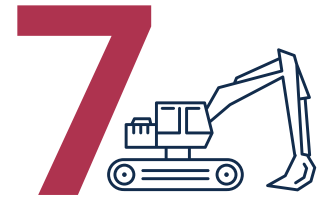
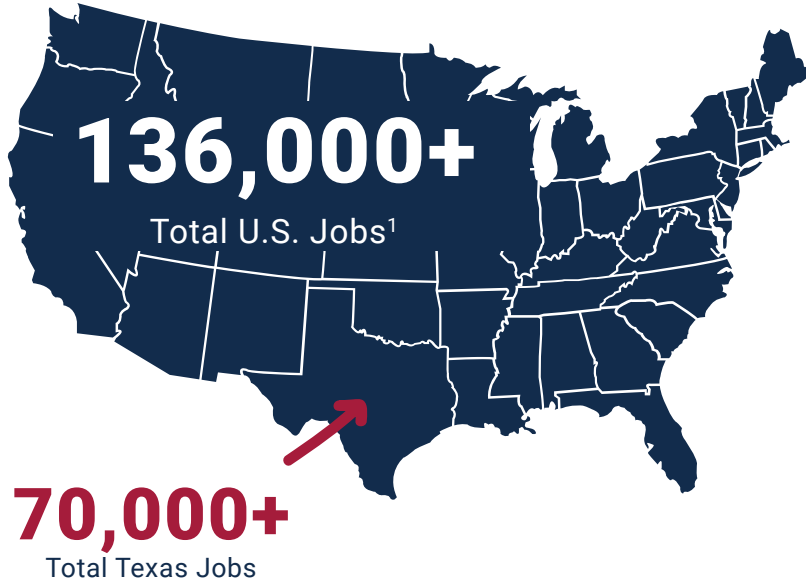




# LNG EXPORT FACILITIES IN TEXAS

A PRIMER



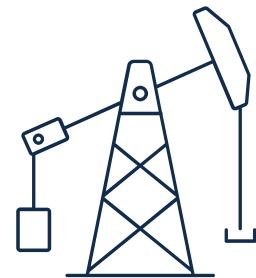
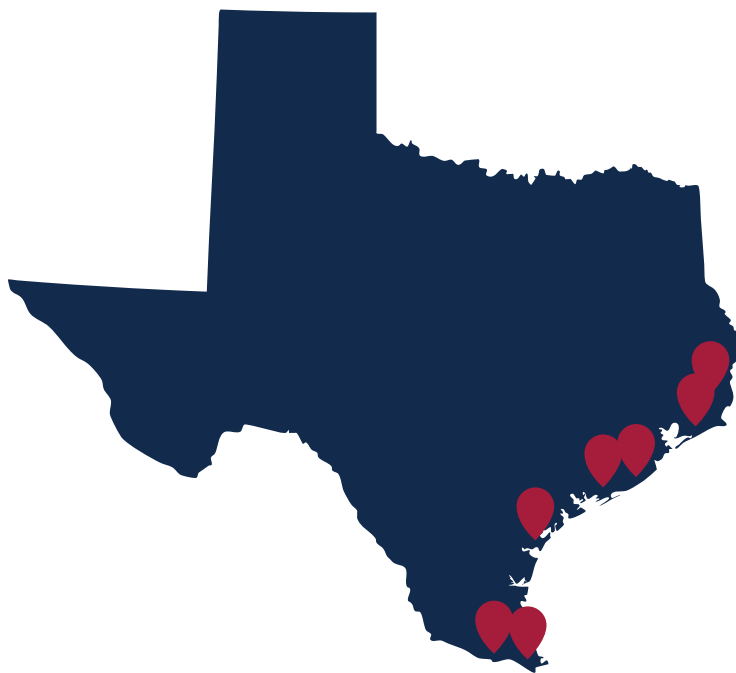
Texas Facilities Proposed  
or Under Construction



