$23,932,031	236
Business Services	$108,847,813	$68,873,005	$56,182,726	665
Health Services	$81,239,489	$56,778,912	$48,007,095	771
Other Services	$147,917,716	$75,154,759	$60,470,622	1,422
TOTAL	$2,455,088,565	$1,201,999,309	$831,366,117	14,333

Source: US Multi-Regional Impact Assessment System, The Perryman Group

*Assumes all initial costs conform to current projections. Direct purchases are allocated across geographic areas based on capacity and historical patterns.

The Anticipated Cumulative Impact of Construction and Other Pre-Operational Activities Associated with the Implementation of the Proposed South Texas LNG Export Project on Business Activity in the Brownsville-Harlingen Metropolitan Statistical Area: Total (Phases 1 and 2)

Sector	Total Expenditures	Real Gross Product	Personal Income	Employment
	(2013 Dollars)	*(2013 Dollars)*	*(2013 Dollars)*	*(Person-Years)*
Agriculture	$99,109,220	$28,497,556	$18,782,772	289
Mining	$1,902,273	$665,855	$372,769	3
Construction	$2,112,810,763	$975,424,704	$803,810,707	11,016
Nondurable Manufacturing	$360,740,358	$122,271,730	$64,630,722	1,191
Durable Manufacturing	$416,019,674	$166,482,455	$102,799,754	1,585
Transportation and Utilities	$348,644,290	$171,134,599	$106,341,013	1,305
Information	$80,845,998	$49,754,917	$21,604,903	201
Wholesale Trade	$192,430,405	$130,254,694	$75,106,016	816
Retail Trade	$845,805,166	$638,167,677	$371,634,500	10,953
Finance, Insurance, and Real Estate	$691,436,723	$153,649,652	$58,443,442	577
Business Services	$270,676,831	$171,565,939	$139,953,848	1,655
Health Services	$198,318,989	$138,607,151	$117,193,629	1,881
Other Services	$360,976,721	$183,466,947	$147,611,385	3,469
TOTAL	$5,979,717,411	$2,929,943,876	$2,028,285,460	34,942

Source: US Multi-Regional Impact Assessment System, The Perryman Group

*Assumes all initial costs conform to current projections. Direct purchases are allocated across geographic areas based on capacity and historical patterns.

Ongoing Operations of the Facilities

The Anticipated Annual Impact of Ongoing Operations Associated with the Implementation of the Proposed South Texas LNG Export Project on Business Activity in the Brownsville-Harlingen Metropolitan Statistical Area: Phase 1

Sector	Total Expenditures	Real Gross Product	Personal Income	Employment
	(2013 Dollars)	*(2013 Dollars)*	*(2013 Dollars)*	*(Permanent Jobs)*
Agriculture	$2,319,017	$693,704	$452,950	7
Mining	$803,261	$179,377	$84,171	0
Construction	$6,555,002	$3,586,494	$2,955,494	41
Nondurable Manufacturing	$195,136,040	$18,433,391	$8,873,128	83
Durable Manufacturing	$4,367,686	$1,715,375	$1,080,324	15
Transportation and Utilities	$17,137,675	$6,340,927	$3,906,582	47
Information	$2,098,154	$1,294,349	$560,214	5
Wholesale Trade	$5,800,669	$3,920,576	$2,260,639	25
Retail Trade	$17,758,605	$13,147,172	$7,617,856	230
Finance, Insurance, and Real Estate	$21,777,874	$6,680,104	$2,179,154	21
Business Services	$4,045,919	$2,343,975	$1,912,083	23
Health Services	$4,134,694	$2,889,969	$2,443,496	39
Other Services	$7,906,599	$4,011,144	$3,242,115	77
TOTAL	$289,841,196	$65,236,557	$37,568,208	613