**\$145+ billion**

Total Economic Impact Total<sup>2</sup>

## Facility Locations



**\$20+ billion**

Texas Tax Revenue

Natural gas is rapidly becoming the dominant fuel source globally. Spurred by massive production growth thanks to innovations such as hydraulic fracturing (fracking) and horizontal drilling, the United States recently overtook Russia as the world's largest natural gas producer. Global natural gas consumption worldwide will grow from 120 trillion cubic feet (Tcf) in 2012 to an estimated 203 Tcf in 2040. As this global demand continues to increase, more countries are turning to a reliable partner to meet their natural gas needs, a role the United States is uniquely positioned to fill.<sup>3</sup>

Just a little over a decade ago, many believed that the United States would need to import increasing amounts of liquefied natural gas (LNG) in order to make up for declining domestic production, from the areas available for exploration and production. Fracking turned this belief on its head, as U.S. production soared in places such as the Barnett Shale in North Texas and the Marcellus Shale in Pennsylvania. In 2004, total natural gas production in the Barnett Shale was roughly one billion cubic feet per day (Bcf/d). By 2012, natural gas production had increased five-fold; reaching a peak of about 5.7 Bcf/d.<sup>4</sup> Resources also grew substantially, with the U.S. Geological Survey (USGS) estimate for undiscovered, technically recoverable resources in the Barnett growing from a mean of 26.2 Tcf in 2003 to an estimated 53 Tcf in 2015.<sup>5</sup> Notably, from 2003 to 2015, only 15 Tcf of natural gas was produced in the Barnett, less than a third of the total estimated resources.<sup>6</sup>

Shale gas accounts for over half of all U.S. gas production, totaling roughly 15.2 Tcf in 2015.<sup>7</sup> The U.S. Energy Information Administration (EIA) projects that natural gas production from shale gas and tight oil plays will almost double to about 29 Tcf by 2040, making up 69 percent of total U.S. natural gas production. EIA projects that the United States will become a net natural gas exporter in 2017.<sup>8</sup>

This surplus of natural gas, coupled with a growing global market for the fuel, has made the Gulf Coast of Texas a prime location for

LNG export facilities. There are currently 24 LNG export projects under construction or planned in the United States, seven of which are located in Texas. These Texas projects are: the Texas LNG project, Golden Pass LNG, Rio Grande LNG, Freeport LNG, Port Arthur LNG, Annova LNG, and Cheniere's Corpus Christi LNG project. Combined, these projects represent tens of billions of dollars in investment and thousands of new jobs. The Rio Grande LNG project alone is estimated to reach up to \$20 billion in total investment, depending on the number of trains – an LNG plant's liquefaction and purification facility – that are built on the site.<sup>9</sup>

In addition to direct investment, these projects will provide substantial economic stimulation to Texas and regional economies. The Freeport LNG export terminal expansion, for example, is estimated to employ more than 3,500 workers during the four- to five-year construction process, as well as provide between \$5.1 and \$7.4 billion in total economic benefits per year.<sup>10</sup> Moreover, that project alone is projected to reduce the U.S. foreign trade imbalance by approximately one full percentage point.<sup>11</sup>

Tax revenue from these projects will also be significant, helping to build additional infrastructure, fund education and support emergency services. Cheniere's Corpus Christi Liquefaction project, which received export approval from the U.S. Department of Energy (DOE) in May 2016, is estimated to create between \$16 billion and \$20 billion in personal income, along with \$1.9 billion to \$2.4 billion in federal tax revenue.<sup>12</sup>

Nationwide, the LNG export facilities proposed or under construction in Texas could create more than 136,000 jobs nationwide, and have an economic impact of more than \$145 billion.

This report provides a quick guide to each of the LNG export facilities under construction or currently planned for the Gulf Coast in Texas, including the economic impact that each one is projected to have.

## WHAT IS LNG?

Liquefied natural gas, or LNG, is natural gas (methane) that has been super cooled to negative 260 degrees Fahrenheit, at which point the gas becomes a liquid. During this conversion process, the natural gas vapor is condensed down to roughly 1/600th of its volume, making transportation of large amounts of gas easier and more economical. In addition to being odorless, LNG has the unique properties of being colorless, non-toxic, and non-corrosive.<sup>13</sup> Also, by converting the methane vapor into a liquid, natural gas can be safely transported long distances that would otherwise be impossible to reach via pipeline, such as from Texas to growing markets in Asia and Europe.

## FEDERAL REGULATION

Two federal agencies have a central role in the current expansion of Texas LNG facilities, the Federal Energy Regulatory Commission (FERC) and the U.S. Department of Energy (DOE). FERC has authority over siting, construction, expansion, or operation of LNG terminals. Applications to FERC must ensure the project meets rigorous environmental, safety and socioeconomic requirements. Other federal agencies that play a regulatory role include the U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, and U.S. Army Corps of Engineers, among others.<sup>14</sup> For Texas projects, the Texas Commission on Environmental Quality is also involved.

The U.S. DOE has authority over import and export of the commodity of natural gas and LNG. DOE reviews applications on the basis of whether they involve exports to Free Trade Agreement (FTA) or non-Free Trade Agreement (non-FTA) countries. Approvals for exports to FTA countries are almost guaranteed, as they are viewed to be de facto in the national interest. Approvals for non-FTA exports have been much more difficult to obtain and can often take years for DOE to make the needed national interest determination. All application and permitting status information contained in this report is current as of April 27, 2017.<sup>15</sup>

# TEXAS LNG OVERVIEW

## BY THE NUMBERS

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Total Capacity:  
**4.5 MTA**



The Texas LNG project is estimated to create about **600 construction jobs** with around **80 permanent jobs** for operation once construction is complete.

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Total government revenue from Texas LNG is projected to reach up to **\$9.3 billion**, with the largest share going to state and local governments.

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Direct investment in the Texas LNG project is expected to reach roughly **\$1.3 billion**, with economic benefits up to **\$22.8 billion**.



**Over 300,000 man hours** went into the FERC assessment and evaluations to ensure best possible practices, economic impact, and environmental stewardship.

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## TEXAS LNG OVERVIEW

**Permitting status:** FTA approval received in June 2014. Non-FTA currently under DOE review. FERC application still pending.

The Texas LNG project is set to begin site construction in 2017 with phase one of production beginning in 2021.<sup>16</sup> The project is currently under FERC review, and will have the capacity to produce up to 2.25 million tons per annum (MTA) of LNG.<sup>17</sup> The second phase of production is anticipated to start in 2022 and will increase export capacity another 2.25 MTA, for a total of 4.5 MTA.<sup>18</sup> The project submitted its FTA and non-FTA export applications on December 31, 2013 and received FTA export approval in June 2014, with a second application for larger export volumes granted approval in September of 2015.<sup>19</sup>

Texas LNG is estimated to create around **600 construction jobs** and about 80 permanent jobs

with an average compensation of **\$70,000 per year**.<sup>20</sup> Total direct investment in the project is expected to reach **\$1.3 billion**, a significant investment in the region.<sup>21</sup> Moreover, the company behind the project anticipates paying more taxes than any other current taxpayer in Cameron County over the life of the project.<sup>22</sup> According to an analysis by ICF International, government revenues from the project are expected to reach \$6.4 to \$9.3 billion, with the largest share of revenues going to state and local governments. In total, economic benefits from the project are estimated to be between **\$15.6 and \$22.8 billion**.<sup>23</sup>

The Texas LNG project is also designed to minimize impact on the surrounding environment. Entering the pre-filing process in March 2015, Texas LNG staff had spent more than **300,000 man-hours** working on the FERC application to ensure the project meets all FERC safety and environmental requirements.<sup>25</sup>



*The Texas LNG...project will provide a much needed outlet for the eco-rich supply of Texas natural gas, which will prompt domestic economic growth.”<sup>24</sup>*

**DAN PATRICK**  
Texas Lieutenant Governor

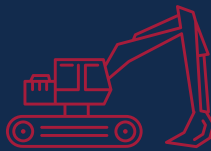
# FREEPORT LNG OVERVIEW

## BY THE NUMBERS

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Total Capacity:  
**13.9 MTA**



The Freeport LNG construction phase is estimated to create more than **3,500 on-site and engineering jobs**, with up to **30,000 permanent indirect and induced jobs** created around the U.S.