Source: US Multi-Regional Impact Assessment System, The Perryman Group

The Anticipated Annual Impact of Ongoing Operations Associated with the Implementation of the Proposed South Texas LNG Export Project on Business Activity in the Brownsville-Harlingen Metropolitan Statistical Area: Phase 2				
Sector	**Total Expenditures**	**Real Gross Product**	**Personal Income**	**Employment**
	(2013 Dollars)	*(2013 Dollars)*	*(2013 Dollars)*	*(Permanent Jobs)*
Agriculture	$2,319,017	$693,704	$452,950	7
Mining	$803,261	$179,377	$84,171	0
Construction	$6,555,002	$3,586,494	$2,955,494	41
Nondurable Manufacturing	$195,136,040	$18,433,391	$8,873,128	83
Durable Manufacturing	$4,367,686	$1,715,375	$1,080,324	15
Transportation and Utilities	$17,137,675	$6,340,927	$3,906,582	47
Information	$2,098,154	$1,294,349	$560,214	5
Wholesale Trade	$5,800,669	$3,920,576	$2,260,639	25
Retail Trade	$17,758,605	$13,147,172	$7,617,856	230
Finance, Insurance, and Real Estate	$21,777,874	$6,680,104	$2,179,154	21
Business Services	$4,045,919	$2,343,975	$1,912,083	23
Health Services	$4,134,694	$2,889,969	$2,443,496	39
Other Services	$7,906,599	$4,011,144	$3,242,115	77
TOTAL	$289,841,196	$65,236,557	$37,568,208	613
Source: US Multi-Regional Impact Assessment System, The Perryman Group				

The Anticipated Annual Impact of Ongoing Operations Associated with the Implementation of the Proposed South Texas LNG Export Project on Business Activity in the Brownsville-Harlingen Metropolitan Statistical Area: Total (Phases 1 and 2)

Sector	Total Expenditures	Real Gross Product	Personal Income	Employment
	(2013 Dollars)	*(2013 Dollars)*	*(2013 Dollars)*	*(Permanent Jobs)*
Agriculture	$4,638,034	$1,387,408	$905,901	14
Mining	$1,606,522	$358,754	$168,343	1
Construction	$13,110,005	$7,172,988	$5,910,988	81
Nondurable Manufacturing	$390,272,080	$36,866,783	$17,746,257	166
Durable Manufacturing	$8,735,373	$3,430,750	$2,160,648	30
Transportation and Utilities	$34,275,351	$12,681,854	$7,813,163	95
Information	$4,196,308	$2,588,698	$1,120,428	10
Wholesale Trade	$11,601,339	$7,841,151	$4,521,277	49
Retail Trade	$35,517,210	$26,294,344	$15,235,713	461
Finance, Insurance, and Real Estate	$43,555,749	$13,360,207	$4,358,309	41
Business Services	$8,091,838	$4,687,949	$3,824,166	45
Health Services	$8,269,387	$5,779,939	$4,886,992	78
Other Services	$15,813,198	$8,022,288	$6,484,230	155
TOTAL	$579,682,392	$130,473,113	$75,136,415	1,227

Source: US Multi-Regional Impact Assessment System, The Perryman Group

Potential Benefits from Incremental Natural Gas Production

The Potential Annual Impact in a "Typical" Year of Natural Gas Exploration and Production Stimulus Required to Maintain the Level of Incremental Natural Gas Production Associated with Implementation of the Proposed South Texas LNG Export Project on Business Activity in the Brownsville-Harlingen Metropolitan Statistical Area: Phase 1

Sector	Total Expenditures	Real Gross Product	Personal Income	Employment
	(2013 Dollars)	*(2013 Dollars)*	*(2013 Dollars)*	*(Permanent Jobs)*
Agriculture	$3,852,094	$1,075,469	$712,749	11
Mining	$18,424,967	$4,045,233	$1,867,834	9
Construction	$88,061,243	$36,156,574	$29,795,269	408
Nondurable Manufacturing	$14,137,665	$4,718,626	$2,493,325	46
Durable Manufacturing	$12,108,397	$4,699,109	$2,944,776	43
Transportation and Utilities	$17,583,350	$9,205,348	$5,811,511	73
Information	$3,207,145	$1,967,334	$853,345	8
Wholesale Trade	$8,180,372	$5,536,270	$3,192,263	35
Retail Trade	$32,486,823	$24,438,606	$14,218,522	421
Finance, Insurance, and Real Estate	$31,292,922	$8,259,628	$3,337,276	34
Business Services	$7,367,251	$4,270,482	$3,483,619	41
Health Services	$7,756,924	$5,419,755	$4,582,453	74
Other Services	$14,704,771	$7,288,911	$5,887,190	138
TOTAL	$259,163,925	$117,081,345	$79,180,132	1,341

Source: US Multi-Regional Impact Assessment System, The Perryman Group

*These effects reflect the "spillover" effects to the urban area assuming that the gas development occurs in the relatively proximate area (Eagle Ford Shale).