Direct investment from Freeport LNG is projected to surpass **\$14 billion**, and the project is expected to result in as much as **\$7.4 billion** in economic benefits for the U.S. per year.



Freeport LNG has given back millions to the community, including \$1 million to the Brazosport College Foundation to support workforce training and \$500,000 to the Brazosport Health Foundation to improve medical facilities.

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## FREPORT LNG OVERVIEW

**Permitting status:** DOE and FERC approved first three trains in Nov. 2014. FERC and DOE approval for fourth train expansion is still pending.

The Freeport LNG project began construction in November of 2014 and is expected to begin operation of the first liquefaction train in 2018. Prior to construction, the project underwent an extensive four-year permitting process, with Freeport LNG receiving final approval from FERC on its first three liquefaction trains and the DOE in November of 2014. The liquefaction expansion at Freeport LNG is expected to provide an export capacity of roughly **13.9 MTA** of LNG, equivalent to processing about two billion cubic feet per day of natural gas.<sup>26</sup>

In total, this expansion will result in **\$5.1 to \$7.4 billion** in benefits to the U.S. economy per year,

and it will represent over **\$14 billion in direct investment**.<sup>27</sup> During construction, the project is estimated to create more than 3,500 on-site and engineering jobs, in addition to hundreds of off-site jobs to support the facilities' design and construction.<sup>28</sup> In terms of indirect jobs, the Freeport LNG expansion is expected to create 24,000 and 30,000 permanent additional jobs across the U.S., including exploration and production jobs to maintain the supply of natural gas for the project.<sup>29</sup>

Along with job creation and massive economic benefits, Freeport LNG is also working to give back to the community. For example, in 2015 Freeport LNG awarded \$1 million to the Brazosport College Foundation to support workforce training and education.<sup>30</sup> Freeport LNG has also given back to the region by giving **\$500,000** to the Brazosport Health Foundation, **\$250,000** to the Center for Arts and Sciences, and **\$100,000** to the BISD Education Foundation.<sup>31</sup>



*This level of financial commitment makes it possible for Brazosport College to have the labs and facilities necessary to deliver quality programs. It is a true honor to announce that we will have [the] Freeport LNG name on a prominent building within the Science Technology corridor on the BC campus."*

**DR. MILLICENT VALEK**  
President | Brazosport College<sup>32</sup>

# GOLDEN PASS LNG OVERVIEW

## BY THE NUMBERS

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Total Capacity:  
**15.6 MTA** <sup>33</sup>



Golden Pass LNG will create roughly 3,800 permanent jobs across the U.S. and the equivalent of **45,000 U.S. jobs** during construction.



Locally, **9,000 jobs** will be created during construction.



Golden Pass LNG is expected to generate total tax revenues of about **\$4.6 billion** throughout the life of the project.



Golden Pass LNG represents an estimated **\$10 billion** in direct investment and **\$31 billion** in total **economic gains**.

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## GOLDEN PASS LNG OVERVIEW

**Permitting status:** Received FERC approval in December 2016. FTA approved by DOE in Sept. 2012; non-FTA approved in April 2017.

Planned as an expansion to one of the largest LNG import terminals in the United States, the Golden Pass LNG project - located near Sabine Pass, Texas - recently received approval from FERC to commence construction and operation. <sup>34</sup> Slated to begin exporting natural gas around as early as 2021, the Golden Pass LNG project represents an estimated \$10 billion in direct investment. <sup>35</sup> During construction, Golden Pass is estimated to create the equivalent of 45,000 U.S. jobs. <sup>36</sup>

It's also estimated that around **9,000 jobs** will be created during the construction phase. <sup>37</sup> Moreover, it's anticipated that 200 new permanent workers will be employed at the facility, <sup>38</sup> as part of an estimated 3,800 permanent jobs across the United States. <sup>39</sup> This includes jobs to manufacture and build additional pipelines, as well as exploration and

production jobs to maintain natural gas supplies for the project. Golden Pass LNG represents a **\$10 billion** investment with total economic gains from that investment reaching a staggering **\$31 billion** across the U.S. <sup>40</sup> Cumulative tax revenue generated is expected to be about **\$4.6 billion**. <sup>41</sup>

Importantly, Golden Pass LNG has also made a concerted effort to benefit and grow businesses in Southeast Texas. Through the "Local Business Initiative," Golden Pass LNG helped over 150 businesses in Jefferson County undergo pre-screening to compete for work on the proposed project without having to pay the usual **\$1,000 screening fee**. <sup>42</sup>

In addition to substantial job creation, economic benefits and efforts to boost local businesses, Golden Pass LNG is also committed to environmental stewardship in the region. For example, while preparing for construction, Golden Pass LNG teamed up with Ducks Unlimited, an international non-profit focused on waterfowl habitat conservation, to restore 1,300 acres of marsh land, known as the J.D. Murphree Wildlife Management Area (WMA). <sup>43</sup>



*Golden Pass LNG could have taken a more traditional and dependable route by placing the dredge material in a containment area. The fact that they not only considered using the material in a positive way, but actually encouraged and paid their dredging contractors to do whatever was necessary to make the project work best for marsh restoration deserves much credit and attention."*

**GREG GREEN**

*Regional Biologist for Ducks Unlimited* <sup>44</sup>

# CORPUS CHRISTI LNG OVERVIEW

## BY THE NUMBERS

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Total Capacity:  
**22.5 MTA**



4,000 jobs created during initial construction, with an additional **430 permanent jobs** created during operation

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The project is estimated to support over **18,000 indirect and induced jobs**, including **3,600 jobs** in the Coastal Bend region to support facility operations. Corpus Christi LNG will ultimately support up to **50,000 Texas jobs**.

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The project will generate between **\$970.62 million** and **\$1.17 billion** in state taxes.



Construction and operation are estimated to generate \$19.56 billion to **\$23.27 billion** in gross product for the Texas economy.

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## CORPUS CHRISTI LNG OVERVIEW

**Permitting status:** Received FERC approval in April 2015. Initial FTA and non-FTA approval from DOE secured in May 2015. Additional export capacity still under DOE review.

Similar to Golden Pass LNG, the Corpus Christi LNG project is being developed on an existing import terminal. A subsidiary of Cheniere, the company behind the already operating Sabine Pass terminal in Louisiana, Corpus Christi LNG is one of the largest planned export terminals in the country. The project is being designed with five trains for an expected total capacity of up to 22.5 MTA. <sup>45</sup> Construction is already underway for the first two liquefaction trains, and a second phase of construction for the remaining trains is tentatively scheduled to begin in 2017. <sup>46</sup>

According to a November 2016 report from the Texas Senate Select Committee on Texas Ports, the direct jobs created by the project will peak at around 4,000 during construction. Additionally, the report estimates that the project will create 430 permanent jobs at the terminal. In terms of indirect and induced jobs, Corpus Christi LNG is estimated to support more than **18,000 Texas**

**jobs** per year over seven years, as well as **3,600** per year in the Coastal Bend region specifically. <sup>47</sup>

In total, the Texas Senate Select Committee report projects that Corpus Christi LNG will support roughly **50,000 Texas jobs**, after factoring in additional natural gas development to meet the facility's demand. Corpus Christi LNG is projected to contribute roughly **\$2.7 billion** to the GDP of South Texas, and approximately **\$1.8 billion** in wages to regional workers during construction. Moreover, the annual economic impact to Texas once the project is in operation is estimated to be over **\$5 billion**, when factoring in the additional natural gas development needed to meet the project's demands. <sup>48</sup>

Construction and operation are estimated to generate **\$19.56 billion to \$23.27 billion** in gross product for the Texas economy. The project is also estimated to generate between **\$970.62 million** and **\$1.17 billion** in state taxes. <sup>49</sup>

# RIO GRANDE LNG OVERVIEW

## BY THE NUMBERS

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Total Capacity:  
27 MTA



Construction is expected to create up to **6,000 jobs** and, once operational, the project is estimated to support **3,000 permanent jobs** in Cameron County.