The Potential Annual Impact in a "Typical" Year of Natural Gas Exploration and Production Stimulus Required to Maintain the Level of Incremental Natural Gas Production Associated with Implementation of the Proposed South Texas LNG Export Project on Business Activity in the Brownsville-Harlingen Metropolitan Statistical Area: Phase 2				
Sector	**Total Expenditures**	**Real Gross Product**	**Personal Income**	**Employment**
	(2013 Dollars)	*(2013 Dollars)*	*(2013 Dollars)*	*(Permanent Jobs)*
Agriculture	$3,852,094	$1,075,469	$712,749	11
Mining	$18,424,967	$4,045,233	$1,867,834	9
Construction	$88,061,243	$36,156,574	$29,795,269	408
Nondurable Manufacturing	$14,137,665	$4,718,626	$2,493,325	46
Durable Manufacturing	$12,108,397	$4,699,109	$2,944,776	43
Transportation and Utilities	$17,583,350	$9,205,348	$5,811,511	73
Information	$3,207,145	$1,967,334	$853,345	8
Wholesale Trade	$8,180,372	$5,536,270	$3,192,263	35
Retail Trade	$32,486,823	$24,438,606	$14,218,522	421
Finance, Insurance, and Real Estate	$31,292,922	$8,259,628	$3,337,276	34
Business Services	$7,367,251	$4,270,482	$3,483,619	41
Health Services	$7,756,924	$5,419,755	$4,582,453	74
Other Services	$14,704,771	$7,288,911	$5,887,190	138
TOTAL	$259,163,925	$117,081,345	$79,180,132	1,341

Source: US Multi-Regional Impact Assessment System, The Perryman Group.

*These effects reflect the "spillover" effects to the urban area assuming that the gas development occurs in the relatively proximate area (Eagle Ford Shale).

The Potential Annual Impact in a "Typical" Year of Natural Gas Exploration and Production Stimulus Required to Maintain the Level of Incremental Natural Gas Production Associated with Implementation of the Proposed South Texas LNG Export Project on Business Activity in the Brownsville-Harlingen Metropolitan Statistical Area: Total (Phases 1 and 2)				
Sector	**Total Expenditures**	**Real Gross Product**	**Personal Income**	**Employment**
	(2013 Dollars)	*(2013 Dollars)*	*(2013 Dollars)*	*(Permanent Jobs)*
Agriculture	$7,704,188	$2,150,939	$1,425,498	22
Mining	$36,849,933	$8,090,466	$3,735,668	18
Construction	$176,122,485	$72,313,148	$59,590,538	817
Nondurable Manufacturing	$28,275,331	$9,437,252	$4,986,650	92
Durable Manufacturing	$24,216,794	$9,398,217	$5,889,552	86
Transportation and Utilities	$35,166,701	$18,410,696	$11,623,021	146
Information	$6,414,291	$3,934,669	$1,706,690	16
Wholesale Trade	$16,360,744	$11,072,540	$6,384,526	69
Retail Trade	$64,973,646	$48,877,211	$28,437,045	842
Finance, Insurance, and Real Estate	$62,585,845	$16,519,256	$6,674,552	68
Business Services	$14,734,502	$8,540,964	$6,967,238	82
Health Services	$15,513,847	$10,839,510	$9,164,906	147
Other Services	$29,409,543	$14,577,822	$11,774,380	277
TOTAL	$518,327,849	$234,162,689	$158,360,264	2,683

Source: US Multi-Regional Impact Assessment System, The Perryman Group.

*These effects reflect the "spillover" effects to the urban area assuming that the gas development occurs in the relatively proximate area (Eagle Ford Shale).

APPENDIX G

CERTIFICATE OF SERVICE

Certificate of Service

I hereby certify that I have this day served the foregoing document upon each person designated on the official service list compiled by the Secretary in this proceeding.

Dated at Washington, D.C. this 31st day of March, 2014.

/s/ Maguette Ndiaye
Maguette Ndiaye
Paralegal on behalf of
Pangea LNG (North America), LLC