Construction alone is expected to contribute about **\$137 million in tax receipts** to Cameron County and **\$1.2 billion** to Texas during the seven-year period. Will infuse **\$6 billion** into the local economy, including Rio Bravo pipeline construction.



Rio Grande LNG anticipates hiring 80 percent of its permanent workforce locally, and the project will create about 200 to 250 permanent operation jobs paying an average of **\$64,000 per year**.



The terminal is projected to provide around \$326 million per year to Cameron County's Gross Product, in addition to roughly **\$526 million** per year in U.S. GDP. Total Texas economic benefits as a result of Rio Grande LNG are estimated to reach **\$23.1 billion**.

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## RIO GRANDE LNG OVERVIEW

**Permitting status:** FERC application formally submitted May 2016. FTA export approved by DOE in Dec. 2015. Non-FTA approval still under DOE review.

Rio Grande LNG is slated to be the nation's largest LNG export terminal with a proposed six liquefaction trains capable of producing 27 MTA of LNG.<sup>50</sup> Rio Grande LNG filed its formal FERC application in May 2016, with construction of the terminal expected to begin in 2017. Tentatively, the terminal is projected to begin operation in 2020, along with the Rio Bravo Pipeline, which will feed natural gas from the Eagle Ford Shale region.<sup>51</sup>

When approved, Rio Grande LNG could generate up to 6,000 construction jobs, along with **200 to 250 permanent jobs on-site**.<sup>52</sup> According to research from the Perryman Group, the Rio Grande LNG project will support more than **3,000 permanent jobs** in Cameron County.<sup>53</sup> Importantly, Rio Grande LNG is working with local communities to hire employees from the surrounding counties, and

anticipates hiring more than 80 percent of its permanent workforce locally.<sup>54</sup>

Total payroll, not including benefits, is estimated to reach **\$19.8 million**, or an average of roughly **\$64,000 per employee**, almost twice the median household income in Cameron County in 2013. The construction and non-operational activities associated with the Rio Grande LNG terminal and Rio Bravo Pipeline will infuse almost \$6 billion into the local economy, which is equivalent to more than two-thirds of Cameron County's current economy. The project will contribute almost **\$137 million** in tax receipts to Cameron County and **\$1.2 billion in tax receipts** for Texas during the seven year construction period.<sup>55</sup>

Once operational, the terminal is projected to provide around **\$326 million** a year to the Cameron County Gross Product, along with annual tax receipts of **\$16.8 million** to Texas and **\$3.5 million** to Cameron County.<sup>56</sup> Cumulative economic benefits to Texas from construction through the first 25 years of operation are estimated to be over \$23 billion.<sup>57</sup>



*We have seen widespread community support for these three projects. These projects will have numerous positive impacts including the creation of high paying jobs; promotion of STEM (Science, Technology, Engineering, and Math) education; and adding tens of millions of dollars to local taxing districts. Each LNG facility, if built today, would be by far the largest taxpayer in Cameron County."*

**MELINDA RODRIGUEZ**

President and CEO of the Brownsville Chamber of Commerce<sup>58</sup>

# ANNOVA LNG OVERVIEW

## BY THE NUMBERS

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Total Capacity:  
**6.95 MTA** <sup>59</sup>



Expected to create 675  
jobs during construction  
with **165 permanent jobs**  
once in operation.

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Permanent jobs at the facility will have an average salary of **\$70,000** and **total compensation of about \$110,000** – well above Cameron County's per capita income of \$25,200.

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Construction of the project will generate more than **\$190 million** in one-time state and local tax revenues, while operation will generate an estimated **\$34 million** in annual tax revenues.

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## ANNOVA LNG OVERVIEW

**Permitting status:** FERC application filed July 2016. Secured FTA approval from DOE in Feb. 2014. No non-FTA application currently submitted.

The third of the three Port of Brownsville LNG projects to file for operation and exporting permits, Exelon's Annova LNG project filed with FERC in July 2016.<sup>60</sup> While approval for the project is not expected until March of 2018, Annova LNG's export terminal is expected to bring substantial economic benefits to the Brownsville area and has already received support from regional business leaders.<sup>61</sup>

Directly, the Annova LNG project is expected to create around **675 jobs** during the four-year construction phase, with about **165 permanent workers** hired to operate and maintain the facility once completed.<sup>62</sup> The employment

generated from this project and others at the Port of Brownsville will have a huge impact on Cameron County. According to the latest census information, just over 34 percent of the population lives at or below the poverty line.<sup>63</sup> The average wage per job currently sits at just over **\$30,000**, with per capita income barely breaking **\$25,000**.<sup>64</sup> The permanent jobs with Annova LNG, however, are projected to have an average salary of **\$70,000**, with benefits increasing that to roughly **\$110,000 in total compensation**.

Annova LNG will also help to fill Cameron County coffers, as the facility will generate over **\$34 million** in annual tax revenues. Additionally, construction of the project is anticipated to generate more than **\$190 million** in one-time state and local tax revenues.<sup>65</sup>



*Supporting LNG from our Port would support hundreds of jobs in such fields as engineering, construction, manufacturing, maintenance and facilities operations. Annova LNG will cultivate commerce and keep the Port of Brownsville connected to all points of the global market. The Port is an international connection to cities across the globe and the Annova LNG project will enhance our connectivity to the world."*

**TONY CAPELLA**

*former Chairman of the Board, Brownsville Economic Development Council*

# PORT ARTHUR LNG OVERVIEW

## BY THE NUMBERS

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Total Capacity:  
**13.5 MTA**



Once complete, at least 100 permanent jobs will be created to help operate the facility.



Construction will support around **3,500 on-site** construction and engineering jobs at its peak, with an average of about **1,300 jobs** over the entire construction period.



The project is projected to generate about **\$175.7 million** in annual tax revenue for Texas, with government revenues from 2018 to 2040 topping **\$4 billion**.



The project is expected to contribute **\$31.81 billion** in economic benefits to Texas from 2018 to 2040.

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## PORT ARTHUR LNG OVERVIEW

**Permitting status:** FERC application filed Dec. 2016. Secured FTA approval from DOE in August 2015. Non-FTA approval still under DOE review.

Still in the early stages of development, the Port Arthur LNG project is a joint effort between Sempra LNG & Midstream and Woodside Energy. Planned to be constructed on the Sabine-Neches Waterway along the Texas Gulf Coast, the Port Arthur LNG terminal is expected to have two liquefaction trains, shipping vessel berthing facilities, several LNG storage tanks and even turbine generators for self-generation of electricity.<sup>66</sup>

Already approved for export to FTA countries, parent company Sempra Energy filed with FERC at the end of November 2016 for authorization of the site, to begin construction, and to operate a liquefied natural gas export terminal. Similar to the Rio Grande LNG project, Sempra also filed for authorization to build pipelines to feed the facility. To complete the project, it's estimated that as many as **3,500 on-site construction** and engineering jobs will be created at the peak, with an average of **1,300 jobs** over the four-to-five-

year construction period. Port Arthur LNG also expects "at least" 100 full-time jobs to operate and maintain the facility.<sup>67</sup>

Nationally, the project is expected to generate **34,200 jobs per year** (direct, indirect and induced) from 2018 to 2040. In Texas, the number of average annual jobs generated from 2018 to 2040 is projected to be over 3,880. According to a report by ICF International, average annual tax revenues generated by the project from 2018 to 2040 are expected to be about **\$3.36 billion** nationally and roughly **\$175.7 million** for Texas alone. Total government revenues created by the project in Texas during this same period are expected to top **\$4 billion**.

Overall, the project is expected to contribute over **\$31.81 billion** in economic benefits to the Texas economy from 2018 to 2040.<sup>68</sup>

# ENDNOTES

- 1 Different projects use varying methodologies to determine total job creation. In this report, the total jobs number was compiled by adding up all direct, indirect, and induced jobs figures for each of the projects. The number includes total jobs created during construction of the projects, as well as the lifetime of the facilities, commonly defined as 20 years after completion. While some projects offer job creation numbers for industries related to LNG exports (exploration and production of feed gas, for example), this is not the case for all projects included. For these reasons, the topline number in this report is a computation of all jobs using an "apples to apples" methodology. As a result, this represents a conservative estimate based on the available data. An ICF International report in 2013 ("U.S. LNG Exports: State-Level Impacts on Energy Markets and the Economy") predicted as many as 665,000 jobs nationwide – and 155,000 jobs in Texas alone – as a result of LNG exports.
- 2 Similar to total jobs created, economic impacts were calculated with varying methodologies in each of the project's filings. As such, the economic impact for some projects is given in terms of yearly benefits (i.e. Freeport LNG), while others provide the total estimated economic benefits over the project's lifetime. The topline economic impact number is a general estimate of total economic impact from the Texas projects outlined in the report.
- 3 "Growth in domestic natural gas production leads to development of LNG export terminals," U.S. Energy Information Administration, Accessed October 2016: <http://www.eia.gov/todayinenergy/detail.php?id=25232>
- 4 "Texas Barnett Shale Total Natural Gas Production 2000 through October 2016," Texas Railroad Commission, December 27, 2016: [http://www.rrc.state.tx.us/media/22204/barnettshale\\_totalnaturalgas\\_day.pdf](http://www.rrc.state.tx.us/media/22204/barnettshale_totalnaturalgas_day.pdf)
- 5 "USGS Estimates 53 Trillion Cubic Feet of Gas Resources in Barnett Shale," U.S. Geological Survey, December 17, 2015: <https://www.usgs.gov/news/usgs-estimates-53-trillion-cubic-feet-gas-resources-barnett-shale>
- 6 Ibid.
- 7 "Natural Gas: U.S. Shale Production," U.S. Energy Information Administration, Accessed March 2017
- 8 "EIA's Energy Outlook 2016," U.S. Energy Information Administration, October 12, 2016: [http://www.eia.gov/pressroom/presentations/sieminski\\_10122016.pdf](http://www.eia.gov/pressroom/presentations/sieminski_10122016.pdf)
- 9 Adam Bruns, "Second Wave," Site Selection Magazine, May 20, 2016: <http://siteselection.com/theEnergyReport/2016/may/lng.cfm>
- 10 "Liquefaction Project," Freeport LNG, Accessed October 2016: [http://www.freeportlng.com/Liquefaction\\_Project.asp](http://www.freeportlng.com/Liquefaction_Project.asp)
- 11 Ibid.
- 12 Matthew Perlman, "Cheniere Raises \$11.5B for Texas LNG Export Project," Law 360, May 14 2015: <https://www.law360.com/articles/655874/cheniere-raises-11-5b-for-texas-lng-export-project-non-toxic-and-non-corrosive>. Also, by converting the methane vapor into a liquid, natural gas can be safely transported long distances that would otherwise be impossible to reach via pipeline, such as from Texas to growing markets in Asia and Europe.
- 13 "All You Need to Know About LNG," OilPrice, October 2, 2012: <http://oilprice.com/Energy/Natural-Gas/All-You-Need-to-Know-About-LNG.html>
- 14 "Freeport LNG's Liquefaction and Export Project," Freeport LNG, Accessed December 2016: [http://www.freeportlng.com/The\\_Project.asp](http://www.freeportlng.com/The_Project.asp)
- 15 "Long Term Applications Received by DOE/FE to Export Domestically Produced LNG from the Lower-48 States (as of February 1, 2017)," U.S. Department of Energy, Accessed February 2017: [https://energy.gov/sites/prod/files/2017/02/134/Summary%20of%20LNG%20Export%20Applications\\_0.pdf](https://energy.gov/sites/prod/files/2017/02/134/Summary%20of%20LNG%20Export%20Applications_0.pdf)
- 16 "Innovative Mid-Sized US LNG Export Project with Experienced Management and Engineering Partner Focused on Delivering Low Cost & Flexible Supply Terms to Global Energy Markets," Texas LNG, Accessed January 2017: <http://www.tlng.com/images/TexasLNG-ProjectBrief-web.pdf>
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